High Precision Resistor Arrays

PRA arrays can be used in most applications requiring a matched pair (or set) of resistor elements. The networks provide 1 ppm/°C TCR tracking, a ratio tolerance as tight as 0.01 % and outstanding stability. They are available in 1 mm, 1.35 mm and 1.82 mm pitch.

FEATURES

- High stability passivated nichrome resistive layer 0.02 % on ratio, 1000 h at Pn at 70 °C
- Tight TCR (10 ppm/°C) and TCR tracking (to 1 ppm/°C)
- Very low noise < 35 dB and voltage coefficient < 0.01 ppm/V
- Ratio tolerance to 0.01 % ($R \geq 200$ R)
- Pre-tinned terminations over nickel barrier
- Lead (Pb)-free available

Pb-free Available

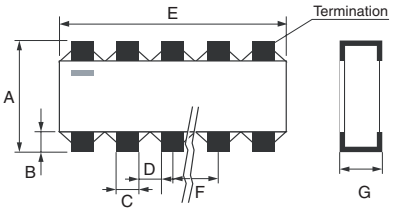
RoHS* COMPLIANT

TYPICAL PERFORMANCE

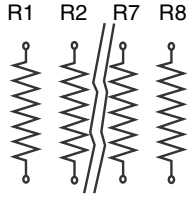
	ABS	TRACKING
TCR	10 ppm/°C	2 ppm/°C
	ABS	RATIO
TOL	0.1 %	0.05 %

DIMENSIONS

I: Independent resistors

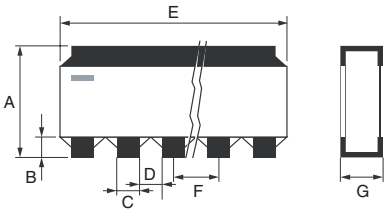


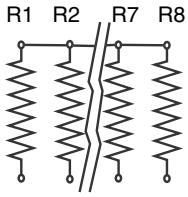
Electrical Diagram



Number of resistors: 2 to 8
R1 = R2 =.... R8

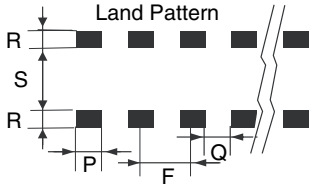
C: One common point N resistors





Number of resistors: 2 to 8
R1 = R2 =.... R8

Land Pattern



DIM.	PRA100		PRA 135		PRA 182	
	mm	mil	mm	mil	mm	mil
A	$1.6^{+0.2}_{-0.1}$	63	$1.85^{+0.2}_{-0.1}$	72	$3.0^{+0.2}_{-0.1}$	118
B	$0.4^{+0.2}_{-0.2}$	16	$0.4^{+0.2}_{-0.2}$	16	$0.4^{+0.2}_{-0.2}$	16
C	$0.65^{+0.15}_{-0.15}$	25.5	$1.05^{+0.15}_{-0.15}$	41	$1.3^{+0.35}_{-0.15}$	51
D	0.25	10	0.25	10	0.25	10
E[1]	E = (N × F) ± 0.2 mm			E = (N × F) ± 8 mil		
F	1	40	1.35	53.1	1.82	72
G	$0.38^{+0.2}_{-0}$	15	$0.38^{+0.2}_{-0}$	15	$0.38^{+0.2}_{-0}$	15
P	0.7	27.5	1.05	41.3	1.52	59.8
Q	0.3	12	0.3	12	0.3	12
R	1	40	1	40	1	40
S	0.6	23.5	0.8	31.5	1.8	70.8

[1] E depends on number of resistors

GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: PRA100I4-5K62BWBT28

P	R	A	1	0	0	I	4	-	5	K	6	2	B	W	B	T	2	8

GLOBAL MODEL	CONFIGURATION	NUMBER OF RESISTORS	VALUE	ABS. TOL.	RATIO TOL.	TERMINATION	PACKAGING	OPTION
PRA100 PRA135 PRA182	I: Independent C: Common	2 to 8	Decimal R or K	**B** = 0.1 % **D** = 0.5 %	**B** = 0.1 % **W** = 0.05 % **P** = 0.02 % **L** = 0.01 %	**B:** SnPb over nickel barrier **N:** SnAg over nickel barrier **G:** Gold over nickel barrier	**Blank** = Waffle Pack ***T** = Tape & Reel	Leave blank if no option

B: lead bearing version
N and **G**: Lead (Pb)-free/ RoHS version

* Tape and Reel only available for maximum 5 resistors in the network

For different ohmic values on a given network a specific part number is used:

