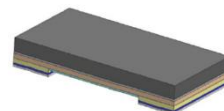


### Features:

- High temperature performance up to 225°C (for operation up to 275°C, contact Stackpole)
- Low thermal EMF ( $< 1\mu\text{V}/\text{C}$ ) typically
- RoHS compliant, REACH compliant, lead free, and halogen free
- AEC-Q200 compliant



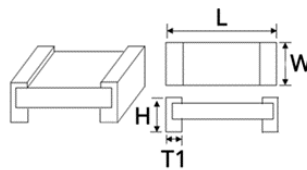
| Electrical Specifications |                          |              |                                        |                                        |    |
|---------------------------|--------------------------|--------------|----------------------------------------|----------------------------------------|----|
| Type/Code                 | Maximum Power Rating (W) | TCR (ppm/°C) | Ohmic Range ( $\Omega$ ) and Tolerance |                                        |    |
|                           |                          |              | 0.5%                                   | 1%                                     | 5% |
| CSS0201                   | 0.2                      | $\pm 200$    | -                                      | 0.01, 0.02                             | -  |
| CSS0402                   | 0.33                     | $\pm 150$    | -                                      | 0.0025                                 | -  |
|                           |                          | $\pm 100$    | -                                      | 0.005, 0.006, 0.008, 0.01, 0.015, 0.02 | -  |
| CSS0603                   | 0.33                     | $\pm 150$    | -                                      | 0.002                                  | -  |
|                           |                          | $\pm 100$    | -                                      | 0.0025, 0.003, 0.004, 0.005            | -  |
|                           |                          | $\pm 75$     | -                                      | 0.01, 0.015, 0.02                      | -  |
| CSS0508                   | 1                        | $\pm 150$    | -                                      | 0.001, 0.0015                          | -  |
|                           |                          | $\pm 100$    | -                                      | 0.002, 0.003, 0.004, 0.005             | -  |
| CSS0805                   | 0.5                      | $\pm 100$    | -                                      | 0.0015                                 | -  |
|                           |                          | $\pm 75$     | -                                      | 0.002, 0.003, 0.004, 0.005             | -  |
|                           |                          | $\pm 50$     | -                                      | 0.006, 0.007, 0.01, 0.015, 0.02        | -  |
| CSSH0805                  | 1                        | $\pm 100$    | -                                      | 0.0005                                 | -  |
|                           |                          | $\pm 75$     | -                                      | 0.001 - 0.002                          | -  |
|                           |                          | $\pm 50$     | 0.007 - 0.013                          | 0.0025 - 0.013                         | -  |
| CSS1206                   | 1                        | $\pm 175$    | -                                      | 0.0005 - 0.0006                        | -  |
|                           |                          | $\pm 75$     | 0.005 - 0.006                          | -                                      | -  |
|                           |                          | $\pm 50$     | -                                      | 0.001 - 0.004                          | -  |
|                           |                          | $\pm 25$     | 0.007 - 0.015                          | 0.005 - 0.015                          | -  |
|                           |                          | $\pm 15$     | 0.016 - 0.05                           | 0.016 - 0.05                           | -  |
| CSSH1206                  | 2                        | $\pm 75$     | 0.005                                  | 0.001 - 0.005                          | -  |
| CSS2010                   | 1                        | $\pm 100$    | -                                      | 0.0005 - 0.0009                        | -  |
|                           |                          | $\pm 50$     | -                                      | 0.001 - 0.003                          | -  |
|                           |                          | $\pm 25$     | 0.007 - 0.015                          | 0.004 - 0.006                          | -  |
|                           |                          | $\pm 15$     | 0.016 - 0.049                          | 0.007 - 0.1                            | -  |
| CSSH2010                  | 2                        | $\pm 100$    | -                                      | 0.0005 - 0.0009                        | -  |
|                           |                          | $\pm 75$     | -                                      | 0.001 - 0.0019                         | -  |
|                           |                          | $\pm 50$     | -                                      | 0.002 - 0.0069                         | -  |
|                           |                          | $\pm 25$     | 0.007 - 0.012                          | 0.007 - 0.012                          | -  |

### Electrical Specifications (cont.)

| Type/Code | Maximum Power Rating (W) | TCR (ppm/°C)  | Ohmic Range (Ω) and Tolerance |                         |    |
|-----------|--------------------------|---------------|-------------------------------|-------------------------|----|
|           |                          |               | 0.5%                          | 1%                      | 5% |
| CSS2512   | 2                        | ± 150         | -                             | 0.0003                  |    |
|           |                          | ± 75          | 0.001                         | -                       |    |
|           |                          | ± 50          | 0.0011 - 0.003                | 0.0005 - 0.003          |    |
|           |                          | ± 25          | 0.0031 - 0.0069               | 0.004 - 0.006           |    |
|           |                          |               |                               | 0.08 - 0.5              |    |
| ± 15      | 0.007 - 0.05             | 0.007 - 0.075 |                               |                         |    |
| CSSH2512  | 3                        | ± 150         | -                             | 0.0003                  |    |
|           |                          | ± 75          | 0.001                         | -                       |    |
|           |                          | ± 50          | 0.0011 - 0.0025               | 0.0005 - 0.0025         |    |
|           |                          |               | 0.011 - 0.05                  | 0.011 - 0.1             |    |
|           |                          | ± 25          | 0.003 - 0.01                  | 0.003 - 0.01            |    |
| CSS2725   | 4                        | ± 100         | -                             | 0.0002                  |    |
|           |                          | ± 50          | -                             | 0.00025 - 0.003         |    |
| CSS2728   | 3                        | ± 25          | 0.004 - 0.007                 | 0.004 - 0.007           |    |
|           |                          |               |                               | 0.101 - 0.2             |    |
|           |                          | ± 15          | 0.008 - 0.019                 | 0.008 - 0.1             |    |
| CSSH2728  | 4                        | ± 25          | 0.004 - 0.007                 | 0.004 - 0.007           |    |
|           |                          | ± 15          | 0.008 - 0.019                 | 0.008 - 0.05            |    |
| CSSH3637  | 7                        | ± 50          | 0.0005, 0.00075               | 0.0003, 0.0005, 0.00075 |    |
|           | 6                        | ± 50          | 0.001                         |                         |    |
| CSS4527   | 5                        | ± 50          | 0.007 - 0.12                  | 0.0005 - 0.2            |    |

$$V = \sqrt{P \cdot R}$$

### Mechanical Specifications



| Type/Code | Maximum Power Rating (W) | Resistance Range (Ω) | L                            | W                            | H                            | T1                           | Unit         |
|-----------|--------------------------|----------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------------|
| CSS0201   | 0.2                      | 0.01, 0.02           | 0.024 ± 0.006<br>0.60 ± 0.15 | 0.012 ± 0.006<br>0.30 ± 0.15 | 0.010 ± 0.004<br>0.25 ± 0.10 | 0.006 ± 0.004<br>0.15 ± 0.10 | inches<br>mm |
| CSS0402   | 0.33                     | 0.0025               | 0.039 ± 0.006<br>1.00 ± 0.15 | 0.022 ± 0.006<br>0.55 ± 0.15 | 0.012 ± 0.004<br>0.30 ± 0.10 | 0.012 ± 0.004<br>0.30 ± 0.10 | inches<br>mm |
|           |                          | 0.005 - 0.02         | 0.039 ± 0.006<br>1.00 ± 0.15 | 0.022 ± 0.006<br>0.55 ± 0.15 | 0.012 ± 0.004<br>0.30 ± 0.10 | 0.009 ± 0.004<br>0.23 ± 0.10 | inches<br>mm |

