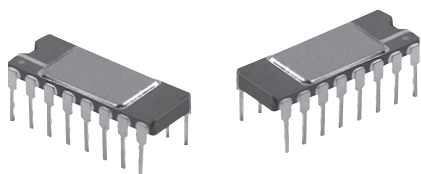


Hermetic, Dual-In-Line Thin Film Resistor, Through Hole Network



Designed to meet or exceed MIL-PRF-83401 characteristic "C"

LINKS TO ADDITIONAL RESOURCES



Product Page

The most advanced thin film technology is put to work in the manufacture of exceptionally stable, precision thin film resistor networks in a variety of popular hermetic-type packages. These networks are based on the utilization of a resistive film possessing outstanding stability throughout board assembly and equipment life.

Manufacturing is performed under rigid process control by a team of specialists having many years experience in the design, fabrication and automatic laser adjustment of several hundred different precision thin film resistor networks. Circuits are designed for specific customer requirements and manufactured according to highly standardized procedures. Testing is conducted in one of the most completely equipped laboratories in the industry.



ATTENTION!
Observe Precautions for
Handling Electrostatic Sensitive Devices!

FEATURES

- True hermetic construction
- Standard 8 pins, 14 pins, 16 pins, 18 pins, 20 pins packages
- Chip and wire construction
- Exceptional stability over time and temperature (500 ppm at +70 °C at 2000 h)
- Ideal for military / aerospace applications
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Note

* This datasheet provides information about parts that are RoHS-compliant and / or parts that are non RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details



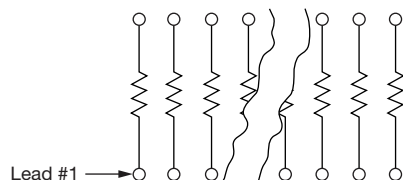
RoHS*
Available
**HALOGEN
FREE**

TYPICAL PERFORMANCE

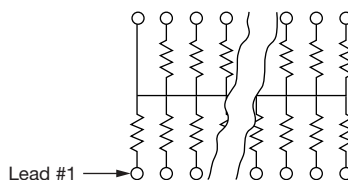
TCR	10	
	2	
TOL.	0.02	0.01

SCHEMATICS

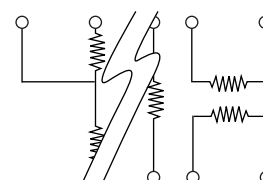
A Schematic



B Schematic



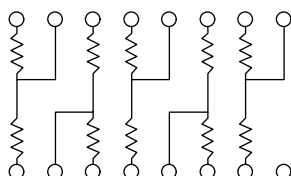
Custom



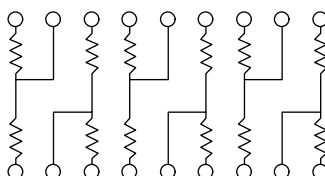
Custom schematics available.
Please contact factory.

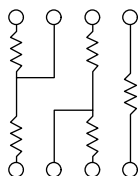
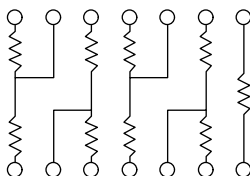
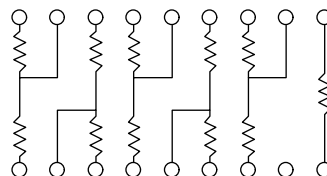
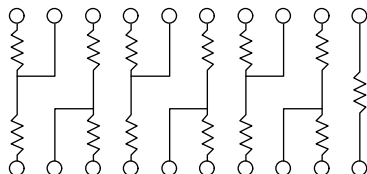
C Schematic

