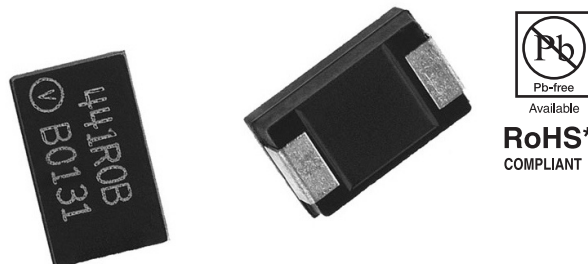


High Precision Bulk Metal® Foil Molded Surface Mount Resistor

with TCR down to ± 2 ppm/°C, Flexible Terminations,
and Load Life Stability of $\pm 0.005\%$ (50 ppm)

FEATURES

- Temperature coefficient of resistance (TCR): ± 2 ppm/°C typical (-55°C to $+125^{\circ}\text{C}$, $+25^{\circ}\text{C}$ ref.)
- Tolerance: to $\pm 0.01\%$
- Flexible terminations ensure minimal stress transference from the PCB due to a difference in thermal coefficient of expansions (TCE)
- Load life stability: $\pm 0.005\%$ (70°C , 2000 h at rated power)
- Resistance range: $5\ \Omega$ to $80\ \text{k}\Omega$
- Power rating: to 600 mW at 70°C
- Non inductive, non capacitive design



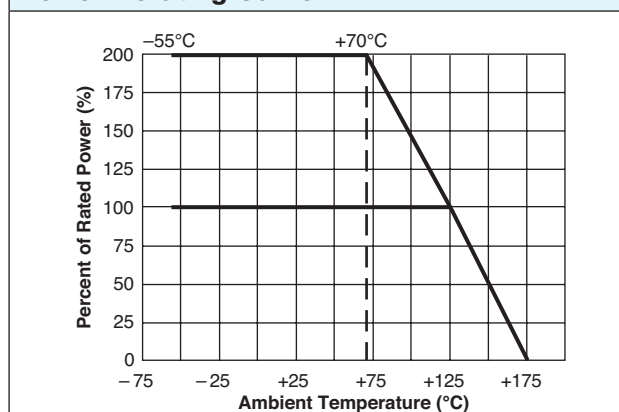
Tolerance and TCR Vs. Resistance Value
(-55°C to $+125^{\circ}\text{C}$, $+25^{\circ}\text{C}$ Ref.)

VALUE	STANDARD TOLERANCE ⁽¹⁾	TYPICAL TCR AND MAX. SPREAD ⁽¹⁾ (ppm/°C)
50 Ω to 80 k Ω	$\pm 0.01\%$	$\pm 2 \pm 3$
20 Ω to <50 Ω	$\pm 0.02\%$	$\pm 2 \pm 4$
10 Ω to <20 Ω	$\pm 0.05\%$	$\pm 2 \pm 6$
5 Ω to <10 Ω	$\pm 0.1\%$	$\pm 2 \pm 8$

Note

⁽¹⁾ Tighter performances are available

Power Derating Curve



The SMRDX Series is Listed in the Following DSCC Specifications

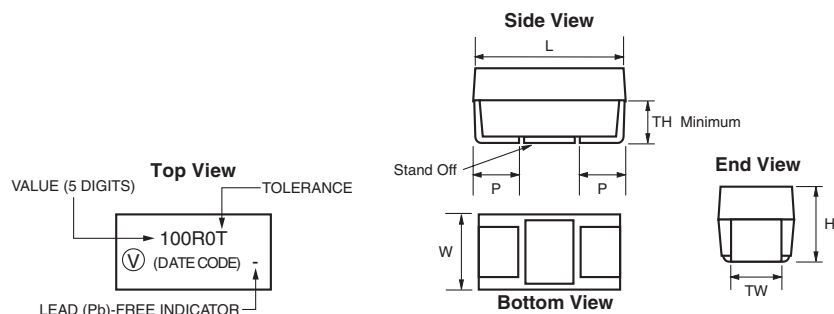
MODEL	DSCC	MIL SPEC
SMR1D	06020	MIL-PRF-55182
SMR3D	06021	MIL-PRF-55182

Performance Specifications					
TEST	CONDITIONS				MAXIMUM LIMIT ⁽¹⁾
	SMR1D		SMR3D		<div>SMR1D</div> <div>SMR3D</div>
Resistance Range					<div>5 Ω to 33 kΩ</div> <div>5 Ω to 80 kΩ</div>
Rated Power	<div>5 Ω to 10 kΩ</div> <div>0.250 W at 70°C</div> <div>0.125 W at 125°C</div>	<div>10 kΩ to 33 kΩ</div> <div>0.160 W at 70°C</div> <div>0.08 W at 125°C</div>	<div>5 Ω to 30 kΩ</div> <div>0.6 W at 70°C</div> <div>0.3 W at 125°C</div>	<div>30 kΩ to 80 kΩ</div> <div>0.4 W at 70°C</div> <div>0.2 W at 125°C</div>	
Maximum Working Voltage					<div>73 V</div> <div>180 V</div>
Maximum Operating Temperature	+175°C				
Working Temperature Range	-55°C to +125°C (MIL range)				
Thermal Shock	-65°C to +150°C; 30 min; 5 cycles				±0.01% (100 ppm)
Short Time Overload	6.25 x rated power; 5 s				±0.01% (100 ppm)
Low Temperature Storage	24 h at -65°C				±0.01% (100 ppm)
Low Temperature Operation	45 min, rated power at -65°C				±0.01% (100 ppm)
Dielectric Withstanding Voltage	atmospheric pressure; AC 200 V; 1 min				±0.01% (100 ppm)
Insulation Resistance (MΩ)	DC 100 V; 1 min				over 10 000
Resistance to Soldering Heat (%)	260°C; 10 s				±0.02%, ±0.01% typical
Moisture Resistance	+65°C to -10°C; 90% to 98% RH; rated power; 240 h				±0.02% (200 ppm)
Shock	100 G; sawtooth				±0.01% (100 ppm)
Vibration, High Frequency	10 ~ 2000 ~ 10 Hz; 20 G; Y, Z each 4 h				±0.01% (100 ppm)
Load Life Stability (2000 h)	<div>0.04 W at +70°C</div> <div>0.25 W at +70°C</div> <div>0.125 W at +125°C</div>		<div>0.1 W at +70°C</div> <div>0.6 W at +70°C</div> <div>0.3 W at +125°C</div>		<div>Typical</div> <div>0.005%</div> <div>0.02%</div> <div>0.02%</div> <div>Typical</div> <div>0.005%</div> <div>0.015%</div> <div>0.015%</div>
High Temperature Exposure	175°C; no load 2000 h				±0.05% (500 ppm)
Weight					<div>0.1143 g</div> <div>0.244 g</div>
Packaging	bulk (loose) or tape and reel, per EIA-481-1				

