

- Resistor Values over four Decades
- Kelvin Connection
- Resistance Tolerances to $\pm 0.1\%$
- TCR to $\pm 15\text{ppm/K}$
- Load Stability to 0.1%

SPECIFICATIONS

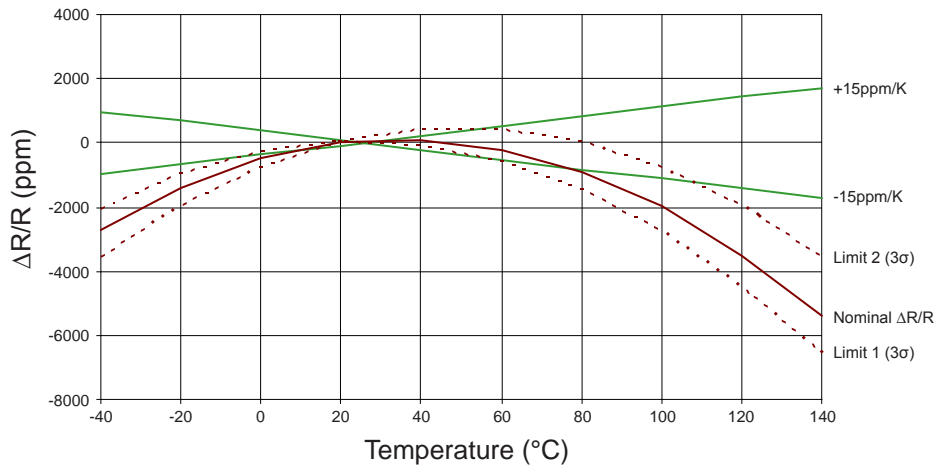
Type	FPN	FHN 5426 / 6819 FHN 6426 / 7819	FHN 8526
Resistance Range	0.010 to 90 Ohms		
Power rating free air 70°C with heatsink (depending on the quantity of the single resistors)	2 W	2 W 20 W	3 W 30 W
Tolerances	0.1% / 0.25% / 0.5% / 1%		
Stability	0.1% / 0.2% / 0.5% (depends on stress)		
Temperature Coefficient	$\pm 15\text{ppm/K}$ (20 to 60°C)		
Max. Current		25 A	
Voltage Proof		> 1 kVDC	
Insulation Resistance	> 10 GOhm		
Thermal EMF	< 0.1 $\mu\text{V/K}$		
Operating Temperature Range	-40 to 130°C		
Resistor Material	CuNiMn-Foil		
Substrate	anodized aluminium		
Housing	Epoxy / anodized aluminium		
Connector Material	Cu tinned		
Max. torque backplate	1 Nm		

Ordering Information

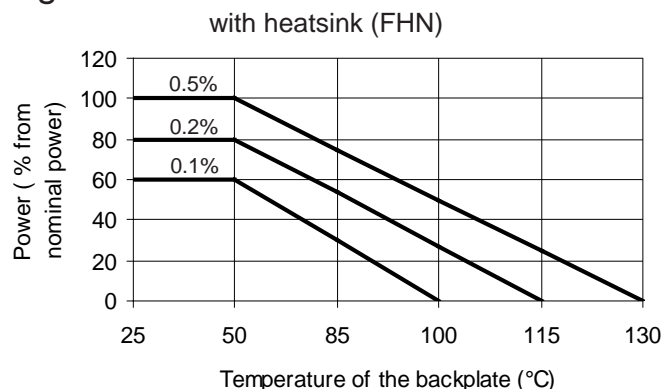
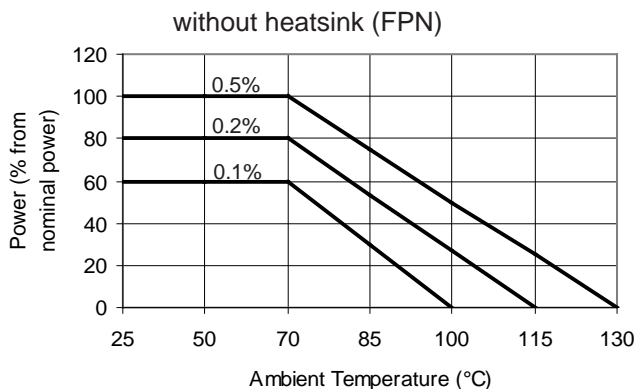
Part Number - Type - Tolerance - Resistance
 FHN 4-6426 C 0.5% 0.10-0.90-9.0-90 Ohms

