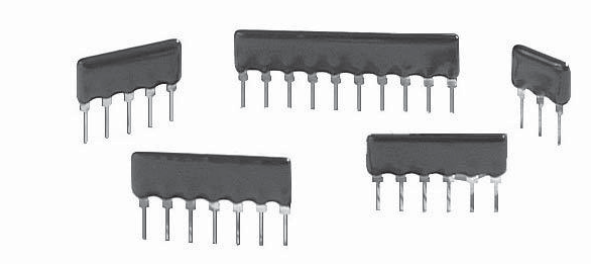
Conformal, Single In-Line Thin Film Resistor, Through Hole Network (Custom)



Wirewound or metal film performance in a space saving package.

SIP networks available in 3 pins to 10 pins sizes can obtain important performance parameters in an economical, mass producible style. SIPs take up the least amount of board space and are the easiest possible configuration to hand-insert into printed circuit boards. Standard pin centers are 0.100". Passivation coatings plus a conformal coating of epoxy protect the active element from the outside environment.

FEATURES

Pb-free Available

RoHS* COMPLIANT

- Minimal PC board space
- Standard 100 mil centers
- Exceptional ratio stability over time and temperature (ΔR ± 0.015 % at + 70 °C at 2000 h)
- Integrated construction
- Conformal coating flame resistant (UL 94 V-0 rating)
- Compliant to RoHS Directive 2002/95/EC

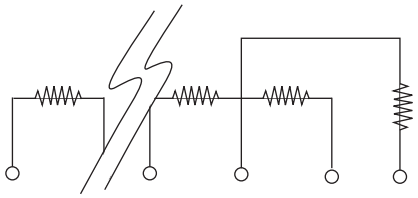
Note

* Pb containing terminations are not RoHS compliant, exemptions may apply

TYPICAL PERFORMANCE

▲	ABSOLUTE	TRACKING
TCR	10	2
	ABSOLUTE	RATIO
TOL.	0.05	0.02

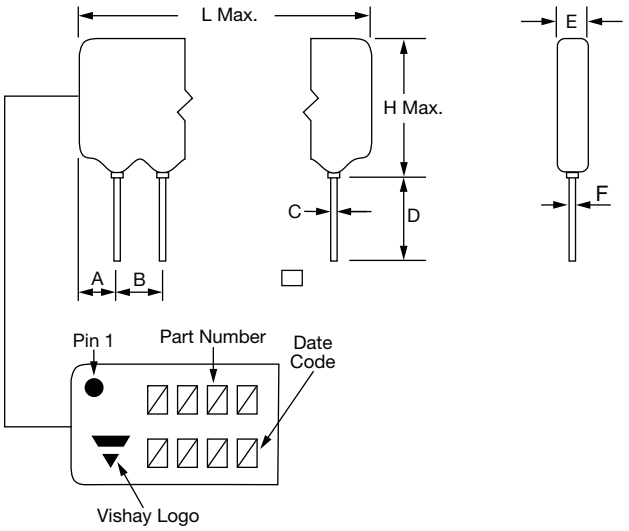
SCHEMATIC



Custom schematics available.
Please consult factory.

STANDARD ELECTRICAL SPECIFICATIONS		
TEST	**SPECIFICATIONS**	**CONDITIONS**
Material	Passivated nichrome	-
Pin/Lead Number	3 to 10	-
Resistance Range	100 Ω to 2 MΩ total	-
TCR: Absolute	± 10 ppm/°C to ± 25 ppm/°C	- 55 °C to + 125 °C
TCR: Tracking	± 2 ppm/°C to ± 5 ppm/°C	- 55 °C to + 125 °C
Tolerance: Absolute	± 0.05 % to ± 1.0 %	+ 25 °C
Tolerance: Ratio	± 0.01 % to ± 0.5 %	+ 25 °C
Power Rating: Resistor	0.100 W (per element)	Maximum at + 70 °C
Power Rating: Package	-	Maximum at + 70 °C
Stability: Absolute	ΔR ± 0.05 %	2000 h at + 70 °C
Stability: Ratio	ΔR ± 0.015 %	2000 h at + 70 °C
Voltage Coefficient	< 0.1 ppm/V	-
Working Voltage	100 V	-
Operating Temperature Range	- 55 °C to + 125 °C	-
Storage Temperature Range	- 55 °C to + 125 °C	-
Noise	< - 30 dB	-
Thermal EMF	< 0.10 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	0.058 typ.	1.47 typ.
B	0.100 typ.	2.54 typ.
C	0.020 ± 0.003	0.51 ± 0.08
D	0.125 min.	3.18 min.
E	0.110 max.	2.79 max.
F	0.010 typ.	0.25 typ.
L (3 Pins)	0.320	8.13
L (4 Pins)	0.420	10.67
L (5 Pins)	0.520	13.21
L (6 Pins)	0.620	15.75
L (7 Pins)	0.720	18.29
L (8 Pins)	0.820	20.83
L (9 Pins)	0.920	23.37
L (10 Pins)	1.020	25.91
H (3 Pins)	0.280 (1)	7 (1)
H (4 Pins)		
H (5 Pins)		
H (6 Pins)		
H (7 Pins)		
H (8 Pins)		
H (9 Pins)		
H (10 Pins)		

Note

(1) H dimension, R-value and schematic dependent

MECHANICAL SPECIFICATIONS

Resistive Element	Passivated nichrome
Substrate Material	Alumina
Body	Epoxy coated
Terminals	Copper alloy
Tin/Lead Option	Sn60 - 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 (Customs)

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

ELECTRICAL	MECHANICAL
1. Resistors, by value and tolerance 2. Reference resistor(s) and matching of which resistors to which reference resistors 3. Resistance by ratio 4. Absolute temperature coefficient of resistivity 5. Temperature tracking of subordinate resistors to reference resistor(s) 6. Maximum operating voltage 7. Resistor power ratings 8. Operating temperature range	1. Maximum allowable seated height (from PC board to top of network) 2. Special marking concerns 3. Schematic pin out of package 4. Specify if lead (Pb)-free

For additional assistance refer to Vishay Thin Film's guide to understanding Thin Film precision.
Resistor networks or application engineering.
All standard products may be ordered directly from Vishay Thin Film.

GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: VTF211BX

V	T	F	2	1	1		B	X
V	T	F	1	0	0	4	S	B	X

GLOBAL MODEL	PART NUMBER (3 or 4 digits)	LEAD (Pb)-FREE (0 or 1 digits)	PACKAGING
VTF	**xxx** or **xxxx** Example: 214 1004	**S** = Lead (Pb)-free (e1) None = Tin lead	**BX** = Conductive foam box

Historical Part Number example: VTF Custom 211 (for reference purposes only)

VTF Custom	211
MODEL	PART NUMBER

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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.