

Features

- Lead Free, RoHS Compliant Option Available
- Low Capacitance
- Mounting - Surface Mount, Tab & Cover, Flange, and Rod
- Power Levels: 0.05 to 800 Watts
- 50 and 100 Ohms Standard
- Tight Resistance Tolerance - $\pm 5\%$, $\pm 2\%$, and $\pm 1\%$ Available
- Tuned Circuit
- Available in AlN, BeO, or Alumina
- Substrate Thicknesses of .015" to .120" Available
- Rod Diameters of .020" to .375"
- Custom Tab Forming Available
- Resistance Ranges from 3 to 400 Ohms
- Small Footprint and Low profile

Applications

- Base Stations
- Broadcast (TV and Radio)
- High Power Amplifier
- Instrumentation
- Military
- Radar System
- Satellite Communications
- Splitters/Combiners
- Voltage Dropping Resistor
- Wilkinson Dividers

For our **CVD Diamond Resistors** see **Diamond Rf Resistives®** on pages 65 to 74



EMC Technology offers low and high power RF resistors including surface mount chips, tab & cover chips, flange mounted and rod types. These resistors are available with Alumina, AlN, BeO and CVD substrate materials. Some devices use a tuned circuit design to minimize parasitic capacitance across their usable frequency bands. Most devices are available in a wide range of resistance values, typically from 1 ohm to 1,000 ohms.

Choose from a variety of metallization finishes for easy mounting to a heat sink or directly to a printed circuit board. Typical finishes include: Lead-free, RoHS compliant plating (silver or gold), solder finish with Sn60Pb40 or solder fused finish with Sn60Pb40 depending upon package type. Select from bulk, tape & reel, or waffle packaging, again, depending upon resistor package style.

Quick Selector Chart

Mounting Style	Power (Watts)	Page
Surface Mount Chip	800	56-57
Tab & Cover	500	58-59
Flange	800	60-62
Rod	40	63

Surface Mount

Chip Resistor

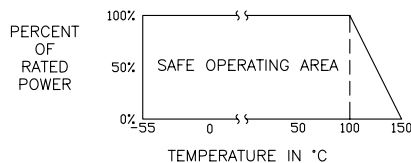


Surface mount chip resistors are available in three different terminal styles for either RF or DC applications, such as bias voltage dropping or heaters. Terminal Style A has a full backside metallization for direct attachment to a heat sink or an item to be heated. Terminal Style B has wrap-around divider for low power SMT applications. Terminal Style C has a split ground that allows it be mounted as a resistor or termination. This style provides a larger ground area for increased heat dissipation and is an excellent choice for high power SMT applications.

Specifications

Standard Resistance	50 & 100 Ohms $\pm 5\%$
Resistance Range	3 to 400 Ohms
Power	2 to 800 Watts
Power Rating	100% @ 100°C
Derates to	0% @ 150°C
Operating Temperature	-55°C to 150°C
Substrate	BeO, AlN or Alumina
Resistive Element	Thin or Thick Film
Solderable Terminals	See Plating Option
Environment	Meets applicable sections of MIL-PRF-55342

