

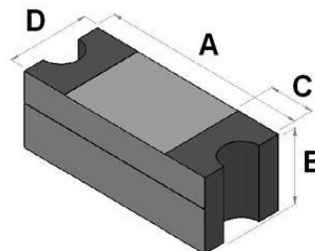
# Surface Mount Fuse Very Fast Acting

PRODUCT: 2410SFV Family (Marked)

DOCUMENT: SCD27651  
REV LETTER: F  
REV DATE: JANUARY 11, 2013  
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## Specification Status: Released

Termination Material: Copper, Ni, Tin  
Fuse Element: Copper/Copper alloy  
Body Material: Fiberglass/Epoxy  
Operating Temperature:  
-55°C to +125°C (with de-rating)



### Clear Time Characteristics

| % of current rating | Clear time at 25°C |        |
|---------------------|--------------------|--------|
|                     | Min.               | Max.   |
| 100%                | 4 hours            |        |
| 200% (0.5A-10.0A)   | 0.01 sec           | 5 sec  |
| 200% (12.0A-20.0A)  | 0.01 sec           | 20 sec |

### Dimensions

|    | A       |         | B       |         | C       |         | D       |         |
|----|---------|---------|---------|---------|---------|---------|---------|---------|
|    | MIN     | MAX     | MIN     | MAX     | MIN     | MAX     | MIN     | MAX     |
| mm | 5.95    | 6.25    | 1.96    | 2.36    | 0.97    | 1.73    | 2.34    | 2.64    |
| in | (0.234) | (0.246) | (0.077) | (0.093) | (0.038) | (0.068) | (0.092) | (0.104) |

