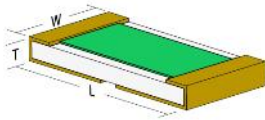


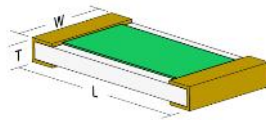
SURFACE MOUNT HIGH POWER CHIP RESISTORS

Extended Wrap (PTSM)



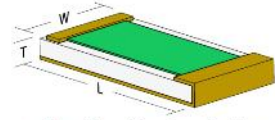
Solderable gold with nickel barrier
OR Nickel barrier pre-soldered

Wrap Around (PTSM)



Solderable gold with nickel barrier
OR Nickel barrier pre-soldered

Half Wrap (PTHW)



Solderable gold with nickel barrier
OR Nickel barrier pre-soldered
Isolated pad is wire bondable

Mini-Systems, Inc. **Surface Mount 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. All sizes are offered in wrap around and half wrap styles to meet your design needs. 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	(NU) Solderable Gold with Nickel Barrier (NT) Nickel with Solder
Operating Temperature	-55°C to +150°C
Storage Temperature	-65°C to +150°C
Operating Voltage	100 V 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

PTSM	3	A	T	100R0	F	NT3
STYLE	TYPE	SUBSTRATE	RESISTOR FILM	OHMIC VALUE	TOLERANCE	OPTION
PTSM	SEE	A = Alumina	T = Tantalum Nitride	5-Digit Number:	D = ±0.5%	NU = Solderable Au w/ Ni Barrier
PTHW	TABLE	B = BeO	N = NiChrome	1st 4 digits are significant with "R" as decimal point when required. 5th digit represents number of zeros.	F = ±1%	NT = Nickel w/ Sn62 Solder
		N = AlN			G = ±2%	NT3 = Nickel w/ SAC305 Solder
					J = ±5%	K = Extended Wrap
					K = ±10%	TR = Tape and Reel

EXAMPLE: PTSM-3-AT-100R0F - NT3

PTSM-3 Series, Alumina, Tantalum Nitride, 100Ω, ±1% Tol., Nickel with SAC305 Solder



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

SURFACE MOUNT 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	1	0.040" [1.016]	0.020" [0.508]	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	4	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	6	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 extended wrap, or half wrap options 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 PTSM, PTHW Series parts are produced on the same manufacturing line using the same materials and processes as parts manufactured to MIL-PRF-55342