CNW	1368
GLOBAL MODEL	REFERENCE

Historical Part Number example: PRA 100 I 4 5K62 0.1 % 0.05 % TR R0028

PRA100	I	4	5K62	0.1 %	0.05 %	TR	R0028
HISTORICAL MODEL	CONFIGURATION	NUMBER OF RESISTORS	OHMIC VALUE	ABS. TOL.	RATIO TOL.	PACKAGING	OPTION

* Pb containing terminations are not RoHS compliant, exemptions may apply

STANDARD ELECTRICAL SPECIFICATIONS			
TEST		**SPECIFICATIONS**	**CONDITION**
Resistance Range:	**PRA 100**	100 Ω to 200 kΩ	
	PRA 135	100 Ω to 300 kΩ	
	PRA 182	100 Ω to 1 MΩ	
Tolerance:	**Absolute**	± 0.5 % to ± 0.1 %	
	Ratio	0.1 %, 0.05 %, 0.02 %, 0.01 % ($R \geq 200$ R)	
TCR:	**Absolute**	± 10 ppm/°C	- 40 °C + 125 °C
	Ratio	2 ppm/°C (1 ppm/°C on request)	- 40 °C + 125 °C
Power Rating:	**PRA 100**	100 mW per resistor	at + 70 °C
	PRA 135	100 mW per resistor	at + 70 °C
	PRA 182	100 mW per resistor	at + 70 °C
Operating Temperature Range*		- 55 °C to + 155 °C	
Noise		≤ - 35 dB	
Voltage Coefficient		≤ 0.01 ppm/V	
Limiting Voltage:	**PRA 100**	35 V	
	PRA 135	75 V	
	PRA 182	100 V	

* For temperature up to 200 °C, please consult factory

MECHANICAL SPECIFICATIONS	
Substrate	Alumina
Technology	Thin Film
Film	Nickel chromium with mineral passivation
Terminations	**B type:** SnPb over nickel barrier
	N type: SnAg over nickel barrier
	G type: Gold over nickel barrier

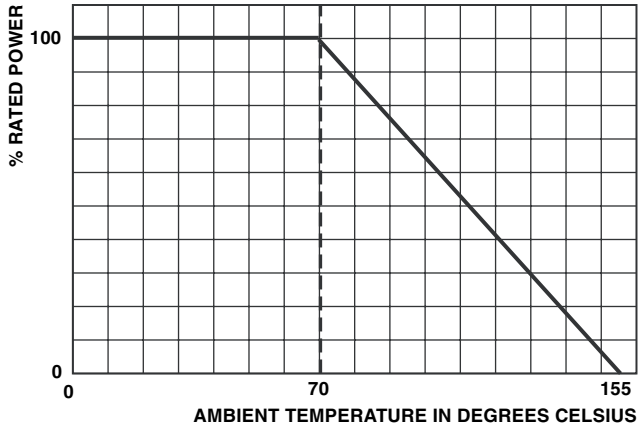
SPECIAL FEATURES

Resistance values can be different on a given network (*R* max./*R* min. as high as 300). Tooling charges might be required depending on the ohmic values in the same network. Please, consult VISHAY SFERNICE for ohmic values, tolerances and also temperature coefficient (e.g. ± 1 ppm/°C) outside the standard range.

PACKAGING

Several types of packaging are available: waffle-pack and tape and reel.

POWER RATING



MARKING

On the primary package, printed information includes VISHAY S.A. trademark series and model, schematic number of resistors, ohmic value, absolute tolerance, ratio tolerance, type of termination: B tinned over nickel barrier.

PERFORMANCE			
TESTS	**CONDITIONS CECC REQUIREMENTS**	**DRIFTS**	
		ABSOLUTE PER (Typical Values)	**RATIO**
Overload	2.5 Un/2 s	0.05 % Rn + 0.05 Ω	0.01 % Rn
Climatic Sequences	- 55 °C + 155 °C/5 moisture cycles	0.1 % Rn + 0.05 Ω	0.01 % Rn
Thermal Shock	- 55 °C + 155 °C/5 cycles 30'	0.05 % Rn + 0.05 Ω	0.01 % Rn
Load Life	1000 h/Pn at + 70 °C	0.1 % Rn + 0.05 Ω	0.02 % Rn
Resistance to Solder Heat	260 °C/10 s	0.05 % Rn + 0.05 Ω	0.01 % Rn
Moisture Resistance	0.01 Pn at + 40 °C 93 % RH	0.1 % Rn + 0.05 Ω	0.01 % Rn
High Temperature Storage	1000 h/no load at + 155 °C	0.1 % Rn + 0.05 Ω	0.02 % Rn

Rn: nominal resistance

Notice

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