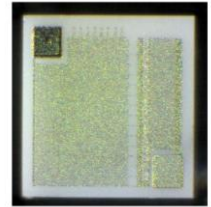
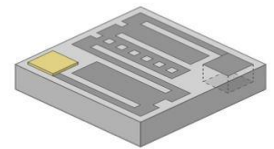


Back Contact Resistors

PR Series



30x30 220kΩ
Fine Line
Back Contact Resistor



- Wire-bondable Thin Film Resistors
- Built to the customer's specifications
- Operating frequencies from DC to 500 MHz
- Provides engineers with space saving option
- One wire bond is required to the top side of the chip, increasing reliability, with the bottom connection made by eutectic or conductive epoxy
- Custom dual configuration
- Can be used in Non-Magnetic Applications

◆ **Product Specifications**

Resistance Range	5Ω to 25MΩ
Resistive Material	Tantalum Nitride
Resistance Tolerance	±0.01% to ±20% value dependent

◆ **Part Numbering**

P R T 1 22 - 20×20× 10 W 10000 J Q E W

P = Passive Plus

Resistor Style

R = Standard (<500MHz)

Resistive Material

T = Tantalum Nitride

Number of Resistors

Substrate

Silicon (SiO₂)

Length and Width

See Charts on following pages

Thickness

10 mils standard
(5 mils standard for size 12x9)

Packaging

W = Waffle Pack (Standard)*

Power Handling

See Charts on next page

TCR

See Charts on next page

Resistance Tolerance

See Charts 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 = 1000Ω, 10001 = 10000Ω

Termination

See Charts on next page

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

The standard dimensional tolerance for length and width is ± 2 mils.
The standard dimensional tolerance for thickness is ± 1 mil.

Back Contact Resistors

◆ 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
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

◆ Resistance Tolerance Codes

Tolerance*	B	D	F	G	H	J	K	L	M	Q	S
Code	± 0.1%	± 0.5%	± 1%	± 2%	± 3%	± 5%	± 10%	± 15%	± 20%	± 0.05%	± 0.01%

* Limit of ± 50mΩs

◆ Terminations

Metallization		Code
Top Side	Bottom Side	
TaN/Pd/Au	Au	W

◆ Power Handling Codes

Watts	Code	Watts	Code
50 mW	C	250 mW	G
75 mW	D	350 mW	M
100 mW	E	400 mW	R
125 mW	I	500 mW	H
150 mW	F	750 mW	J
200 mW	O	1.0 W	K

Back Contact Resistors

◆ Power Handling & Standard Resistance Ranges by Material and Case Size

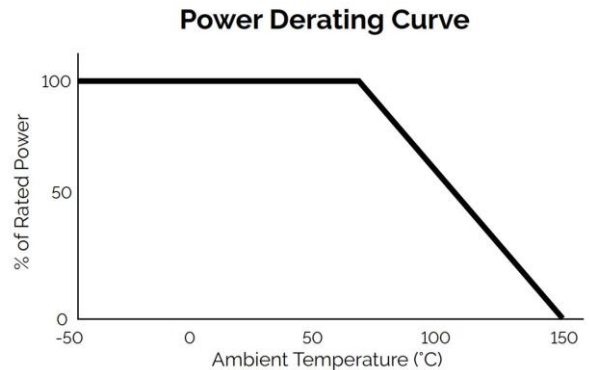
Power Handling		Resistance Range	
Case Size mils (inches)	Silicon (C-22)	Min (Ω)	Max (Ω) Silicon (C-22)
12 x 9 (0.012 x 0.009)	50 mW	1-3	150K
14 x 12 (0.014 x 0.012)	100 mW	1-3	200K
20 x 10 (0.020 x 0.010)	100 mW	1-3	250K
15 x 15 (0.015 x 0.015)	100 mW	1-2	500K
20 x 20 (0.020 x 0.020)	250 mW	1-2	750K
30 x 20 (0.030 x 0.020)	250 mW	1-2	1M
40 x 20 (0.040 x 0.020)	250 mW	1-2	1.5M
30 x 30 (0.030 x 0.030)	250 mW	1-2	2M
35 x 35 (0.035 x 0.035)	250 mW	1-2	3M
40 x 40 (0.040 x 0.040)	350 mW	1-2	5M
50 x 25 (0.050 x 0.025)	350 mW	1-2	3M
60 x 30 (0.060 x 0.030)	500 mW	1-2	6M
50 x 50 (0.050 x 0.050)	500 mW	1-2	7M
60 x 60 (0.060 x 0.060)	500 mW	1-2	15M
80 x 50 (0.080 x 0.050)	500 mW	1-2	20M
100 x 50 (0.100 x 0.050)	500 mW	1-2	25M
120 x 60 (0.120 x 0.060)	750 mW	1-2	30M
100 x 100 (0.100 x 0.100)	750 mW	1-2	35M

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.

Back Contact Resistors

◆ 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 may be available. Please contact sales@passiveplus.com.

◆ Packaging

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

