Nichrome Resistor Networks on Ceramic Substrates

Model 694, 698, 699 Series

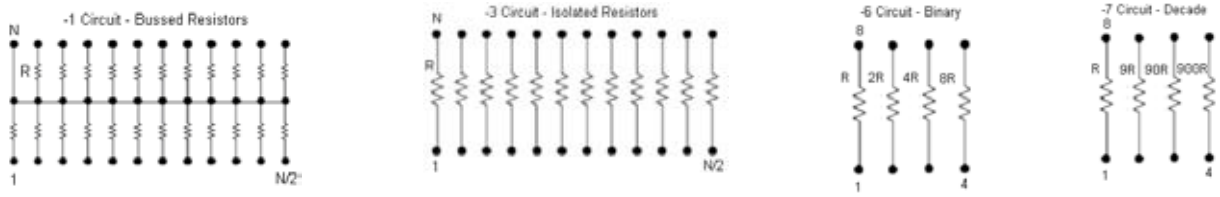
- **Isolated, bussed and other circuits**
- **Thin film resistor network**
- **0.300" PDIP packages**
- **RoHS compliant**



Features

Precision Nichrome Resistors on Ceramic	Passivation coating provides protection in humid environments Excellent frequency response Excellent long term resistance stability
Industry Standard Packaging	JEDEC 95, MS-001 (Plastic DIP 0.300 inch wide in 8, 14 and 16 lead pin counts)
Ratio Tolerances	< ± 0.05%
TCR Tracking Tolerances	< ± 5 ppm/°C

Schematics



Electrical[1]

Standard Resistance Range[2]	1K ohms to 100K ohms (Isolated) 1K ohms to 45K ohms (Bussed)
TCR[3]	± 25 ppm/°C
TCR Tracking[3]	± 5 ppm/°C
Operating Temperature Range	-55°C to +125°C
Interlead Capacitance	< 2pF
Insulation Resistance	≥ 10,000 Megohms
Maximum Operating Voltage	100 Vdc or √ PR
Noise, Maximum (MIL-STD-202, Method 308)	-40 dB
Resistor Power Rating at 70°C	0.1 Watts

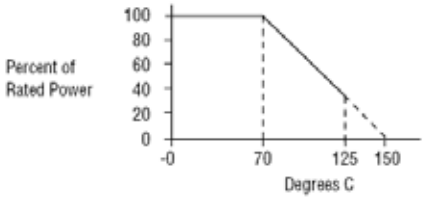
1 Specifications subject to change without notice.
2 E96 codes available.
3 Standard limits for all resistance codes.

General Note

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Package Power And Derating Curve



Model	Package Power @ 70°C(watts)[4]
694	0.4
698	0.6
699	0.6

Environmental (Mil-R-83401)

Thermal Shock plus Power Conditioning	ΔR 0.25%
Short Time Overload	ΔR 0.1%
Terminal Strength	ΔR 0.1%
Moisture Resistance	ΔR 0.2%
Mechanical Shock	ΔR 0.25%
Vibration	ΔR 0.25%
Low Temperature Operation	ΔR 0.1%
High Temperature Exposure	ΔR 0.1%
Load Life, 1,000 Hours	ΔR 0.1%
Resistance to Solder Heat	ΔR 0.1%
Dielectric Withstanding Voltage	200V 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

Mechanical

Lead Plating	100 matte Tin (RoHS)
Lead Material	Copper Alloy
Lead Configuration	Thru hole
Substrate Material	Alumina
Resistor Material	Passivated Nichrome
Body Material	Molded Epoxy

4 Maximum power per resistor @ 70°C is 100 mW, not to exceed package power

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Ordering Information[5]

69 4 -3- R10K A LF

Model Series:
69 = Passivated Nichrome
on Ceramic

Number of Leads:
4= 8 leads
9=14 leads
8=16 leads

Circuit Type:
1=Bussed
3=Isolated
6=Binary (Only available as 694 model with B tolerance)
7=Decade (Only available as 694 model with B tolerance)

Resistance Value

Tolerance Code

Lead Finish:
LF = Lead free (RoHS)

Resistance Code[5]

Standard values follow E96 table. Character “K” denotes a multiplier of 1000.

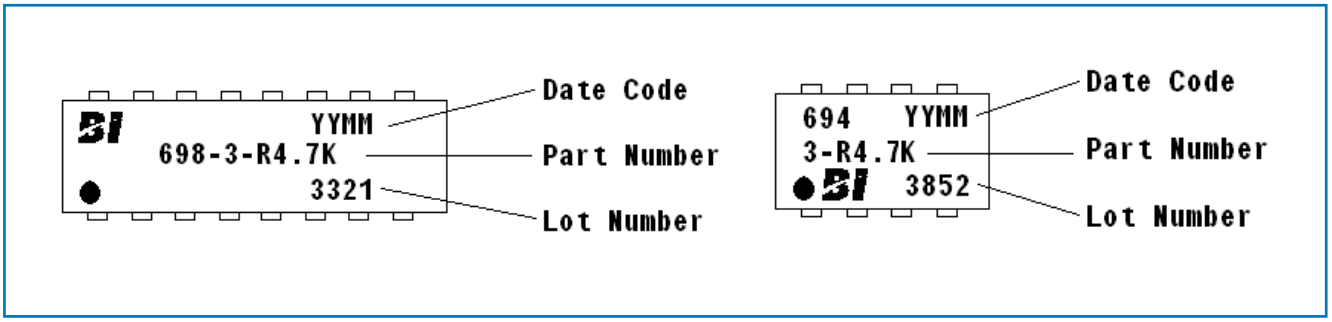
Resistance Tolerance Code

Accuracy Code at 25°C	A	B	D	F
Absolute Resistance Tolerances (%)	± 0.1	± 0.1	± 0.5	± 1.0
Ratio Tolerances (R1 Ref) (%)	± 0.05	± 0.1	± 0.1	± 0.5

Packaging Options (Unit Count/Tube)

Model + Pin count	
694	100
699	50
698	50

Typical Marking



5 Consult customer service for custom designs and features.

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