### Mechanical Specifications (cont.)

| Type/Code | Maximum Power Rating (W) | Resistance Range (Ω) | L                            | W                            | H                            | T1                           | Unit         |
|-----------|--------------------------|----------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------------|
| CSS0603   | 0.33                     | 0.002                | 0.063 ± 0.010<br>1.60 ± 0.25 | 0.031 ± 0.010<br>0.80 ± 0.25 | 0.016 ± 0.010<br>0.40 ± 0.25 | 0.018 ± 0.008<br>0.45 ± 0.20 | inches<br>mm |
|           |                          | 0.0025, 0.003        | 0.063 ± 0.010<br>1.60 ± 0.25 | 0.031 ± 0.010<br>0.80 ± 0.25 | 0.016 ± 0.010<br>0.40 ± 0.25 | 0.014 ± 0.008<br>0.35 ± 0.20 | inches<br>mm |
|           |                          | 0.004 - 0.02         | 0.063 ± 0.010<br>1.60 ± 0.25 | 0.031 ± 0.010<br>0.80 ± 0.25 | 0.016 ± 0.010<br>0.40 ± 0.25 | 0.012 ± 0.008<br>0.30 ± 0.20 | inches<br>mm |
| CSS0508   | 1                        | 0.001                | 0.049 ± 0.010<br>1.25 ± 0.25 | 0.079 ± 0.010<br>2.00 ± 0.25 | 0.017 ± 0.006<br>0.42 ± 0.15 | 0.015 ± 0.010<br>0.38 ± 0.25 | inches<br>mm |
|           |                          | 0.0015               | 0.049 ± 0.010<br>1.25 ± 0.25 | 0.079 ± 0.010<br>2.00 ± 0.25 | 0.017 ± 0.006<br>0.42 ± 0.15 | 0.015 ± 0.010<br>0.37 ± 0.25 | inches<br>mm |
|           |                          | 0.002                | 0.049 ± 0.010<br>1.25 ± 0.25 | 0.079 ± 0.010<br>2.00 ± 0.25 | 0.017 ± 0.006<br>0.42 ± 0.15 | 0.014 ± 0.010<br>0.36 ± 0.25 | inches<br>mm |
|           |                          | 0.003 - 0.005        | 0.049 ± 0.010<br>1.25 ± 0.25 | 0.079 ± 0.010<br>2.00 ± 0.25 | 0.017 ± 0.006<br>0.42 ± 0.15 | 0.013 ± 0.010<br>0.32 ± 0.25 | inches<br>mm |
| CSS0805   | 0.5                      | 0.0015               | 0.079 ± 0.010<br>2.00 ± 0.25 | 0.049 ± 0.010<br>1.25 ± 0.25 | 0.016 ± 0.010<br>0.40 ± 0.25 | 0.028 ± 0.008<br>0.70 ± 0.20 | inches<br>mm |
|           |                          | 0.002                | 0.079 ± 0.010<br>2.00 ± 0.25 | 0.049 ± 0.010<br>1.25 ± 0.25 | 0.016 ± 0.010<br>0.40 ± 0.25 | 0.024 ± 0.008<br>0.60 ± 0.20 | inches<br>mm |
|           |                          | 0.003 - 0.02         | 0.079 ± 0.010<br>2.00 ± 0.25 | 0.049 ± 0.010<br>1.25 ± 0.25 | 0.016 ± 0.010<br>0.40 ± 0.25 | 0.016 ± 0.008<br>0.40 ± 0.20 | inches<br>mm |
| CSSH0805  | 1                        | 0.0005               | 0.081 ± 0.010<br>2.05 ± 0.25 | 0.051 ± 0.012<br>1.30 ± 0.30 | 0.024 ± 0.008<br>0.60 ± 0.20 | 0.030 ± 0.008<br>0.75 ± 0.20 | inches<br>mm |
|           |                          | 0.001                | 0.081 ± 0.010<br>2.05 ± 0.25 | 0.051 ± 0.012<br>1.30 ± 0.30 | 0.022 ± 0.008<br>0.55 ± 0.20 | 0.016 ± 0.008<br>0.40 ± 0.20 | inches<br>mm |
|           |                          | 0.0015               | 0.081 ± 0.010<br>2.05 ± 0.25 | 0.051 ± 0.012<br>1.30 ± 0.30 | 0.018 ± 0.008<br>0.45 ± 0.20 | 0.016 ± 0.008<br>0.40 ± 0.20 | inches<br>mm |
|           |                          | 0.002                | 0.081 ± 0.010<br>2.05 ± 0.25 | 0.051 ± 0.012<br>1.30 ± 0.30 | 0.014 ± 0.008<br>0.35 ± 0.20 | 0.016 ± 0.008<br>0.40 ± 0.20 | inches<br>mm |
|           |                          | 0.0025               | 0.081 ± 0.010<br>2.05 ± 0.25 | 0.051 ± 0.012<br>1.30 ± 0.30 | 0.018 ± 0.008<br>0.45 ± 0.20 | 0.016 ± 0.008<br>0.40 ± 0.20 | inches<br>mm |
|           |                          | 0.003 - 0.008        | 0.081 ± 0.010<br>2.05 ± 0.25 | 0.051 ± 0.012<br>1.30 ± 0.30 | 0.014 ± 0.008<br>0.35 ± 0.20 | 0.016 ± 0.008<br>0.40 ± 0.20 | inches<br>mm |
|           |                          | 0.009 - 0.013        | 0.081 ± 0.010<br>2.05 ± 0.25 | 0.051 ± 0.012<br>1.30 ± 0.30 | 0.015 ± 0.008<br>0.37 ± 0.20 | 0.016 ± 0.008<br>0.40 ± 0.20 | inches<br>mm |
| CSS1206   | 1                        | 0.0005 - 0.0006      | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.063 ± 0.010<br>1.60 ± 0.25 | 0.045 ± 0.010<br>1.15 ± 0.25 | 0.029 ± 0.010<br>0.73 ± 0.25 | inches<br>mm |
|           |                          | 0.001 - 0.0015       | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.063 ± 0.010<br>1.60 ± 0.25 | 0.025 ± 0.010<br>0.65 ± 0.25 | 0.020 ± 0.010<br>0.51 ± 0.25 | inches<br>mm |
|           |                          | 0.002 - 0.004        | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.063 ± 0.010<br>1.60 ± 0.25 | 0.022 ± 0.010<br>0.55 ± 0.25 | 0.020 ± 0.010<br>0.51 ± 0.25 | inches<br>mm |
|           |                          | 0.005                | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.063 ± 0.010<br>1.60 ± 0.25 | 0.022 ± 0.010<br>0.55 ± 0.25 | 0.024 ± 0.010<br>0.60 ± 0.25 | inches<br>mm |
|           |                          | 0.006 - 0.05         | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.063 ± 0.010<br>1.60 ± 0.25 | 0.022 ± 0.010<br>0.55 ± 0.25 | 0.020 ± 0.010<br>0.51 ± 0.25 | inches<br>mm |

### Mechanical Specifications (cont.)

| Type/Code | Maximum Power Rating (W) | Resistance Range (Ω) | L                            | W                            | H                            | T1                           | Unit         |
|-----------|--------------------------|----------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------------|
| CSSH1206  | 2                        | 0.001                | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.063 ± 0.010<br>1.60 ± 0.25 | 0.025 ± 0.010<br>0.65 ± 0.25 | 0.020 ± 0.010<br>0.51 ± 0.25 | inches<br>mm |
|           |                          | 0.002 - 0.004        | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.063 ± 0.010<br>1.60 ± 0.25 | 0.021 ± 0.010<br>0.55 ± 0.25 | 0.020 ± 0.010<br>0.51 ± 0.25 | inches<br>mm |
|           |                          | 0.005                | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.063 ± 0.010<br>1.60 ± 0.25 | 0.021 ± 0.010<br>0.55 ± 0.25 | 0.024 ± 0.010<br>0.60 ± 0.25 | inches<br>mm |
| CSS2010   | 1                        | 0.0005 - 0.0009      | 0.200 ± 0.010<br>5.08 ± 0.25 | 0.100 ± 0.010<br>2.54 ± 0.25 | 0.031 ± 0.010<br>0.79 ± 0.25 | 0.057 ± 0.010<br>1.44 ± 0.25 | inches<br>mm |
|           |                          | 0.001 - 0.003        | 0.200 ± 0.010<br>5.08 ± 0.25 | 0.100 ± 0.010<br>2.54 ± 0.25 | 0.031 ± 0.010<br>0.79 ± 0.25 | 0.051 ± 0.010<br>1.30 ± 0.25 | inches<br>mm |
|           |                          | 0.0031 - 0.1         | 0.200 ± 0.010<br>5.08 ± 0.25 | 0.100 ± 0.010<br>2.54 ± 0.25 | 0.025 ± 0.010<br>0.65 ± 0.25 | 0.031 ± 0.010<br>0.79 ± 0.25 | inches<br>mm |
| CSSH2010  | 2                        | 0.0005 - 0.0009      | 0.200 ± 0.010<br>5.08 ± 0.25 | 0.100 ± 0.010<br>2.54 ± 0.25 | 0.031 ± 0.010<br>0.79 ± 0.25 | 0.057 ± 0.010<br>1.44 ± 0.25 | inches<br>mm |
|           |                          | 0.001 - 0.003        | 0.200 ± 0.010<br>5.08 ± 0.25 | 0.100 ± 0.010<br>2.54 ± 0.25 | 0.031 ± 0.010<br>0.79 ± 0.25 | 0.051 ± 0.010<br>1.30 ± 0.25 | inches<br>mm |
|           |                          | 0.0031 - 0.004       | 0.200 ± 0.010<br>5.08 ± 0.25 | 0.100 ± 0.010<br>2.54 ± 0.25 | 0.025 ± 0.010<br>0.65 ± 0.25 | 0.031 ± 0.010<br>0.79 ± 0.25 | inches<br>mm |
|           |                          | 0.0041 - 0.012       | 0.200 ± 0.010<br>5.08 ± 0.25 | 0.100 ± 0.010<br>2.54 ± 0.25 | 0.025 ± 0.010<br>0.65 ± 0.25 | 0.031 ± 0.010<br>0.79 ± 0.25 | inches<br>mm |
| CSS2512   | 2                        | 0.0003               | 0.246 ± 0.010<br>6.25 ± 0.25 | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.045 ± 0.010<br>1.15 ± 0.25 | 0.080 ± 0.010<br>2.02 ± 0.25 | inches<br>mm |
|           |                          | 0.0005 - 0.0007      | 0.246 ± 0.010<br>6.25 ± 0.25 | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.031 ± 0.010<br>0.79 ± 0.25 | 0.080 ± 0.010<br>2.02 ± 0.25 | inches<br>mm |
|           |                          | 0.00075              | 0.246 ± 0.010<br>6.25 ± 0.25 | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.031 ± 0.010<br>0.79 ± 0.25 | 0.054 ± 0.010<br>1.37 ± 0.25 | inches<br>mm |
|           |                          | 0.0008 - 0.004       | 0.246 ± 0.010<br>6.25 ± 0.25 | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.031 ± 0.010<br>0.79 ± 0.25 | 0.074 ± 0.010<br>1.88 ± 0.25 | inches<br>mm |
|           |                          | 0.0041 - 0.075       | 0.246 ± 0.010<br>6.25 ± 0.25 | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.026 ± 0.010<br>0.65 ± 0.25 | 0.044 ± 0.010<br>1.12 ± 0.25 | inches<br>mm |
|           |                          | 0.08 - 0.1           | 0.246 ± 0.010<br>6.25 ± 0.25 | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.026 ± 0.010<br>0.65 ± 0.25 | 0.025 ± 0.010<br>0.62 ± 0.25 | inches<br>mm |
|           |                          | 0.3 - 0.5            | 0.246 ± 0.010<br>6.25 ± 0.25 | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.028 ± 0.010<br>0.72 ± 0.25 | 0.034 ± 0.010<br>0.87 ± 0.25 | inches<br>mm |