Power Rating and Derating

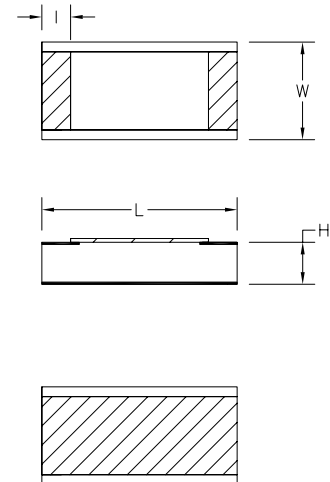


Part Numbering Code

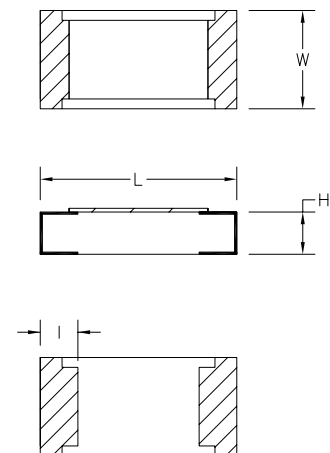
8	1	A	7	0 4 2	-	1 0 0	-	5	F
STYLE 8 = Chip/ Power Pak	PLATING OPTION - = Tin Lead ¹⁾ A = Silver Nickel B = Silver Copper M = Non-magnetic	TYPE 1 = Resistor	SUBSTRATE MATERIAL 7 = Aluminum Nitride 8 = Alumina 3 = Beryllium Oxide	DESCRIPTIONS Random Numbers		RESISTANCE Value in ohms - = Tin/Lead (blank) = RoHS Compliant		TOLERANCE 1 = 1% 2 = 2% 5 = 5% 10 = 10%	ENVIRONMENTAL COMPLIANCE F = RoHS Compliant
				(blank) = Style C A = Style A B = Style B					

¹⁾ Not RoHS Compliant

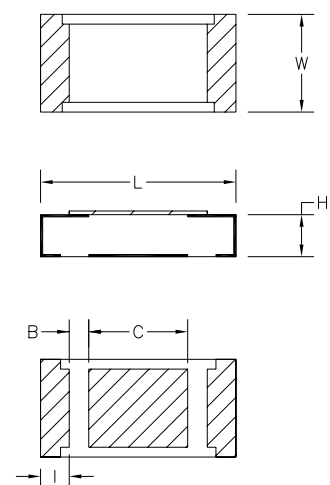
Style A



Style B



Style C





Power	Resistance	Substrate	Capacitance	L		W		H		Part Series #
Watt	Range			mm [inches]						
2	10-250	Alumina	0.10	3.05	[0.120]	1.52	[0.060]	0.38	[0.015]	81 8004B*
5	25-200	Alumina	0.10	5.08	[0.200]	2.54	[0.100]	1.02	[0.040]	81 8002B*
5	25-200	AlN	0.27	5.08	[0.200]	2.54	[0.100]	1.02	[0.040]	81 7001B*
5	2.5-200	BeO	0.80	5.08	[0.200]	2.54	[0.100]	1.02	[0.040]	81 3001B*
6	5-150	BeO	/1	5.08	[0.200]	5.08	[0.200]	1.02	[0.040]	81 3002Bv
8	3-200	BeO	0.66	6.35	[0.250]	6.35	[0.250]	1.57	[0.062]	81 3012B*
8	5-75	BeO	0.85	5.84	[0.230]	8.89	[0.350]	1.02	[0.040]	81 3005B*
8	3-200	BeO	1.00	6.35	[0.250]	6.35	[0.250]	1.02	[0.040]	81 3003B*
10	10-300	AlN	/1	5.08	[0.200]	2.54	[0.100]	1.02	[0.040]	81 7031*
10	15-400	BeO	0.10	5.08	[0.200]	2.54	[0.100]	1.02	[0.040]	81 3031*
10	7-250	BeO	1.33	9.53	[0.375]	6.35	[0.250]	1.02	[0.040]	81 3006B*
10	5-200	BeO	0.80	5.08	[0.200]	2.54	[0.100]	1.02	[0.040]	81 3001A*
10	10-300	AlN	0.10	5.08	[0.200]	2.54	[0.100]	1.02	[0.040]	81 7031
12	5-250	BeO	1.64	9.53	[0.375]	9.53	[0.375]	1.02	[0.040]	81 3008B*
15	5-150	BeO	/1	5.08	[0.200]	5.08	[0.200]	1.02	[0.040]	81 3002A*
20	15-300	AlN	1.50	9.53	[0.375]	6.35	[0.250]	1.02	[0.040]	81 7042
20	5-75	BeO	6.00	6.35	[0.250]	6.35	[0.250]	1.02	[0.040]	81 3039*
20	7-250	BeO	1.50	9.53	[0.375]	6.35	[0.250]	1.02	[0.040]	81 3032*
30	5-120	BeO	0.85	5.84	[0.230]	8.89	[0.350]	1.02	[0.040]	81 3005A*
50	5-200	AlN	/1	9.53	[0.375]	9.53	[0.375]	1.02	[0.040]	81 7028*
50	10-400	BeO	1.35	17.78	[0.700]	8.89	[0.350]	1.52	[0.060]	81 3036*
50	5-120	BeO	1.00	6.35	[0.250]	6.35	[0.250]	1.02	[0.040]	81 3003A*
100	12-400	BeO	4.48	25.40	[1.000]	25.40	[1.000]	1.52	[0.060]	81 3011B*
150	7-250	BeO	1.33	9.53	[0.375]	6.35	[0.250]	1.02	[0.040]	81 3006A*
250	5-200	BeO	/1	9.53	[0.375]	9.53	[0.375]	1.02	[0.040]	81 3028*
800	12-400	BeO	4.48	25.40	[1.000]	25.40	[1.000]	1.52	[0.060]	81 3011A*

Peak power is typically 10 times the max power rating with a 1% duty cycle and 10 microsecond pulse width.