| Part Number       | Marking Code | Rated Current (A) | Interrupt Rating                                                                                                                                                                                                                                                                                                                                                          | Voltage Rating (V) |     | Nominal Cold DC Resistance (DCR) (Ω)* | Nominal I <sup>2</sup> t (A <sup>2</sup> s) <sup>2</sup> |
|-------------------|--------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----|---------------------------------------|----------------------------------------------------------|
|                   |              |                   |                                                                                                                                                                                                                                                                                                                                                                           | AC                 | DC  |                                       |                                                          |
| 2410SFV0.50FM/125 | C            | 0.50              | <b>UL:</b><br><b>0.5-2A</b><br>100A @250V <sub>AC</sub><br><b>2.5-8A</b><br>50A @ 125V <sub>AC</sub><br><b>0.5-8A</b><br>50A @ 125V <sub>DC</sub><br>300A @ 32V <sub>DC</sub><br><br><b>TUV:</b><br><b>0.5-2A</b><br>100A @250V <sub>AC</sub><br>50A @125V <sub>DC</sub><br><br><b>CQC:</b><br><b>0.5A, 1A, 2A</b><br>100A @250V <sub>AC</sub><br>50A @125V <sub>DC</sub> | 250                | 125 | 0.2310                                | 0.1                                                      |
| 2410SFV0.63FM/125 | S            | 0.63              |                                                                                                                                                                                                                                                                                                                                                                           | 250                | 125 | 0.1740                                | 0.16                                                     |
| 2410SFV0.75FM/125 | D            | 0.75              |                                                                                                                                                                                                                                                                                                                                                                           | 250                | 125 | 0.1480                                | 0.23                                                     |
| 2410SFV1.00FM/125 | E            | 1.00              |                                                                                                                                                                                                                                                                                                                                                                           | 250                | 125 | 0.0930                                | 0.59                                                     |
| 2410SFV1.25FM/125 | F            | 1.25              |                                                                                                                                                                                                                                                                                                                                                                           | 250                | 125 | 0.0700                                | 0.96                                                     |
| 2410SFV1.50FM/125 | G            | 1.50              |                                                                                                                                                                                                                                                                                                                                                                           | 250                | 125 | 0.0620                                | 1.19                                                     |
| 2410SFV2.00FM/125 | I            | 2.00              |                                                                                                                                                                                                                                                                                                                                                                           | 250                | 125 | 0.0420                                | 2.75                                                     |
| 2410SFV2.50FM/125 | J            | 2.50              |                                                                                                                                                                                                                                                                                                                                                                           | 125                | 125 | 0.0310                                | 1.21                                                     |
| 2410SFV3.00FM/125 | K            | 3.00              |                                                                                                                                                                                                                                                                                                                                                                           | 125                | 125 | 0.0249                                | 1.73                                                     |
| 2410SFV3.15FM/125 | V            | 3.15              |                                                                                                                                                                                                                                                                                                                                                                           | 125                | 125 | 0.0232                                | 2.2                                                      |
| 2410SFV3.50FM/125 | L            | 3.50              |                                                                                                                                                                                                                                                                                                                                                                           | 125                | 125 | 0.0220                                | 2.5                                                      |
| 2410SFV4.00FM/125 | M            | 4.00              |                                                                                                                                                                                                                                                                                                                                                                           | 125                | 125 | 0.0172                                | 4.1                                                      |
| 2410SFV5.00FM/125 | N            | 5.00              |                                                                                                                                                                                                                                                                                                                                                                           | 125                | 125 | 0.0143                                | 5.9                                                      |
| 2410SFV6.30FM/125 | O            | 6.30              |                                                                                                                                                                                                                                                                                                                                                                           | 125                | 125 | 0.0100                                | 12.5                                                     |
| 2410SFV7.00FM/125 | P            | 7.00              |                                                                                                                                                                                                                                                                                                                                                                           | 125                | 125 | 0.0094                                | 14.2                                                     |
| 2410SFV8.00FM/125 | R            | 8.00              | <b>UL:</b><br>35A@125V <sub>AC</sub><br>50A @ 125V <sub>DC</sub><br>300A @ 32V <sub>DC</sub>                                                                                                                                                                                                                                                                              | 125                | 125 | 0.0086                                | 20.3                                                     |
| 2410SFV10.0FM/125 | Q            | 10.00             |                                                                                                                                                                                                                                                                                                                                                                           | 125                | 125 | 0.0066                                | 29.2                                                     |
| 2410SFV12.0FM/065 | X            | 12.00             |                                                                                                                                                                                                                                                                                                                                                                           | 65                 | 65  | 0.0053                                | 49.2                                                     |
| 2410SFV15.0FM/065 | Y            | 15.00             | <b>UL:</b><br>50A @ 65V <sub>AC</sub><br>50A @ 65V <sub>DC</sub><br>300A @ 32V <sub>DC</sub>                                                                                                                                                                                                                                                                              | 65                 | 65  | 0.0038                                | 102.5                                                    |
| 2410SFV20.0FM/065 | Z            | 20.00             |                                                                                                                                                                                                                                                                                                                                                                           | 65                 | 65  | 0.0034                                | 126.2                                                    |