SPECIFICATIONS (continued)

Temperature Coefficient



Derating

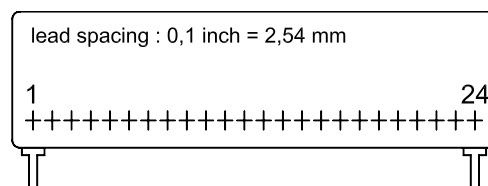


Part	Type	Resistance Value Combination
FPN 3-4916 / FHN 3-5426 / FHN 3-6819	A B C D E F G	0.01 - 0.09 - 0.90 Ohms 0.01 - 0.10 - 0.90 Ohms 0.09 - 0.90 - 90.0 Ohms 0.10 - 0.90 - 9.0 Ohms 0.90 - 9.0 - 90.0 Ohms 1.0 - 9.0 - 90.0 Ohms 0.10 - 0.90 - 9.0 Ohms
FPN 4-5716 / FHN 4-6426 / FHN 4-7819	B C D E	0.01 - 0.09 - 0.90 - 9.0 Ohms 0.10 - 0.90 - 9.0 - 90.0 Ohms 0.05 - 0.45 - 4.5 - 45.0 Ohms 0.025 - 0.075 - 0.150 - 0.250 Ohms
FHN 4-8526	B	0.01 - 0.09 - 0.90 - 9.0 Ohms
FPN 5-4818	A R	0.01 - 0.09 - 0.90 - 9.0 - 90.0 Ohms 0.033 - 0.067 - 0.90 - 9.0 - 90.0 Ohms
FHN 6-8526	K	0.025 - 0.075 - 0.15 - 0.75 - 1.5 - 7.5 Ohms
FPN 7-6516	A	0.025 - 0.075 - 0.15 - 0.25 - 0.50 - 1.5 - 2.5 Ohms

