

Molded, 50 mil Pitch, Dual-In-Line Thin Film Divider, Surface Mount Resistor Network



Vishay Dale Thin Film ORN series Dividers provide optimum ratio precision, small size and exceptional stability for most applications. They offer a wide ratio range that is listed in the selection guide and are available for immediate delivery. The tight ratio tolerance offered on the standard ratios will provide exceptional performance throughout life.

SCHEMATIC



FEATURES

- 0.068" (1.73 mm) maximum seated height
- Rugged molded case construction with no internal solder (JEDEC MS-012 variation AA package)
- Low TCR tracking ± 5 ppm/ $^{\circ}\text{C}$
- Compliant to RoHS Directive 2002/95/EC
- Halogen-free according to IEC 61249-2-21 definition



RoHS*
COMPLIANT
HALOGEN
FREE

Note

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

TYPICAL PERFORMANCE

| | ABSOLUTE | TRACKING |
|------|----------|----------|
| TCR | 25 | 5 |
| | ABSOLUTE | RATIO |
| TOL. | 0.1 | 0.05 |

STANDARD RESISTANCE OFFERING (R_1/R_2)

| RATIO | R_1 | R_2 |
|-------|-------|-------|
| 100:1 | 100K | 1K |
| 50:1 | 50K | 1K |
| 25:1 | 25K | 1K |
| 20:1 | 20K | 1K |
| 10:1 | 10K | 1K |
| 5:1 | 10K | 2K |
| 2:1 | 10K | 5K |

STANDARD ELECTRICAL SPECIFICATIONS

| TEST | SPECIFICATIONS | CONDITIONS |
|--------------------------------|---|---|
| Material | Passivated nichrome | - |
| Pin/Lead Number | 8 | - |
| Resistance Range | 1000 Ω to 100 k Ω per resistor | - |
| TCR: Absolute | ± 25 ppm/ $^{\circ}\text{C}$ | - 55 $^{\circ}\text{C}$ to + 125 $^{\circ}\text{C}$ |
| TCR: Tracking | ± 5 ppm/ $^{\circ}\text{C}$ | - 55 $^{\circ}\text{C}$ to + 125 $^{\circ}\text{C}$ |
| Tolerance: Absolute | ± 0.1 % | + 25 $^{\circ}\text{C}$ |
| Tolerance: Ratio | ± 0.05 % | + 25 $^{\circ}\text{C}$ |
| Power Rating: Resistor | 100 mW | Maximum at + 70 $^{\circ}\text{C}$ |
| Power Rating: Package | 400 mW | Maximum at + 70 $^{\circ}\text{C}$ |
| Stability: Absolute | $\Delta R \pm 0.05$ % | 2000 h at + 70 $^{\circ}\text{C}$ |
| Stability: Ratio | $\Delta R \pm 0.015$ % | 2000 h at + 70 $^{\circ}\text{C}$ |
| Voltage Coefficient | < 0.1 ppm/V | - |
| Working Voltage | 100 V max. not to exceed $\sqrt{P \times R}$ | - |
| Operating Temperature Range | - 55 $^{\circ}\text{C}$ to + 125 $^{\circ}\text{C}$ | - |
| Storage Temperature Range | - 55 $^{\circ}\text{C}$ to + 150 $^{\circ}\text{C}$ | - |
| Noise | < - 30 dB | - |
| Thermal EMF | 0.08 $\mu\text{V}/^{\circ}\text{C}$ | - |
| Shelf Life Stability: Absolute | $\Delta R \pm 0.01$ % | 1 year at + 25 $^{\circ}\text{C}$ |
| Shelf Life Stability: Ratio | $\Delta R \pm 0.002$ % | 1 year at + 25 $^{\circ}\text{C}$ |

Note

- Tantalum nitride film is custom, consult factory

| DIMENSIONS AND IMPRINTING in inches and millimeters | | | |
|---|------------------|----------------|--------------------|
| | DIMENSION | INCHES | MILLIMETERS |
| | A | 0.157 | 3.99 |
| | B | 0.0165 ± 0.005 | 0.4 ± 0.06 |
| | C | 0.050 | 1.27 |
| | D | 0.195 max. | 4.93 |
| | E | 0.008 ± 0.001 | 0.20 ± 0.03 |
| | F | 0.028 ± 0.001 | 0.71 ± 0.02 |
| | G | 0.239 ± 0.005 | 6.07 ± 0.13 |
| | H | 0.068 max. | 1.73 |
| | I | 0.008 ± 0.002 | 0.22 ± 0.06 |
| Ø | 2° to 6° | 2° to 6° | |

Note

- Marking - Vishay symbol, part number from ordering information

| MECHANICAL SPECIFICATIONS | |
|------------------------------------|---------------------|
| Resistive Element | Passivated nichrome |
| Substrate Material | Silicon |
| Body | Molded epoxy |
| Terminals | Copper alloy |
| Lead (Pb)-free Option | 100 % matte tin |
| Tin Lead Option | Sn90 |
| Tin Lead and Lead (Pb)-free Finish | Plated |



| GLOBAL PART NUMBER INFORMATION | | | | | | | | | | | | |
|---|---|----------------------|----------------------|--------------------------------------|---|---|---|---|---|---|---|---|
| New Global Part Numbering: ORNA5-1UF | | | | | | | | | | | | |
| | O | R | N | A | | 5 | - | 1 | | U | F | |
| | O | R | N | T | A | 1 | 0 | 0 | - | 1 | U | F |
| GLOBAL MODEL (4 or 5 digits) | RESISTANCE (3, 4 or 5 digits) | | | | PACKAGING | | | | | | | |
| ORNA (Tin/lead) | 2-1 5-1 10-1 20-1 25-1 50-1 100-1 | | | | TAPE AND REEL T0 = 100 min., 100 mult T1 = 1000 min., 1000 mult T3 = 300 min., 300 mult T5 = 500 min., 500 mult TF = Full reel 3000 TS = 100 min., 1 mult UF = TUBED | | | | | | | |
| ORNTA (Lead (Pb)-free) (e3) | | | | | | | | | | | | |
| Historical Part Number example: ORNA2-1 (for reference purposes only) | | | | | | | | | | | | |
| ORNA2-1 | 2:1 | 10K | 5K | 2 | | | | | | | | |
| PART NUMBER | DIVIDER NETWORK | R ₁ VALUE | R ₂ VALUE | R ₁ /R ₂ RATIO | | | | | | | | |



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