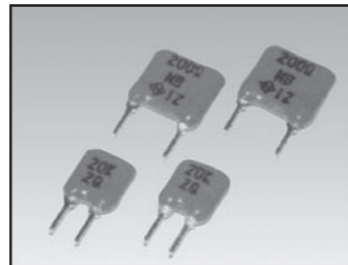


1/4 Watt Precision Thin Film Resistors

High precision, thin film resistors. A standard TCR of 2ppm/°C is achieved with a Ni-Cr-Si alloy spattered onto an alumina substrate. Operating temperatures from -55°C to +125°C. These models also exhibit excellent long-term stability, low current noise, a low voltage coefficient and a low thermal EMF. Typical applications are: Discrete voltage dividers, analogue circuits in industrial measuring equipment, control, medical electronics, ATE, aerospace, and reliable power electronics.

GENERAL SPECIFICATIONS

Model	Resistance Range[Ω]	1)TCR [±ppm/°C]	1)Tolerance (%)	Standard Resistance	2)Power Rating(W)	Working Voltage(V)
TP48 TP47 TP46 TP45	100~20K	±1(X)	T [0.01]	E96 and E24(include 2.5 and 5.0) * any resistance value	0.25	$\sqrt{P.R}$
	100~150K	±2(Y)	Q [0.02]			
TP48, TP47	50~150K	±10(N)	A [0.05]			
TP46, TP45	50~510K		B [0.1]			
TP48, TP47	10~150K	±25(E)	B [0.1]			
TP46, TP45	10~820K					



1) Conditions: -55 to +125°C 2) Conditions: -55°C to +70°C
* 4 or more significant digits and odd resistances, please call factory about printing method

CHARACTERISTICS

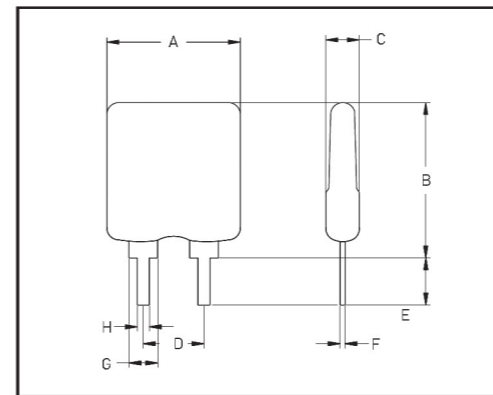
Values in [] mean change in Ω after test

Operating Temperature Range	-55°C to +125°C
Storage Temperature Range	-55°C to +125°C
Dielectric Withstanding Voltage	[±0.03%]
Short Time Over Load	Rating power X 2.5, 5 sec.
Moisture Resistance	[±0.05%] 1000 hours.
Vibration	[Not Specified]
Shelf Life Stability	[±0.03%] One year at 25°C
Voltage Coefficient	[<0.1ppm/V] THD at rating power < -120dB
Temperature Cycle	[±0.05%] -55°C 30minutes, +120°C 30minutes, 20cycles
Thermal EMF	0.05μV/°C
Soldering Heat	[±0.03%] 350°C, 3 sec.
Solvent	[No damage] IPA test
Solderability	[Covered 95%] 235°C, 2 sec.
Terminal Strength	[±0.05%]
Noise	< -43dB
Load Life	[±0.05%] 1000 hours

ORDERING PROCEDURE EXAMPLE

Ordering Example	Model	TC	Resistance	Tolerance(%)	Code	Note
TP48Z100ohmB000	TP48	5ppm(Z)	100Ω	B [0.1]	000	1/4W, 2.54mm
TP48Y10kohmQ000	TP48	2ppm(Y)	10kΩ	Q [0.02]	000	1/4W, 2.54mm
TP46Z100ohmA000	TP46	5ppm(Z)	100Ω	A [0.05]	000	1/4W, 5.08mm
TP46Y10kohmQ000	TP46	2ppm(Y)	10kΩ	Q [0.02]	000	1/4W, 5.08mm
TP46C10kohmF000	TP46	50ppm(C)	10kΩ	F [1]	000	1/4W, 5.08mm

DIMENSIONS(mm)



Model	TP48	TP47	TP46	TP45
A	5.6max	6.8max	8.0max	10.0max
B	8.2max	8.6max	9.0max	9.0max
C	2.54max	2.54max	2.54max	2.54max
D	2.54±0.25	3.81±0.25	5.08±0.25	7.62±0.25
E	3.3±0.5	3.3±0.5	3.3±0.5	3.3±0.5
F	0.25	0.25	0.25	0.25
G	1.25	1.2	1.2	1.2
H	0.5±0.05	0.5±0.05	0.5±0.05	0.5±0.05

RESISTANCES, E24, E96

Standard Resistance E24+							Standard Resistance E96												
1.0	1.5	2.2	3.0	4.3	5.6	8.2	1.00	1.21	1.47	1.78	2.15	2.61	3.16	3.83	4.64	5.62	6.81	8.25	
1.1	1.6	2.4	3.3	4.7	6.2	9.1	1.02	1.24	1.50	1.82	2.21	2.67	3.24	3.92	4.75	5.76	6.98	8.45	
1.2	1.8	(2.5)	3.6	(5.0)	6.8		1.05	1.27	1.54	1.87	2.26	2.74	3.32	4.02	4.87	5.90	7.15	8.66	
1.3	2.0	2.7	3.9	5.1	7.5		1.07	1.30	1.58	1.91	2.32	2.80	3.40	4.12	4.99	6.04	7.32	8.87	
							1.10	1.33	1.62	1.96	2.37	2.87	3.48	4.22	5.11	6.19	7.50	9.09	
							1.13	1.37	1.65	2.00	2.43	2.94	3.57	4.32	5.23	6.34	7.68	9.31	
							1.15	1.40	1.69	2.05	2.49	3.01	3.65	4.42	5.36	6.49	7.87	9.53	
							1.18	1.43	1.74	2.10	2.55	3.09	3.74	4.53	5.49	6.65	8.06	9.76	

TCR AND TOLERANCE IDENTIFICATIONS

TCR and Symbols		Tolerance and Symbols	
X	±1ppm/°C	T	±0.01%
Y	±2ppm/°C	Q	±0.02%
Z	±5ppm/°C	A	±0.05%
N	±10ppm/°C	B	±0.10%
E	±25ppm/°C	D	±0.50%
C	±50ppm/°C	F	±1.0%