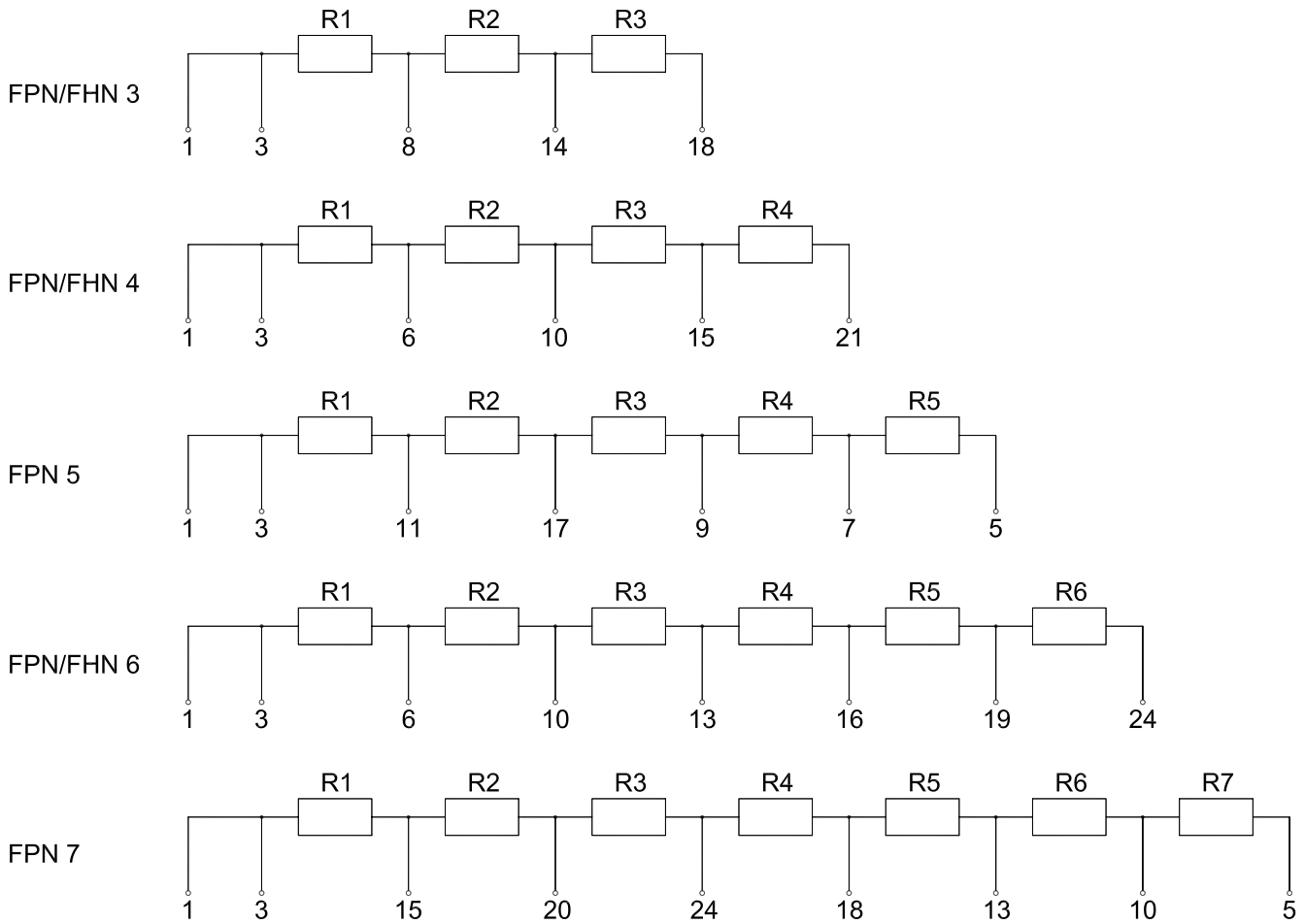
Pattern

The resistor networks can be configured upon request of the customer. The only restriction is the grid of 5.08mm between two contacts.

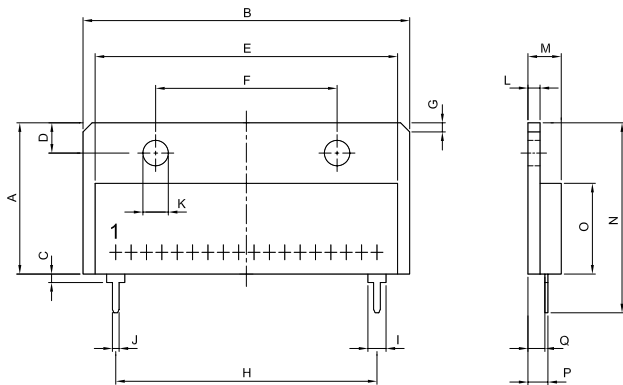
The point of the contact can be in a grid dimension of 2.54mm.



SPECIFICATIONS (continued)

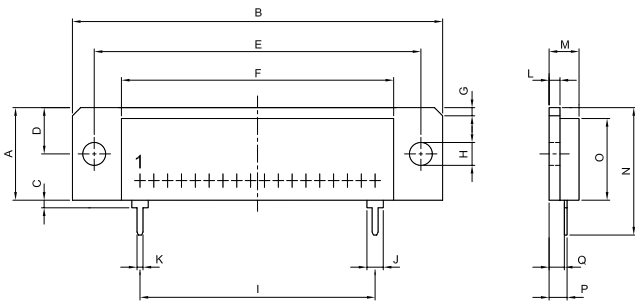


Dimensions

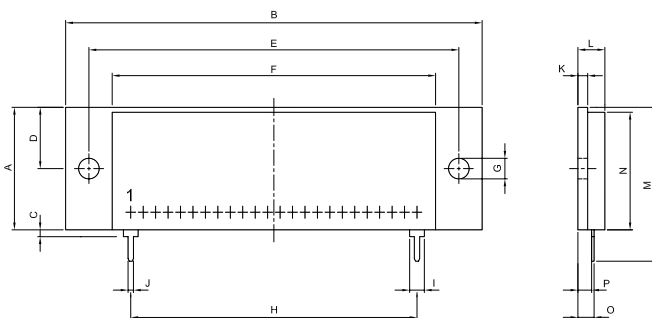


Dimension	FHN 3-5426 mm	FHN 4-6426 mm	tol. (±mm)	FHN 3-5426 inches	FHN 4-6426 inches	tol. (±inches)
A	25.00	25.00	0.2	0.98	0.98	0.008
B	54.00	64.00	0.3	2.13	2.52	0.012
C	1.40	1.40	0.4	0.06	0.06	0.016
D	5.00	5.00	0.1	0.20	0.20	0.004
E	50.00	60.00	0.3	1.97	2.36	0.012
F	30.00	35.00	0.2	1.18	1.38	0.008
G	1.5x45°	1.5x45°	0.1	0.6x45°	0.6x45°	0.004
H	43.18	50.80	0.3	1.70	2.00	0.012
I	3.00	3.00	0.1	0.12	0.12	0.004
J	1.10	1.10	0.1	0.04	0.04	0.004
K	4.20	4.20	0.1	0.17	0.17	0.004
L	2.00	2.00	0.1	0.08	0.08	0.004
M	max.5.5	max.5.5	0.2	max.0.22	max.0.22	0.008
N	31.40	31.40	0.3	1.24	1.24	0.012
O	15.00	15.00	0.2	0.59	0.59	0.008
P	3.30	3.30	0.1	0.13	0.13	0.004
Q	2.80	2.80	0.1	0.11	0.11	0.004

