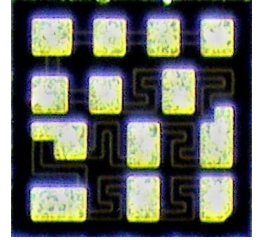


Network Resistor Array – PN Series

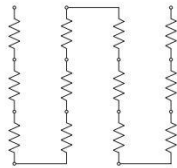
Product Features

- Multiple resistances in a single, space saving chip.
- Single chip geometry offers excellent TCR tracking and resistance ratio tracking.
- PPI offers chips with 12 or 20 resistive elements as standard.
- Other configurations are available upon request.
- Can be used in Non-Magnetic Applications

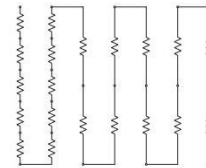
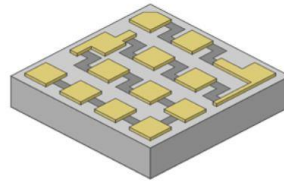


Product Specifications

Resistive Material	Tantalum Nitride
Ratio Tolerance	To 0.01% value dependent

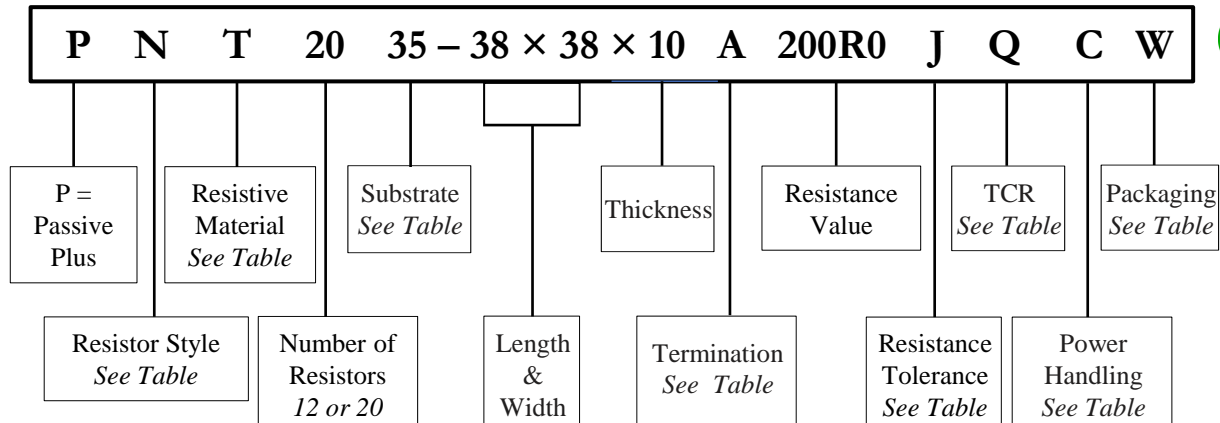


12 Resistor Configuration



20 Resistor Configuration

Part Numbering



Resistor Style

Code	Style
N	Network Array

Resistive Material

Code	Material	Passivation	Sheet Resistivity (Ω/ Sq)	Abs. Tolerance	Ratio Tolerance
T	Tantalum Nitride (TaN)	Self Passivating Ta ₂ O ₅	5 to 270	From ±0.01%	From ±0.01%



Network Resistor Array – PN Series

Resistance Range

Code	Size	Substrate Metallization	Resistance Range	Resistance Distribution
12	30x30 (0.030"x0.030")	Silicon	80Ω to 240kΩ	R ₁ to R ₇ = R _t /8
		Alumina	80Ω to 50kΩ	R ₈ to R ₁₂ = R _t /40
20	38x38 (0.038"x0.038")	Silicon	550Ω to 500kΩ	R ₁ to R ₁₀ = R _t /110
		Alumina	550Ω to 50kΩ	R ₁₁ to R ₂₀ = R _t /11

Substrate Materials

Code	Material	Thickness	Surface Finish	Dielectric Constant (@ 1MHz)	Coefficient of Thermal Expansion (x 10 ⁶ /°C)	Thermal Conductivity (W/m*K)
35	Alumina (Al ₂ O ₃)	0.005" - 0.010"	2μ" - 3μ"	9.9	7 (25°C to < 300°C)	26.9
22	Silicon (Si) (with 12kÅ SiO ₂)	0.005" - 0.010"	Chemical Polish	N/A (SiO ₂ K=1.38)	2.49 - 4.44 (25°C to < 1000°C)	149 (SiO ₂ 1.38)

Terminations

Code	Top Side		Bottom Side	
	Metallization	Attachement Options	Metallization	Attachement Options
A	Pd / Au	Wirebond, Non-Cond. Epoxy	—	—
D	Pd / Au	Wirebond, Non-Cond. Epoxy	Ta/Pd/Au	Cond. Epoxy, Non-Cond. Epoxy, Eutectic Attach, Solder
K	Pd / Au	Wirebond, Non-Cond. Epoxy	Au Sputtered	Solder

Resistance Tolerance Codes

Code	J	K	M
Tolerance	± 5%	± 10%	± 20%

Temperature Coefficient of Resistance

Code	TC	Material
Q*	±150 ppm/°C	Tantalum Nitride
V	±100 ppm/°C	(TaN)

*Standard

Power Handling

Code	Rating
C	50mW

Packaging

Code	Style
W	Waffle Pack (Standard)

Contact PPI for additional packaging options.



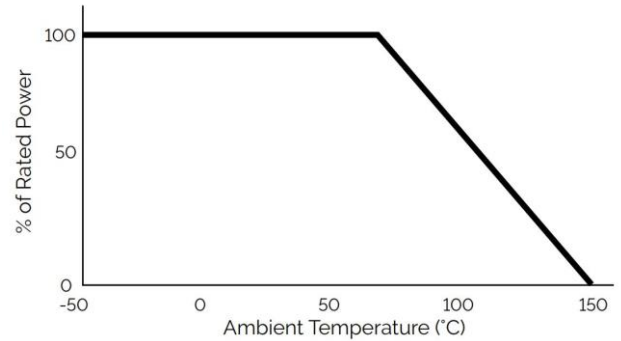
Thin Film Products

Network Resistor Array – PN Series

General Properties

Operating Temperature	-55°C to +150°C
Storage Temperature	-65°C to +150°C
Operating Frequency	DC to 500 MHz
Voltage Rating	100V maximum
Power Derating (See Chart at Right)	Full power up to 70°C Derated linearly to zero power at 150°C

Power Derating Curve



Testing

Testing Performed	Specification / Standard
Visual Inspection	MIL-PRF-55342 MIL-STD-883
Mechanical Inspection	MIL-PRF-55342
DC Resistance	MIL-PRF-55342 MIL-STD-202
Resistance Temperature Characteristics (TCR)	MIL-PRF-55342
Short Time Overload	MIL-PRF-55342
High Temperature Exposure	MIL-PRF-55342
Thermal Shock	MIL-PRF-55342 MIL-STD-202
Resistance to Bonding Exposure	MIL-PRF-55342
Wire Bonding Integrity	MIL-PRF-55342
Life Test	MIL-PRF-55342 MIL-STD-202

Performance Specifications

Higher power ratings, additional sizes, and custom resistors available. Please contact sales@passiveplus.com.