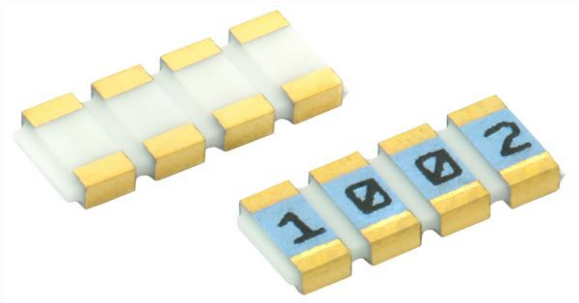
High Temperature (230 °C) High Precision Thin Film Wraparound Chip Resistor Arrays



PRAHT arrays can be used in most applications requiring a matched pair (or set) of resistor elements at very high temperature up to 230 °C. The networks provide 2 ppm/°C TCR tracking, a ratio tolerance as tight as 0.05 % and outstanding stability. They are available in 1 mm, 1.35 mm, and 1.82 mm pitch.

FEATURES

- Tight TCR (10 ppm/°C) and TCR tracking (to 2 ppm/°C)
- Very low noise < - 35 dB and voltage coefficient < 0.01 ppm/V
- Ratio tolerance to 0.05 %
- Gold terminations for temperature up to 230 °C
- High temperature (230 °C)
- SnAg terminations for temperature up to 200 °C
- SMD wraparound chip resistor array
- Thin film technology
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

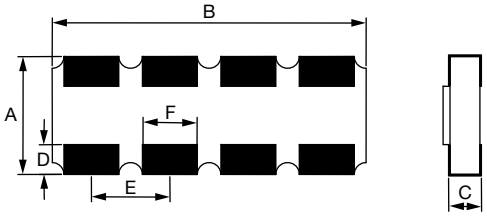
Pb-free
RoHS COMPLIANT
GREEN (5-2008) Available

TYPICAL PERFORMANCE

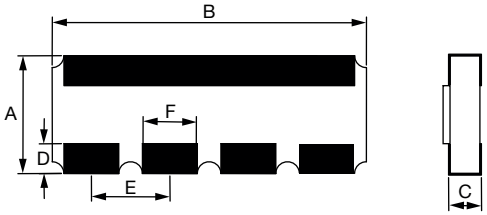
	ABSOLUTE	TRACKING
TCR	10 ppm/°C	2 ppm/°C
	ABSOLUTE	RATIO
TOL.	0.5 %	0.05 %

DIMENSIONS

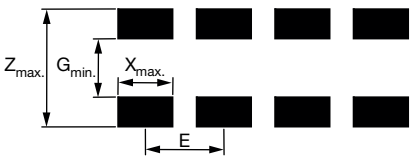
Independent resistors



One common point



Suggested land pattern (according to IPC-7351A)



DIM.	PRAHT 100		PRAHT 135		PRAHT 182	
	mm	mil	mm	mil	mm	mil
A	1.52 ± 0.152	60 ± 6	1.91 ± 0.152	75 ± 6	3.06 ± 0.152	120 ± 6
B	B = N x E (± 0.2 mm) B = N x E (± 8 mil)					
C	0.5 ± 0.127	20 ± 5	0.5 ± 0.127	20 ± 5	0.5 ± 0.127	20 ± 5
D	0.38 ± 0.13	15 ± 5	0.38 ± 0.13	15 ± 5	0.40 ± 0.13	16 ± 5
E	1	40	1.35	53	1.825	72
F	0.7 ± 0.1	27.6 ± 4	1.05 ± 0.1	41.4 ± 4	1.525 ± 0.1	60 ± 4
$G_{min.}$	0.49	19.3	0.88	34.5	1.99	78.3
$X_{max.}$	0.66	26	1.01	39.8	1.49	58.7
$Z_{max.}$	2.57	101.2	2.96	116.5	4.11	161.8

GLOBAL PART NUMBER INFORMATION (1)

New Global Part Numbering: PRAHT100I4-1K00BWGT

P	R	A	H	T	1	0	0	I	4	-	1	K	0	0	B	W	G	T

GLOBAL MODEL	CONFIG.	NUMBERS OF RESISTORS	VALUE (2)	ABS. TOL.	RATIO TOL.	TERMINATION (3)	PACKAGING
PRAHT 100 **PRAHT 135** **PRAHT 182**	**I**: Independent **C**: Common	**4**	Decimal R or K	**D** = 0.5 % **F** = 1 % **B** = 0.1 %	**B** = 0.1 % **W** = 0.05 %	**N**: SnAg over nickel barrier **G**: Gold over nickel barrier	**Blank** = Waffle pack **T** = Tape and reel

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

Notes

(1) Part number can only have 18 digits. Depending on information needed a compromise has to be found. Consult Vishay.