SPECIFICATIONS (continued)

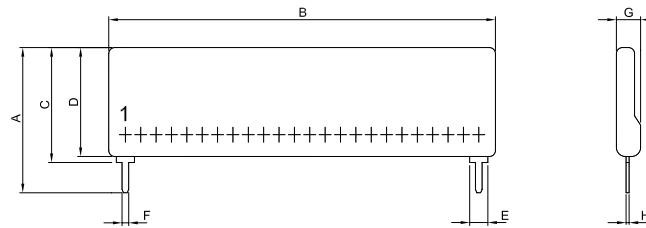


Dimension	FHN 3-6819 mm	FHN 4-7819 mm	tol. (±mm)	FHN 3-6819 inches	FHN 4-7819 inches	tol. (±inches)
A	17.00	17.00	0.2	0.67	0.67	0.008
B	68.00	78.00	0.3	2.68	3.07	0.012
C	1.40	1.40	0.4	0.06	0.06	0.016
D	8.50	8.5	0.2	0.33	0.33	0.008
E	60.00	70.00	0.3	2.36	2.76	0.012
F	50.00	60.00	0.2	1.97	2.36	0.008
G	1.5x45°	1.5x45°	0.1	0.6x45°	0.6x45°	0.004
H	4.20	4.20	0.1	0.17	0.17	0.004
I	43.18	50.80	0.3	1.70	2.00	0.012
J	3.00	3.00	0.1	0.12	0.12	0.004
K	1.10	1.10	0.1	0.04	0.04	0.004
L	2.00	2.00	0.1	0.08	0.08	0.004
M	max. 5.5	max. 5.5	0.2	max. 0.22	max. 0.22	0.008
N	23.40	23.40	0.2	0.92	0.92	0.008
O	15.00	15.00	0.2	0.59	0.59	0.008
P	3.30	3.30	0.1	0.13	0.13	0.004
Q	2.80	2.80	0.1	0.11	0.11	0.004



Dimension	FHN 4-8526 mm	FHN 6-8526 mm	tol. (±mm)	FHN 4-8526 inches	FHN 6-8526 inches	tol. (±inches)
A	25.00	25.00	0.2	0.98	0.98	0.008
B	85.00	85.00	0.3	3.35	3.35	0.012
C	1.00	1.00	0.2	0.04	0.04	0.008
D	12.50	12.50	0.2	0.49	0.49	0.008
E	75.50	75.50	0.3	2.97	2.97	0.012
F	66.00	66.00	0.3	2.60	2.60	0.012
G	4.20	4.20	0.1	0.17	0.17	0.004
H	50.80	58.42	0.3	2.00	2.30	0.012
I	3.00	3.00	0.1	0.12	0.12	0.004
J	1.10	1.10	0.1	0.04	0.04	0.004
K	2.00	2.00	0.1	0.08	0.08	0.004
L	max.5.5	max.5.5	0.2	max.0.22	max.0.22	0.008
M	31.00	31.00	0.3	1.22	1.22	0.012
N	24.00	24.00	0.2	0.94	0.94	0.008
O	3.30	3.30	0.1	0.13	0.13	0.004
P	2.80	2.80	0.1	0.11	0.11	0.004

SPECIFICATIONS (continued)



Dimension	FPN 3-4916 mm	FPN 4-5716 mm	FPN 5-4818 mm	FPN 7-6516 mm	tol. (±mm)	FPN 3-4916 inches	FPN 4-5716 inches	FPN 5-4818 inches	FPN 7-6516 inches	tol. (±inches)
A	21.50	21.50	23.50	21.50	0.2	0.85	0.85	0.93	0.85	0.008
B	49.00	57.00	48.00	65.00	0.3	1.93	2.24	1.89	2.56	0.012
C	16.50	16.50	18.50	16.50	0.2	0.65	0.65	0.73	0.65	0.008
D	15.50	15.50	17.50	15.50	0.2	0.61	0.61	0.69	0.61	0.008
E	3.00	3.00	3.00	3.00	0.1	0.12	0.12	0.12	0.12	0.004
F	1.10	1.10	1.10	1.10	0.1	0.04	0.04	0.04	0.04	0.004
G	4.30	4.30	4.30	4.30	0.2	0.17	0.17	0.17	0.17	0.008
H	0.50	0.50	0.50	0.50	0.1	0.02	0.02	0.02	0.02	0.004