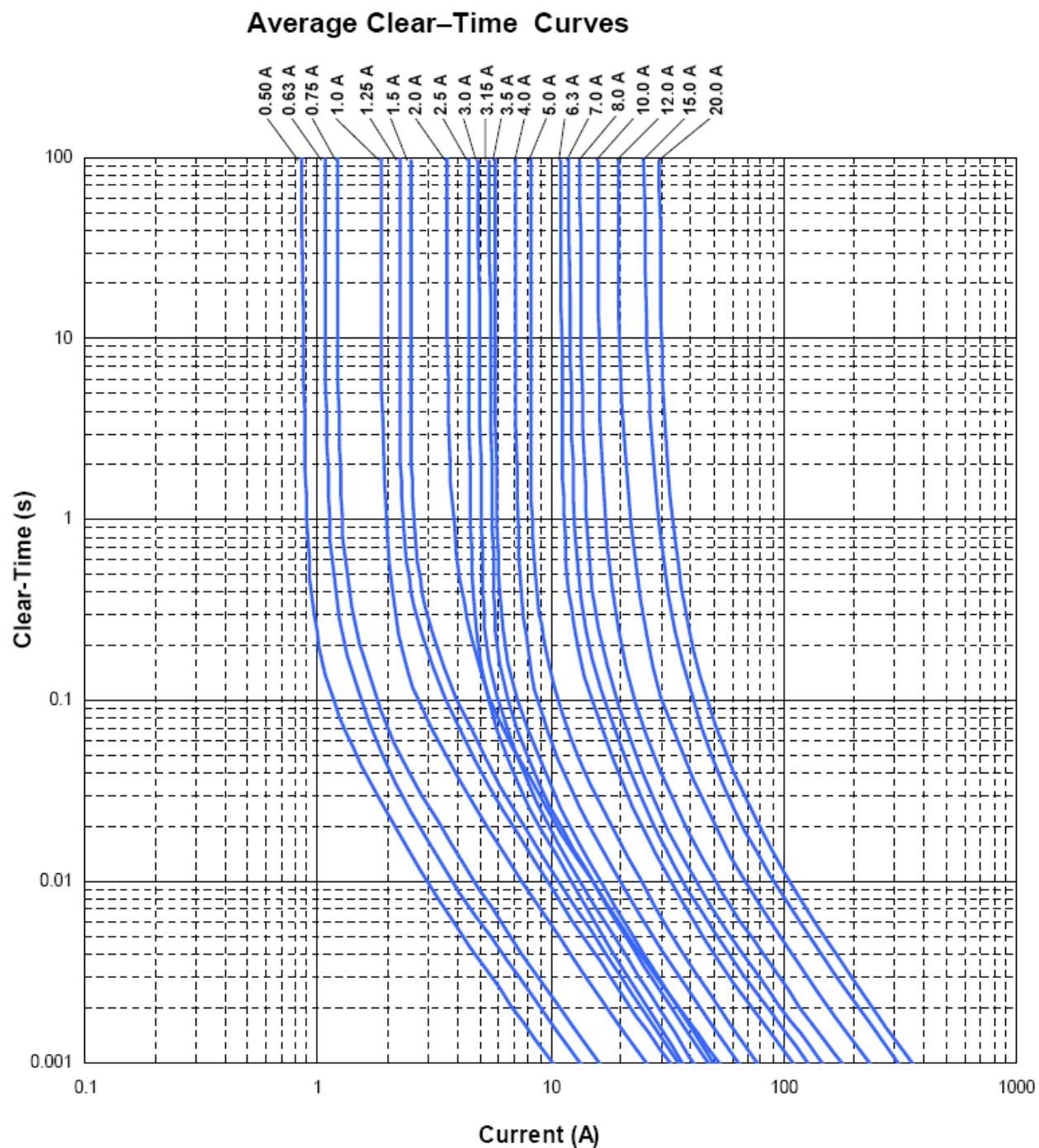
\* Measured at ≤10% of rated current and 25°C ambient

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### Average Clear-Time Curves for 2410 Devices