/1 Varies by resistance value within the range. Call the Sales department for more information.

“*” is a place holder. See part number configurations to complete the part number.

For L, B and C dimensions see data sheet on website.

Tab & Cover

Resistor

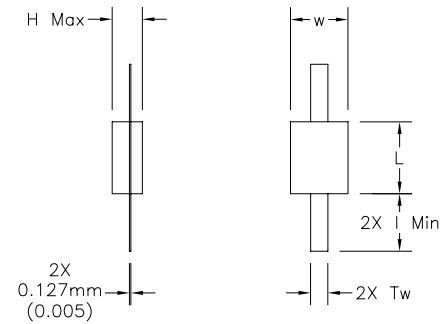


Tab & Cover resistors are ideal for mounting directly to a heat sink or onto a circuit board. The resistors are available with BeO, Aluminum Nitride (AlN) or Alumina substrates. These devices have standard resistance values of 50 & 100 ohms, however, are available in many non-standard values as well. The power rating ranges from 10 to 500 watts. Applications include Wilkinson divider/combiner that require low capacitance to ground. Packaging options are tray or tape & reel. All devices are available RoHS compliant.

Specifications

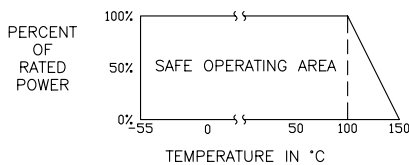
Standard Resistance	50 & 100 Ohms ±5%
Resistance Range	5 to 400 Ohms
Power	10 to 500 Watts
Power Rating	100% @ 100°C
Derates to	0% @ 150°C
Operating Temperature	-55°C to 150°C
Substrate	BeO, AlN or Alumina
Resistor	Thin Film
Tab Contact	Beryllium copper
Cover	Alumina
Ground Plane	Plated Thick Film

81-Series Tab & Cover

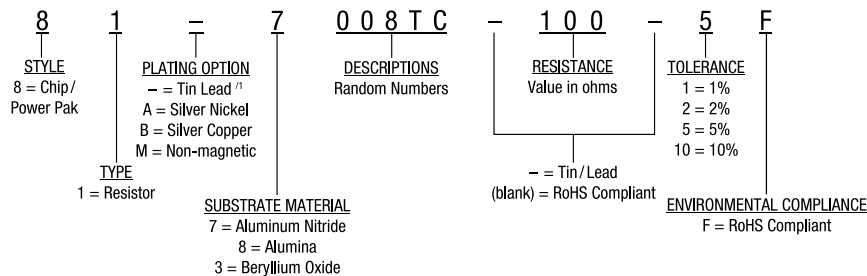


For "1 min" and Tw dimensions see data sheet on website.