### Mechanical Specifications (cont.)

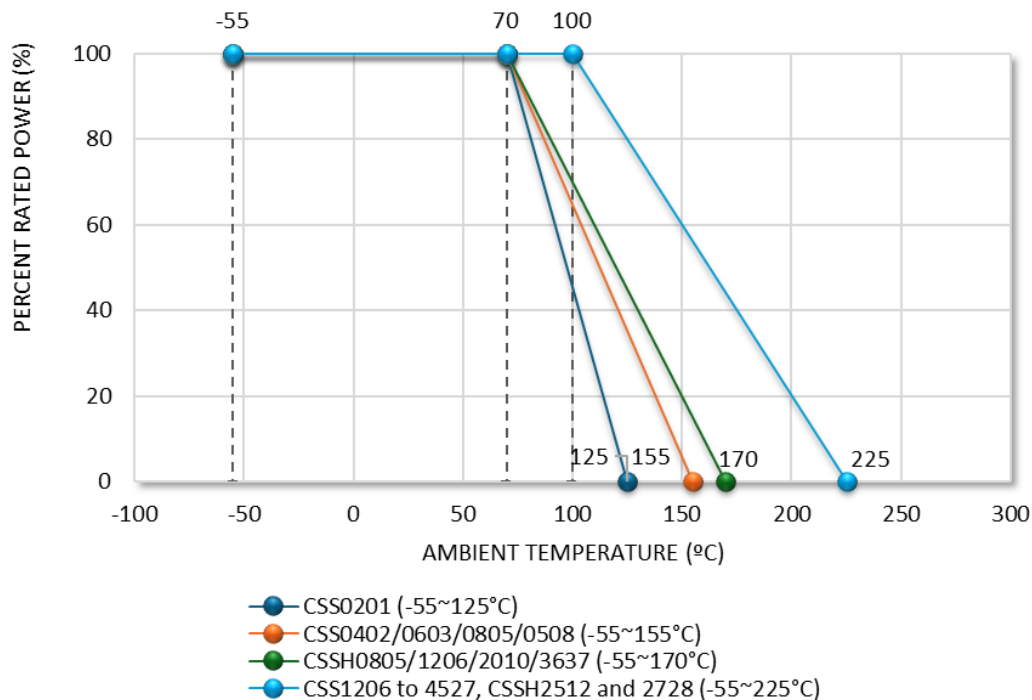
| Type/Code | Maximum Power Rating (W) | Resistance Range (Ω)          | L                            | W                            | H                            | T1                           | Unit         |
|-----------|--------------------------|-------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------------|
| CSSH2512  | 3                        | 0.0003                        | 0.246 ± 0.010<br>6.25 ± 0.25 | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.045 ± 0.010<br>1.15 ± 0.25 | 0.080 ± 0.010<br>2.02 ± 0.25 | inches<br>mm |
|           |                          | 0.0005                        | 0.246 ± 0.010<br>6.25 ± 0.25 | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.031 ± 0.010<br>0.79 ± 0.25 | 0.080 ± 0.010<br>2.02 ± 0.25 | inches<br>mm |
|           |                          | 0.0006 - 0.0007               | 0.246 ± 0.010<br>6.25 ± 0.25 | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.031 ± 0.010<br>0.79 ± 0.25 | 0.074 ± 0.010<br>1.88 ± 0.25 | inches<br>mm |
|           |                          | 0.00075                       | 0.246 ± 0.010<br>6.25 ± 0.25 | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.031 ± 0.010<br>0.79 ± 0.25 | 0.054 ± 0.010<br>1.37 ± 0.25 | inches<br>mm |
|           |                          | 0.0008 - 0.0029               | 0.246 ± 0.010<br>6.25 ± 0.25 | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.031 ± 0.010<br>0.79 ± 0.25 | 0.044 ± 0.010<br>1.12 ± 0.25 | inches<br>mm |
|           |                          | 0.003 - 0.0035                | 0.246 ± 0.010<br>6.25 ± 0.25 | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.031 ± 0.010<br>0.79 ± 0.25 | 0.074 ± 0.010<br>1.88 ± 0.25 | inches<br>mm |
|           |                          | 0.0036 - 0.004                | 0.246 ± 0.010<br>6.25 ± 0.25 | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.031 ± 0.010<br>0.79 ± 0.25 | 0.066 ± 0.010<br>1.68 ± 0.25 | inches<br>mm |
|           |                          | 0.0041 - 0.01                 | 0.246 ± 0.010<br>6.25 ± 0.25 | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.026 ± 0.010<br>0.65 ± 0.25 | 0.044 ± 0.010<br>1.12 ± 0.25 | inches<br>mm |
|           |                          | 0.0101 - 0.079 <sup>(*)</sup> | 0.246 ± 0.010<br>6.25 ± 0.25 | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.039 ± 0.010<br>1.00 ± 0.25 | 0.044 ± 0.010<br>1.12 ± 0.25 | inches<br>mm |
|           |                          | 0.08 - 0.1 <sup>(*)</sup>     | 0.246 ± 0.010<br>6.25 ± 0.25 | 0.126 ± 0.010<br>3.20 ± 0.25 | 0.039 ± 0.010<br>1.00 ± 0.25 | 0.034 ± 0.010<br>0.87 ± 0.25 | inches<br>mm |
| CSS2725   | 4                        | 0.0002 - 0.0003               | 0.268 ± 0.010<br>6.81 ± 0.25 | 0.254 ± 0.010<br>6.45 ± 0.25 | 0.039 ± 0.010<br>0.99 ± 0.25 | 0.085 ± 0.010<br>2.16 ± 0.25 | inches<br>mm |
|           |                          | 0.00035                       | 0.268 ± 0.010<br>6.81 ± 0.25 | 0.254 ± 0.010<br>6.45 ± 0.25 | 0.039 ± 0.010<br>0.99 ± 0.25 | 0.075 ± 0.010<br>1.90 ± 0.25 | inches<br>mm |
|           |                          | 0.0004 - 0.00045              | 0.268 ± 0.010<br>6.81 ± 0.25 | 0.254 ± 0.010<br>6.45 ± 0.25 | 0.039 ± 0.010<br>0.99 ± 0.25 | 0.051 ± 0.010<br>1.30 ± 0.25 | inches<br>mm |
|           |                          | 0.0005                        | 0.268 ± 0.010<br>6.81 ± 0.25 | 0.254 ± 0.010<br>6.45 ± 0.25 | 0.039 ± 0.010<br>0.99 ± 0.25 | 0.085 ± 0.010<br>2.16 ± 0.25 | inches<br>mm |
|           |                          | 0.0006                        | 0.268 ± 0.010<br>6.81 ± 0.25 | 0.254 ± 0.010<br>6.45 ± 0.25 | 0.039 ± 0.010<br>0.99 ± 0.25 | 0.071 ± 0.010<br>1.80 ± 0.25 | inches<br>mm |
|           |                          | 0.00075                       | 0.268 ± 0.010<br>6.81 ± 0.25 | 0.254 ± 0.010<br>6.45 ± 0.25 | 0.039 ± 0.010<br>0.99 ± 0.25 | 0.059 ± 0.010<br>1.50 ± 0.25 | inches<br>mm |
|           |                          | 0.001                         | 0.268 ± 0.010<br>6.81 ± 0.25 | 0.254 ± 0.010<br>6.45 ± 0.25 | 0.043 ± 0.010<br>1.09 ± 0.25 | 0.085 ± 0.010<br>2.16 ± 0.25 | inches<br>mm |
|           |                          | 0.0015                        | 0.268 ± 0.010<br>6.81 ± 0.25 | 0.254 ± 0.010<br>6.45 ± 0.25 | 0.039 ± 0.010<br>0.99 ± 0.25 | 0.085 ± 0.010<br>2.16 ± 0.25 | inches<br>mm |
|           |                          | 0.002                         | 0.268 ± 0.010<br>6.81 ± 0.25 | 0.254 ± 0.010<br>6.45 ± 0.25 | 0.035 ± 0.010<br>0.89 ± 0.25 | 0.071 ± 0.010<br>1.80 ± 0.25 | inches<br>mm |
|           |                          | 0.0025                        | 0.268 ± 0.010<br>6.81 ± 0.25 | 0.254 ± 0.010<br>6.45 ± 0.25 | 0.035 ± 0.010<br>0.89 ± 0.25 | 0.065 ± 0.010<br>1.65 ± 0.25 | inches<br>mm |
|           |                          | 0.003                         | 0.268 ± 0.010<br>6.81 ± 0.25 | 0.254 ± 0.010<br>6.45 ± 0.25 | 0.035 ± 0.010<br>0.89 ± 0.25 | 0.051 ± 0.010<br>1.30 ± 0.25 | inches<br>mm |