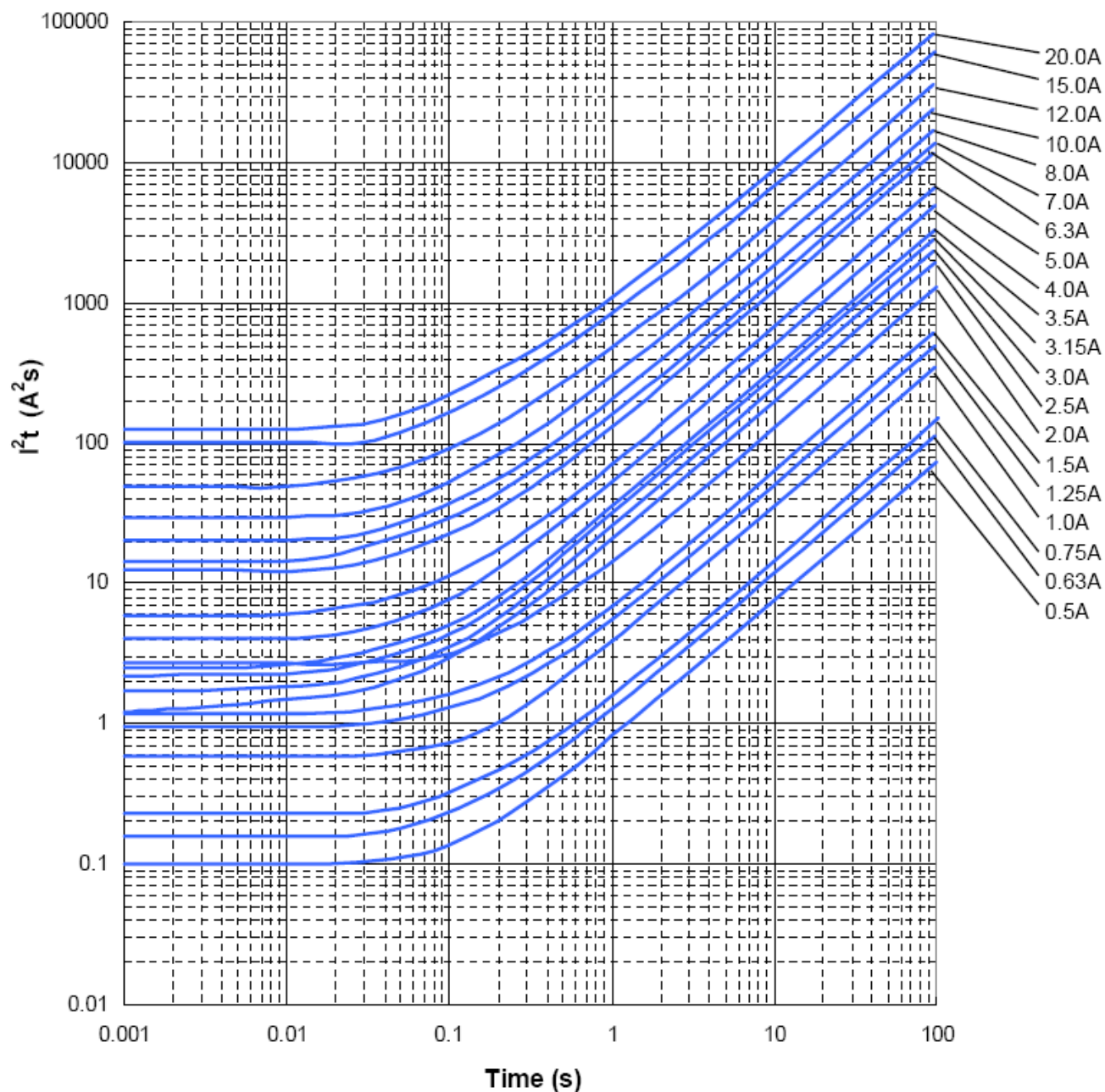
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### $I^2t$ Curves for 2410 Devices

