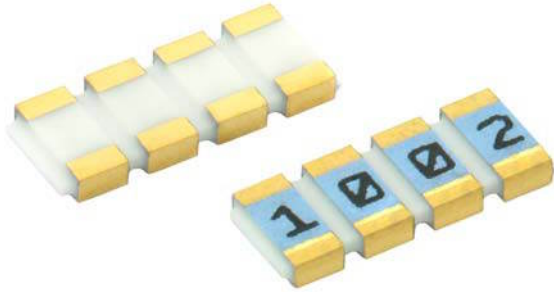


High Temperature (230 °C) High Precision Thin Film Wraparound Chip Resistor Arrays



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)
- 2 to 4 resistors (same or different values)
- 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
- Very low noise < - 35 dB and voltage coefficient < 0.01 ppm/V
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

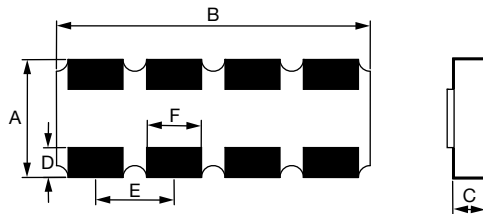


TYPICAL PERFORMANCE

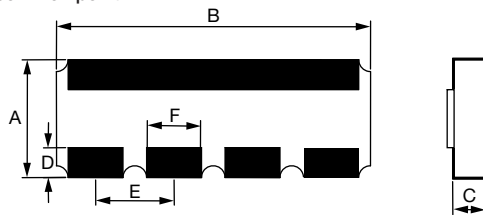
| | ABSOLUTE | TRACKING |
|------|-----------|----------|
| TCR | 10 ppm/°C | 2 ppm/°C |
| | ABSOLUTE | RATIO |
| TOL. | 0.5 % | 0.05 % |

DIMENSIONS

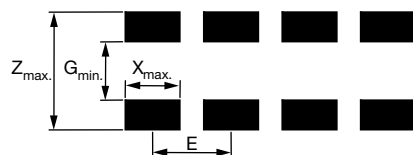
Independent resistors



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 PRAHT 100 PRAHT 135 PRAHT 182 | CONFIG. I: Independent C: Common | NUMBERS OF RESISTORS 2 to 4 | VALUE ⁽²⁾ Decimal R or K | ABS. TOL. D = 0.5 % F = 1 % B = 0.1 % | RATIO TOL. B = 0.1 % W = 0.05 % | TERMINATION ⁽³⁾ N: SnAg over nickel barrier G: Gold over nickel barrier | PACKAGING W = Waffle pack, 100 min., 1 mult Tape and Reel: T: 100 min., 1 mult TA: 100 min., 100 mult TB: 250 min., 250 mult TC: 500 min., 500 mult TD: 1000 min., 1000 mult TE: 2500 min., 2500 mult TF: Full tape |
|--|--|---------------------------------------|---|---|---|--|---|

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. A codification can be used to identify case size + configuration and number of resistors. See table below.
E.g. PRAHT100I4-4K75BWGTA (Part number has more than 18 digits); PRAHT100I4 must be replaced by PRAHT17 = PRAHT17-4K75BWGTA
- (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.