### Mechanical Specifications (cont.)

| Type/Code | Maximum Power Rating (W) | Resistance Range ( $\Omega$ ) | L                                     | W                                    | H                                    | T1                                   | Unit         |
|-----------|--------------------------|-------------------------------|---------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------|
| CSS2728   | 3                        | 0.004 - 0.2                   | $0.264 \pm 0.010$<br>$6.71 \pm 0.25$  | $0.283 \pm 0.010$<br>$7.19 \pm 0.25$ | $0.039 \pm 0.010$<br>$0.99 \pm 0.25$ | $0.045 \pm 0.010$<br>$1.14 \pm 0.25$ | inches<br>mm |
| CSSH2728  | 4                        | 0.004 - 0.05                  | $0.264 \pm 0.010$<br>$6.71 \pm 0.25$  | $0.283 \pm 0.010$<br>$7.19 \pm 0.25$ | $0.039 \pm 0.010$<br>$0.99 \pm 0.25$ | $0.045 \pm 0.010$<br>$1.14 \pm 0.25$ | inches<br>mm |
| CSSH3637  | 7                        | 0.0003                        | $0.362 \pm 0.010$<br>$9.20 \pm 0.25$  | $0.378 \pm 0.010$<br>$9.60 \pm 0.25$ | $0.029 \pm 0.010$<br>$0.73 \pm 0.25$ | $0.111 \pm 0.010$<br>$2.83 \pm 0.25$ | inches<br>mm |
|           |                          | 0.0005                        | $0.362 \pm 0.010$<br>$9.20 \pm 0.25$  | $0.378 \pm 0.010$<br>$9.60 \pm 0.25$ | $0.029 \pm 0.010$<br>$0.73 \pm 0.25$ | $0.098 \pm 0.010$<br>$2.49 \pm 0.25$ | inches<br>mm |
|           |                          | 0.00075                       | $0.362 \pm 0.010$<br>$9.20 \pm 0.25$  | $0.378 \pm 0.010$<br>$9.60 \pm 0.25$ | $0.029 \pm 0.010$<br>$0.73 \pm 0.25$ | $0.090 \pm 0.010$<br>$2.28 \pm 0.25$ | inches<br>mm |
|           | 6                        | 0.001                         | $0.362 \pm 0.010$<br>$9.20 \pm 0.25$  | $0.378 \pm 0.010$<br>$9.60 \pm 0.25$ | $0.029 \pm 0.010$<br>$0.73 \pm 0.25$ | $0.090 \pm 0.010$<br>$2.28 \pm 0.25$ | inches<br>mm |
| CSS4527   | 5                        | 0.0005                        | $0.450 \pm 0.010$<br>$11.43 \pm 0.25$ | $0.270 \pm 0.010$<br>$6.85 \pm 0.25$ | $0.059 \pm 0.010$<br>$1.50 \pm 0.25$ | $0.137 \pm 0.010$<br>$3.47 \pm 0.25$ | inches<br>mm |
|           |                          | 0.0006 - 0.003                | $0.450 \pm 0.010$<br>$11.43 \pm 0.25$ | $0.270 \pm 0.010$<br>$6.85 \pm 0.25$ | $0.059 \pm 0.010$<br>$1.50 \pm 0.25$ | $0.127 \pm 0.010$<br>$3.22 \pm 0.25$ | inches<br>mm |
|           |                          | 0.004 - 0.005                 | $0.450 \pm 0.010$<br>$11.43 \pm 0.25$ | $0.270 \pm 0.010$<br>$6.85 \pm 0.25$ | $0.059 \pm 0.010$<br>$1.50 \pm 0.25$ | $0.127 \pm 0.010$<br>$3.22 \pm 0.25$ | inches<br>mm |
|           |                          | 0.0051 - 0.2                  | $0.450 \pm 0.010$<br>$11.43 \pm 0.25$ | $0.270 \pm 0.010$<br>$6.85 \pm 0.25$ | $0.059 \pm 0.010$<br>$1.50 \pm 0.25$ | $0.072 \pm 0.010$<br>$1.82 \pm 0.25$ | inches<br>mm |

(\*) with heat sink

### Power Derating Curve:



### Performance Characteristics

| Test                                        | Test Method       | Test Specification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Test Condition                                                                                                                                                                                      |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
|---------------------------------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------|---------|-----|------------------|---------|------|-------------------------------|---------|------|-------------------------------|---------|---|-------------------------------|---------|-----|-------------------------------|----------|---|----------------|---------|---|------------------|----------|---|------------------|---------|---|------------------|----------|---|------------------|---------|---|------------------|----------|---|------------------|---------|---|------------------|---------|---|------------------|----------|---|------------------|----------|---------|----------------------------------|---------|---|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------|-------------|---------|-----|-----------|---------|------|-----------|---------|------|-----------|---------|---|-----------|---------|-----|-----------|----------|---|---------|---------|---|---------|----------|---|---------|---------|---|---------|----------|---|---------|---------|---|---------|----------|---|---------|---------|---|---------|---------|---|---------|----------|---|---------|----------|---------|---------|---------|---|---------|
| Temperature Coefficient of Resistance (TCR) | JIS-C-5201-1 4.8  | Per specification<br>(refer to Electrical Specification table)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | $TCR \text{ (ppm/}^{\circ}\text{C)} = \frac{(R2 - R1)}{R1 (T2 - T1)} \times 10^6$<br>R1: resistance of room temperature (T1)<br>R2: resistance of 125°C (T2)                                        |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| Short Time Overload                         | JIS C 5201-1 4.13 | <table><tr><th>Size</th><th>Power (W)</th><th>Max. R Change</th></tr><tr><td>CSS0201</td><td>0.2</td><td><math>\leq \pm 0.5\%</math></td></tr><tr><td>CSS0402</td><td>0.33</td><td><math>\pm 1\% + 0.5\text{m}\Omega</math></td></tr><tr><td>CSS0603</td><td>0.33</td><td><math>\pm 1\% + 0.5\text{m}\Omega</math></td></tr><tr><td>CSS0508</td><td>1</td><td><math>\pm 1\% + 0.5\text{m}\Omega</math></td></tr><tr><td>CSS0805</td><td>0.5</td><td><math>\pm 1\% + 0.5\text{m}\Omega</math></td></tr><tr><td>CSSH0805</td><td>1</td><td><math>\leq \pm 1\%</math></td></tr><tr><td>CSS1206</td><td>1</td><td><math>\leq \pm 0.5\%</math></td></tr><tr><td>CSSH1206</td><td>2</td><td><math>\leq \pm 0.5\%</math></td></tr><tr><td>CSS2010</td><td>1</td><td><math>\leq \pm 0.5\%</math></td></tr><tr><td>CSSH2010</td><td>2</td><td><math>\leq \pm 0.5\%</math></td></tr><tr><td>CSS2512</td><td>2</td><td><math>\leq \pm 0.5\%</math></td></tr><tr><td>CSSH2512</td><td>3</td><td><math>\leq \pm 0.5\%</math></td></tr><tr><td>CSS2725</td><td>4</td><td><math>\leq \pm 0.5\%</math></td></tr><tr><td>CSS2728</td><td>3</td><td><math>\leq \pm 0.5\%</math></td></tr><tr><td>CSSH2728</td><td>4</td><td><math>\leq \pm 0.5\%</math></td></tr><tr><td>CSSH3637</td><td>6 and 7</td><td><math>\leq 0.5\% + 0.5\text{m}\Omega</math></td></tr><tr><td>CSS4527</td><td>5</td><td><math>\leq \pm 2\%</math></td></tr></table> | Size                                                                                                                                                                                                | Power (W)     | Max. R Change | CSS0201 | 0.2 | $\leq \pm 0.5\%$ | CSS0402 | 0.33 | $\pm 1\% + 0.5\text{m}\Omega$ | CSS0603 | 0.33 | $\pm 1\% + 0.5\text{m}\Omega$ | CSS0508 | 1 | $\pm 1\% + 0.5\text{m}\Omega$ | CSS0805 | 0.5 | $\pm 1\% + 0.5\text{m}\Omega$ | CSSH0805 | 1 | $\leq \pm 1\%$ | CSS1206 | 1 | $\leq \pm 0.5\%$ | CSSH1206 | 2 | $\leq \pm 0.5\%$ | CSS2010 | 1 | $\leq \pm 0.5\%$ | CSSH2010 | 2 | $\leq \pm 0.5\%$ | CSS2512 | 2 | $\leq \pm 0.5\%$ | CSSH2512 | 3 | $\leq \pm 0.5\%$ | CSS2725 | 4 | $\leq \pm 0.5\%$ | CSS2728 | 3 | $\leq \pm 0.5\%$ | CSSH2728 | 4 | $\leq \pm 0.5\%$ | CSSH3637 | 6 and 7 | $\leq 0.5\% + 0.5\text{m}\Omega$ | CSS4527 | 5 | $\leq \pm 2\%$ | <p>The number of rated power are as follows:</p> <table><tr><th>Size</th><th>Power (W)</th><th>Rated Power</th></tr><tr><td>CSS0201</td><td>0.2</td><td>2.5 times</td></tr><tr><td>CSS0402</td><td>0.33</td><td>2.5 times</td></tr><tr><td>CSS0603</td><td>0.33</td><td>2.5 times</td></tr><tr><td>CSS0508</td><td>1</td><td>2.5 times</td></tr><tr><td>CSS0805</td><td>0.5</td><td>2.5 times</td></tr><tr><td>CSSH0805</td><td>1</td><td>4 times</td></tr><tr><td>CSS1206</td><td>1</td><td>5 times</td></tr><tr><td>CSSH1206</td><td>2</td><td>5 times</td></tr><tr><td>CSS2010</td><td>1</td><td>5 times</td></tr><tr><td>CSSH2010</td><td>2</td><td>5 times</td></tr><tr><td>CSS2512</td><td>2</td><td>5 times</td></tr><tr><td>CSSH2512</td><td>3</td><td>5 times</td></tr><tr><td>CSS2725</td><td>4</td><td>5 times</td></tr><tr><td>CSS2728</td><td>3</td><td>5 times</td></tr><tr><td>CSSH2728</td><td>4</td><td>5 times</td></tr><tr><td>CSSH3637</td><td>6 and 7</td><td>5 times</td></tr><tr><td>CSS4527</td><td>5</td><td>5 times</td></tr></table> | Size | Power (W) | Rated Power | CSS0201 | 0.2 | 2.5 times | CSS0402 | 0.33 | 2.5 times | CSS0603 | 0.33 | 2.5 times | CSS0508 | 1 | 2.5 times | CSS0805 | 0.5 | 2.5 times | CSSH0805 | 1 | 4 times | CSS1206 | 1 | 5 times | CSSH1206 | 2 | 5 times | CSS2010 | 1 | 5 times | CSSH2010 | 2 | 5 times | CSS2512 | 2 | 5 times | CSSH2512 | 3 | 5 times | CSS2725 | 4 | 5 times | CSS2728 | 3 | 5 times | CSSH2728 | 4 | 5 times | CSSH3637 | 6 and 7 | 5 times | CSS4527 | 5 | 5 times |
|                                             |                   | Size                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Power (W)                                                                                                                                                                                           | Max. R Change |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSS0201                                     | 0.2               | $\leq \pm 0.5\%$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSS0402                                     | 0.33              | $\pm 1\% + 0.5\text{m}\Omega$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSS0603                                     | 0.33              | $\pm 1\% + 0.5\text{m}\Omega$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSS0508                                     | 1                 | $\pm 1\% + 0.5\text{m}\Omega$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSS0805                                     | 0.5               | $\pm 1\% + 0.5\text{m}\Omega$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSSH0805                                    | 1                 | $\leq \pm 1\%$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSS1206                                     | 1                 | $\leq \pm 0.5\%$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSSH1206                                    | 2                 | $\leq \pm 0.5\%$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSS2010                                     | 1                 | $\leq \pm 0.5\%$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSSH2010                                    | 2                 | $\leq \pm 0.5\%$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSS2512                                     | 2                 | $\leq \pm 0.5\%$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSSH2512                                    | 3                 | $\leq \pm 0.5\%$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSS2725                                     | 4                 | $\leq \pm 0.5\%$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSS2728                                     | 3                 | $\leq \pm 0.5\%$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSSH2728                                    | 4                 | $\leq \pm 0.5\%$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSSH3637                                    | 6 and 7           | $\leq 0.5\% + 0.5\text{m}\Omega$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSS4527                                     | 5                 | $\leq \pm 2\%$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| Size                                        | Power (W)         | Rated Power                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSS0201                                     | 0.2               | 2.5 times                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSS0402                                     | 0.33              | 2.5 times                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSS0603                                     | 0.33              | 2.5 times                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSS0508                                     | 1                 | 2.5 times                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSS0805                                     | 0.5               | 2.5 times                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSSH0805                                    | 1                 | 4 times                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSS1206                                     | 1                 | 5 times                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSSH1206                                    | 2                 | 5 times                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSS2010                                     | 1                 | 5 times                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSSH2010                                    | 2                 | 5 times                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSS2512                                     | 2                 | 5 times                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSSH2512                                    | 3                 | 5 times                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSS2725                                     | 4                 | 5 times                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSS2728                                     | 3                 | 5 times                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSSH2728                                    | 4                 | 5 times                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSSH3637                                    | 6 and 7           | 5 times                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| CSS4527                                     | 5                 | 5 times                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                     |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| Insulation Resistance                       | JIS-C-5201-1 4.6  | $\geq 10^9\Omega$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Put the resistor in the fixture, add 100 VDC in terminal for 60 seconds, then measure the insulation resistance between electrodes and insulating enclosure or between electrodes and base material |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |
| Dielectric Withstanding Voltage             | JIS-C-5201-1 4.7  | No short or burned in the appearance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Applied 500 VAC for 1 minute and limit surge current 50 mA (max)                                                                                                                                    |               |               |         |     |                  |         |      |                               |         |      |                               |         |   |                               |         |     |                               |          |   |                |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |          |   |                  |         |   |                  |         |   |                  |          |   |                  |          |         |                                  |         |   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |           |             |         |     |           |         |      |           |         |      |           |         |   |           |         |     |           |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |          |   |         |         |   |         |         |   |         |          |   |         |          |         |         |         |   |         |