Note

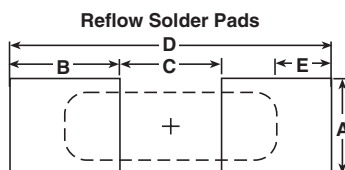
⁽¹⁾ As shown +0.01 Ω to allow for measurement error at low values

Dimensions in inches (millimeters)



MODEL	L	W	H	P	TW	TH (minimum)
SMR1D	0.236±0.012 (5.99±0.30)	0.126±0.012 (3.20±0.30)	0.098±0.012 (2.49±0.30)	0.051±0.012 (1.30±0.30)	0.087±0.004 (2.21±0.10)	0.039 (0.99)
SMR3D	0.287±0.012 (7.29±0.30)	0.170±0.012 (4.32±0.30)	0.110±0.012 (2.79±0.30)	0.051±0.012 (1.30±0.30)	0.095±0.004 (2.41 ±0.10)	0.039 (0.99)

Recommended Mounting Pad Geometries in inches (millimeters)

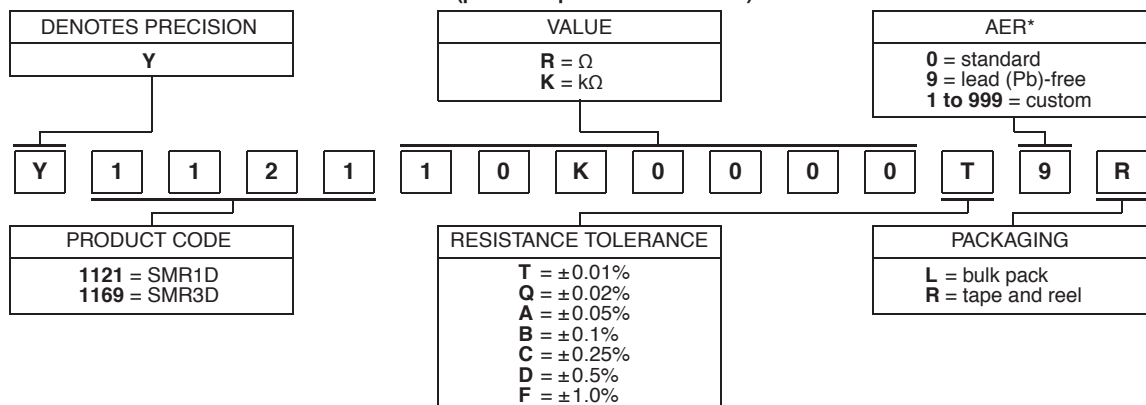


MODEL	METHOD	A MIN.	B REF	C REF	D ±0.04 (±1.02)	E REF
SMR1D	Reflow	0.110 (2.79)	0.106 (2.69)	0.124 (3.15)	0.337 (8.55)	0.050 (1.27)
SMR3D	Reflow	0.118 (3.00)	0.106 (2.69)	0.175 (4.45)	0.388 (9.86)	0.050 (1.27)

Per IPC-SM-782 Rev. A

Global Part Number Information

NEW GLOBAL PART NUMBER: Y112110K000T9R (preferred part number format)



FOR EXAMPLE: ABOVE GLOBAL ORDER Y1121 10K0000 T 9 R:

TYPE: SMR1D

VALUE: 10.0 $k\Omega$ ABSOLUTE TOLERANCE: $\pm 0.01\%$

TERMINATION: lead (Pb)-free

PACKAGING: tape and reel

HISTORICAL PART NUMBER: SMR1D 10K000 TCR2 T S T (will continue to be used)

SMR1D	10K000	TCR2	T	S	T
MODEL	OHMIC VALUE	TCR CHARACTERISTIC	RESISTANCE TOLERANCE	TERMINATION	PACKAGING
SMR1D SMR3D	10.0 $k\Omega$		T = $\pm 0.01\%$ Q = $\pm 0.02\%$ A = $\pm 0.05\%$ B = $\pm 0.1\%$ C = $\pm 0.25\%$ D = $\pm 0.5\%$ F = $\pm 1.0\%$	S = lead (Pb)-free B = tin/lead	B = bulk pack T = tape and reel

Note

* For non-standard requests, please contact application engineering.