16 Pins



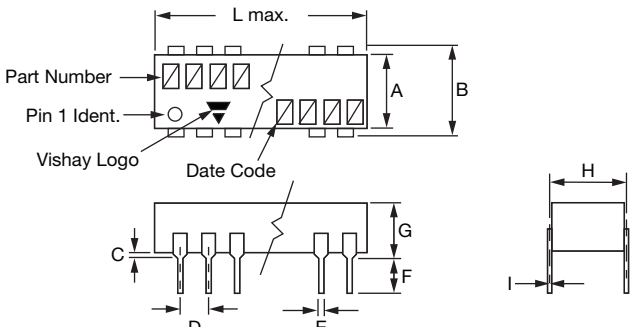
18 Pins



V Schematic
8 Pins

14 Pins

18 Pins

20 Pins


STANDARD ELECTRICAL SPECIFICATIONS		
TEST	SPECIFICATIONS	CONDITIONS
Material	Passivated nichrome standard Tantalum nitride available for custom versions	-
Pin/Lead Number	8 to 20	-
Resistance Range	<u>Standard</u> 50 Ω to 500 k Ω per resistor (isolated) 50 Ω to 250 k Ω per resistor (bussed or either of the dividers) <u>Custom</u> Passivated nichrome: 50 Ω to 1500 k Ω (total) Tantalum nitride: 50 Ω to 300 k Ω (total)	-
TCR: Absolute	± 10 ppm/ $^{\circ}\text{C}$ (Passivated nichrome - standard and custom) ± 25 ppm/ $^{\circ}\text{C}$ (Tantalum nitride - custom)	-55 $^{\circ}\text{C}$ to +125 $^{\circ}\text{C}$
TCR: Tracking	± 2 ppm/ $^{\circ}\text{C}$ (Passivated nichrome - standard and custom) ± 5 ppm/ $^{\circ}\text{C}$ (Tantalum nitride - custom)	-55 $^{\circ}\text{C}$ to +125 $^{\circ}\text{C}$
Tolerance: Absolute	± 0.02 % to ± 1.0 %	+25 $^{\circ}\text{C}$
Tolerance: Ratio	± 0.01 % to ± 0.5 %	+25 $^{\circ}\text{C}$
Power Rating: Resistor	100 mW (per element (typical))	+25 $^{\circ}\text{C}$
Power Rating: Package	-	-
Stability: Absolute	500 ppm	2000 h at +70 $^{\circ}\text{C}$
Stability: Ratio	150 ppm	2000 h at +70 $^{\circ}\text{C}$
Voltage Coefficient	< 0.1 ppm/V	-
Working Voltage	100 V	-
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	< 0.10 $\mu\text{V}/^{\circ}\text{C}$	-
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 $^{\circ}\text{C}$

DIMENSIONS AND IMPRINTING in inches and millimeters

	DIMENSION	INCHES	MILLIMETERS
	A	0.295	7.49
	B	0.310 ± 0.010	7.88 ± 0.25
	C	0.035 ± 0.010	0.89 ± 0.25
	D	0.100 non-accum.	2.54
	E	0.018 ± 0.002	0.46 ± 0.05
	F	0.130 typical	3.30
	G	0.130 max.	3.30
	H	0.300 typical	7.62
	I	0.010 typical	0.25
	L (8 pins)	0.528	13.41
	L (14 pins)	0.710	18.03
	L (16 pins)	0.810	20.57
	L (18 pins)	0.910	23.11
	L (20 pins)	1.010	25.65

MECHANICAL SPECIFICATIONS

Resistive Element	Passivated nichrome or tantalum nitride (custom only)
Substrate Material	Alumina
Body	Ceramic
Terminals	Copper alloy
Tin / Lead Option	Sn63
Lead (Pb)-Free Option	Sn96.5, Ag3.0, Cu0.5
Tin/Lead and Lead (Pb)-Free Finish	Hot solder dip

ORDERING INFORMATION CHECK LIST

Special requirements should be identified in advance, but as a minimum, you should have the following information ready.

ELECTRICAL	MECHANICAL
- Resistors, by value and tolerance - Reference resistor(s) and matching of which resistors to which reference resistors - Resistance by ratio - Absolute temperature coefficient of resistivity - Temperature tracking of subordinate resistors to reference resistor(s) - Maximum operating voltage - Resistor power ratings - Operating temperature range	- Resistor film - Special marking concerns - Schematic pin out of package - Lead finish. Standard leads are not soldered
For additional assistance refer to Vishay Dale Thin Film's guide to understanding Thin Film precision. Resistor networks or application engineering. All standard products may be ordered directly from Vishay Dale Thin Film.	



GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: HD16A1002AUF

H	D	1	6	A	1	0	0	2	A	U	F
H	D	0	8	B	1	0	0	3	Z	U	F
H	D	2	0	V	0	0	0	0	F	U	F

GLOBAL MODEL	PIN COUNT	SCHEMATIC	RESISTANCE	TOLERANCE AND RATIO TOLERANCE		PACKAGING
HD	08 14 16 18 20	A = isolated equal resistors B = bussed equal resistors C = voltage divider V = voltage divider with reference resistor	The first 3 digits are significant figures and the last digit specifies the number of zeros to follow. R designates the decimal point. Example: 1002 = 10 kΩ 1003 = 100 kΩ 4991 = 4.99 kΩ 50R0 = 50 Ω	Abs. Tol.	Ratio	UF = tubed
				A = ± 0.1 % ⁽¹⁾ B = ± 0.1 % C = ± 0.25 % D = ± 0.5 % F = ± 1 % Q = ± 0.05 % ⁽²⁾ Z = ± 0.1 % ⁽²⁾	± 0.05 % ± 0.1 % ± 0.1 % ± 0.1 % ± 0.5 % ± 0.01 % ± 0.025 %	

Historical Part Number Example: HD16A1002A (for reference purposes only)

HD	16	A	1002	A
SERIES	PIN COUNT	SCHEMATIC	RESISTANCE	TOLERANCE AND RATIO TOLERANCE

Notes

- ⁽¹⁾ Ratio tolerance available 250 Ω and up
⁽²⁾ Tol. available 1K and up



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