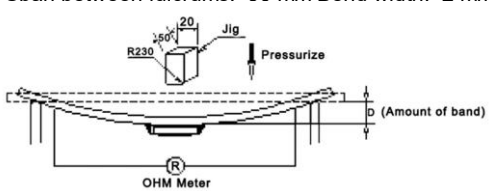
Operating Temperature Range for size CSS0201 is -55 to +125°C.

Operating Temperature Range for sizes CSS0402, CSS0603, CSS0805, and CSS0508 is -55 to +155°C.

Operating Temperature Range for size CSSH0805, CSSH1206, CSSH2010, and CSSH3637 is -55 to +170°C.

Operating Temperature Range for sizes CSS1206 - CSS4527, CSSH 2512 and CSSH 2728 is -55 to +225°C.

### Mechanical Performance

| Test Item                 | Test Method       | Test Specifications                                                                                                                                            | Test Condition                                                                                                                         |
|---------------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Resistance to Solder Heat | JIS C 5201-1 4.18 | 0201 - 0805: $\leq \pm 1\% + 0.5m\Omega$<br>CSSH0805 and above 1206: $\leq \pm 0.5\% + 0.5m\Omega$<br>CSSH3637: $\leq \pm 0.5\% + 0.5m\Omega$<br>Jumper < Rmax | 260 $\pm$ 5°C for 10 $\pm$ 1 seconds                                                                                                   |
| Solderability             | JIS C 5201-1 4.17 | > 95 % coverage                                                                                                                                                | 245 $\pm$ 5°C for 3 $\pm$ 0.5 seconds                                                                                                  |
| Substrate Bending         | JIS C 5201-1 4.33 | $\pm 1\% + 0.5m\Omega$<br>CSSH3637: $\leq \pm 0.5\% + 0.5m\Omega$                                                                                              | Span between fulcrums: 90 mm Bend width: 2 mm<br> |

### Mechanical Performance (cont.)

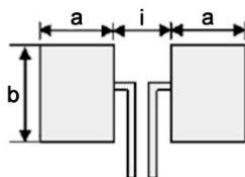
| Test Item             | Test Method       | Test Specifications                                  | Test Condition                                                                                                                                                                                                                                                                                                                                      |
|-----------------------|-------------------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Resistance to Solvent | JIS C 5201-1 4.29 | $\leq \pm 0.5\%$<br>No evidence of mechanical damage | The tested resistor is immersed into isopropyl alcohol of 20 ~ 25°C for 60 seconds, then the resistor is left in the room for 48 hours.                                                                                                                                                                                                             |
| Vibration             | JIS C 5201-1 4.22 | $\leq \pm 0.5\%$<br>No evidence of mechanical damage | The resistor shall be mounted by its terminal leads to the supporting terminals on the solid table. The entire frequency range from 10 Hz to 55 Hz and return to 10 Hz, shall be transferred in 1 minute. Amplitude: 1.5 mm. This motion shall be applied for a period of 4 hours in each 3 mutually perpendicular directions (a total of 12 hours) |
| Mechanical Shock      | JIS C 5202 6.7    | $\pm 1\% + 0.5m\Omega$                               | a = 50 G, t = 11 ms, 5 times shock                                                                                                                                                                                                                                                                                                                  |

### Environmental Performance

| Test Item                           | Test Method                           | Test Specifications                                                                                                                                                                                   | Test Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |  |                             |                               |                             |                              |                            |            |                              |      |
|-------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--|-----------------------------|-------------------------------|-----------------------------|------------------------------|----------------------------|------------|------------------------------|------|
| Low Temperature Exposure (Storage)  | JIS C 5201-1 4.23.4                   | 0201 - 0805: $\leq \pm 1\% + 0.5\text{m}\Omega$<br>$\geq 1206$ : $\pm 0.5\%$                                                                                                                          | 1000 hours at $-55 \pm 2^\circ\text{C}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |  |                             |                               |                             |                              |                            |            |                              |      |
| High Temperature Exposure (Storage) | JIS C 5201-1 4.23.2                   | 0201 - 0805: $\leq \pm 1\% + 0.5\text{m}\Omega$                                                                                                                                                       | 1000 hours at $+155 \pm 2^\circ\text{C}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                   |  |                             |                               |                             |                              |                            |            |                              |      |
|                                     |                                       | CSSH0805: $\pm 1\%$<br>CSSH3637: $\leq \pm 1\% + 0.5\text{m}\Omega$<br>$\geq 1206$ : $\pm 1\%$                                                                                                        | 1000 hours at $+170 \pm 5^\circ\text{C}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                   |  |                             |                               |                             |                              |                            |            |                              |      |
|                                     |                                       | 0201 Jumper $< R_{\text{max}}$                                                                                                                                                                        | 1000 hours at $+125 \pm 2^\circ\text{C}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                   |  |                             |                               |                             |                              |                            |            |                              |      |
| Temperature Cycling                 | JESD22<br>Method JA-104               | 0201 - 0805: $\leq \pm 1\% + 0.5\text{m}\Omega$<br>CSSH0805: $\leq \pm 0.5\% + 0.5\text{m}\Omega$<br>$\geq 1206$ : $\leq \pm 0.5\% + 0.5\text{m}\Omega$                                               | $-55$ to $+150^\circ\text{C}$ 30 minutes each, except for 0201 which is $-55$ to $+125^\circ\text{C}$ 30 minutes each.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |  |                             |                               |                             |                              |                            |            |                              |      |
| Biased Humidity                     | JIS C 5201-1 4.24                     | 0201 - 0805: $\leq \pm 2\% + 0.5\text{m}\Omega$<br>0201 Jumper $< R_{\text{max}}$                                                                                                                     | $T = 40 \pm 2^\circ\text{C}$ , RH = 90~95%, Load with Rated Current<br>1.5 hours "ON", 0.5 hours "OFF", 1000 hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |  |                             |                               |                             |                              |                            |            |                              |      |
|                                     |                                       | CSSH0805: $\pm 0.5\%$<br>CSSH3637: $\leq \pm 0.5\% + 0.5\text{m}\Omega$<br>$\geq 1206$ : $\pm 0.5\%$                                                                                                  | 1000 hours at $+85^\circ\text{C}$ / 85% R.H., 10% of operating power<br>1.5 hours "ON" and 0.5 hours "OFF"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                   |  |                             |                               |                             |                              |                            |            |                              |      |
| Load Life                           | JIS C 5201-1 4.25                     | 0201 - 0805: $\leq \pm 2\% + 0.5\text{m}\Omega$<br>0201 Jumper = $R_{\text{max}}$<br>CSSH0805: $\pm 1\%$<br>CSSH3637: $\leq \pm 1\% + 0.5\text{m}\Omega$<br>1206 - 2728: $\pm 1\%$<br>4527: $\pm 2\%$ | $T = 70 \pm 2^\circ\text{C}$ , load with Rated Current<br>1.5 hours "ON", 0.5 hours "OFF", 1000 hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |  |                             |                               |                             |                              |                            |            |                              |      |
| Whisker Test                        | JESD Standard<br>No.22A121<br>class 2 | Max $50\text{ }\mu\text{m}$                                                                                                                                                                           | <div>Test item (Thermal Shock Test):<table><tr><th colspan="2">Testing Condition</th></tr><tr><td>Minimum Storage Temperature</td><td><math>-55 + 0 / -10^\circ\text{C}</math></td></tr><tr><td>Maximum Storage Temperature</td><td><math>85 + 10 / -0^\circ\text{C}</math></td></tr><tr><td>Temperature-Retaining Time</td><td>10 minutes</td></tr><tr><td>Number of Temperature Cycles</td><td>1500</td></tr></table></div> <div>Inspection:<br/>Inspect for whisker formation on specimens that underwent the acceleration test, with a magnifier (stereo microscope) of about 40 or higher magnification. If judgement is difficult with this method, use a scanning electron microscope (SEM) of about 1000 or higher magnification</div> | Testing Condition |  | Minimum Storage Temperature | $-55 + 0 / -10^\circ\text{C}$ | Maximum Storage Temperature | $85 + 10 / -0^\circ\text{C}$ | Temperature-Retaining Time | 10 minutes | Number of Temperature Cycles | 1500 |
| Testing Condition                   |                                       |                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |  |                             |                               |                             |                              |                            |            |                              |      |
| Minimum Storage Temperature         | $-55 + 0 / -10^\circ\text{C}$         |                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |  |                             |                               |                             |                              |                            |            |                              |      |
| Maximum Storage Temperature         | $85 + 10 / -0^\circ\text{C}$          |                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |  |                             |                               |                             |                              |                            |            |                              |      |
| Temperature-Retaining Time          | 10 minutes                            |                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |  |                             |                               |                             |                              |                            |            |                              |      |
| Number of Temperature Cycles        | 1500                                  |                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |  |                             |                               |                             |                              |                            |            |                              |      |

Recommended storage temperature: 25  $\pm$  5°C. Humidity: 60  $\pm$  20%.

