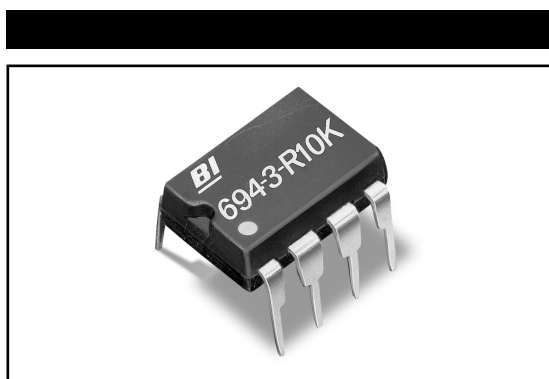


# MODELS 694, 698, 699

## Dual In-Line Precision Thin Film Resistor Networks



### FEATURES

- **Unique passivation coating eliminates moisture concerns** and allows for use in applications traditionally restricted to tantalum nitride
- Outperforms other thin film resistor materials providing excellent tolerances, ratio matching, temperature coefficient, and temperature tracking
- Improved performance over silicon substrates in stray capacitance, frequency response and stability

### ELECTRICAL

|  |                 |
|--|-----------------|
| Operating Temperature Range              | -55°C to +125°C |
| Resistance Voltco                        | ≈0              |
| Interlead Capacitance                    | <2pF            |
| Operating Voltage, Maximum               | 100Vdc or √PR   |
| Insulation Resistance                    | ≥10,000 Megohms |
| Noise, Maximum (MIL-STD-202, Method 308) | -40dB           |

### ENVIRONMENTAL (PER MIL-R-83401)

|                                       |                         |
|---------------------------------------|-------------------------|
| Thermal Shock plus Power Conditioning | ΔR ±0.25%               |
| Short Time Overload                   | ΔR ±0.10%               |
| Terminal Strength                     | ΔR ±0.10%               |
| Moisture Resistance                   | ΔR ±0.20%               |
| Mechanical Shock                      | ΔR ±0.25%               |
| Vibration                             | ΔR ±0.25%               |
| Low Temperature Storage               | ΔR ±0.10%               |
| High Temperature Exposure             | ΔR ±0.10%               |
| Load Life, 1,000 Hours                | ΔR ±0.10%               |
| Resistance to Solder Heat             | ΔR ±0.10%               |
| Dielectric Withstanding Voltage       | 200V rms for 1 minute   |
| Marking Permanency                    | MIL-STD-202, Method 215 |
| Lead Solderability                    | MIL-STD-202, Method 208 |
| Flammability                          | UL-94V-0 Rated          |
| Storage Temperature Range             | -65°C to +125°C         |

4

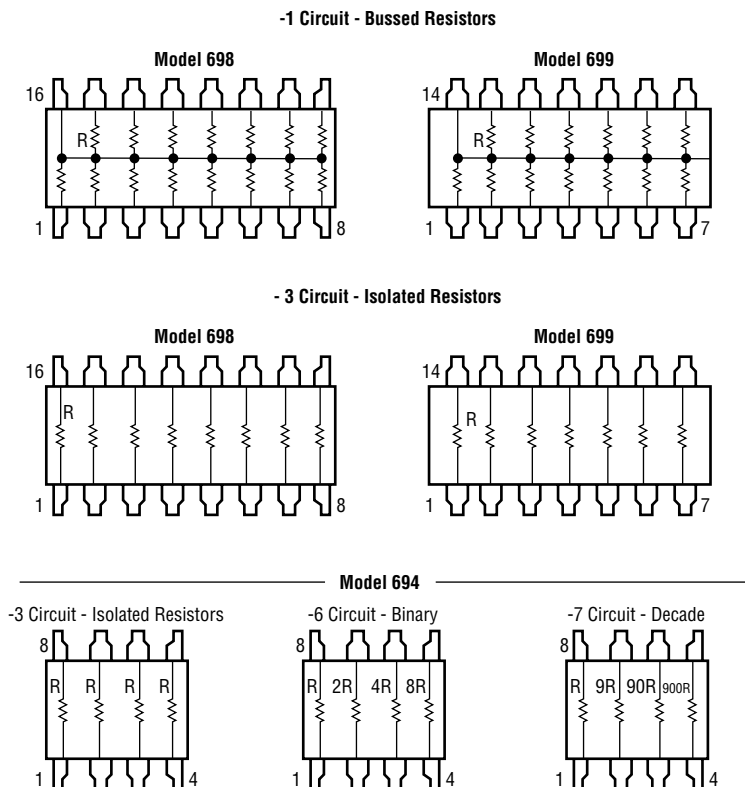
## ACCURACY CODES

| Code  | A     | B    | D    | F         |
|---|-------|------|------|-----------|
| Absolute Resistance Tolerances, at 25°C         | 0.1%  | 0.1% | 0.5% | 1.0%      |
| Ratio   | 0.05% | 0.1% | 0.1% | 0.5%      |
| Temperature Coefficient of Resistance           |       |      |      | ±50ppm/°C |
| Temperature Coefficient of Resistance, Tracking |       |      |      | ±5ppm/°C  |

## MECHANICAL

|                    |                         |
|--------------------|-------------------------|
| Lead Plating       | 60/40 Tin Lead (Dipped) |
| Lead Material      | Copper Alloy            |
| Substrate Material | Alumina                 |
| Resistor Material  | Nichrome                |
| Body Material      | Molded Epoxy            |

