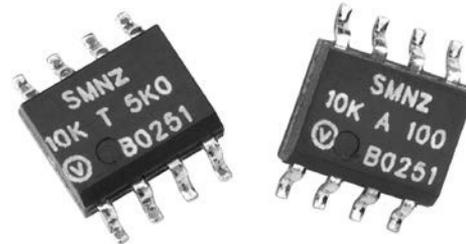


Ultra High Precision Z-Foil Surface Mount 4 Resistor Network Dual-In-Line Package

with TCR Tracking of 0.1 ppm/°C, PCR Tracking of 5 ppm at Rated Power,
and Tolerance Match of 0.01%

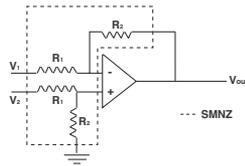
FEATURES

- Temperature coefficient of resistance (TCR):
Absolute: ± 0.05 ppm/°C typical (0°C to +60°C)
 ± 0.2 ppm/°C typical (-55°C to +125°C, +25°C Ref.)
Tracking: 0.1 ppm/°C typical
- Tolerance match: 0.01%
- Power coefficient tracking – “R2-R1 due to self heating”: 5 ppm at rated power
- Power rating: at 70°C
Entire package: 0.4 W
Each resistor: 0.1 W
- Ratio stability: 0.005%
(0.1 W at 70°C, 2000 h)
- Short time overload $\leq 0.0025\%$
- Non-inductive, non-capacitive design

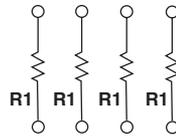


Available
RoHS*
COMPLIANT

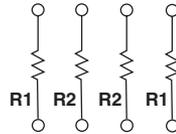
Any value and any ratio available within resistance range



Schematics



OPTION 1
FOUR RESISTORS, SAME OHMIC VALUE
SAME ABSOLUTE TOLERANCE



OPTION 2
TWO RESISTOR PAIRS
R1/R2; R2/R1

Note

1. Different schematics are available (R1, R2, R3, R4)

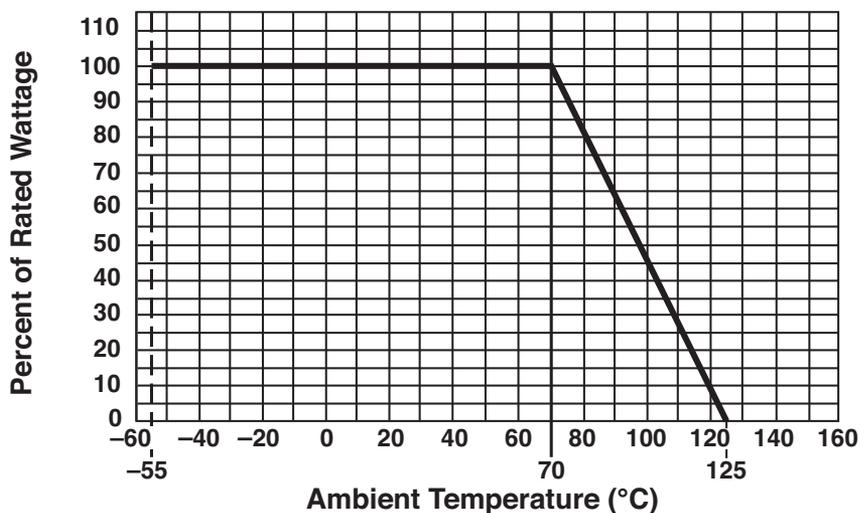
Model SMNZ Specifications

MODEL	RESISTANCE VALUES ⁽¹⁾	ABSOLUTE TCR (-55°C TO +125°C, +25°C REF.) (TYPICAL + MAX. SPREAD)	RESISTANCE RATIO	TCR TRACKING		TOLERANCE	
				MAX.		ABSOLUTE	MATCH
SMNZ	100 Ω to 1 kΩ 1 kΩ to 10 kΩ	$\pm 0.2 \pm 2.8$ $\pm 0.2 \pm 1.8$	R1/R2 = 1 1 < R1/R2 ≤ 10 10 < R1/R2 ≤ 100	0.5 ppm/°C 1.0 ppm/°C 2.0 ppm/°C		$\pm 0.02\%$ $\pm 0.05\%$ $\pm 0.1\%$	0.01% 0.02% 0.05%

