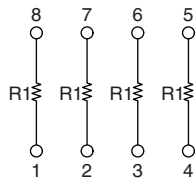
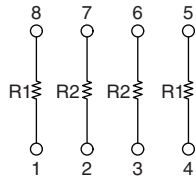


Molded, 50 mil Pitch, Dual-In-Line Thin Film Resistor, Precision Automotive, AEC-Q200 Qualified, Networks



The AORN series features a narrow body (0.150") small outline SMT package. The network is constructed with a tantalum nitride resistor film on a high purity alumina substrate for improved ESD and moisture protection.

SCHEMATICS



Note

- Consult Factory for additional divider ratios and resistance values.

FEATURES

- Moisture resistant tantalum nitride resistive film (MIL STD 202, method 106)
- Standard 8 pin count (0.150" narrow body) JEDEC MS-012
- Rugged molded case construction
- Excellent long term ratio stability ($\Delta R \pm 0.015\%$)
- Low TCR tracking ± 5 ppm/ $^{\circ}\text{C}$
- Passes Sulfur Resistance Test per ASTM B 809
- 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.

TYPICAL APPLICATIONS

- Voltage divider circuits
- Engine control units
- Signal conditioning
- Feedback circuits

TYPICAL PERFORMANCE

	ABSOLUTE	TRACKING
TCR	25	5
	ABSOLUTE	RATIO
TOL.	0.10	0.05

STANDARD DIVIDER VALUES

RATIO R_1/R_2	R_1	R_2
100:1	100 k Ω	1 k Ω
50:1	50 k Ω	1 k Ω
25:1	25 k Ω	1 k Ω
20:1	20 k Ω	1 k Ω
10:1	10 k Ω	1 k Ω
5:1	10 k Ω	2 k Ω
2:1	10 k Ω	5 k Ω
1:1	100 k Ω	
	100 k Ω	
	49.9 k Ω	
	24.9 k Ω	
	20.0 k Ω	
	10.0 k Ω	
	4.99 k Ω	
	2.0 k Ω	
	1.0 k Ω	

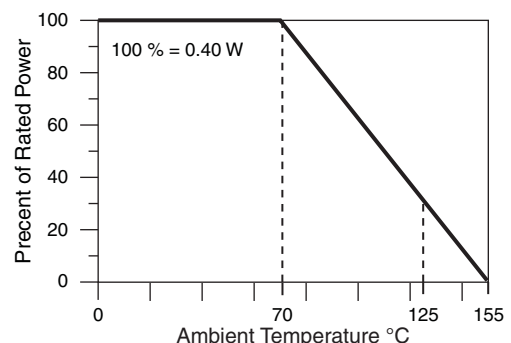
STANDARD ELECTRICAL SPECIFICATIONS		
TEST	SPECIFICATIONS	CONDITIONS
Material	Tantalum nitride (Ta2N)	-
Pin/Lead Number	8	-
Resistance Range	1 k Ω to 100 k Ω per resistor	-
TCR: Absolute	± 25 ppm/ $^{\circ}$ C (standard)	-55 $^{\circ}$ C to +155 $^{\circ}$ C
TCR: Tracking	± 5 ppm/ $^{\circ}$ C (typical)	-55 $^{\circ}$ C to +155 $^{\circ}$ C
Tolerance: Absolute	± 0.10 % to ± 1 %	At +25 $^{\circ}$ C temperature
Tolerance: Ratio	± 0.05 % to ± 0.1 %	At +25 $^{\circ}$ C temperature
Power Rating: Resistor	100 mW	Maximum at +70 $^{\circ}$ C
Power Rating: Package	400 mW	Maximum at +70 $^{\circ}$ C
Stability: Absolute	$\Delta R \pm 0.05$ %	1000 h at +155 $^{\circ}$ C
Stability: Ratio	$\Delta R \pm 0.015$ %	1000 h at +155 $^{\circ}$ C
Voltage Coefficient	< 0.1 ppm/V	-
Working Voltage	100 V max. not to exceed $\sqrt{P \times R}$	-
Operating Temperature Range	-55 $^{\circ}$ C to +155 $^{\circ}$ C	-
Storage Temperature Range	-55 $^{\circ}$ C to +155 $^{\circ}$ C	-
Noise	≤ -30 dB	-
Thermal EMF	0.08 μ V/ $^{\circ}$ C	-
Shelf Life Stability: Absolute	$\Delta R \pm 0.01$ %	1 year at +25 $^{\circ}$ C
Shelf Life Stability: Ratio	$\Delta R \pm 0.002$ %	1 year at +25 $^{\circ}$ C

DIMENSIONS AND IMPRINTING in inches and millimeters			
	DIMENSION	INCHES	MILLIMETERS
	A	0.157	3.99
	B	0.0165 \pm 0.0025	0.4 \pm 0.06
	C	0.050	1.27
	D	0.195 max.	4.93 max.
	E	0.008 \pm 0.001	0.20 \pm 0.03
	F	0.028 \pm 0.001	0.71 \pm 0.02
	G	0.239 \pm 0.001	6.07 \pm 0.13
	H	0.068 max.	1.73 max.
	I	0.008 \pm 0.002	6.07 \pm 0.13

MECHANICAL SPECIFICATIONS	
Resistive Element	Tantalum nitride (Ta2N)
Substrate Material	Ceramic
Body	Molded epoxy
Terminals	Copper alloy
Lead Frame Finish	Ni/Pd/Au solder free ⁽¹⁾

Note

- Gold thickness less than 10 μ ".