Power Rating and Derating



Part Numbering Code



¹⁾ Not RoHS Compliant



Power	Resistance	Substrate	Capacitance	L		W		H		Part Series #
Watt	Range			mm [inches]						
10	10-250	AlN	0.57	5.08	[0.200]	2.54	[0.100]	2.16	[0.085]	81 7008TC /1
10	10-250	AlN	/5	5.08	[0.200]	2.54	[0.100]	2.16	[0.085]	81 7006TC /2
10	5-200	BeO	0.80	5.08	[0.200]	2.54	[0.100]	2.29	[0.090]	81 3001TC*
15	5-150	BeO	1.00	5.08	[0.200]	5.08	[0.200]	2.16	[0.085]	81 3002TC*
20	3-250	BeO	1.00	6.35	[0.250]	6.35	[0.250]	2.67	[0.105]	81 3012TC*
30	10-400	BeO	0.50	6.35	[0.250]	6.35	[0.250]	2.16	[0.085]	81 3034TC*
40	10-250	AlN	0.52	6.35	[0.250]	6.35	[0.250]	2.16	[0.085]	81 7108TC /3
40	10-250	AlN	0.25	5.84	[0.250]	8.89	{0.350}	2.16	[0.085]	81 7107TC /4
40	9-300	BeO	0.50	6.35	[0.250]	8.89	{0.350}	2.16	[0.085]	81 3035TC*
50	5-200	AlN	0.45	6.35	[0.250]	9.53	[0.375]	2.16	[0.085]	81 7109TC*
50	5-120	BeO	1.00	6.35	[0.250]	6.35	[0.250]	2.16	[0.085]	81 3003TC*
60	5-200	BeO	0.70	6.35	[0.250]	9.53	[0.375]	1.02	[0.040]	81 3033TC*
100	14-250	AlN	1.50	9.53	[0.375]	6.35	[0.250]	2.16	[0.085]	81 7043TC
150	7-250	AlN	1.38	9.53	[0.375]	6.35	[0.250]	2.16	[0.085]	81 7021TC*
150	12-400	BeO	0.50	9.53	[0.375]	6.35	[0.250]	2.67	[0.105]	81 3075TC*
150	7-250	BeO	1.33	9.53	[0.375]	6.35	[0.250]	2.16	[0.085]	81 3006TC*
200	10-250	AlN	1.40	9.53	[0.375]	9.53	[0.375]	2.16	[0.085]	81 7110TC*
250	10-350	BeO	1.00	9.53	[0.375]	9.53	[0.375]	2.67	[0.105]	81 3076TC*
250	5-250	BeO	1.64	9.53	[0.375]	9.53	[0.375]	2.16	[0.085]	81 3008TC*
400	5-200	BeO	3.25	12.70	[0.500]	12.70	[0.500]	2.16	[0.085]	81 3074TC*
500	10-400	BeO	1.50	12.70	[0.500]	12.70	[0.500]	2.16	[0.085]	81 3123TC*
500	10-400	BeO	1.50	12.70	[0.500]	12.70	[0.500]	1.02	[0.040]	81 3027TC*

/1 & /2 Slightly different specifications

/3 & /4 Slightly different body size and lead length

Peak power is typically 10 times the max power rating with a 1% duty cycle and 10 microsecond pulse width.

Capacitance is parallel and measured to 2.7 GHz.

“**” is a place holder. See part number configuration to complete the part number.

For a complete part number, include resistance and tolerance as described above in ordering information.

Please call the Sales department for specific applications.

Flange

Resistor

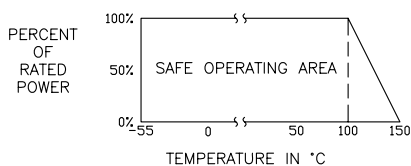


Flange resistors are excellent for mounting directly to heat sinks for improved heat dissipation. The devices are available in single, double and four hole flange mounting styles. These devices have standard resistance values of 50 & 100 ohms, however most designs are available in non-standard values as well. The flange resistors are offered in power ratings ranging from 10 to 1000 watts. Many designs are available in both BeO and Aluminum Nitride (AlN) substrates. The 31-XXXX designs, traditionally have a thin film resistor while the 5XXX designs, use a thick film resistor.

Specifications

Standard Resistance	50 & 100 Ohms ±5%
Resistance Range	4 to 400 Ohms
Power	10 to 800 Watts
Power Rating	100% @ 100°C
Derates to	0% @ 150°C
Operating Temperature	-55°C to 150°C
Substrate	BeO or AlN
Resistor	Thin or Thick Film
Tab Contact	Beryllium Copper
Cover	Alumina
Mounting Flange	Copper, Nickel Plated

Power Rating and Derating



Part Numbering Code

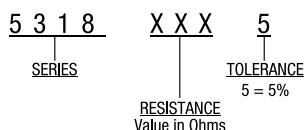
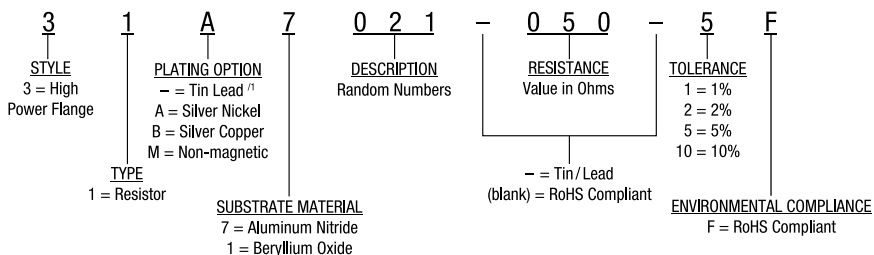


