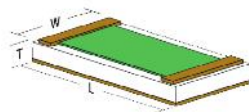


TOP CONTACT HIGH POWER CHIP RESISTORS

PTWB



Non-solderable gold
OR Solderable gold with nickel barrier
OR Nickel barrier pre-soldered

Mini-Systems, Inc. **Wire Bondable High Power Chip Resistor** series is constructed with **high current density** Thin Film materials to fit the rigorous demands that operating **high power** have on performance. Connection methods to associated circuitry are made through either wire bonding, conductive epoxy or soldering to the terminations.

GENERAL CHARACTERISTICS

Resistance Range	2Ω to 1kΩ
Resistance Tolerance	±0.5% to ±10%
Termination Material	(G) Non-Solderable Gold, (NU) Solderable Au w/ Ni barrier (NT) Nickel with Solder
Backing Material	Bare Substrate (Standard), Gold (Optional)
Operating Temperature	-55°C to +150°C
Storage Temperature	-65°C to +150°C
Operating Voltage	100V Max.
Insulation Resistance	10 ¹² Ω Min.

SUBSTRATE CHARACTERISTICS

SUBSTRATE	Available Thickness	Dielectric Constant @ 1MHz	Thermal Conductivity W/m•K	Current Noise	
				101Ω to 1kΩ	≤ 100Ω
99.6% Alumina	0.005" - 0.025"	9.9	28	-35 dB	-30 dB
Beryllium Oxide	0.010" - 0.025"	6.7	300	-30 dB	-20 dB
Aluminum Nitride	0.010" - 0.025"	9.0	140 - 177	-30 dB	-20 dB

RESISTOR CHARACTERISTICS

RESISTOR FILM	Passivation	TCR
Tantalum Nitride	Ta ₂ O ₅ (SelfPassivating)	±150 ppm/°C
NiChrome	SiO ₂	±25 ppm/°C

PART NUMBER DESIGNATION

PTWB	110	A	T	100R0	F	GB
STYLE	TYPE	SUBSTRATE	RESISTOR FILM	OHMIC VALUE	TOLERANCE	OPTION
PTWB	SEE TABLE	A = Alumina B = BeO N = AlN	T = Tantalum Nitride N = NiChrome	5-Digit Number: 1st 4 digits are significant with "R" as decimal point when required. 5th digit represents number of zeros.	D = ±0.5% F = ±1% G = ±2% J = ±5% K = ±10%	G = Non-Solderable Gold GB = Gold Back NU = Solderable Au w/ Ni barrier NT = Nickel w/ Sn62 Solder NT3 = Nickel w/SAC305 Solder TR = Tape and Reel

EXAMPLE: PTWB-110-AT-100R0F - GGB

PTWB-110 Series, Alumina, Tantalum Nitride, 100Ω, ±1% Tol., Non-Solderable Terminations, Gold Back



MINI SYSTEMS INC.
MADE IN AMERICA
SINCE 1968

THIN FILM DIVISION

ISO 9001 CERTIFIED
20 DAVID ROAD
NORTH ATTLEBORO, MA 02760
EMAIL: msithin@Mini-SystemsInc.com
WEB: www.Mini-SystemsInc.com
PHONE: 508-695-0203 FAX:508-695-6076



8041 Rev. A

TOP CONTACT HIGH POWER CHIP RESISTORS

CASE SIZE	TYPE	DIMENSIONS			RESISTANCE RANGE	POWER RATING ¹		
		L (±0.002") [±0.051mm]	W (±0.002") [±0.051mm]	T ⁴ (±0.002") [±0.051mm]		Alumina	AlN ^{2,3}	BeO ^{2,3}
0201	21	0.020" [0.508]	0.010" [0.254]	0.006" [0.152]	2Ω - 1kΩ	100mW	400mW	800mW
0202	122	0.020" [0.508]	0.016" [0.406]	0.010" [0.152]	2Ω - 1kΩ	250mW	1W	2W
0202	7	0.020" [0.508]	0.020" [0.508]	0.010" [0.254]	2Ω - 1kΩ	250mW	1W	2W
0302	32	0.030" [0.762]	0.020" [0.508]	0.010" [0.254]	2Ω - 1kΩ	250mW	1W	2W
0402	110	0.037" [0.940]	0.017" [0.432]	0.010" [0.254]	2Ω - 1kΩ	500mW	2W	4W
0404	2	0.035" [0.889]	0.035" [0.889]	0.010" [0.254]	2Ω - 1kΩ	1W	2W	4W
0502	115	0.050" [1.270]	0.025" [0.635]	0.010" [0.254]	2Ω - 1kΩ	500mW	2W	4W
0505	112	0.050" [1.270]	0.050" [1.270]	0.010" [0.254]	2Ω - 1kΩ	1W	2.8W	5.6W
0603	63	0.060" [1.524]	0.030" [0.762]	0.010" [0.254]	2Ω - 1kΩ	1W	4W	8W
0805	3	0.075" [1.905]	0.050" [1.270]	0.010" [0.254]	2Ω - 1kΩ	1W	4W	8W
1005	120	0.100" [2.54]	0.050" [1.270]	0.010" [0.254]	2Ω - 1kΩ	2W	4W	8W
1010	121	0.100" [2.54]	0.100" [2.54]	0.010" [0.254]	2Ω - 1kΩ	2W	6W	12W
1206	5	0.126" [3.20]	0.063" [1.60]	0.010" [0.254]	2Ω - 1kΩ	2W	6W	12W
1505	9	0.153" [1.270]	0.050" [0.254]	0.010" [0.254]	2Ω - 1kΩ	2W	6W	12W

¹ Power rating at 70°C derated linearly to 0% at 150°C

² Power ratings for resistors manufactured on AlN and BeO are based on adequate heat sinking to maintain the case temperature below 90°C

³ MSI recommends the gold back option for adequate heat sinking to maintain case temperature below 90°C

⁴ Thickness does not include solder

PERFORMANCE SPECIFICATIONS

PROPERTY	TEST CONDITION	REQUIRED LIMITS	MSI TYPICAL LIMITS
SHORT TERM OVERLOAD	2.5X RATED POWER, +25°C, 5 SEC	±0.25 MAX ΔR/R	±0.10 MAX ΔR/R
HIGH TEMP EXPOSURE	+150°C, 100HRS	±0.20 MAX ΔR/R	±0.03 MAX ΔR/R
THERMAL SHOCK	MIL-STD 202, METHOD 107	±0.25 MAX ΔR/R	±0.10 MAX ΔR/R
MOISTURE RESISTANCE	MIL-STD 202, METHOD 106	±0.40 MAX ΔR/R	±0.10 MAX ΔR/R
STABILITY	MIL-STD 202 METHOD 108, 2000 HRS, +70°C, RATED POWER	±0.50 MAX ΔR/R	±0.10 MAX ΔR/R

All PTWB Series parts are produced on the same manufacturing line using the same materials and processes as parts manufactured to MIL-PRF-55342



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