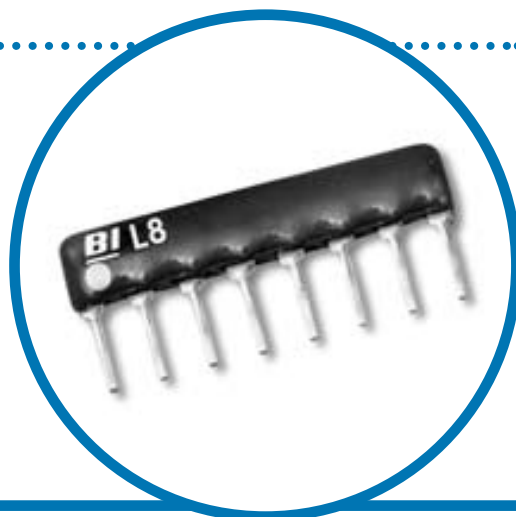


# MODEL L SERIES

## L Series

- Thick Film
- Low Profile SIP
- Conformal Coated
- Resistor Networks
- RoHS Compliant



## Electrical

|                                                 |                                             |
|-------------------------------------------------|---------------------------------------------|
| Standard Resistance Range, Ohms                 | 1%: 22R - 1M; 2%: 10R - 5M6; 5%: 10R - 10M  |
| Standard Resistance Tolerance, at 25°C          | ±2%<br>Optional: ±1% (F Tol.), ±5% (J Tol.) |
| Operating Temperature Range                     | -55°C to +125°C                             |
| Temperature Coefficient of Resistance           | ±100ppm/°C (<50 Ohms = ±250ppm/°C)          |
| Temperature Coefficient of Resistance, Tracking | ±50ppm/°C                                   |
| Maximum Operating Voltage                       | 100Vdc or √PR                               |
| Insulation Resistance                           | ≥10,000 Megohms                             |

## Environmental

|                                                                 |                         |
|-----------------------------------------------------------------|-------------------------|
| Thermal Shock plus Power Conditioning                           | ΔR 0.70%                |
| Short Time Overload                                             | ΔR 0.25%                |
| Terminal Strength                                               | ΔR 0.25%                |
| Moisture Resistance                                             | ΔR 0.50%                |
| Mechanical Shock                                                | ΔR 0.25%                |
| Vibration                                                       | ΔR 0.25%                |
| Low Temperature Storage                                         | ΔR 0.25%                |
| High Temperature Exposure                                       | ΔR 0.50%                |
| Load Life, 1,000 Hours                                          | ΔR 1.00%                |
| Resistance to Solder Heat (Per MIL-STD-202, Method 210, Cond.B) | ΔR 0.25%                |
| Dielectric Withstand Voltage                                    | 200V for 1 minute       |
| Marking Permanency                                              | MIL-STD 202, Method 215 |
| Lead Solderability                                              | MIL-STD 202, Method 208 |
| Flammability                                                    | UL-94V-O Rated          |
| Storage Temperature Range                                       | -55°C to +150°C         |

Specifications subject to change without notice.

### General Note

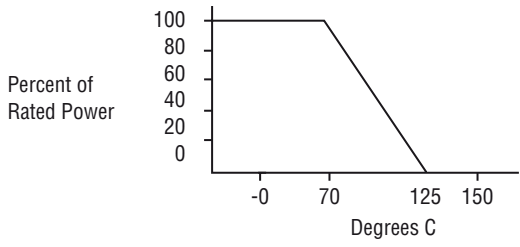
TT electronics reserves the right to make changes in product specification without notice or liability.  
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## Mechanical

|                    |                       |
|--------------------|-----------------------|
| Lead Finish        | SnAgCu                |
| Substrate Material | Alumina               |
| Resistor Material  | Cermet                |
| Body Material      | Conformal Epoxy Resin |