MF4115

Precision Metal Film Resistor Networks

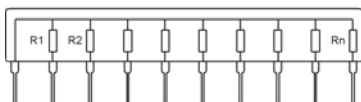


- Resistances from 1 Ohm to 3MOhms
- Power Rating 0.4Watts per Resistor
- Resistance Tolerances to $\pm 0.05\%$
- Matched Tolerances to $\pm 0.025\%$
- Temperature Coefficients to $\pm 3\text{ppm/K}$
- Economically Customized for Small Qty's

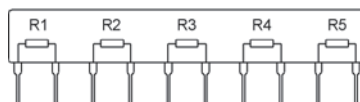
SPECIFICATIONS

Specification	Value
Resistance Range	1 Ohm to 3MOhms
Free Air Power Rating	0.4W @ +40°C
Tolerances	$\pm 0.05\%$ to $\pm 1\%$
Temperature Coefficient	$\pm 50\text{ppm/K}$: -25°C to +125°C $\pm 25\text{ppm/K}$: -10°C to +85°C $\pm 10\text{ppm/K}$: 0°C to +85°C $\pm 3\text{ppm/K}$: (Call Factory)
Temperature Range	-25°C to +125°C
Insulation Resistance	>10000 MOhms
Voltage Coefficient	$0.5 \times 10^{-6} / V_{(MAX)}$

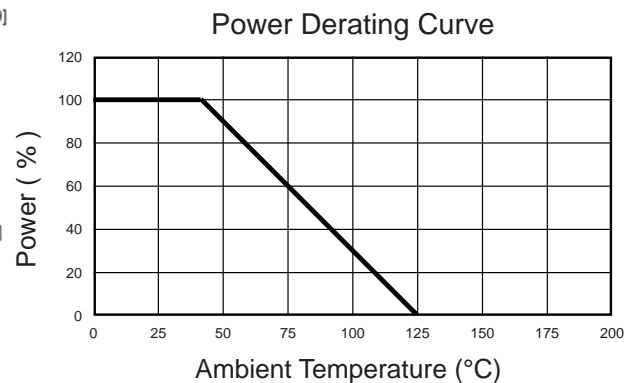
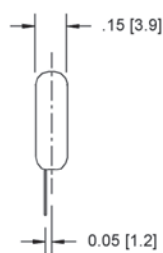
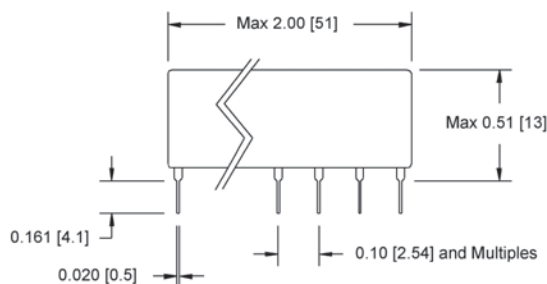
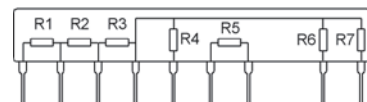
Common Circuit
Up to 19 Resistors



Isolated Circuit
Up to 10 Resistors



Custom Circuit
Up to 20 Pins



Ordering Information

Part Number - Resistance - Tolerance - TCR - Configuration
 Example: MF4115 22 kOhm 0.5% 15ppm Common Circuit

MF4200 Series

Precision Metal Film Resistor Networks

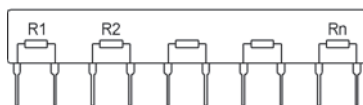


- Resistances from 100Ohm to 100kOhms
- Power Rating 0.1Watts per Resistor
- Resistance Tolerances to $\pm 0.1\%$
- Matched Tolerances to $\pm 0.05\%$
- Temperature Coefficients to $\pm 5\text{ppm/K}$
- Very Low Noise and Inductance

