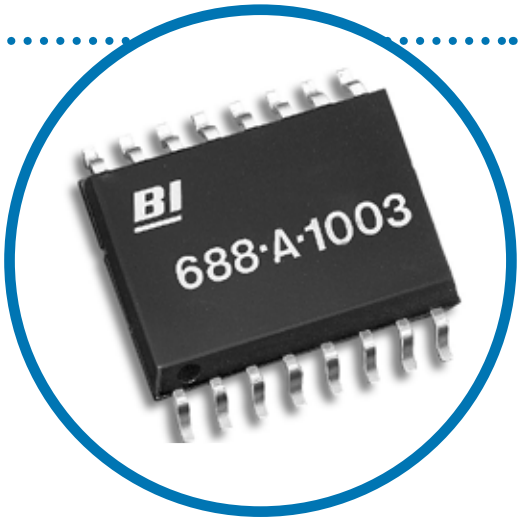
# Nichrome Resistor Networks on Ceramic Substrates

Model 688 Series




**Precision Thin Film .300" Dual In-Line Surface Mount Resistor Networks**

- **RoHS Compliant**
- **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**

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**Not Recommended for New Designs**

## 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 (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 | 100V for 1 minute |
| Temperature Exposure, Maximum | 215°C for 3 minutes |
| Marking Permanency | MIL-STD-202, Method 215 |
| Lead Solderability | MIL-STD-202, Method 208 |
| Flammability | UL-94V-O Rated |
| Storage Temperature Range | -65°C to +125°C |

Specifications subject to change without notice.

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## Mechanical

| | |
|---|---|
| Lead Material | 100% matte Tin (RoHS) |
| Lead Configuration | Gull Wing |
| Lead Coplanarity | 0.004" (0.102mm) |
| Substrate Material | Alumina |
| Resistor Material | Nichrome |
| Body Material | Molded Epoxy |

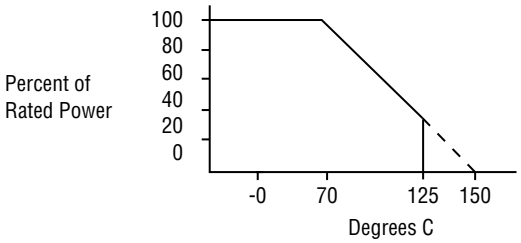
## Tolerances

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

## Standard Resistance Values, Ohms

| Model | Ohms | Code |
|---|---|---|
| 688A | 50K<br>100K | 5002<br>1003 |
| 688B | 100K | 1003 |

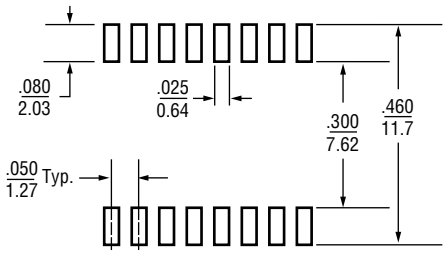
## Power Derating Curve




## Power Dissipation, Watts At 70°C

| Model | Package | Per Resistor |
|---|---|---|
| 688 | .7 | .1 |

## Solder Pad Layout (Inch/mm)



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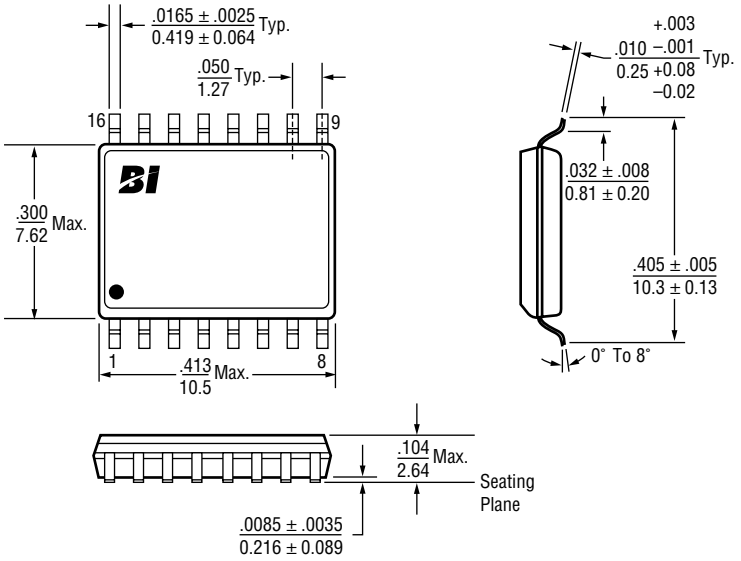
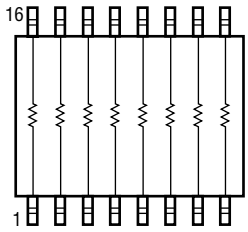
## Outline Dimensions (Inch/mm)



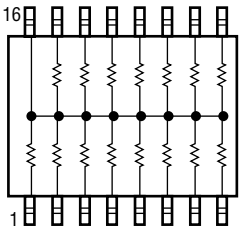

Note: Leads are within .005/0.13 of true position. Maximum allowable mold excursion = 0.006”

## Schematics

**688A - Isolated Resistors**




**688B - Bussed Resistors**




## Applicable Documents

| |
|---|
| MIL-R-83401 — Resistor Networks, Fixed, Film, General Specifications |
| MIL-STD-202 — Test Methods for Electronics and Electrical Component Parts |

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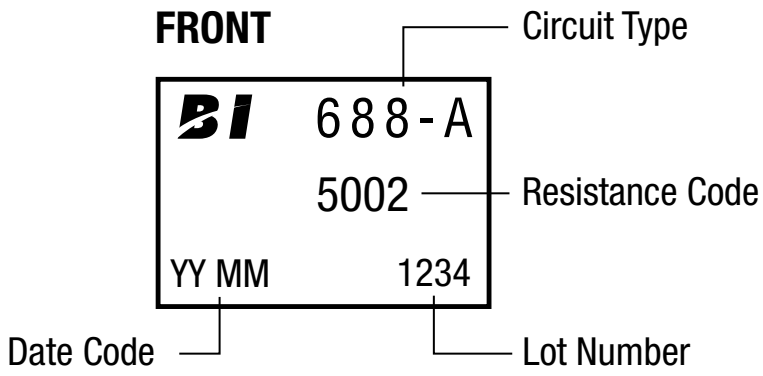
## Typical Marking




## Packaging

| | | | |
|---|---|---|---|
| Standard: | Magazines<br>All units oriented with lead #1 to the same side. | | |
| Magazine: | Capacity = | 50 units | |
| Option | Embossed Tape & Reel | | |
| Option: | Magazines<br>Conforms to EIA and JEDEC standards.<br>All units oriented with lead #1 to the same side. | | |
| Reel: | Diameter =<br>Capacity = | 7″ Reel<br>500 Units | 13″ Reel<br>1,500 Units |

## Ordering Information

68 8 A 5002 B LF 7

Model: 68

Number of Leads: 8 = 16 Leads

Circuit Type: A = Isolated, B = Bussed

Resistance Code: First 3 digits are significant. Last digit denotes the number of trailing zeros.

Accuracy Code

Lead Finish: LF=Lead Free (RoHS)

Packaging Option: 7 = 7″ Reel Diameter, 13 = 13″ Reel Diameter (No code used for Magazines.)