Average  $I^2t$  vs.  $t$  Curves



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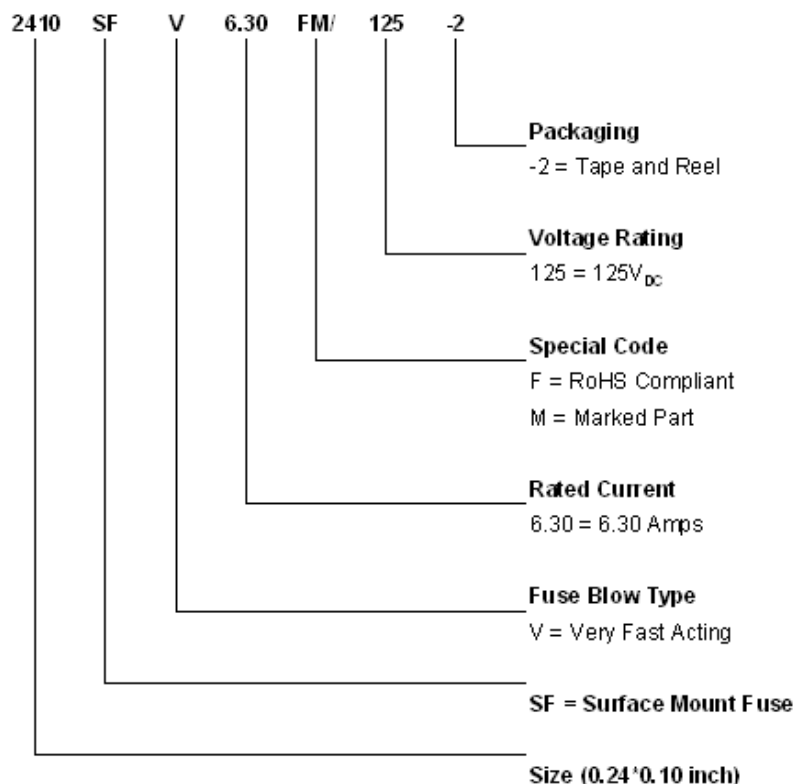
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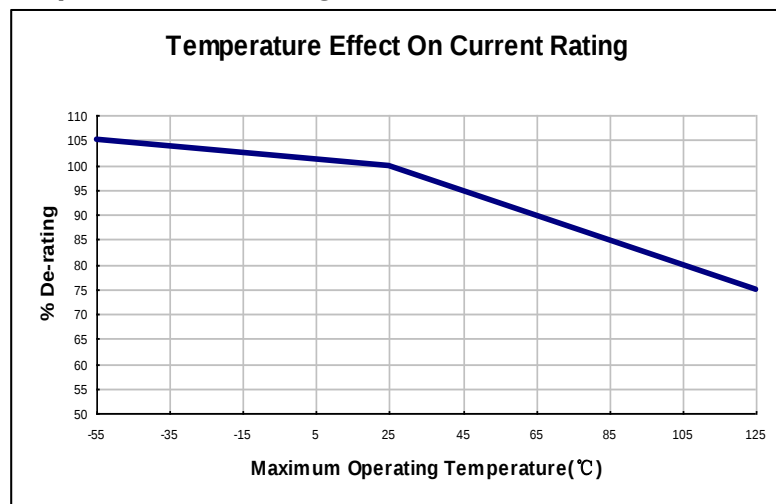
### Product Characteristics for 2410 Devices

| Reliability Test          | Test Condition and Requirement                                                                      |
|---------------------------|-----------------------------------------------------------------------------------------------------|
| Reflow & Bend             | 3 reflows at 245°C followed by a 2 mm bend, 20% DCR change max. (10% for ≤1A), no mechanical damage |
| Solderability             | 245°C, 5 seconds, new solder coverage 90% minimum                                                   |
| Soldering Heat Resistance | 260°C (according to MIL-STD-202, Method 210, Test condition B)                                      |
| Life                      | 25°C, 2000 hours, 80% rated current (75% for <1A), voltage drop change ≤±20%                        |
| Thermal Shock             | -65°C to +125°C, 100 cycles, 10% DCR change max., no mechanical damage                              |
| Mechanical Vibration      | 5 – 3000 Hz, 0.4 inch double amplitude or 30 G peak, 10% DCR change max., no mechanical damage      |
| Mechanical Shock          | 1500 G, 0.5 milliseconds, half-sine shocks, 10% DCR change max., no mechanical damage               |
| Salt Spray                | 5% salt solution, 48 hour exposure, 10% DCR change max., no excessive corrosion                     |
| Moisture Resistance       | 10 cycles, 15% DCR change max., no excessive corrosion                                              |

