Decade Divider, Single-In-Line
Through Hole Thin Film Resistor Networks (Standard)

Using these integrated thin film networks instead of discrete resistor sets, designers gain several advantages: Smaller size, better overall tracking, greater reliability, and lower cost.

FEATURES

- Tight TCR tracking down to 2.5 ppm typical
- Low voltage coefficient < 0.02 ppm/V
- Low noise index < - 30 dB
- 5 decades: 1 kΩ to 9 MΩ
- 6 decades: 100 Ω to 9 MΩ
- High stability 0.01 % on ratio (1000 h at Pn at + 70 °C)
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

Pb-free

RoHS COMPLIANT

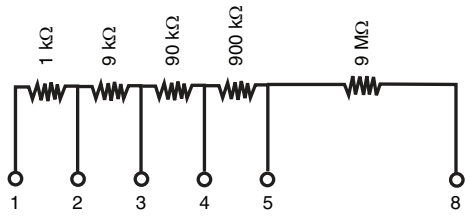
HALOGEN FREE GREEN (5-2008)

TYPICAL PERFORMANCE

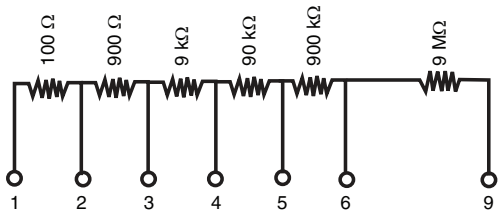
	ABS	TRACKING
TCR	< 25 ppm/°C	< 2.5 ppm/°C
	ABS	RATIO
TOL.	0.1 %	0.03 %

SCHEMATIC

5 Decades



6 Decades



STANDARD ELECTRICAL SPECIFICATIONS

MODEL	SIZE	RESISTANCE RANGE Ω	POWER RATING PER RESISTOR W	POWER RATING PER PACKAGE 0 °C TO 70 °C W	ABSOLUTE TOLERANCE 0 °C TO 70 °C ± %	RATIO TOLERANCE (2) ± %	ABSOLUTE TCR 0 °C TO 70 °C ppm/°C	RATIO TCR (1) ppm/°C
CNS 471		100 to 10M	0.1	0.6	0.1	0.03, 0.05, 0.1	< 25	2.5 typical

Notes

(1) Except for 100R (5 ppm/°C)

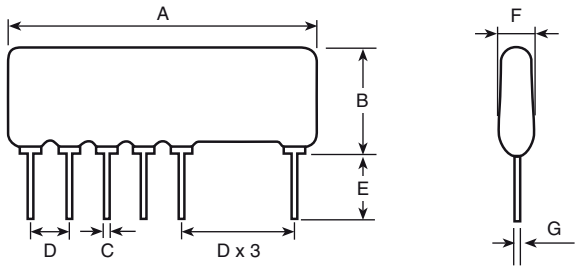
(2) A = ± 0.05 %, B = ± 0.1 %, C = ± 0.03 %

PERFORMANCES

TEST	SPECIFICATIONS	CONDITIONS
Stability ΔR ratio	0.01 % typical	1000 h at + 70 °C at Pn
Voltage coefficient	< 0.02 ppm/V	
Working voltage	1200 V	
Operating temperature range	0 °C; + 70 °C	
Storage temperature range	- 55 °C to + 155 °C	
Noise	< - 30 dB typical	
Thermal EMF	0.1 µV/°C	
Shelf life stability (ratio)	50 ppm	1 year

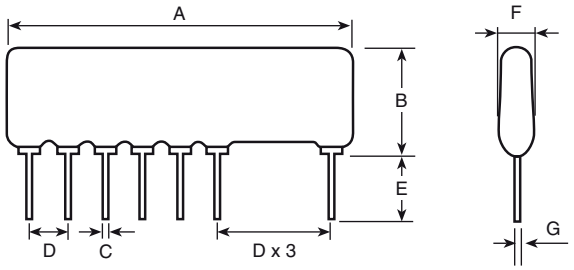
DIMENSIONS

5 Decades



DIMENSION	INCHES	MILLIMETERS
A	0.830	21.08 max.
B	0.261	6.62 max.
C	0.020	0.51
D	0.100	2.54
E	0.125	3.17 min.
F	0.100	2.54 max.
G	0.010	0.25

6 Decades



DIMENSION	INCHES	MILLIMETERS
A	0.930	23.62 max.
B	0.261	6.62 max.
C	0.020	0.51
D	0.100	2.54
E	0.125	3.17 min.
F	0.100	2.54 max.
G	0.010	0.25

MECHANICAL SPECIFICATIONS

Resistive material	Nichrome
Coating	Fluidized epoxy
Terminals	Tin/silver on copper alloy
Substrate material	Alumina
Marking resistance to solvents	Laser marking

GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: CNS471A6

C	N	S	4	7	1	A	6

MODEL	TOLERANCE	NUMBER OF DECADES
CNS 471	**B** = 0.1 %; 0.1 % **A** = 0.1 %; 0.05 % **Q** = 0.1 %; 0.03 %	**5** **6**

Historical Part Number example: CNS 471 A 6 e2

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.