Note

⁽¹⁾ SMN (Classic Foil) available with values up to 20 kΩ

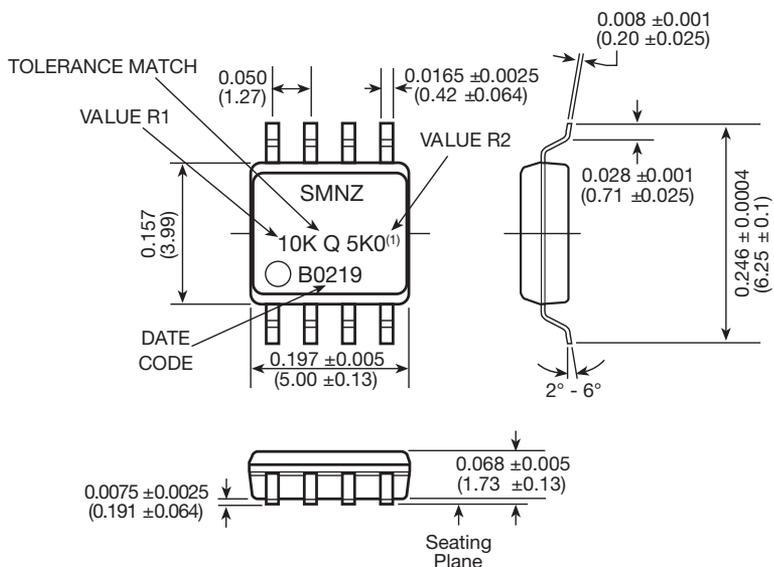
Power Derating Curve



Performance Specifications (per mil-prf 914 test methods)

SPECIFICATIONS	TYPICAL LIMITS
Power Rating at +70°C	Each resistor: 0.1 W Entire package: 0.4 W
Maximum Working Voltage (each resistor)	$(P \times R)^{1/2}$
Thermal Shock 25 × (-65°C to +125°C)	$\Delta R = 0.01\%$ (100 ppm) $\Delta \text{Ratio} = 0.01\%$ (100 ppm)
Thermal Shock 5 × (-65°C to +125°C) and Power Conditioning 1.5 rated power at 25°C, 100 h	$\Delta R = 0.02\%$ (200 ppm) $\Delta \text{Ratio} = 0.015\%$ (150 ppm)
DWV Atm. Pressure 200 VAC, 1 min	Successfully passed
Insulation Resistance 100 VDC, 1 min	>10 ⁴ MΩ
Resistance to Soldering Heat	$\Delta R = 0.01\%$ (100 ppm) $\Delta \text{Ratio} = 0.005\%$ (50 ppm)
Moisture Resistance +65°C to -10°C; 90% to 98% RH; 0.1 × rated power; 240 h	$\Delta R = 0.02\%$ (200 ppm) $\Delta \text{Ratio} = 0.005\%$ (50 ppm)
Shock (Specified Pulse) 100 G	$\Delta R = 0.01\%$ (100 ppm) $\Delta \text{Ratio} = 0.01\%$ (100 ppm)
Vibration, High Frequency (10 Hz to 2000 Hz), 20 G	$\Delta R = 0.005\%$ (50 ppm) $\Delta \text{Ratio} = 0.005\%$ (50 ppm)
High Temperature Exposure 100 h at 125°C	$\Delta R = 0.01\%$ (100 ppm) $\Delta \text{Ratio} = 0.005\%$ (50 ppm)
Low Temperature Storage 24 h at -65°C	$\Delta R = 0.005\%$ (50 ppm) $\Delta \text{Ratio} = 0.005\%$ (50 ppm)
Load Life Stability at 70°C; 0.1 W per resistor, 2000 h	$\Delta R = 0.005\%$ (50 ppm) $\Delta \text{Ratio} = 0.005\%$ (50 ppm)
Short Time Overload 6.25 × rated power; 5 s	$\Delta R = 0.005\%$ (50 ppm) $\Delta \text{Ratio} = 0.0025\%$ (25 ppm)
Weight	0.08 g

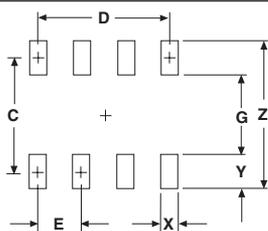
Dimensions and Imprinting Example in inches (millimeters)



Note

⁽¹⁾ If the resistance value of R1 and R2 contains more than 6 characters together, the VCODE will be printed instead (see Resistance Value Code List for Popular Ratios Table) followed by the ratio tolerance code.