### Recommended Pad Layout



| Type/Code | Maximum Power Rating (W) | Resistance Range ( $\Omega$ ) | a             | b             | i             | Unit         |
|-----------|--------------------------|-------------------------------|---------------|---------------|---------------|--------------|
| CSS0201   | 0.2                      | 0.01, 0.02                    | 0.008<br>0.20 | 0.013<br>0.33 | 0.010<br>0.25 | inches<br>mm |
| CSS0402   | 0.33                     | 0.0025                        | 0.024<br>0.60 | 0.024<br>0.60 | 0.014<br>0.35 | inches<br>mm |
|           |                          | 0.005 - 0.02                  | 0.024<br>0.60 | 0.024<br>0.60 | 0.016<br>0.40 | inches<br>mm |
| CSS0603   | 0.33                     | 0.002                         | 0.056<br>1.41 | 0.036<br>0.92 | 0.015<br>0.38 | inches<br>mm |
|           |                          | 0.0025, 0.003                 | 0.053<br>1.35 | 0.036<br>0.92 | 0.020<br>0.50 | inches<br>mm |
|           |                          | 0.004 - 0.02                  | 0.051<br>1.30 | 0.036<br>0.92 | 0.024<br>0.60 | inches<br>mm |
| CSS0508   | 1                        | 0.001, 0.0015, 0.002          | 0.035<br>0.90 | 0.091<br>2.30 | 0.016<br>0.40 | inches<br>mm |
|           |                          | 0.003 - 0.005                 | 0.033<br>0.85 | 0.091<br>2.30 | 0.020<br>0.50 | inches<br>mm |
| CSS0805   | 0.5                      | 0.0015, 0.002                 | 0.061<br>1.55 | 0.057<br>1.44 | 0.020<br>0.50 | inches<br>mm |
|           |                          | 0.003 - 0.02                  | 0.055<br>1.40 | 0.057<br>1.44 | 0.031<br>0.80 | inches<br>mm |
| CSSH0805  | 1                        | 0.0005                        | 0.053<br>1.35 | 0.071<br>1.80 | 0.012<br>0.30 | inches<br>mm |
|           |                          | 0.001 - 0.013                 | 0.039<br>1.00 | 0.071<br>1.80 | 0.039<br>1.00 | inches<br>mm |
| CSS1206   | 1                        | 0.0005 - 0.0006               | 0.065<br>1.65 | 0.086<br>2.18 | 0.035<br>0.90 | inches<br>mm |
|           |                          | 0.001 - 0.05                  | 0.063<br>1.60 | 0.086<br>2.18 | 0.039<br>1.00 | inches<br>mm |
| CSSH1206  | 2                        | 0.001 - 0.005                 | 0.063<br>1.60 | 0.086<br>2.18 | 0.039<br>1.00 | inches<br>mm |
| CSS2010   | 1                        | 0.0005 - 0.003                | 0.114<br>2.89 | 0.115<br>2.92 | 0.048<br>1.22 | inches<br>mm |
|           |                          | 0.0031 - 0.1                  | 0.090<br>2.29 | 0.115<br>2.92 | 0.095<br>2.41 | inches<br>mm |
| CSSH2010  | 2                        | 0.0005 - 0.003                | 0.114<br>2.89 | 0.115<br>2.92 | 0.048<br>1.22 | inches<br>mm |
|           |                          | 0.0031 - 0.012                | 0.090<br>2.29 | 0.115<br>2.92 | 0.095<br>2.41 | inches<br>mm |

### Recommended Pad Layout (cont.)

| Type/Code | Maximum Power Rating (W) | Resistance Range ( $\Omega$ ) | a             | b              | i             | Unit         |
|-----------|--------------------------|-------------------------------|---------------|----------------|---------------|--------------|
| CSS2512   | 2                        | 0.0003 - 0.0007               | 0.120<br>3.05 | 0.145<br>3.68  | 0.050<br>1.27 | inches<br>mm |
|           |                          | 0.00075                       | 0.086<br>2.19 | 0.145<br>3.68  | 0.118<br>3.00 | inches<br>mm |
|           |                          | 0.0008 - 0.004                | 0.120<br>3.05 | 0.145<br>3.68  | 0.050<br>1.27 | inches<br>mm |
|           |                          | 0.00041 - 0.075               | 0.083<br>2.11 | 0.145<br>3.68  | 0.125<br>3.18 | inches<br>mm |
|           |                          | 0.08 - 0.1                    | 0.083<br>2.11 | 0.145<br>3.68  | 0.125<br>3.18 | inches<br>mm |
|           |                          | 0.3 - 0.5                     | 0.083<br>2.11 | 0.145<br>3.68  | 0.125<br>3.18 | inches<br>mm |
| CSSH2512  | 3                        | 0.0003 - 0.0005               | 0.120<br>3.05 | 0.145<br>3.68  | 0.050<br>1.27 | inches<br>mm |
|           |                          | 0.0006 - 0.0029               | 0.086<br>2.19 | 0.145<br>3.68  | 0.118<br>3.00 | inches<br>mm |
|           |                          | 0.003 - 0.004                 | 0.110<br>2.79 | 0.145<br>3.68  | 0.071<br>1.80 | inches<br>mm |
|           |                          | 0.0101 - 0.1                  | 0.086<br>2.19 | 0.145<br>3.68  | 0.118<br>3.00 | inches<br>mm |
| CSS2725   | 4                        | 0.0002 - 0.003                | 0.125<br>3.18 | 0.270<br>6.86  | 0.052<br>1.32 | inches<br>mm |
| CSS2728   | 3                        | 0.004 - 0.2                   | 0.108<br>2.75 | 0.308<br>7.82  | 0.138<br>3.51 | inches<br>mm |
| CSSH2728  | 4                        | 0.004 - 0.1                   | 0.108<br>2.75 | 0.308<br>7.82  | 0.138<br>3.51 | inches<br>mm |
| CSSH3637  | 7                        | 0.0003 - 0.00075              | 0.152<br>3.85 | 0.413<br>10.50 | 0.114<br>2.90 | inches       |
|           | 6                        | 0.001                         |               |                |               | mm           |
| CSS4527   | 5                        | 0.0005 - 0.005                | 0.228<br>5.80 | 0.344<br>8.74  | 0.138<br>3.51 | inches<br>mm |
|           |                          | 0.0051 - 0.2                  | 0.163<br>4.15 | 0.344<br>8.74  | 0.268<br>6.81 | inches<br>mm |

### Recommended Solder Profiles

This information is intended as a reference for solder profiles for Stackpole resistive components. These profiles should be compatible with most soldering processes. These are only recommendations. Actual numbers will depend on board density, geometry, packages used, etc., especially those cells labeled with “\*”.

Soldering iron recommended temperatures: 330 to 350°C with minimum duration.

Maximum number of reflow cycles: 3.

### Wave Soldering

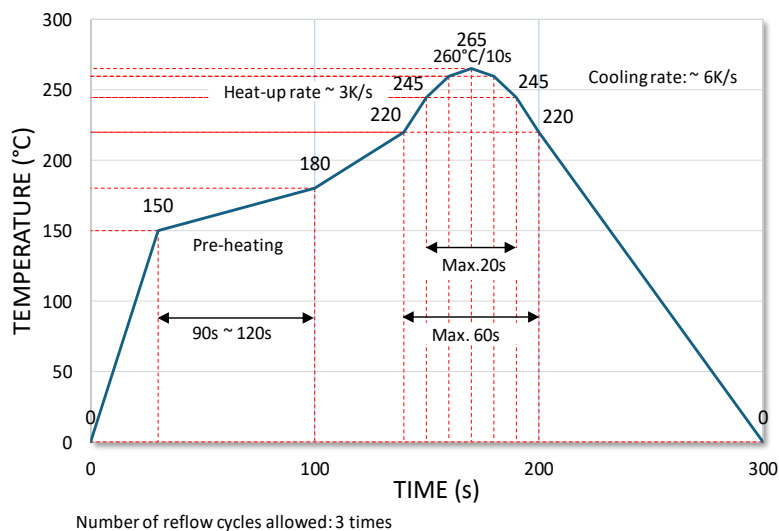
| Description        | Maximum    | Recommended | Minimum    |
|--------------------|------------|-------------|------------|
| Preheat Time       | 80 seconds | 70 seconds  | 60 seconds |
| Temperature Diff.  | 140°C      | 120°C       | 100°C      |
| Solder Temp.       | 260°C      | 250°C       | 240°C      |
| Dwell Time at Max. | 10 seconds | 5 seconds   | *          |
| Ramp DN (°C/sec)   | N/A        | N/A         | N/A        |

Temperature Diff. = Difference between final preheat stage and soldering stage.

