

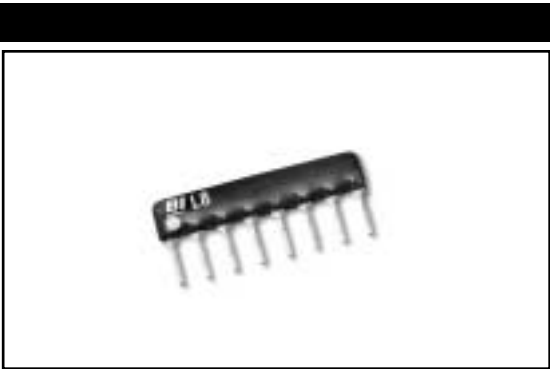
# MODEL L SERIES

## Thick Film

## Low Profile SIP

## Conformal Coated

## Resistor Networks



### ELECTRICAL

|                                                 |                                             |
|-------------------------------------------------|---------------------------------------------|
| Standard Resistance Range, Ohms                 | 22 to 1Meg                                  |
| 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 (<100 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 Withstanding 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.

## MECHANICAL

|                    |                                                   |
|--------------------|---------------------------------------------------|
| Lead Material      | Steel Alloy (Standard)<br>Copper Alloy (Optional) |
| Lead Finish        | 90/10 Tin-Lead                                    |
| Substrate Material | Alumina                                           |
| Resistor Material  | Cermet                                            |
| Body Material      | Conformal Epoxy Resin                             |

## STANDARD RESISTANCE VALUES, OHMS

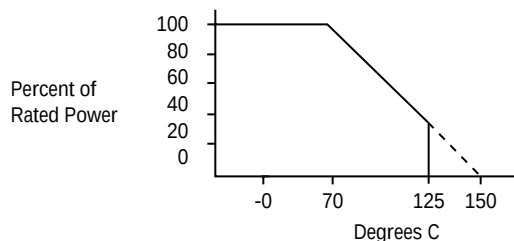
### -3 Circuit (Isolated Resistors) & -1 Circuits (Bussed Resistors)

| 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 |         |         |

## POWER DERATING CURVE

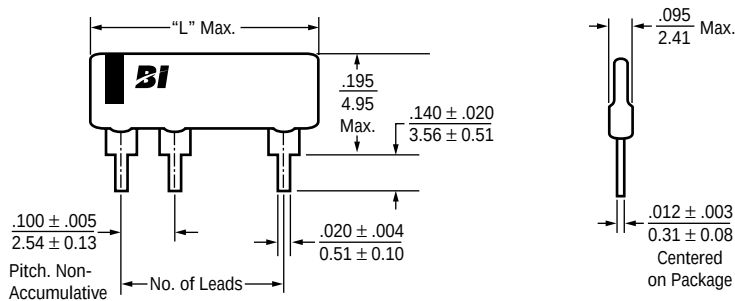


## POWER DISSIPATION, WATTS AT 70°C

| Model | Package | — Resistor (Per Circuit) — |      |      |
|-------|---------|----------------------------|------|------|
|       |         | -1                         | -3   | -5   |
| L06   | .6      | .125                       | .200 | .125 |
| L08   | .8      | .125                       | .200 | .125 |
| L10   | 1.0     | .125                       | .200 | .125 |



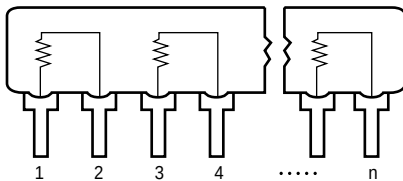
OUTLINE DIMENSIONS (Inch/mm)



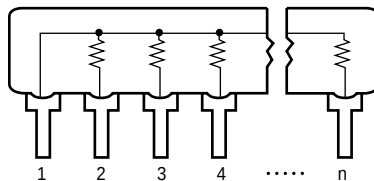
| # of Leads    | 4                   | 5                   | 6                   | 7                   | 8                   | 9                   | 10                   | 11                   | 12                   | 13                   | 14                   |
|---------------|---------------------|---------------------|---------------------|----------------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