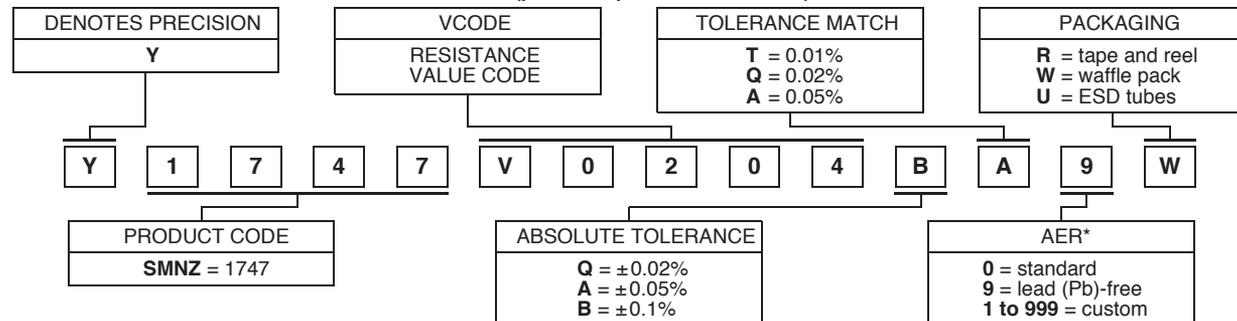
Land Pattern in inches (millimeters)



	Z	G	X	Y	C	D	E
MINIMUM	0.283 (7.19)	0.102 (2.59)	0.024 (0.61)	0.095 (2.41)	0.197 (5.00)	0.150 (3.81)	0.050 (1.27)
MAXIMUM	0.291 (7.39)	0.110 (2.79)	0.032 (0.81)	REFERENCE			

Global Part Number Information

NEW GLOBAL PART NUMBER: Y1747V0204BA9W (preferred part number format)



FOR EXAMPLE: ABOVE GLOBAL ORDER Y1747 V0204 B A 9 W:

TYPE: SMNZ
 VALUES: 10K/500R
 ABSOLUTE TOLERANCE: ±0.1%
 TOLERANCE MATCH: 0.05%
 TERMINATION: Lead (Pb)-free
 PACKAGING: Waffle Pack

HISTORICAL PART NUMBER: SMNZ 10K/500R TCR0.2 B A S W (will continue to be used)

SMNZ	10K/500R	TCR0.2	B	A	S	W
MODEL	RESISTANCE VALUE	ABSOLUTE TCR	ABSOLUTE TOLERANCE	TOLERANCE MATCH	TERMINATION	PACKAGING
SMNZ	R ₁ = 10 k R ₂ = 500 Ω	TCR0.2	Q = ±0.02% A = ±0.05% B = ±0.1%	T = 0.01% Q = 0.02% A = 0.05%	S = lead (Pb)-free B = tin/lead	T = tape and reel W = waffle pack U = ESD tubes

Note

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

Resistance Value Code List for Popular Ratios (other values available upon request)

VCODES	R ₁ /R ₂ RATIO	R ₁	R ₂	VCODES	R ₁ /R ₂ RATIO	R ₁	R ₂
V0201	100	10K	100R	V0189	2.5	1K	400R
V0202	50	10K	200R	V0185		500R	200R
V0197		5K	100R	V0207	2	10K	5K
V0203	25	10K	400R	V0175		2K	1K
V0198		5K	200R	V0190		1K	500R
V0204	20	10K	500R	V0182		400R	200R
V0193		2K	100R	V0179		200R	100R
V0205	10	10K	1K	V0186	1.25	500R	400R
V0194		2K	200R	1	V0178	100R	100R
V0187		1K	100R		V0180	200R	200R
V0200	5	5K	1K		V0183	400R	400R
V0195		2K	400R		V0023	500R	500R
V0188		1K	200R		V0191	1K	1K
V0184		500R	100R		V0176	2K	2K
V0196	4	2K	500R		V0019	5K	5K
V0181		400R	100R	V0008	10K	10K	