### Part Naming for 2410 Devices

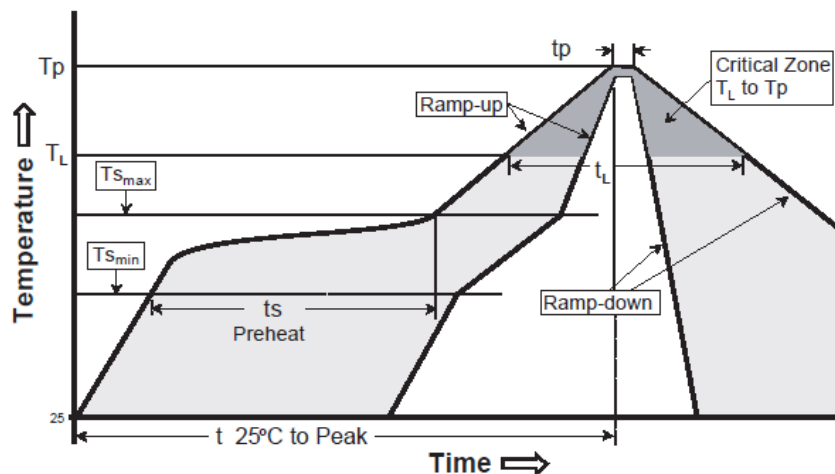


## Temperature De-rating Curve for 2410 Devices



## Solder Reflow Recommendation for 2410 Devices

| Profile Feature                                                                                                                                                                                                                                      |                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Average ramp up rate ( $T_{S_{MAX}}$ to $T_p$ )                                                                                                                                                                                                      | 3°C/second max.  |
| Preheat <ul style="list-style-type: none"> <li>• Temperature min. (<math>T_{S_{MIN}}</math>)</li> <li>• Temperature max. (<math>T_{S_{MAX}}</math>)</li> <li>• Time (<math>t_{S_{MIN}}</math> to <math>t_{S_{MAX}}</math>) 60-180 seconds</li> </ul> | 150°C            |
|                                                                                                                                                                                                                                                      | 200°C            |
|                                                                                                                                                                                                                                                      | 40 – 100 Seconds |
| Time maintained above: <ul style="list-style-type: none"> <li>• Temperature (<math>T_L</math>)</li> <li>• Time (<math>t_L</math>)</li> </ul>                                                                                                         | 200°C            |
|                                                                                                                                                                                                                                                      | 30 Seconds Min.  |
| Peak/Classification temperature ( $T_p$ )                                                                                                                                                                                                            | 250°C Max.       |
| Time within 5°C of actual peak temperature Time ( $t_p$ )                                                                                                                                                                                            | 30 – 40 Seconds  |
| From 25°C to preheating (150°C)                                                                                                                                                                                                                      | 40 – 100 seconds |
| Ramp down rate                                                                                                                                                                                                                                       | Natural Cooling  |