Figure 1

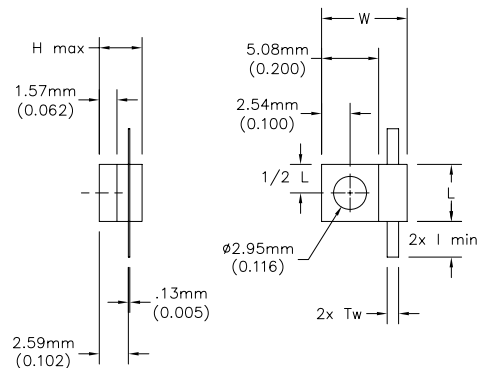


Figure 2

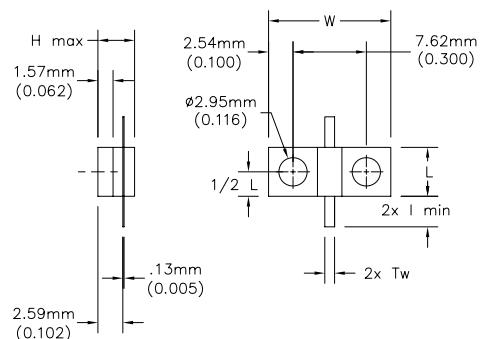


Figure 3

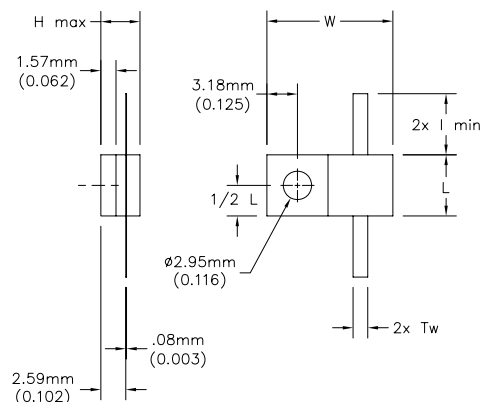




Figure 4

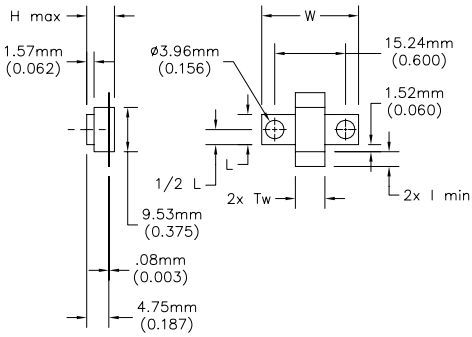


Figure 5

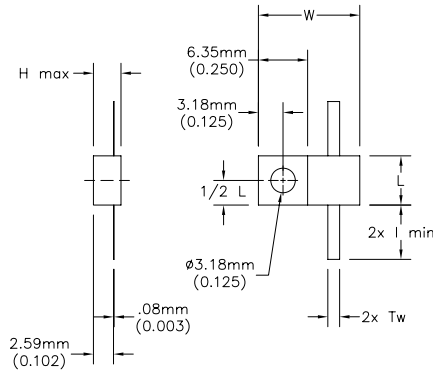


Figure 6

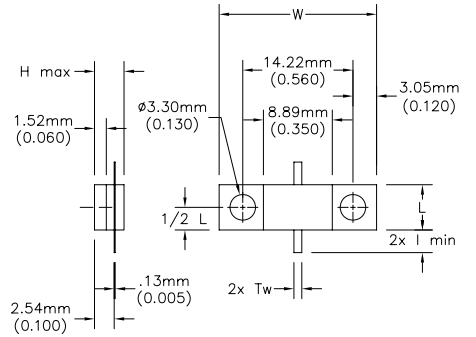