| CODIFICATION OF SIZE + CONFIGURATION + NUMBER OF RESISTORS | | | | | | | | | |
|--|------------|---------|------------|---------|------------|---------|------------|---------|------------|
| CODE 18 | CODE 40 | CODE 18 | CODE 40 | CODE 18 | CODE 40 | CODE 18 | CODE 40 | CODE 18 | CODE 40 |
| 1 | PRAHT073I2 | 15 | PRAHT100I2 | 29 | PRAHT182I2 | 43 | PRAHT074C2 | 57 | PRAHT135C2 |
| 2 | PRAHT073I3 | 16 | PRAHT100I3 | 30 | PRAHT182I3 | 44 | PRAHT074C3 | 58 | PRAHT135C3 |
| 3 | PRAHT073I4 | 17 | PRAHT100I4 | 31 | PRAHT182I4 | 45 | PRAHT074C4 | 59 | PRAHT135C4 |
| 4 | PRAHT073I5 | 18 | PRAHT100I5 | 32 | PRAHT182I5 | 46 | PRAHT074C5 | 60 | PRAHT135C5 |
| 5 | PRAHT073I6 | 19 | PRAHT100I6 | 33 | PRAHT182I6 | 47 | PRAHT074C6 | 61 | PRAHT135C6 |
| 6 | PRAHT073I7 | 20 | PRAHT100I7 | 34 | PRAHT182I7 | 48 | PRAHT074C7 | 62 | PRAHT135C7 |
| 7 | PRAHT073I8 | 21 | PRAHT100I8 | 35 | PRAHT182I8 | 49 | PRAHT074C8 | 63 | PRAHT135C8 |
| 8 | PRAHT074I2 | 22 | PRAHT135I2 | 36 | PRAHT073C2 | 50 | PRAHT100C2 | 64 | PRAHT182C2 |
| 9 | PRAHT074I3 | 23 | PRAHT135I3 | 37 | PRAHT073C3 | 51 | PRAHT100C3 | 65 | PRAHT182C3 |
| 10 | PRAHT074I4 | 24 | PRAHT135I4 | 38 | PRAHT073C4 | 52 | PRAHT100C4 | 66 | PRAHT182C4 |
| 11 | PRAHT074I5 | 25 | PRAHT135I5 | 39 | PRAHT073C5 | 53 | PRAHT100C5 | 67 | PRAHT182C5 |
| 12 | PRAHT074I6 | 26 | PRAHT135I6 | 40 | PRAHT073C6 | 54 | PRAHT100C6 | 68 | PRAHT182C6 |
| 13 | PRAHT074I7 | 27 | PRAHT135I7 | 41 | PRAHT073C7 | 55 | PRAHT100C7 | 69 | PRAHT182C7 |
| 14 | PRAHT074I8 | 28 | PRAHT135I8 | 42 | PRAHT073C8 | 56 | PRAHT100C8 | 70 | PRAHT182C8 |

| STANDARD ELECTRICAL SPECIFICATIONS | | | | | | | |
|------------------------------------|------|-----------------------|---|---------------------------|----------------------|---|--------------------------------------|
| MODEL | SIZE | RESISTANCE RANGE Ω | POWER RATING PER RESISTOR ⁽⁴⁾ W | ABSOLUTE TOLERANCE ± % | RATIO TOLERANCE % | ABSOLUTE TCR ⁽⁵⁾ ± ppm/°C | RATIO TCR ⁽⁵⁾ ± 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

- (4) At + 215 °C
- (5) 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 temperatures up to 230°C.

PACKAGING

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

| SIZE | MOQ | NUMBER OF PIECES PER PACKAGE | | |
|------------|-----|-----------------------------------|---------------|------|
| | | WAFFLE PACK MAX. QUANTITY PER BOX | TAPE AND REEL | |
| | | | MIN. | MAX. |
| PRA100 x 2 | 100 | 100 | 100 | 4000 |
| PRA100 x 3 | | 140 | | |
| PRA100 x 4 | | 60 | | |
| PRA135 x 2 | | 140 | 100 | 4000 |
| PRA135 x 3 | | 60 | | |
| PRA135 x 4 | | 60 | | |
| PRA182 x 2 | | 60 | 100 | 4000 |
| PRA182 x 2 | | 60 | | |
| PRA182 x 2 | | 50 | | |

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.

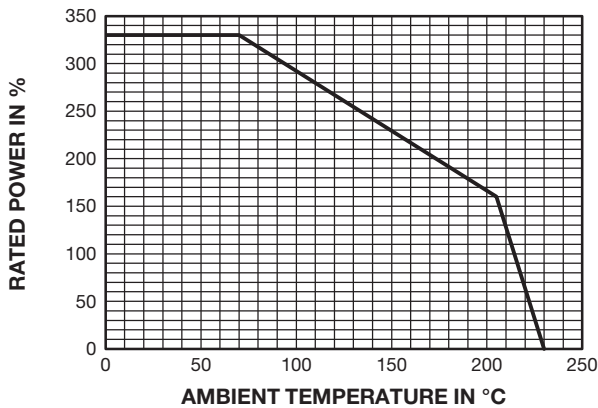
To get “not stacked up” waffle pack in case of ordered quantity > maximum number of pieces per package: Please consult Vishay Sfernice for specific ordering code.

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.

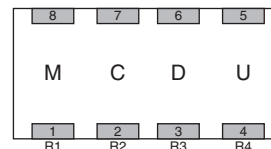
DERATING



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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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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