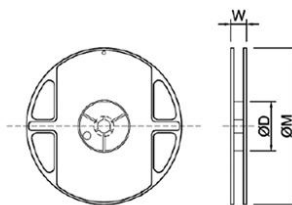
### Convection IR Reflow

| Description        | Maximum     | Recommended | Minimum    |
|--------------------|-------------|-------------|------------|
| Ramp Up (°C/sec)   | 3°C/sec     | 2°C/sec     | *          |
| Dwell Time > 217°C | 150 seconds | 90 seconds  | 60 seconds |
| Solder Temp.       | 260°C       | 245°C       | *          |
| Dwell Time at Max. | 30 seconds  | 15 seconds  | 10 seconds |
| Ramp DN (°C/sec)   | 6°C/sec     | 3°C/sec     | *          |

### Recommended Resistor Reflow Profile

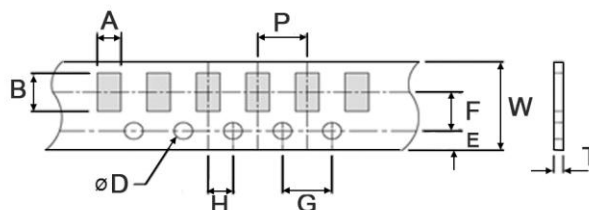


### Reel Specifications



| Type/Code                            | Tape Width | W                             | ØD                            | ØM                             | Unit         |
|--------------------------------------|------------|-------------------------------|-------------------------------|--------------------------------|--------------|
| 0201, 0402, 0603<br>0508, 0805, 1206 | 8 mm       | 0.354 ± 0.020<br>9.00 ± 0.50  | 2.362 ± 0.079<br>60.00 ± 2.00 | 7.008 ± 0.197<br>178.00 ± 5.00 | inches<br>mm |
| CSSH0805                             | 8 mm       | 0.472 ± 0.020<br>12.00 ± 0.50 | 2.362 ± 0.079<br>60.00 ± 2.00 | 7.008 ± 0.197<br>178.00 ± 5.00 | inches<br>mm |
| CSSH3637                             | 16 mm      | 0.685 ± 0.039<br>17.40 ± 1.00 | 2.362 ± 0.039<br>60.00 ± 1.00 | 7.008 ± 0.079<br>178.00 ± 2.00 | inches<br>mm |
| 2010, 2512, 2725, 2728               | 12 mm      | 0.543 ± 0.020<br>13.80 ± 0.50 | 3.150 ± 0.039<br>80.00 ± 1.00 | 7.008 ± 0.197<br>178.00 ± 5.00 | inches<br>mm |
| 4527                                 | 24 mm      | 0.984 ± 0.039<br>25.00 ± 1.00 | 2.362 ± 0.039<br>60.00 ± 1.00 | 7.008 ± 0.197<br>178.00 ± 5.00 | inches<br>mm |

### Packaging Specifications - Paper Tape

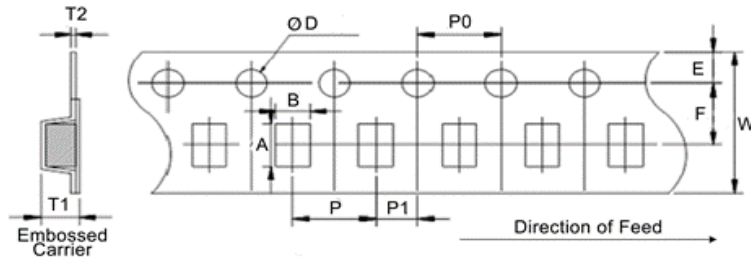


| Type/Code | W                            | P                            | E                            | F                            | ØD                                  | Unit         |
|-----------|------------------------------|------------------------------|------------------------------|------------------------------|-------------------------------------|--------------|
| CSS0201   | 0.315 ± 0.012<br>8.00 ± 0.30 | 0.079 ± 0.004<br>2.00 ± 0.10 | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.138 ± 0.004<br>3.50 ± 0.10 | 0.059 +0.004 / -0<br>1.50 +0.1 / -0 | inches<br>mm |
| CSS0402   | 0.315 ± 0.012<br>8.00 ± 0.30 | 0.079 ± 0.004<br>2.00 ± 0.10 | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.138 ± 0.004<br>3.50 ± 0.10 | 0.059 +0.004 / -0<br>1.50 +0.1 / -0 | inches<br>mm |
| CSS0603   | 0.315 ± 0.012<br>8.00 ± 0.30 | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.138 ± 0.004<br>3.50 ± 0.10 | 0.059 +0.004 / -0<br>1.50 +0.1 / -0 | inches<br>mm |
| CSS0508   | 0.315 ± 0.012<br>8.00 ± 0.30 | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.138 ± 0.004<br>3.50 ± 0.10 | 0.059 +0.004 / -0<br>1.50 +0.1 / -0 | inches<br>mm |
| CSS0805   | 0.315 ± 0.012<br>8.00 ± 0.30 | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.138 ± 0.004<br>3.50 ± 0.10 | 0.059 +0.004 / -0<br>1.50 +0.1 / -0 | inches<br>mm |

### Packaging Specifications - Paper Tape (cont.)

| Type/Code | G                            | H                            | A                            | B                            | T                            | Unit         |
|-----------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------------|
| CSS0201   | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.079 ± 0.004<br>2.00 ± 0.10 | 0.016 ± 0.008<br>0.40 ± 0.20 | 0.028 ± 0.008<br>0.70 ± 0.20 | 0.018 ± 0.002<br>0.45 ± 0.05 | inches<br>mm |
| CSS0402   | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.079 ± 0.004<br>2.00 ± 0.10 | 0.026 ± 0.008<br>0.65 ± 0.20 | 0.043 ± 0.008<br>1.10 ± 0.20 | 0.017 ± 0.002<br>0.42 ± 0.05 | inches<br>mm |
| CSS0603   | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.079 ± 0.004<br>2.00 ± 0.10 | 0.039 ± 0.008<br>0.98 ± 0.20 | 0.073 ± 0.008<br>1.85 ± 0.20 | 0.024 ± 0.004<br>0.60 ± 0.10 | inches<br>mm |
| CSS0508   | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.079 ± 0.004<br>2.00 ± 0.10 | 0.061 ± 0.008<br>1.55 ± 0.20 | 0.091 ± 0.008<br>2.30 ± 0.20 | 0.028 ± 0.008<br>0.70 ± 0.20 | inches<br>mm |
| CSS0805   | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.079 ± 0.004<br>2.00 ± 0.10 | 0.061 ± 0.008<br>1.55 ± 0.20 | 0.091 ± 0.008<br>2.30 ± 0.20 | 0.030 ± 0.008<br>0.75 ± 0.20 | inches<br>mm |

### Packaging Specifications - Plastic Tape



| Type/Code                               | A                             | B                            | W                             | E                            | F                             | T1                           | Unit         |
|-----------------------------------------|-------------------------------|------------------------------|-------------------------------|------------------------------|-------------------------------|------------------------------|--------------|
| CSS1206/CSSH1206<br>(0.0005Ω - 0.0006Ω) | 0.138 ± 0.004<br>3.50 ± 0.10  | 0.075 ± 0.004<br>1.90 ± 0.10 | 0.315 ± 0.006<br>8.00 ± 0.15  | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.138 ± 0.004<br>3.50 ± 0.10  | 0.050 ± 0.004<br>1.27 ± 0.10 | inches<br>mm |
| CSS1206/CSSH1206<br>(≥ 0.001Ω)          | 0.137 ± 0.004<br>3.48 ± 0.10  | 0.072 ± 0.004<br>1.83 ± 0.10 | 0.315 ± 0.006<br>8.00 ± 0.15  | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.138 ± 0.004<br>3.50 ± 0.10  | 0.043 ± 0.004<br>1.10 ± 0.10 | inches<br>mm |
| CSS2010/CSSH2010                        | 0.215 ± 0.004<br>5.45 ± 0.10  | 0.114 ± 0.004<br>2.90 ± 0.10 | 0.472 ± 0.006<br>12.00 ± 0.15 | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.217 ± 0.004<br>5.50 ± 0.10  | 0.052 ± 0.004<br>1.33 ± 0.10 | inches<br>mm |
| CSS2512/CSSH2512<br>(0.0003Ω)           | 0.265 ± 0.004<br>6.74 ± 0.10  | 0.138 ± 0.004<br>3.50 ± 0.10 | 0.472 ± 0.006<br>12.00 ± 0.15 | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.217 ± 0.004<br>5.50 ± 0.10  | 0.063 ± 0.004<br>1.60 ± 0.10 | inches<br>mm |
| CSS2512/CSSH2512                        | 0.266 ± 0.004<br>6.75 ± 0.10  | 0.138 ± 0.004<br>3.50 ± 0.10 | 0.472 ± 0.006<br>12.00 ± 0.15 | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.217 ± 0.004<br>5.50 ± 0.10  | 0.051 ± 0.004<br>1.30 ± 0.10 | inches<br>mm |
| CSS2725                                 | 0.281 ± 0.004<br>7.15 ± 0.10  | 0.266 ± 0.004<br>6.75 ± 0.10 | 0.472 ± 0.006<br>12.00 ± 0.15 | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.217 ± 0.004<br>5.50 ± 0.10  | 0.077 ± 0.004<br>1.95 ± 0.10 | inches<br>mm |
| CSS2728                                 | 0.281 ± 0.004<br>7.15 ± 0.10  | 0.303 ± 0.004<br>7.70 ± 0.10 | 0.472 ± 0.006<br>12.00 ± 0.15 | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.217 ± 0.004<br>5.50 ± 0.10  | 0.057 ± 0.004<br>1.45 ± 0.10 | inches<br>mm |
| CSSH0805<br>0.0005Ω - 0.001Ω            | 0.096 ± 0.004<br>2.45 ± 0.10  | 0.067 ± 0.004<br>1.70 ± 0.10 | 0.315 ± 0.012<br>8.00 ± 0.30  | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.138 ± 0.004<br>3.50 ± 0.10  | 0.035 ± 0.010<br>0.90 ± 0.25 | inches<br>mm |
| CSSH0805<br>0.0015Ω - 0.013Ω            | 0.096 ± 0.004<br>2.45 ± 0.10  | 0.067 ± 0.004<br>1.70 ± 0.10 | 0.315 ± 0.012<br>8.00 ± 0.30  | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.138 ± 0.004<br>3.50 ± 0.10  | 0.022 ± 0.010<br>0.55 ± 0.25 | inches<br>mm |
| CSSH3637                                | 0.394 ± 0.004<br>10.00 ± 0.10 | 0.378 ± 0.004<br>9.60 ± 0.10 | 0.630 ± 0.008<br>16.00 ± 0.20 | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.295 ± 0.004<br>7.50 ± 0.10  | 0.051 ± 0.004<br>1.30 ± 0.10 | inches<br>mm |
| CSS4527                                 | 0.465 ± 0.004<br>11.80 ± 0.10 | 0.283 ± 0.004<br>7.20 ± 0.10 | 0.945 ± 0.006<br>24.00 ± 0.15 | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.453 ± 0.004<br>11.50 ± 0.10 | 0.079 ± 0.004<br>2.00 ± 0.10 | inches<br>mm |