DERATING CURVE




ENVIRONMENTAL TESTS					
ENVIRONMENTAL TEST		CONDITONS	SUGGESTED PRODUCT LIMITS	TYPICAL VISHAY PERFORMANCE < 10K	TYPICAL VISHAY PERFORMANCE > 10K
Max. Ambient Temperature at Rated Wattage			+70 °C	+70 °C	+70 °C
Max. Ambient Temperature at Power Derating			+155 °C	+155 °C	+155 °C
High Temperature Exposure	ΔR	MIL-STD-202, 108, 1000 h at 155 °C	$\pm 0.20 \%$	0.08 %	0.045 %
Temperature Cycling	ΔR	JESD22, A104, 1000 cycles, -55 °C to +155 °C	$\pm 0.25 \%$	0.012 %	0.010 %
Moisture Resistance	ΔR	MIL-STD-202 method 106	$\pm 0.20 \%$	0.007 %	0.007 %
Biased Humidity	ΔR	MIL-STD-202, 103, 1000 h at 85 °C, 85 % RH, 10 % P	$\pm 0.25 \%$	0.075 %	0.075 %
Life	ΔR	MIL-STD-202, 108, 1000 h at 155 °C	$\pm 0.50 \%$	0.199 %	0.221 %
Mechanical Shock	ΔR	MIL-STD-202 method 213, condition C	$\pm 0.25 \%$	0.004 %	0.002 %
Vibration	ΔR	MIL-STD-202 method 204, 10 Hz to 2 kHz	$\pm 0.25 \%$	0.004 %	0.002 %
Resistance to Soldering Heat	ΔR	MIL-STD-202, 204, condition B	$\pm 0.10 \%$	-0.008 %	0.016 %
Electrostatic Discharg	ΔR	AEC-Q200-002 at 1 kV, human body	$\pm 0.50 \%$	-0.028 %	
		AEC-Q200-002 at 2 kV, human body	$\pm 0.50 \%$		0.108 %
Solderability		J-STD-002 method B and B1	95 %	Acceptable	Acceptable
Terminal Strenght	ΔR	AEC-Q200-006 at 1 kg for 60 s		Acceptable	Acceptable
Flame Retardance		AEC-Q200-001 Para 4.0		Acceptable	Acceptable

GLOBAL PART NUMBER INFORMATION																																													
New Global Part Numbering: AORN 5-1																																													
A	O	R	N																																										
5	-	1	A																																										
U	F																																												
A	O	R	N																																										
1	0	0	1																																										
A	U	F																																											
GLOBAL MODEL (4 digits)	DIVIDER ⁽¹⁾ or RESISTANCE (3, 4 or 5 digits)	TOLERANCE % (ABSOLUTE / RATIO)	PACKAGING																																										
AORN 8 pin SOIC, surface mount (e4)	<table border="0"> <tr> <td>2 - 1</td> <td>1001</td> </tr> <tr> <td>5 - 1</td> <td>2001</td> </tr> <tr> <td>10 - 1</td> <td>4991</td> </tr> <tr> <td>20 - 1</td> <td>or 1002</td> </tr> <tr> <td>25 - 1</td> <td>2002</td> </tr> <tr> <td>50 - 1</td> <td>2492</td> </tr> <tr> <td>100 - 1</td> <td>4992</td> </tr> <tr> <td></td> <td>1003</td> </tr> </table>	2 - 1	1001	5 - 1	2001	10 - 1	4991	20 - 1	or 1002	25 - 1	2002	50 - 1	2492	100 - 1	4992		1003	<table border="0"> <tr> <td>A</td> <td>= 0.1 / 0.05</td> </tr> <tr> <td>B</td> <td>= 0.1 / 0.1</td> </tr> <tr> <td>C</td> <td>= 0.25 / 0.1</td> </tr> <tr> <td>D</td> <td>= 0.5 / 0.1</td> </tr> <tr> <td>F</td> <td>= 1.0 / 0.5</td> </tr> </table>	A	= 0.1 / 0.05	B	= 0.1 / 0.1	C	= 0.25 / 0.1	D	= 0.5 / 0.1	F	= 1.0 / 0.5	<table border="0"> <tr> <td colspan="2" style="text-align: center;">TAPE AND REEL</td> </tr> <tr> <td>T0</td> <td>= 100 min., 100 mult</td> </tr> <tr> <td>T1</td> <td>= 1000 min., 1000 mult</td> </tr> <tr> <td>T3</td> <td>= 300 min., 300 mult</td> </tr> <tr> <td>T5</td> <td>= 500 min., 500 mult</td> </tr> <tr> <td>TF</td> <td>= Full reel 3000</td> </tr> <tr> <td>TS</td> <td>= 100 min., 1 mult</td> </tr> <tr> <td colspan="2" style="text-align: center;">UF = TUBED</td> </tr> </table>	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	
2 - 1	1001																																												
5 - 1	2001																																												
10 - 1	4991																																												
20 - 1	or 1002																																												
25 - 1	2002																																												
50 - 1	2492																																												
100 - 1	4992																																												
	1003																																												
A	= 0.1 / 0.05																																												
B	= 0.1 / 0.1																																												
C	= 0.25 / 0.1																																												
D	= 0.5 / 0.1																																												
F	= 1.0 / 0.5																																												
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																																													

Note

⁽¹⁾ Examples:

1. 2-1 = ratio between resistance values
2. 1001 = four 1K resistors



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

Material Category Policy

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.

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.

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.