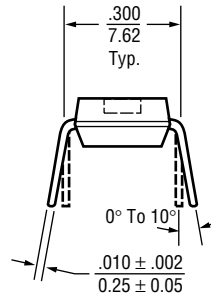
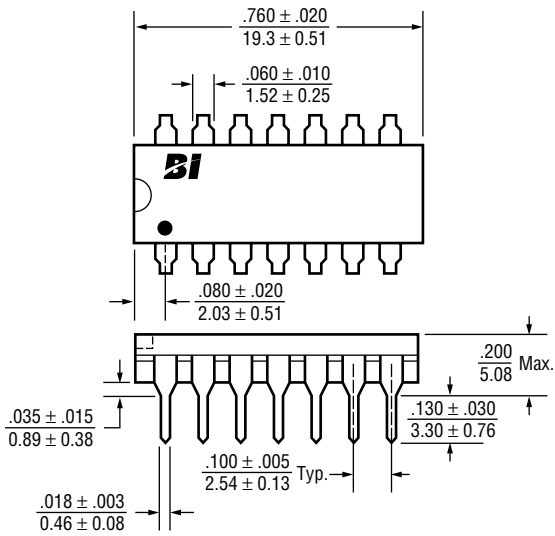
## SCHEMATICS



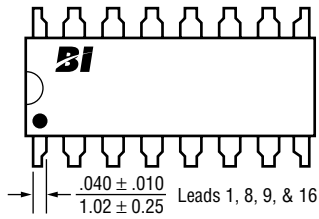
Note: Model 694, -6 & -7 circuits available only in accuracy code B: 0.1% absolute, 0.1% ratio.

**OUTLINE DIMENSIONS (Inch/mm)**

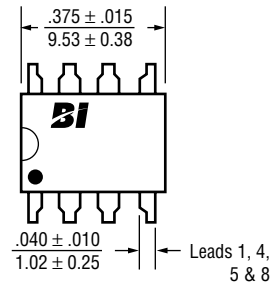
Model 699



Model 699



Model 699



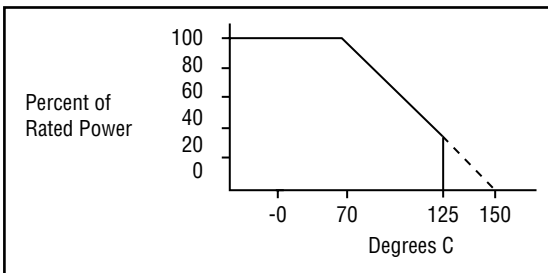
Note: Model 699 dimensions applicable to all models except as noted.

4

**APPLICABLE DOCUMENTS**

MIL-R-83401 — Resistor Networks, Fixed, Film, General Specifications

MIL-STD-202 — Test Methods for Electronic and Electrical Component Parts

**POWER DERATING CURVE****POWER (WATTS) DISSIPATION, AT 70°C**

| Model | Package | Resistor |
|-------|---------|----------|
| 694   | 0.4     | 0.15     |
| 698-1 | 0.6     | 0.05     |
| 698-3 | 0.6     | 0.10     |
| 699-1 | 0.6     | 0.05     |
| 699-3 | 0.6     | 0.10     |

**STANDARD RESISTANCE VALUES, OHMS**

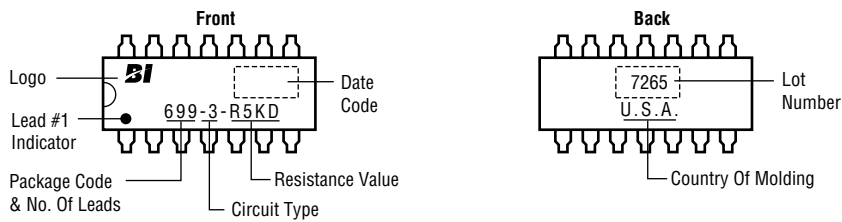
|        |      |      |      |      |      |      |      |       |       |
|--------|------|------|------|------|------|------|------|-------|-------|
| 694-1  | 11K  | 47K  |      |      |      |      |      |       |       |
| 694-3: | 100* | 500* | 1K*  | 2K*  | 5K*  | 10K* | 20K* | 50K   | 100K* |
| 694-6: | 1K   | 10K  |      |      |      |      |      |       |       |
| 694-7: | 1K   |      |      |      |      |      |      |       |       |
| 698-1: | 470  | 1K   | 2K   | 4.7K | 10K  | 20K  | 22K  | 47K   | 100K  |
| 698-3: | 100  | 330  | 470  | 1K*  | 1.5K | 2K   | 2.2K | 3.3K  | 4.7K  |
|        | 5K   | 10K* | 15K  | 20K* | 22K  | 47K* | 50K* | 100K* |       |
| 699-1: | 1K   | 437K | 5K   | 10K  | 20K  | 50K  | 100K |       |       |
| 699-3: | 1K   | 2K   | 3.3K | 4.7K | 5K   | 10K  | 20K  | 22K   | 47K   |
|        | 50K  | 100K |      |      |      |      |      |       |       |

All values available in Accuracy Codes B, D, & F, except -6 or -7 circuits.

\* Items with asterick are also available in Accuracy Code A.

Consult factory for additional values.

## TYPICAL PART MARKING



## PACKAGING

### Standard: Magazine

All units oriented with lead #1 to the same side.

|           |          |   |                     |
|-----------|----------|---|---------------------|
| Magazine: | Capacity | = | 50 Units (8 leads)  |
|           |          |   | 25 Units (16 leads) |
|           |          |   | 25 Units (14 leads) |

4

## ORDERING INFORMATION