### Packaging Specifications - Plastic Tape (cont.)

| Type/Code                               | T2                           | P                             | P0                           | P1                           | ΦD                               | Unit         |
|-----------------------------------------|------------------------------|-------------------------------|------------------------------|------------------------------|----------------------------------|--------------|
| CSS1206/CSSH1206<br>(0.0005Ω - 0.0006Ω) | 0.009 ± 0.004<br>0.23 ± 0.10 | 0.157 ± 0.004<br>4.00 ± 0.10  | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.079 ± 0.004<br>2.00 ± 0.10 | 0.059 +0.004/-0<br>1.50 +0.10/-0 | inches<br>mm |
| CSS1206/CSSH1206<br>(≥ 0.001Ω)          | 0.008 ± 0.002<br>0.20 ± 0.05 | 0.157 ± 0.004<br>4.00 ± 0.10  | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.079 ± 0.004<br>2.00 ± 0.10 | 0.059 +0.004/-0<br>1.50 +0.10/-0 | inches<br>mm |
| CSS2010/CSSH2010                        | 0.009 ± 0.002<br>0.23 ± 0.05 | 0.157 ± 0.004<br>4.00 ± 0.10  | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.079 ± 0.004<br>2.00 ± 0.10 | 0.059 +0.004/-0<br>1.50 +0.10/-0 | inches<br>mm |
| CSS2512/CSSH2512<br>(0.0003Ω)           | 0.009 ± 0.002<br>0.24 ± 0.05 | 0.315 ± 0.004<br>8.00 ± 0.10  | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.079 ± 0.004<br>2.00 ± 0.10 | 0.059 +0.004/-0<br>1.50 +0.10/-0 | inches<br>mm |
| CSS2512/CSSH2512                        | 0.008 ± 0.002<br>0.20 ± 0.05 | 0.157 ± 0.004<br>4.00 ± 0.10  | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.079 ± 0.004<br>2.00 ± 0.10 | 0.059 +0.004/-0<br>1.50 +0.10/-0 | inches<br>mm |
| CSS2725                                 | 0.010 ± 0.002<br>0.25 ± 0.05 | 0.315 ± 0.004<br>8.00 ± 0.10  | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.079 ± 0.004<br>2.00 ± 0.10 | 0.059 +0.004/-0<br>1.50 +0.10/-0 | inches<br>mm |
| CSS2728                                 | 0.010 ± 0.002<br>0.25 ± 0.05 | 0.472 ± 0.004<br>12.00 ± 0.10 | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.079 ± 0.004<br>2.00 ± 0.10 | 0.059 +0.004/-0<br>1.50 +0.10/-0 | inches<br>mm |
| CSSH0805<br>0.0005Ω - 0.001Ω            | 0.008 ± 0.002<br>0.20 ± 0.05 | 0.157 ± 0.004<br>4.00 ± 0.10  | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.079 ± 0.004<br>2.00 ± 0.10 | 0.059 +0.004/-0<br>1.50 +0.10/-0 | inches<br>mm |
| CSSH0805<br>0.0015Ω - 0.013Ω            | 0.008 ± 0.002<br>0.20 ± 0.05 | 0.157 ± 0.004<br>4.00 ± 0.10  | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.079 ± 0.004<br>2.00 ± 0.10 | 0.059 +0.004/-0<br>1.50 +0.10/-0 | inches<br>mm |
| CSSH3637                                | 0.010 ± 0.002<br>0.25 ± 0.05 | 0.472 ± 0.004<br>12.00 ± 0.10 | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.079 ± 0.004<br>2.00 ± 0.10 | 0.059 +0.004/-0<br>1.50 +0.10/-0 | inches<br>mm |
| CSS4527                                 | 0.012 ± 0.004<br>0.30 ± 0.10 | 0.472 ± 0.004<br>12.00 ± 0.10 | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.079 ± 0.004<br>2.00 ± 0.10 | 0.059 +0.004/-0<br>1.50 +0.10/-0 | inches<br>mm |

### RoHS Compliance

Stackpole Electronics has joined the worldwide effort to reduce the amount of lead in electronic components and to meet the various regulatory requirements now prevalent, such as the European Union's directive regarding "Restrictions on Hazardous Substances" (RoHS 3). As part of this ongoing program, we periodically update this document with the status regarding the availability of our compliant components. All our standard part numbers are compliant to EU Directive 2011/65/EU of the European Parliament as amended by Directive (EU) 2015/863/EU as regards the list of restricted substances.

### RoHS Compliance Status

| Standard Product Series | Description                                                | Package / Termination Type | Standard Series RoHS Compliant | Lead-Free Termination Composition | Lead-Free Mfg. Effective Date (Std Product Series) | Lead-Free Effective Date Code (YY/WW) |
|-------------------------|------------------------------------------------------------|----------------------------|--------------------------------|-----------------------------------|----------------------------------------------------|---------------------------------------|
| CSS                     | Ultra-Precision Current Sensing Chip Resistor              | SMD                        | YES                            | 100% Matte Sn over Ni             | Always                                             | Always                                |
| CSSH                    | Ultra-Precision Current Sensing Chip Resistor (High Power) | SMD                        | YES                            | 100% Matte Sn over Ni             | Always                                             | Always                                |

### “Conflict Metals” Commitment

We at Stackpole Electronics, Inc. are joined with our industry in opposing the use of metals mined in the “conflict region” of the eastern Democratic Republic of the Congo (DRC) in our products. Recognizing that the supply chain for metals used in the electronics industry is very complex, we work closely with our own suppliers to verify to the extent possible that the materials and products we supply do not contain metals sourced from this conflict region. As such, we are in compliance with the requirements of Dodd-Frank Act regarding Conflict Minerals.

### Compliance to “REACH”

We certify that all passive components supplied by Stackpole Electronics, Inc. are SVHC (Substances of Very High Concern) free and compliant with the requirements of EU Directive 1907/2006/EC, “The Registration, Evaluation, Authorization and Restriction of Chemicals”, otherwise referred to as REACH. Contact us for complete list of REACH Substance Candidate List.

### Environmental Policy

It is the policy of Stackpole Electronics, Inc. (SEI) to protect the environment in all localities in which we operate. We continually strive to improve our effect on the environment. We observe all applicable laws and regulations regarding the protection of our environment and all requests related to the environment to which we have agreed. We are committed to the prevention of all forms of pollution.

### How to Order

| C S S 2 7 2 5 F T 3 L 0 0 |             |      |           |      |           |                      |                         |          |                                                                                                                                            |  |  |
|---------------------------|-------------|------|-----------|------|-----------|----------------------|-------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Product Series            |             | Size | Tolerance |      | Packaging |                      |                         |          | Resistance Value                                                                                                                           |  |  |
| Code                      | Description | Size | Code      | Tol  | Code      | Description          | Size                    | Quantity | Four characters with the multiplier used as the decimal holder.<br>"L" used as multiplier of 10 <sup>-3</sup> for any value under 0.1 ohm. |  |  |
| CSS                       | Metal Alloy | 0201 | D         | 0.5% | T         | 7" Reel Paper Tape   | 0201, 0402              | 10000    |                                                                                                                                            |  |  |
| CSSH                      | High Power  | 0402 | F         | 1%   |           |                      | 0603, 0508              | 5000     |                                                                                                                                            |  |  |
|                           |             | 0603 | G         | 2%   |           |                      | 0805                    |          |                                                                                                                                            |  |  |
|                           |             | 0805 | J         | 5%   |           | 7" Reel Plastic Tape | 1206 (≥0.001Ω)          | 4000     |                                                                                                                                            |  |  |
|                           |             | 0508 |           |      |           |                      | 1206 (0.0003 - 0.0006Ω) | 2000     |                                                                                                                                            |  |  |
|                           |             | 1206 |           |      |           |                      | 2010, 2512 (>0.0003Ω)   |          |                                                                                                                                            |  |  |
|                           |             | 2010 |           |      |           |                      | 2512 (0.0003Ω)          | 1000     |                                                                                                                                            |  |  |
|                           |             | 2512 |           |      |           |                      | 2725, 2728, 3637        |          |                                                                                                                                            |  |  |
|                           |             | 2728 |           |      |           |                      | 4527                    | 500      |                                                                                                                                            |  |  |
|                           |             | 2725 |           |      |           |                      |                         |          | 0.00025 ohm = L250                                                                                                                         |  |  |
|                           |             | 3637 |           |      |           |                      |                         |          | 0.004 ohm = 4L00                                                                                                                           |  |  |
|                           |             | 4527 |           |      |           |                      |                         |          | 0.05 ohm = 50L0                                                                                                                            |  |  |
|                           |             |      |           |      |           |                      |                         |          | 0.12 ohm = R120                                                                                                                            |  |  |