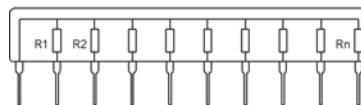
SPECIFICATIONS

Specification	Value
Resistance Range	100 Ohm to 100kOhms
Resistance Ratio	500X Between Highest and Lowest Value
Free Air Power Rating	0.1W per Resistor / 1W total Package (+40°C)
Tolerances	$\pm 0.1\%$ to $\pm 1\%$
Tolerance Matching	to $\pm 0.05\%$
Temperature Coefficient	$\pm 5\text{ppm/K}$ to $\pm 25\text{ppm/K}$
TCR Matching	to $\pm 3\text{ppm/K}$
Number of Pins	3 to 16 Pins
Temperature Range	-25°C to +125°C
Insulation Resistance	>10000 MOhms

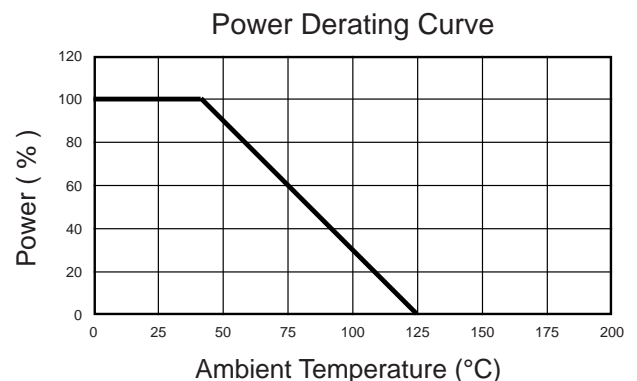
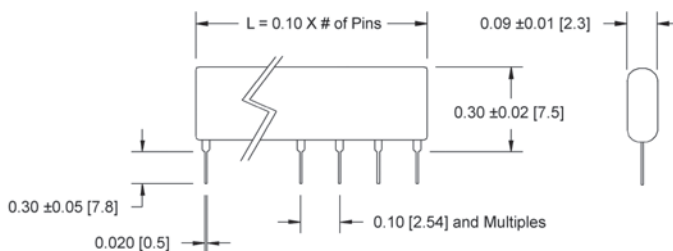
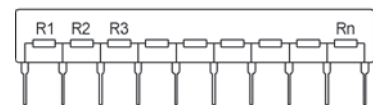
Isolated Circuit (I)



Common Circuit (C)



Divider Circuit (D)



Ordering Information

MF42 (# of Pins) (Circuit Type I / C / D) - Resistance - Tolerance - TCR

Example: MF4208C 22 kOhm 0.5% 15ppm

TF3000 Series

Thick Film Resistor Networks



- Resistances from 25 Ohm to 10MOhms
- Power Rating to 1.35W
- Resistance Tolerances to $\pm 1\%$
- Temperature Coefficients to $\pm 100\text{ppm/K}$
- TCR Matching to $\pm 5\text{ppm/K}$
- Up to 9 Resistors

SPECIFICATIONS

Type	Wattage Rating (Watts @ 40°C)	L (MAX)	# of Pins	# of Resistors
TF3006A	0.75	0.590 [15.0]	6	3
TF3008A	1.0	0.780 [19.8]	8	4
TF3010A	1.25	0.996 [25.3]	10	5
TF3006B	0.75	0.590 [15.0]	6	5
TF3007B	0.90	0.685 [17.4]	7	6
TF3008B	1.05	0.780 [19.8]	8	7
TF3009B	1.20	0.878 [22.3]	9	8
TF3010B	1.35	0.996 [25.3]	10	9