SCHEMATICS

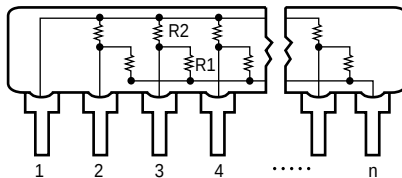
-3 Circuit  
Isolated Resistors



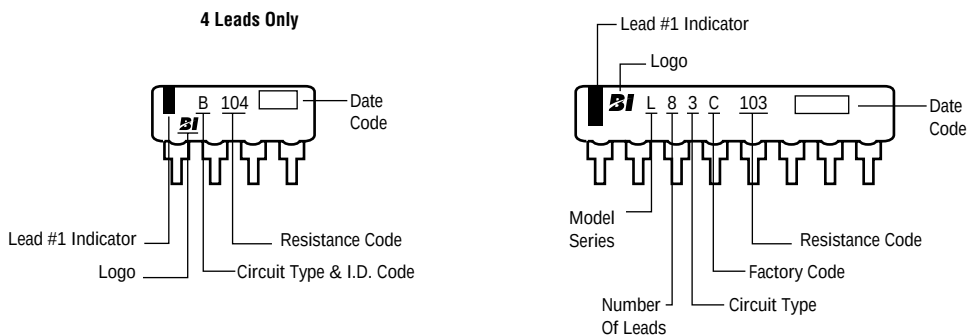
-1 Circuit  
Bussed Resistors



-5 Circuit  
Dual Terminator



## TYPICAL PART MARKING



## PACKAGING

**Standard:** Bulk: Quantity = 500 (Europe)  
200 Units (USA/Asia)

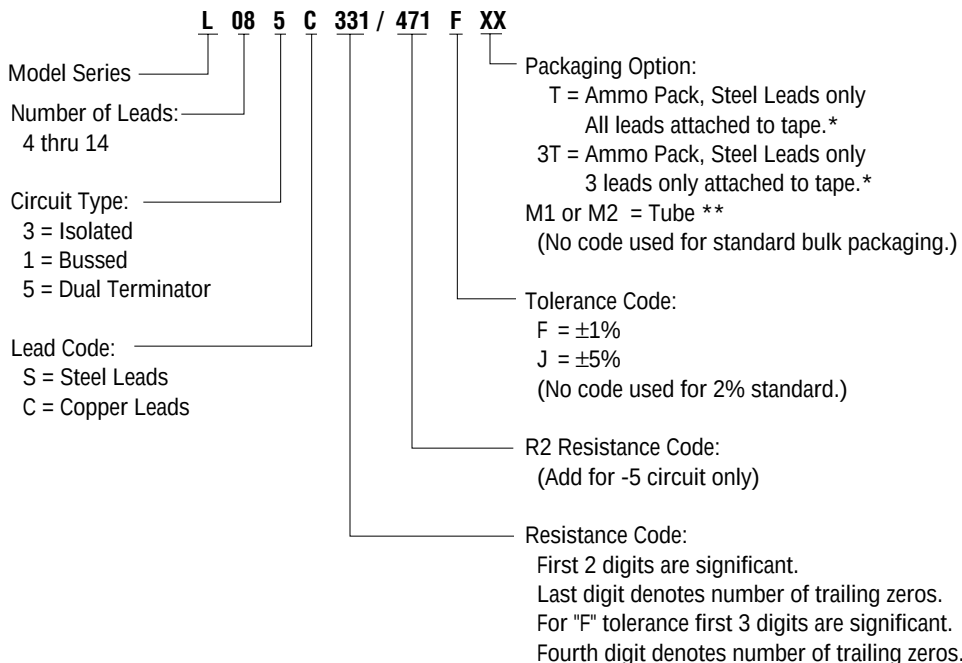
**Option:** Tape in Ammo Box (Steel pins only).  
All Units oriented with lead #1 to the left of direction of feed.

|           |          |   |             |
|-----------|----------|---|-------------|
| Tape:     | Width    | = | 18mm        |
|           | Pitch    | = | 12.7mm      |
| Ammo Box: | Capacity | = | 1,000 Units |

**Option:** Magazine  
Dimensions conform to EIA & JEDEC standards.  
All Units oriented with lead #1 to the same side.

|           |          |   |                    |
|-----------|----------|---|--------------------|
| Magazine: | Material | = | Antistatic Plastic |
|-----------|----------|---|--------------------|

## 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