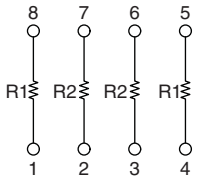
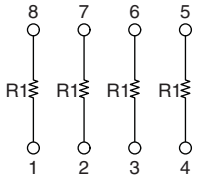
Molded, 50 mil Pitch, Dual-In-Line Thin Film Resistor, Precision Automotive, AEC-Q200 Qualified, Networks

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 (ΔR ± 0.015 %)
- Low TCR tracking ± 5 ppm/°C
- Passes Sulfur Resistance Test per ASTM B 809
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free Available

RoHS* Available

HALOGEN FREE

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

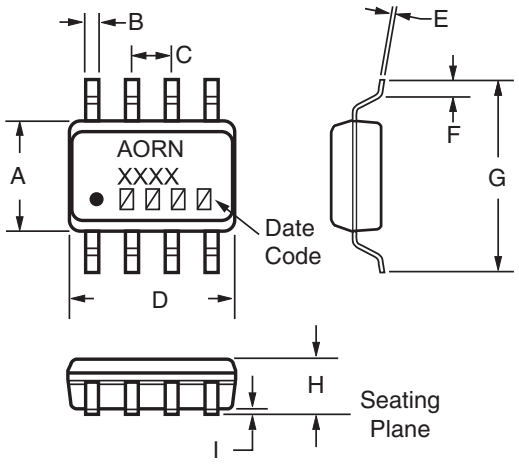
	ABSOLUTE	TRACKING
TCR	25	5
	ABSOLUTE	RATIO
TOL.	0.10	0.05

STANDARD DIVIDER VALUES		
RATIO R_1/R_2	R_1	R_2
100:1	100 kΩ	1 kΩ
50:1	50 kΩ	1 kΩ
25:1	25 kΩ	1 kΩ
20:1	20 kΩ	1 kΩ
10:1	10 kΩ	1 kΩ
5:1	10 kΩ	2 kΩ
2:1	10 kΩ	5 kΩ
1:1	100 kΩ	
	100 kΩ	
	49.9 kΩ	
	24.9 kΩ	
	20.0 kΩ	
	10.0 kΩ	
	4.99 kΩ	
	2.0 kΩ	
	1.0 kΩ	

STANDARD ELECTRICAL SPECIFICATIONS

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

DIMENSIONS AND IMPRINTING in inches and millimeters



DIMENSION	INCHES	MILLIMETERS
A	0.157	3.99
B	0.0165 ± 0.0025	0.4 ± 0.06
C	0.050	1.27
D	0.195 max.	4.93 max.
E	0.008 ± 0.001	0.20 ± 0.03
F	0.028 ± 0.001	0.71 ± 0.02
G	0.239 ± 0.001	6.07 ± 0.13
H	0.068 max.	1.73 max.
I	0.008 ± 0.002	6.07 ± 0.13

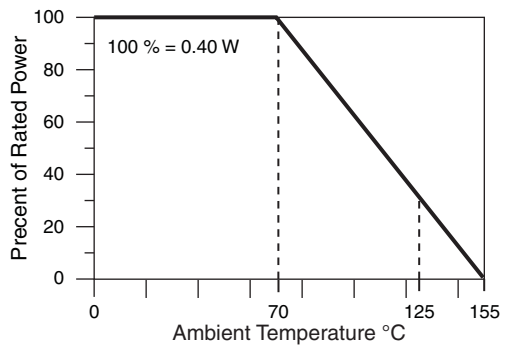
MECHANICAL SPECIFICATIONS

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	± 0.20 %	0.08 %	0.045 %
Temperature Cycling	**ΔR**	JESD22, A104, 1000 cycles, -55 °C to +155 °C	± 0.25 %	0.012 %	0.010 %
Moisture Resistance	**ΔR**	MIL-STD-202 method 106	± 0.20 %	0.007 %	0.007 %
Biased Humidity	**ΔR**	MIL-STD-202, 103, 1000 h at 85 °C, 85 % RH, 10 % P	± 0.25 %	0.075 %	0.075 %
Life	**ΔR**	MIL-STD-202, 108, 1000 h at 155 °C	± 0.50 %	0.199 %	0.221 %
Mechanical Shock	**ΔR**	MIL-STD-202 method 213, condition C	± 0.25 %	0.004 %	0.002 %
Vibration	**ΔR**	MIL-STD-202 method 204, 10 Hz to 2 kHz	± 0.25 %	0.004 %	0.002 %
Resistance to Soldering Heat	**ΔR**	MIL-STD-202, 204, condition B	± 0.10 %	-0.008 %	0.016 %
Electrostatic Discharg	**ΔR**	AEC-Q200-002 at 1 kV, human body	± 0.50 %	-0.028 %	
		AEC-Q200-002 at 2 kV, human body	± 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)	**2 - 1** **5 - 1** **10 - 1** **20 - 1** **25 - 1** **50 - 1** **100 - 1**	or **1001** **2001** **4991** **1002** **2002** **2492** **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.

OCEAN CHIPS
Океан Электроники
Поставка электронных компонентов

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

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «**JONHON**», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «**FORSTAR**».

AVIC JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).

FORSTAR®

Телефон: 8 (812) 309-75-97 (многоканальный)
Факс: 8 (812) 320-03-32
Электронная почта: ocean@oceanchips.ru
Web: http://oceanchips.ru/
Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А