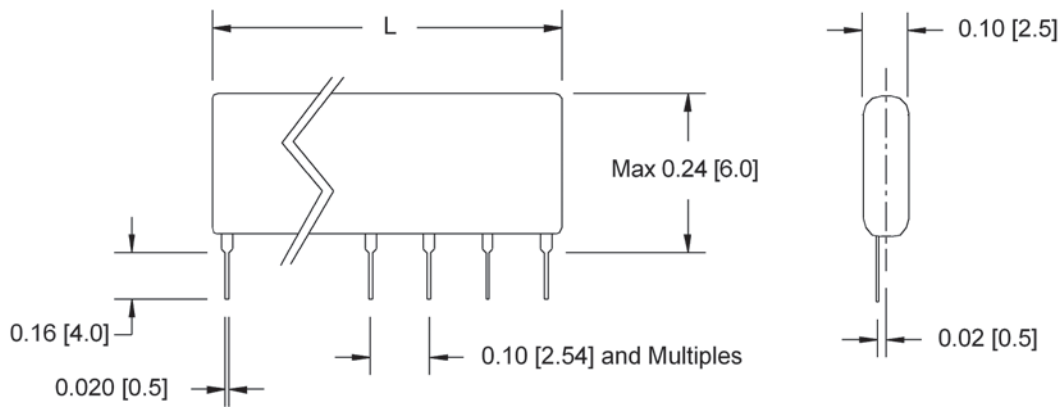
Specification	Value
Resistance Range	25 Ohm to 10MOhms
Tolerances	$\pm 1\%$: $100\Omega \geq R \geq 1M\Omega$ $\pm 2\%$: $25\Omega \geq R \geq 5M\Omega$ $\pm 5\%$: $25\Omega \geq R \geq 10M\Omega$
Temperature Coefficient	$\pm 100\text{ppm/K}$
TCR Matching	to $\pm 5\text{ppm/K}$
Insulation Resistance	>50000 MOhms
Temperature Range	-25°C to +125°C
Voltage Coefficient	$5 \times 10^{-6} / V_{(MAX)}$

Ordering Information

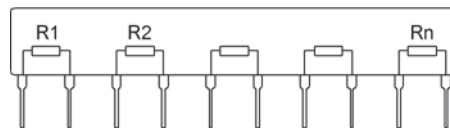
TF30 (# of Pins) (Circuit Type - A or B) - Resistance - Tolerance - TCR

Example: TF3008B 10 kOhms 1% 100ppm

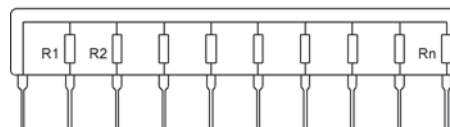
SPECIFICATIONS



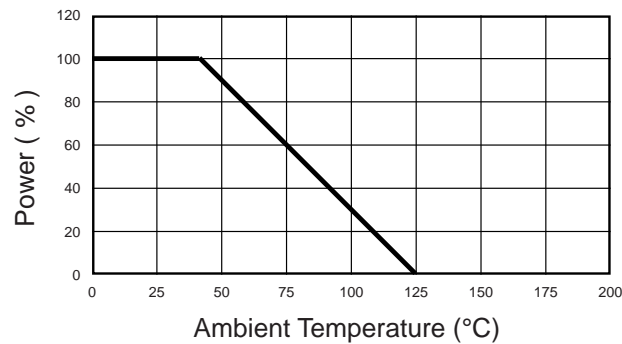
Isolated Circuit (A)



Common Circuit (B)



Power Derating Curve



SO Series

Thin Film Resistor Networks



- Resistances from 10 to 10MOhms
- Power Rating 0.25 to 0.50Watts
- Resistance Tolerances to $\pm 0.05\%$
- Tolerances Matching to $\pm 0.025\%$
- TCR's to $\pm 5\text{ppm/K}$
- TCR Tracking to $\pm 0.5\text{ ppm/K}$
- Up to 19 Resistors

SPECIFICATIONS

Type	Power Rating Watts @ 70°C	Resistance Range (Ω)	Number of pins	D _(MAX)	E $\pm 0.008''$ [$\pm 0.2\text{mm}$]	A _(MAX)	H $\pm 0.020''$ [$\pm 0.6\text{mm}$]	L _(MIN)	C $\pm 0.002''$ [$\pm 0.05\text{mm}$]
SOT223	0.25	10 to 5M	4	(See SOT223 Drawing)					
SO8	0.25	10 to 5M	8	0.200 [5.1]	0.157 [4.0]	0.079 [2.0]	0.240 [6.1]	0.033 [0.85]	0.008 [0.2]
SO14	0.25	10 to 10M	14	0.350 [8.9]	0.157 [4.0]	0.079 [2.0]	0.240 [6.1]	0.033 [0.85]	0.008 [0.2]
SO16	0.25	10 to 10M	16	0.402 [10.2]	0.157 [4.0]	0.079 [2.0]	0.240 [6.1]	0.033 [0.85]	0.008 [0.2]
SO20	0.25	10 to 10M	20	0.512 [13.0]	0.157 [4.0]	0.079 [2.0]	0.240 [6.1]	0.033 [0.85]	0.008 [0.2]
SO20L	0.50	10 to 10M	20	0.512 [13.0]	0.295 [7.5]	0.104 [2.7]	0.410 [10.4]	0.053 [1.35]	0.011 [0.27]
QSOP16	0.25	10 to 10M	16	0.19 [4.9]	0.15 [3.9]	0.24 [6.0]	0.07 [1.75]	0.028 [0.72]	0.006 [0.15]
QSOP20	0.25	10 to 10M	20	0.34 [8.65]	0.15 [3.9]	0.24 [6.0]	0.07 [1.75]	0.028 [0.72]	0.006 [0.15]