## Standard Resistance Values, Ohms Power Derating Curve

| -3 Circuit (Isolated Resistors) & -1 Circuits (Bussed Resistors) |         |         |         |         |         |
|------------------------------------------------------------------|---------|---------|---------|---------|---------|
| Ohms                                                             | Code    | Ohms    | Code    | Ohms    | Code    |
| 22                                                               | 220     | 820     | 821     | 33K     | 333     |
| 27                                                               | 270     | 1K      | 102     | 39K     | 393     |
| 33                                                               | 330     | 1.2K    | 122     | 47K     | 473     |
| 39                                                               | 390     | 1.5K    | 152     | 51K     | 513     |
| 47                                                               | 470     | 1.8K    | 182     | 56K     | 563     |
| 51                                                               | 510     | 2K      | 202     | 68K     | 683     |
| 56                                                               | 560     | 2.2K    | 222     | 82K     | 823     |
| 68                                                               | 680     | 2.7K    | 272     | 100K    | 104     |
| 82                                                               | 820     | 3.3K    | 332     | 120K    | 124     |
| 100                                                              | 101     | 3.9K    | 392     | 150K    | 154     |
| 120                                                              | 121     | 4.7K    | 472     | 180K    | 184     |
| 150                                                              | 151     | 5.1K    | 512     | 200K    | 204     |
| 180                                                              | 181     | 5.6K    | 562     | 220K    | 224     |
| 200                                                              | 201     | 6.8K    | 682     | 270K    | 274     |
| 220                                                              | 221     | 8.2K    | 822     | 330K    | 334     |
| 270                                                              | 271     | 10K     | 103     | 390K    | 394     |
| 330                                                              | 331     | 12K     | 123     | 470K    | 474     |
| 390                                                              | 391     | 15K     | 153     | 510K    | 514     |
| 470                                                              | 471     | 18K     | 183     | 560K    | 564     |
| 510                                                              | 511     | 20K     | 203     | 680K    | 684     |
| 560                                                              | 561     | 22K     | 223     | 820K    | 824     |
| 680                                                              | 681     | 27K     | 273     | 1Meg    | 105     |
| -5 Circuit (Dual Terminators)                                    |         |         |         |         |         |
| Ohms                                                             | Code    | Ohms    | Code    | Ohms    | Code    |
| R1/R2                                                            | R1/R2   | R1/R2   | R1/R2   | R1/R2   | R1/R2   |
| 180/390                                                          | 181/391 | 330/390 | 331/391 | 3K/6.2K | 302/622 |
| 220/270                                                          | 221/271 | 330/470 | 331/471 | -       | -       |
| 220/330                                                          | 221/331 | 330/680 | 331/681 | -       | -       |



Percent of Rated Power

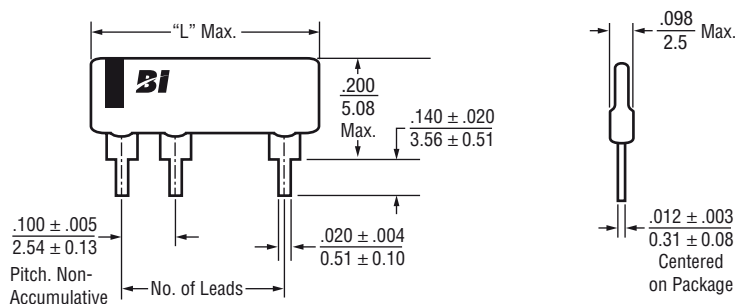
Degrees C

| Power Dissipation, Watts At 70°C |         |      |      |      |
|----------------------------------|---------|------|------|------|
| — Resistor (Per Circuit) —       |         |      |      |      |
| Model                            | Package | -1   | -3   | -5   |
| L06                              | .6      | .125 | .200 | .125 |
| L08                              | .8      | .125 | .200 | .125 |
| L10                              | 1.0     | .125 | .200 | .125 |

