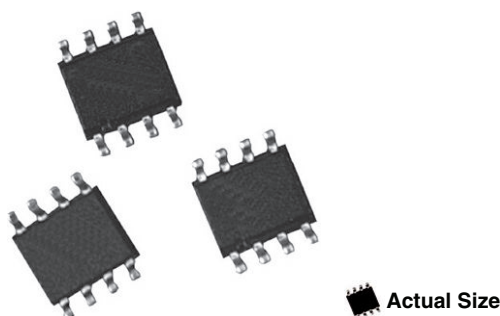
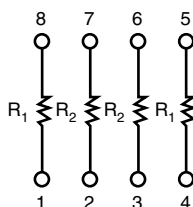


## Molded, 50 mil Pitch, Dual-In-Line Thin Film Divider, Surface Mount Resistor Network



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  $\pm 5$  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 $\Omega$ to 100 k $\Omega$ per resistor        | -                                                   |
| TCR: Absolute                  | $\pm 25$ ppm/ $^{\circ}\text{C}$                    | - 55 $^{\circ}\text{C}$ to + 125 $^{\circ}\text{C}$ |
| TCR: Tracking                  | $\pm 5$ ppm/ $^{\circ}\text{C}$                     | - 55 $^{\circ}\text{C}$ to + 125 $^{\circ}\text{C}$ |
| Tolerance: Absolute            | $\pm 0.1$ %                                         | + 25 $^{\circ}\text{C}$                             |
| Tolerance: Ratio               | $\pm 0.05$ %                                        | + 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

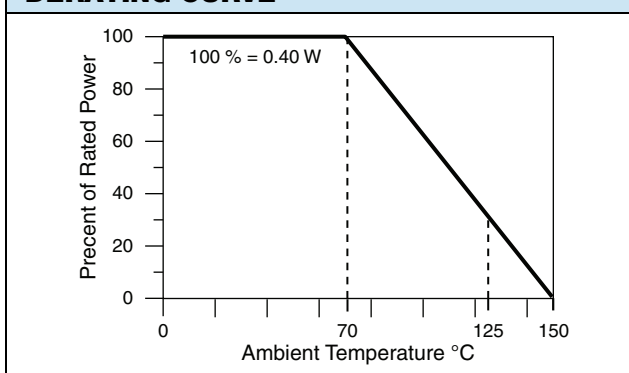
|  | DIMENSION | INCHES         | MILLIMETERS |
|--|-----------|----------------|-------------|
|  | A         | 0.157          | 3.99        |
|  | B         | 0.0165 ± 0.005 | 0.4 ± 0.06  |
|  | C         | 0.050          | 1.27        |
|  | D         | 0.195 max.     | 4.93        |
|  | E         | 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              |

**DERATING CURVE**

**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<br>(4 or 5 digits)          |
|------------------------------------------|
| <b>ORNA</b><br>(Tin/lead)                |
| <b>ORNTA</b><br>(Lead (Pb)-free)<br>(e3) |

| RESISTANCE<br>(3, 4 or 5 digits) |
|----------------------------------|
| 2-1                              |
| 5-1                              |
| 10-1                             |
| 20-1                             |
| 25-1                             |
| 50-1                             |
| 100-1                            |

| PACKAGING                        |
|----------------------------------|
| TAPE AND REEL                    |
| <b>T0</b> = 100 min., 100 mult   |
| <b>T1</b> = 1000 min., 1000 mult |
| <b>T3</b> = 300 min., 300 mult   |
| <b>T5</b> = 500 min., 500 mult   |
| <b>TF</b> = Full reel 3000       |
| <b>TS</b> = 100 min., 1 mult     |
| <b>UF</b> = TUBED                |

Historical Part Number example: ORNA2-1 (for reference purposes only)

|             |                 |                      |                      |                                      |
|-------------|-----------------|----------------------|----------------------|--------------------------------------|
| ORNA2-1     | 2:1             | 10K                  | 5K                   | 2                                    |
| PART NUMBER | DIVIDER NETWORK | R <sub>1</sub> VALUE | R <sub>2</sub> VALUE | R <sub>1</sub> /R <sub>2</sub> RATIO |



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**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

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