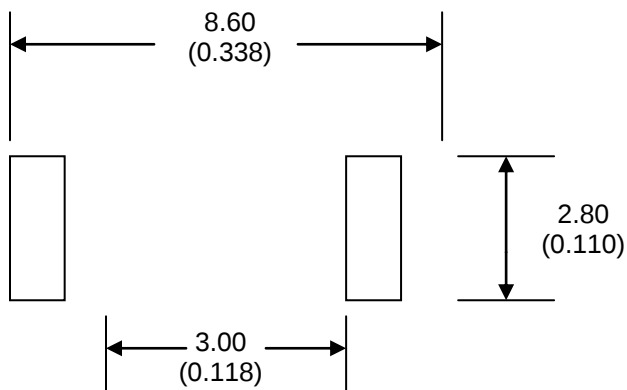


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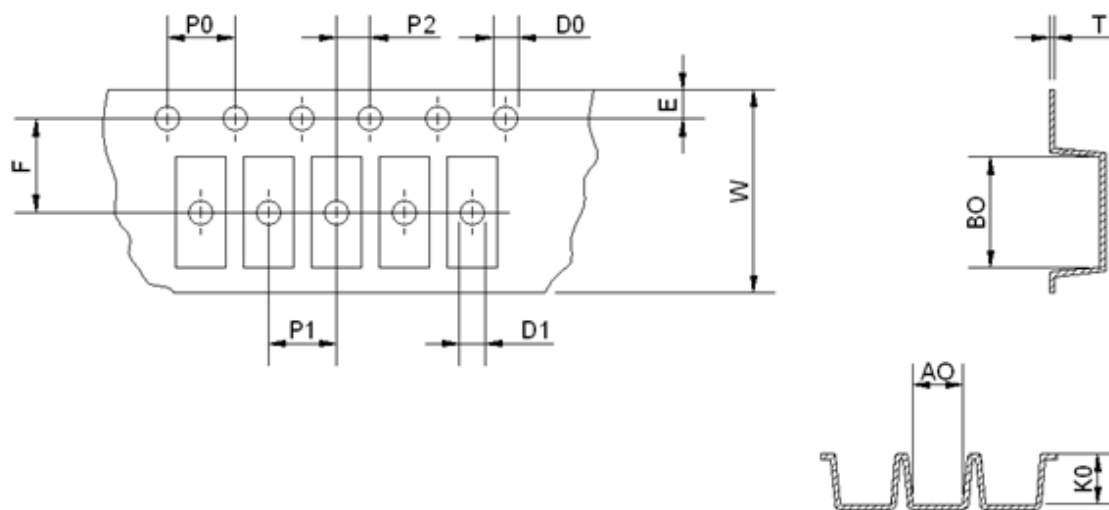
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### Recommended Pad Layout for 2410 Devices mm (inch)



### Package Information for 2410 Devices

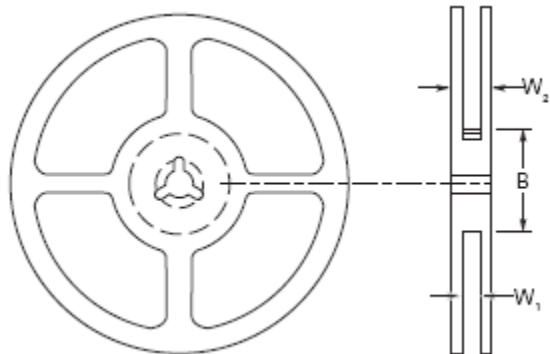


|      | E                    | F             | W             | P1            | P0            | P2            |
|------|----------------------|---------------|---------------|---------------|---------------|---------------|
| mm   | 1.75±0.10            | 5.50±0.10     | 12.00±0.10    | 4.00±0.10     | 4.00±0.10     | 2.00±0.05     |
| (in) | (0.069±0.004)        | (0.217±0.004) | (0.472±0.004) | (0.157±0.004) | (0.157±0.004) | (0.079±0.002) |
|      | D0                   | D1            | T             | AO            | B0            | K0            |
| mm   | 1.50+0.10/-0.00      | 1.55±0.10     | 0.25±0.05     | 2.85±0.10     | 6.40±0.10     | 2.35±0.10     |
| (in) | (0.059+0.004/-0.000) | (0.61±0.004)  | (0.010±0.002) | (0.112±0.004) | (0.252±0.004) | (0.093±0.004) |

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|      | B      | W <sub>1</sub> | W <sub>2</sub> |
|------|--------|----------------|----------------|
| mm   | 60.2   | 13.40          | 16             |
| (in) | (2.37) | (0.528)        | (0.63)         |

Agency Recognition:  
Precedence:  
Effectivity:

UL E197536, CQC 12012078873, TUV 50236400  
This specification takes precedence over documents referenced herein.  
Reference documents shall be the issue in effect on the date of invitation for bid.

### Materials Information

#### ROHS Compliant

Directive 2002/95/EC  
Compliant

#### ELV Compliant

Directive 2000/53/EC  
Compliant

#### Pb-Free



#### Halogen Free\*



\* Halogen Free refers to: Br≤900ppm, Cl≤900ppm, Br+Cl≤1500ppm