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Outline Dimensions (Inch/mm)



| # of Leads    | 4            | 5            | 6            | 7            | 8            | 9            | 10            | 11            | 12            | 13            | 14            |
|---------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|---------------|
| Dim. "L" Max. | .40<br>10.16 | .50<br>12.70 | .60<br>15.24 | .70<br>17.78 | .80<br>20.32 | .90<br>22.86 | 1.00<br>25.40 | 1.10<br>27.94 | 1.20<br>30.48 | 1.30<br>33.02 | 1.40<br>35.56 |

Schematics



# Typical Part Marking



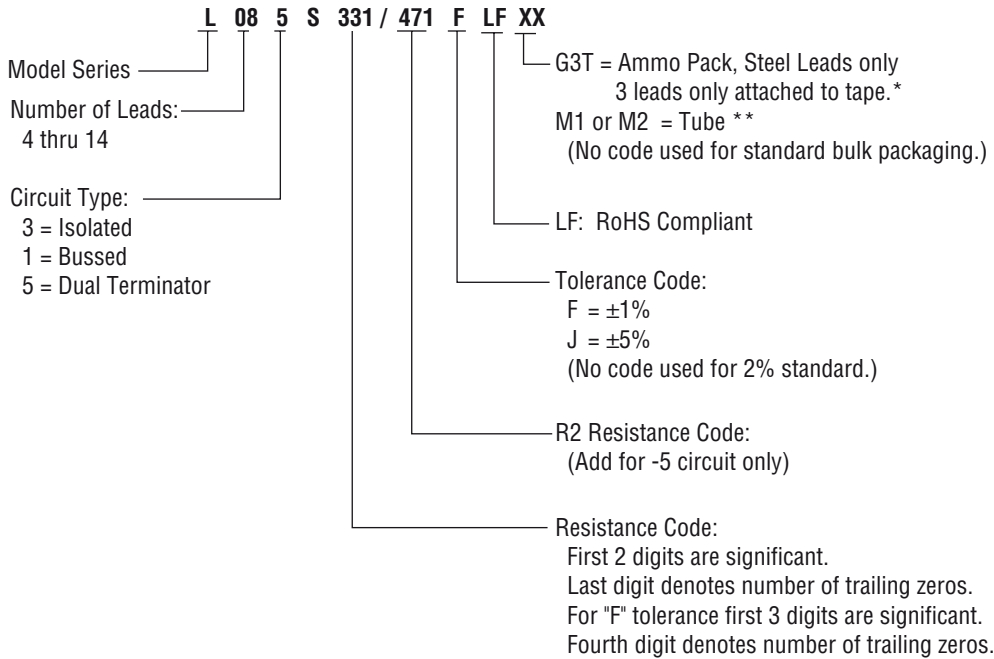
# Packaging

|           |                                                                                                           |          |   |                                                                                |
|-----------|-----------------------------------------------------------------------------------------------------------|----------|---|--------------------------------------------------------------------------------|
| Standard: | Bulk:                                                                                                     | Quantity | = | 4 -10 pins: 200 per bag, 1000 per box<br>11 -14 pins: 100 per bag, 500 per box |
| Option:   | Tape in Ammo Box (4 - 10 pins only).<br>All Units oriented with lead #1 to the left of direction of feed. |          |   |                                                                                |
|           | Tape:                                                                                                     | Width    | = | 18mm                                                                           |
|           |                                                                                                           | Pitch    | = | 12.7mm                                                                         |
|           | Ammo Box:                                                                                                 | Capacity | = | 1,000 units per box. 12,000 units per carton                                   |

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# Ordering Information



\* Refer to Packaging for Automation section (Page A-3) for Ammo Pack capacity and dimensions.  
\*\* Refer to Packaging for Automation section (Page A-4) for M1 and M2 tube capacity and dimensions.

# Applicable Documents

|                                                                           |
|---------------------------------------------------------------------------|
| MIL-R-83401 — Resistor Networks, Fixed, Film, General Specifications      |
| MIL-STD-105 — Sampling Procedures and Tables for Inspection by Attributes |
| MIL-STD-202 — Test Methods for Electronic and Electrical Component Parts  |