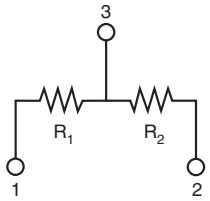
Matched Pair, Molded, Automotive, Thin Film, SOT-23, Resistor, Surface Mount Network, AEC-Q200 Qualified

Actual Size

Vishay Thin Film MPMA Series dividers provide ± 2 ppm/°C tracking and a ratio tolerance as tight as ± 0.05 %, small size, and exceptional stability for all surface mount applications. The standard SOT-23 package format with unity and common standard resistance divider ratios provide easy selection for most applications requiring matched pair resistor elements. MPMA is AEC-Q200 qualified and ideal for high precision automotive applications. The ratios listed are available for off the shelf delivery. If you require a non-standard ratio, consult the applications engineering group as we may be able to meet your requirements.

SCHEMATIC



FEATURES

- AEC-Q200 qualified
- Resistance range 250 Ω to 50 kΩ
- Excellent long term ratio stability ± 0.03 % over 1000 h, 125 °C
- Ratio tolerances to ± 0.05 %
- Low TCR tracking ± 2 ppm
- Very low noise and voltage coefficient (< - 30 dB, 0.1 ppm/V)
- Standard JEDEC TO-236 package variation AB
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

Pb-free

RoHS COMPLIANT

HALOGEN FREE

TYPICAL PERFORMANCE

	ABSOLUTE	TRACKING
TCR	25	2
	ABSOLUTE	RATIO
TOL.	0.1	0.05

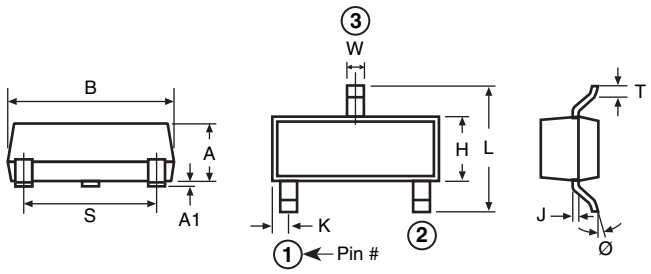
STANDARD DIVIDER RATIO (R_2/R_1)

RATIO	R_2 (Ω)	R_1 (Ω)
50:1	50K	1K
25:1	25K	1K
20:1	20K	1K
10:1	10K	1K
9:1	9K	1K
6:1	6K	1K
5:1	10K	2K
5:1	5K	1K
4:1	8K	2K
4:1	4K	1K
2:1	10K	5K
2:1	2K	1K
1:1	50K	50K
1:1	25K	25K
1:1	10K	10K
1:1	5K	5K
1:1	2.5K	2.5K
1:1	1K	1K
1:1	500	500
1:1	250	250

STANDARD ELECTRICAL SPECIFICATIONS

TEST	SPECIFICATIONS	CONDITIONS
Material	Ta2N	-
Pin/Lead Number	3	-
Resistance Range	250 Ω to 50 kΩ per resistor	-
TCR: Absolute	± 25 ppm/°C	- 55 °C to + 125 °C
TCR: Tracking	± 2 ppm/°C (typical)	- 55 °C to + 125 °C
Tolerance: Absolute	± 0.1 % to ± 1.0 %	+ 25 °C
Tolerance: Ratio	± 0.05 % to 0.5 %	+ 25 °C
Power Rating: Resistor	100 mW	Maximum at + 70 °C
Power Rating: Package	200 mW	Maximum at + 70 °C
Stability: Absolute	< 1 kΩ: ± 0.35 %; > 1 kΩ: ± 0.04 %	1000 h at + 125 °C
Stability: Ratio	< 1 kΩ: ± 0.35 %; > 1 kΩ: ± 0.03 %	1000 h at + 125 °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	0.2 µV/°C	-
Shelf Life Stability: Absolute	$\Delta R/R$ ± 0.01 %	1 year at + 25 °C
Shelf Life Stability: Ratio	$\Delta R/R$ ± 0.002 %	1 year at + 25 °C

DIMENSIONS AND IMPRINTING in inches and millimeters

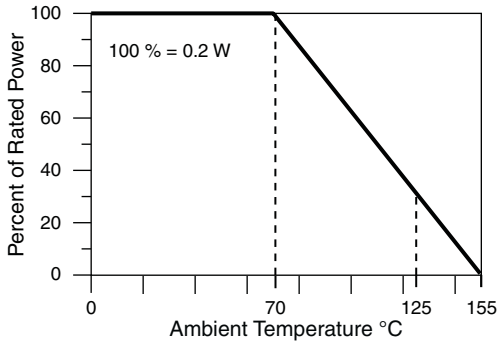


DIMENSION	INCHES		MILLIMETERS	
	MIN.	MAX.	MIN.	MAX.
A	0.031	0.040	0.79	1.02
A1	0.001	0.004	0.02	0.10
B	0.105	0.120	2.67	3.05
S	0.071	0.079	1.80	2.00
W	0.015	0.021	0.38	0.54
L	0.083	0.098	2.10	2.50
H	0.047	0.055	1.20	1.40
T	0.005	0.010	0.13	0.25
J	0.0035	0.0059	0.089	0.15
K	0.017	0.022	0.44	0.55
Ø	0	8°	0	8°