(2) When the last digit(s) of the ohmic value is (are) 0, it (they) can be omitted.
E.g.: PRAHT100I4-2K20BWGT → can be ordered under PRAHT100I4-2K2BWGT
PRAHT100I4-1K00BWGT → can be ordered under PRAHT100I4-1KBWGT

(3) N termination for temperature up to 200 °C.
G termination for temperature up to 230 °C.

STANDARD ELECTRICAL SPECIFICATIONS

MODEL	SIZE	RESISTANCE RANGE Ω	POWER RATING PER RESISTOR (1) W	ABSOLUTE TOLERANCE ± %	RATIO TOLERANCE %	ABSOLUTE TCR (2) ± ppm/°C	RATIO TCR (2) ± ppm/°C
PRAHT 100	100	10 to 250K	0.010	0.1, 0.5, 1	0.05, 0.1	15	2
PRAHT 135	135	10 to 500K	0.0125	0.1, 0.5, 1	0.05, 0.1	15	2
PRAHT 182	182	10 to 2M	0.020	0.1, 0.5, 1	0.05, 0.1	15	2

Notes

(1) At + 215 °C

(2) At - 40 °C to + 215 °C

CLIMATIC SPECIFICATIONS

Operating temperature range	- 55 °C to + 215 °C
Storage temperature range	- 55 °C to + 230 °C

PERFORMANCES

TEST		SPECIFICATIONS
Noise		≤ - 35 dB
Voltage coefficient		≤ 0.01 ppm/V
Limiting voltage	PRAHT 100	50 V
	PRAHT 135	100 V
	PRAHT 182	150 V

MECHANICAL SPECIFICATIONS

Substrate	Alumina
Technology	Thin Film
Film	Nickel chromium with mineral passivation
Terminations (1)	N type: SnAg over nickel barrier
	G type: Gold over nickel barrier

Note

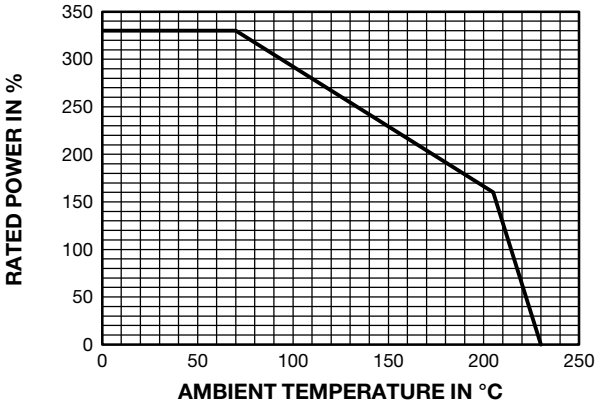
(1) N terminations for temperatures up to 200°C.
G terminations for temepratures up to 230°C.

PACKAGING

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

		NUMBER OF PIECES PER PACKAGE		
SIZE	MOQ	WAFFLE PACK MAX. QUANTITY PER BOX	TAPE AND REEL	
PRAHT 100 x 4	100	60	100	4000
PRAHT 135 x 4	100	60	100	4000
PRAHT 182 x 4	100	50	100	4000

DERATING



PACKAGING RULES

Waffle Pack

Can be filled up to maximum quantity indicated in the table here above, taking into account the minimum order quantity. When quantity ordered exceeds maximum quantity of a single waffle pack, the waffle packs are stacked up on the top of each other and closed by one single cover.

To get "not stacked up" waffle pack in case of ordered quantity > maximum number of pieces per package: Please consult Vishay Sfernice for specific ordering code.

Tape and Reel

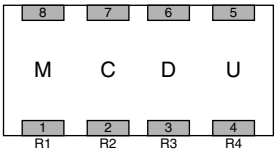
Can be filled up to maximum quantity indicated in the table here above, taking into account the minimum order quantity. When quantity ordered is between the MOQ and the maximum reel capacity, only one reel is provided.

When several reels are needed for ordered quantity within MOQ and maximum reel capacity: Please consult Vishay Sfernice for specific ordering code.

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.

Marking on parts:



E.g.: Ohmic value 13K:
Coded 1302: M = 1, C = 3, D = 0, U = 2

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 215 °C	0.5 % Rn	0.25 % Rn
	8000 h/Pn at 215 °C	0.7 % Rn	0.4 % 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

Note

- Rn: Nominal resistance

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