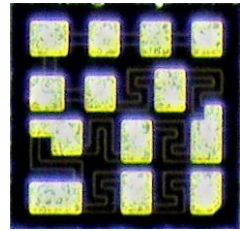


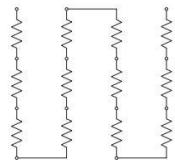
Multi-Tap Resistor Networks

PN-12, PN-20 Series

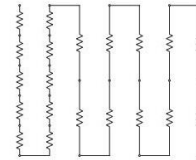
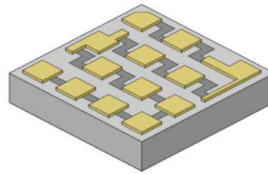


12 Resistor Multi-Tap Resistor Network

- 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



12 Resistor Configuration



20 Resistor Configuration

◆ Part Numbering

P N T 12 - 35-30×30× 10 A 200R0 J Q G W

P = Passive Plus

Resistor Style

N = Network

Resistive Material

T = Tantalum Nitride

Number of Resistors

12 or 20

Substrate

See Chart on next page

Length and Width

Thickness

10 mils standard

Packaging

W = Waffle Pack (Standard)*

Power Handling

See Charts on next page

TCR

See Charts on next page

Resistance Tolerance

See Chart on next page

Resistance Value

Digits 1-4 are significant figures

Digit 5 is the number of zeros to follow

When required, the "R" is used as a decimal point

and the exponent is omitted.

e.g. 100R5 = 100.5Ω, 10000 = 10000Ω, 10001 = 10000Ω

Termination

See Chart on next page

* All parts are supplied in waffle packs. Other packaging may be available. Contact PPI for additional packaging options.

Multi-Tap Resistor Networks

◆ Product Specifications

Resistive Material	Tantalum Nitride
Ratio Tolerance	To 0.01% value dependent

Tolerance	5%, 10% or 20%	
Power	250mW	
	Size 30 x 30 (0.030" x 0.030")	Size 38 x 38 (0.038" x 0.038")
Resistance Range: Silicon	80Ω to 240kΩ	550Ω to 500kΩ
Alumina	80Ω to 50kΩ	550Ω to 50kΩ
Resistance Distribution	R_1 to $R_7 = R_t / 8$	R_1 to $R_{10} = R_t / 110$
	R_8 to $R_{12} = R_t / 40$	R_{11} to $R_{20} = R_t / 11$

◆ Substrate Materials

Recommended Substrates	Code
99.6% Alumina (Al ₂ O ₃)	35
Silicon (SiO ₂)	22

◆ Terminations

Metallization		Code
Top Side	Bottom Side	
Pd/Au	—	A
Pd/Au	Pd/Au	D
Pd/Au	Au Sputtered	K

◆ Resistance Tolerance Codes

Tolerance	J	K	M
Code	± 5%	± 10%	± 20%

◆ Resistive Materials & Temperature Coefficient of Resistance (TCR)

Resistive Materials					TCR					
Material	Passivation	Sheet Resistivity (Ω/ Sq)	Abs. Tolerance	Ratio Tolerance	±150 ppm/°C	±100 ppm/°C	±50 ppm/°C	±25 ppm/°C	±10 ppm/°C	±5 ppm/°C
Tantalum Nitride (TaN)	Self Passivating Ta ₂ O ₅	5 to 270	From ±0.01%	From ±0.01%	Q	V	W	X	Y	Z
					Standard	Yes	---	---	---	---

◆ Substrate Materials

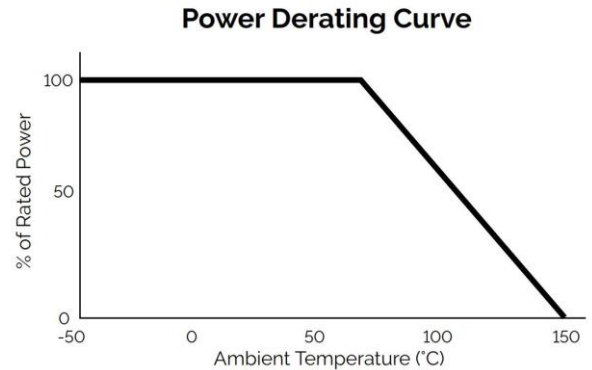
Material	Thickness	Surface Finish	Dielectric Constant (@ 1MHz)	Coefficient of Thermal Expansion (x 10 ⁶ /°C)	Thermal Conductivity (W/m ² *K)	Code
Alumina (Al ₂ O ₃)	0.005" - 0.010"	2μ" - 3μ"	9.9	7 (25°C to < 300°C)	26.9	35
Silicon (Si) (with 12kÅ SiO ₂)	0.005" - 0.010"	Chemical Polish	N/A (SiO ₂ K=1.38)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

Typical PPI commercial testing includes 100% visual inspection, 100% electrical testing and TCR sampling. Our parts meet or exceed additional MIL-PRF-55342 and MIL-STD-202 requirements.

Multi-Tap Resistor Networks

◆ 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



◆ 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.

◆ Packaging

ESD waffle packs are standard. Film rings and gel pack packaging may be available upon request.