Figure 7

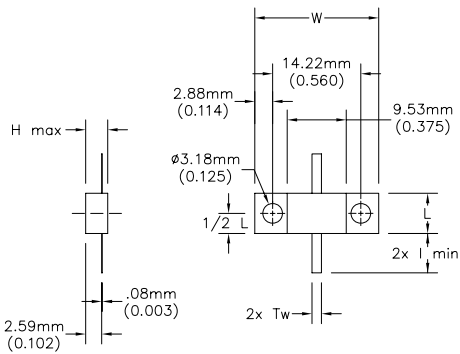


Figure 8

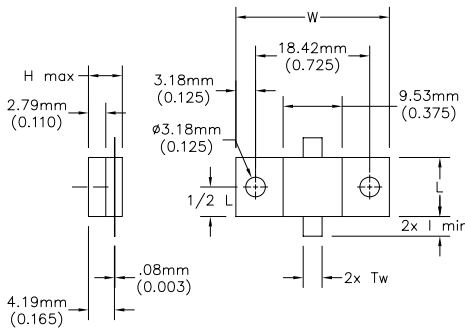


Figure 9

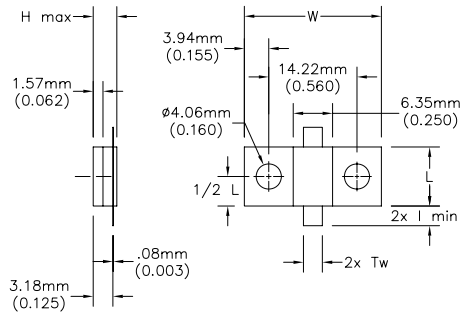


Figure 10

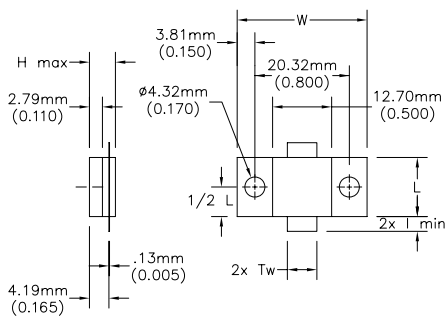


Figure 11

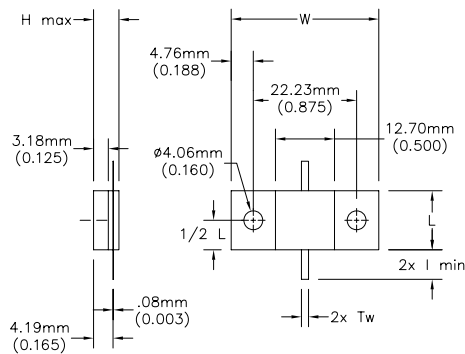
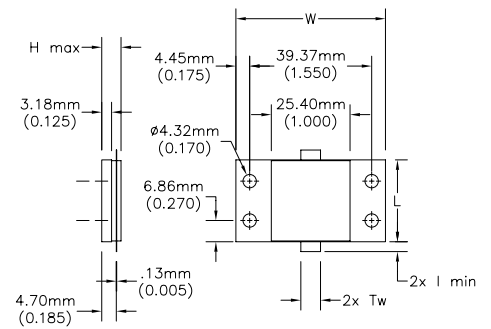