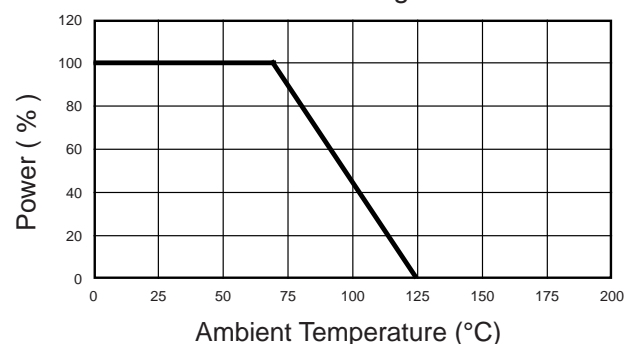
Specification	Value
Resistance Range	10 Ohms to 10MOhms
Tolerances	$\pm 0.05\%$ to $\pm 1\%$
Tolerance Matching	$\pm 0.025\%^A$ / $\pm 0.05\%$ / $\pm 0.1\%$
Temperature Coefficient	$\pm 5^A$ / ± 10 / ± 25 / $\pm 50\text{ ppm/K}$
Temperature Coefficient Tracking	$\pm 0.5^A$ / ± 1 / ± 2 / ± 5 / $\pm 10\text{ ppm/K}$
Temperature Range	-55°C to $+125^\circ\text{C}$
Climatic Category	55/125/56
Solderability	$+235^\circ\text{C}$ / 2s
Max Soldering Temperature	$+260^\circ\text{C}$ / 10s

^A Temperature Range 0°C to $+70^\circ\text{C}$

Ordering Information

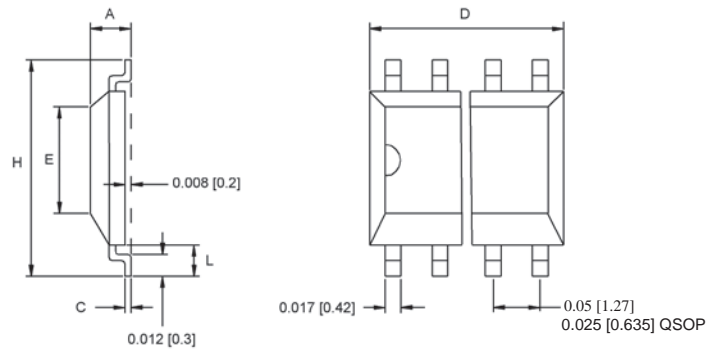
Contact Factory -
Indicate: Package Size / Resistance Values
/ Tolerances / TCR's / Number and Connec-
tions of Resistors

Power Derating Curve

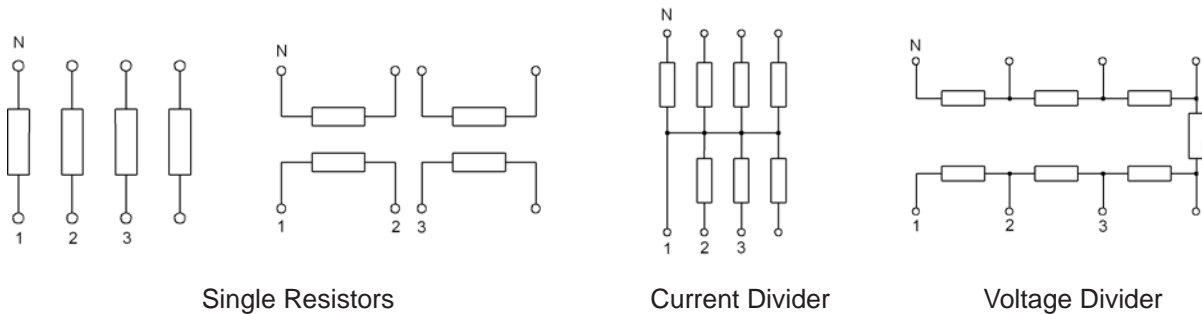


DIMENSIONS

SO8 / SO14 / SO16 / SO20L Package



Typical Resistor Layouts Any Layout is Available - Contact Factory



SOT223 Package