MECHANICAL SPECIFICATIONS

Resistive Element	Tantalum nitride
Substrate Material	Ceramic
Body	Molded epoxy
Terminals	Copper alloy
Lead (Pb)-free Option	Solder free leads, Ni/Pd/Au plated

DERATING CURVE



ENVIRONMENTAL TESTS

ENVIRONMENTAL TEST	CONDITIONS	SUGGESTED PRODUCT LIMITS ABS/RATIO	MAX. VALUES ABS/RATIO
Resistance Temperature Characteristics	- 55 °C to + 125 °C	25/2	15/2
High Temperature Exposure	< 1 kΩ: MIL-STD-202, 108, 1000 h at 125 °C	± 0.5 %/± 0.5 %	± 0.35 %/± 0.35 %
	> 1 kΩ: MIL-STD-202, 108, 1000 h at 125 °C	± 0.25 %/± 0.1 %	± 0.02 %/± 0.008 %
Temperature Cycling	JESD22, JA-104, 1000 cycles at - 55 °C to + 125 °C	± 0.25 %/± 0.1 %	± 0.1%/± 0.027 %
Moisture Resistance	MIL-STD-202, 106	± 0.25 %/± 0.1 %	± 0.03%/± 0.012 %
Biased Humidity	MIL-STD-202, 103, 1000 h at 85 °C, 85 % RH, 10 % P	± 1.0 %/± 0.5 %	± 0.4 %/± 0.34 %
Life	< 1 kΩ: MIL-STD-202, 108 at 125 °C, 1000 h	± 0.5 %/± 0.5 %	± 0.35 %/± 0.35 %
	> 1 kΩ: MIL-STD-202, 108 at 125 °C, 1000 h	± 0.5 %/± 0.1 %	± 0.04 %/± 0.03 %
Mechanical Shock	MIL-STD-202, 213, condition C	± 0.25 %/± 0.1 %	± 0.03 %/± 0.018 %
Vibration	MIL-STD-204, 10 Hz to 2 kHz	± 0.25 %/± 0.1 %	± 0.02 %/± 0.047 %
Resistance to Soldering Heat	MIL-STD-202, 210, condition B	± 0.25 %/± 0.1 %	± 0.13 %/± 0.24 %
Electrostatic Discharge	< 1 kΩ: AEC-Q200-002 at 500 V human body	± 0.5 %	± 0.50 %
	> 1 kΩ: AEC-Q200-002 at 1000 V human body	± 0.5 %	± 0.25 %
Solderability	J-STD-002 method B and B1	Visual	Visual
Terminal Strength	AEC-Q200-006 at 1 kg for 60 s	± 0.25 %/± 0.1 %	± 0.02 %/± 0.018 %
Flame Retardance	AEC-Q200-001 para 4.0	Visual	Visual

GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: MPMA1003AWS

M	P	M	A		1	0	0	3				A	T	1
M	P	M	A	1	0	0	1	5	0	0	1	A	T	1

GLOBAL MODEL (3 or 4 digits)	RESISTANCE (4 or 8 digits)	TOLERANCE AND RATIO TOLERANCE	PACKAGING
MPMA Ni/Pd/Au = e4 termination	First 3 digits are significant figures and the last digit specifies the number of zeros to follow. When like values are required use total resistance. When dual values are required list both values. Example: (List R_1 first in part number with dual values) **1002** = 10K (5K/5K) **1003** = 100K (50K/50K) **10011002** = 1K/10K divider	Abs. Tol. / Ratio **A** = 0.1 % / 0.05 % **B** = 0.1 % / 0.1 % **C** = 0.25 % / 0.1 % **D** = 0.5 % / 0.1 % **F** = 1 % / 0.5 %	TAPE AND REEL **T1** = 1000 min., 1000 mult (1) **T5** = 500 min., 500 mult **TF** = Full reel 4000 **TP** = 100 min., 1 mult (package unit single lot date code) **TS** = 100 min., 1 mult

Note

(1) Preferred packaging code

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.

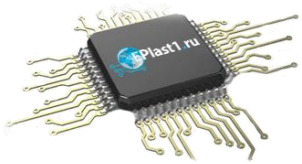
Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

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.