Figure 12



Flange

Product Information



Power Watt	Resistance Range	Substrate	Capacitance	L		W		H		Part Series #	Figure #
				mm [inches]							
10	5-200	BeO	0.80	5.08	[0.200]	12.70	[0.500]	3.81	[0.150]	31 1008*	2
10	5-200	BeO	0.80	5.08	[0.200]	7.62	[0.300]	3.81	[0.150]	31 1006*	1
10	25-250	BeO	1.30	7.62	[0.300]	5.08	[0.200]	4.06	[0.160]	5318 XXX,5	1
20	10-250	AlN	0.80	5.08	[0.200]	12.70	[0.500]	3.81	[0.150]	31 7008*	1
20	10-250	AlN	0.57	5.08	[0.200]	7.62	[0.300]	3.81	[0.150]	31 7006*	1
20	10-400	BeO	0.20	6.35	[0.250]	13.08	[0.515]	4.32	[0.170]	31 1094*	3
20	10-150	BeO	1.00	6.35	[0.250]	20.83	[0.820]	5.97	[0.235]	31 1010*	7
20	3-250	BeO	0.60	6.35	[0.250]	13.08	[0.515]	4.06	[0.160]	31 1009*	3
20	3-250	BeO	0.60	6.35	[0.250]	13.08	[0.515]	4.06	[0.160]	31 1001*	3
25	25-250	BeO	2.50	12.70	[0.500]	6.48	[0.255]	4.32	[0.170]	5310 XXX,5	2
25	25-250	BeO	2.00	13.08	[0.515]	6.35	[0.250]	4.06	[0.160]	5326 XXX,5	2
30	10-400	BeO	0.50	6.35	[0.250]	13.08	[0.515]	3.56	[0.140]	31 1034*	5
40	5-300	AlN	0.80	6.35	[0.250]	13.08	[0.515]	3.81	[0.150]	31 7108*	3
40	10-250	AlN	0.25	5.84	[0.250]	20.32	[0.800]	3.81	[0.150]	31 7107*	6
40	10-400	BeO	0.50	6.35	[0.250]	13.08	[0.515]	3.56	[0.140]	31 1089*	3
40	9-300	BeO	0.50	5.84	[0.230]	20.32	[0.800]	3.81	[0.150]	31 1035*	6
40	9-300	BeO	0.50	5.84	[0.230]	20.32	[0.800]	3.81	[0.150]	31 1007*	6
40	25-250	BeO	3.40	20.32	[0.800]	5.84	[0.230]	4.06	[0.160]	5654 XXX,5	6
50	5-300	AlN	0.45	6.48	[0.255]	19.99	[0.787]	3.56	[0.140]	31 7109*	7
60	5-200	BeO	0.70	6.48	[0.255]	19.99	[0.787]	3.56	[0.140]	31 1033*	7
75	7-250	BeO	0.50	9.53	[0.375]	20.83	[0.820]	5.97	[0.235]	31 1002*	4
150	7-1000	BeO	0.8	9.52	[0.375]	14.30	[0.563]	4.32	[0.170]	31 1125*	5
150	7-250	AlN	2.25	9.53	[0.375]	22.10	[0.870]	4.32	[0.170]	31 7021*	9
150	12-400	BeO	0.50	9.53	[0.375]	22.10	[0.870]	4.32	[0.170]	31 1075*	9
150	7-1000	BeO	0.80	9.53	[0.375]	22.10	[0.870]	4.32	[0.170]	31 1021	9
150	7-250	BeO	1.33	9.53	[0.375]	22.10	[0.870]	3.81	[0.150]	31 1003*	9
150	5-600	BeO	/1	5.84	[0.230]	20.32	[0.800]	3.81	[0.150]	31 1086*	9
150	25-250	BeO	3.80	22.23	[0.875]	9.53	[0.375]	4.32	[0.170]	5308 XXX,5	9
200	10-350	AlN	1.40	9.53	[0.375]	24.77	[0.975]	5.46	[0.215]	31 7110*	8
250	10-350	BeO	1.00	9.53	[0.375]	24.77	[0.975]	5.46	[0.215]	31 1098*	8 /2
250	10-350	BeO	1.00	9.53	[0.375]	24.77	[0.975]	5.46	[0.215]	31 1076*	8
250	5-150	BeO	2.00	24.77	[0.975]	9.53	[0.375]	7.11	[0.280]	31 1059	8
250	5-250	BeO	1.64	9.53	[0.375]	24.77	[0.975]	5.46	[0.215]	31 1004*	8
250	25-250	BeO	4.30	24.77	[0.975]	9.53	[0.375]	5.21	[0.205]	5660 XXX,5	8
400	5-200	BeO	3.25	12.70	[0.500]	27.94	[1.100]	5.59	[0.220]	31 1074*	10
500	10-400	BeO	1.50	12.70	[0.500]	31.75	[1.250]	5.46	[0.215]	31 1123*	11
750	10-400	BeO	4.50	26.42	[1.040]	48.26	[1.900]	6.35	[0.250]	31 1054*	12
800	12-400	BeO	4.48	26.42	[1.040]	48.26	[1.900]	6.22	[0.245]	31 1005*	12
800	7-175	BeO	1.00	26.42	[1.040]	48.26	[1.900]	6.22	[0.245]	31 1099*	12

/1 Varies by resistance value within the range. Call the Sales department for more information.

/2 Formed Tabs

