

TP45, TP46, TP47, TP48 1/4W PRECISION THIN FILM RESISTORS



High precision, thin film resistors manufactured with a NiCr alloy spattered onto an alumina substrate. TP resistors have linear operating temperatures from -55C to +125C. Standard TCRs include 2ppm/C and 5ppm/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 Note1	TCR [ppm/C] Note1	Tolerance	Standard Resistance	Power [W] Note2	Working Voltage[V]
TP48 TP47	100-20K	+ -1(X)	0.1(B)	E96, E24 (includes 2.5 and 5.0) Note3	0.25	Root(PR)
TP46 TP45		+ -2(Y)	0.02(Q)			
TP48,TP47	100-150K	+ -5(Z)	0.05(A)			
		+ -10(N)	0.1(B)			
TP46,TP45	50-150K	+ -25(E)	0.1(B)			
TP48,TP47	50-510K					
TP46,TP45	10-150K					
TP46,TP45	10-820K					

Note1: -55C – 125C

Note2: -55C – 70C

Note3: Please enquire if resistance values are not E96 or E24

CHARACTERISTICS

Values in [] mean change in ohmic value after test

Storage Temp. Range	-55C to +125C
Operating Temp.	-55C to +125C
Noise	Less than -60dB
Voltage Coefficient	[Less than 0.1ppm/V] THD at rating power less than -60dB
Thermal EMF	0.05 microvolts/C
Temperature Cycle	[+ -0.05%] -55C 30min, +120C 30min, 20 cycles.
Short time over Load	[+ -0.05%] Rating Power X 2.5, 5 sec.
Load Life	[+ -0.05%] 1000 hrs.
Humidity	[+ -0.05%] 1000 hrs.
Shelf Life Stability	[+ -0.03%] One year at 25C
Soldering Heat	[+ -0.03%] 235C , 2 sec.
Solderability	[Covered 95%] 350C , 3 sec.
Solvent	[No damage] IPA test
Terminal Strength	[+ -0.05%]
Withstanding Voltage	[+ -0.03%]
Vibration	[No Damage]

ORDERING PROCEDURE EXAMPLE

Ordering Example	Model	TC	Resistance	Tolerance	Code	Note
TP48Z100ohm B000	TP48	5ppm/C (Z)	100ohm	0.1%(B)	000	1/4W,2.54mm
TP48Y10Kohm Q000	TP48	2ppm/C (Y)	10Kohm	0.02%(Q)	000	1/4W,2.54mm
TP46Z100ohm A000	TP46	5ppm/C (Z)	100ohm	0.05%(A)	000	1/4W,5.08mm
TP46Y10Kohm Q000	TP46	2ppm/C (Y)	10Kohm	0.02%(Q)	000	1/4W,5.08mm
TP46C10Kohm F000	TP46	50ppm/C (C)	10Kohm	1%(F)	000	1/4W,5.08mm



DIMENSIONS (mm)

	Model	TP48	TP47	TP46	TP45
	A	5.6 max	6.8 max	8.0 max	10.0 max
	B	8.2 max	8.6 max	9.0 max	9.0 max
	C	2.54 max	2.54 max	2.54 max	2.54 max
	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	1.2	1.2	1.2	1.2
	H	0.5±0.05	0.5±0.05	0.5±0.05	0.5±0.05

TCR AND TOLERANCE IDENTIFICATION, E24 RESISTANCES

TCR & Symbols		Tolerance & Symbols		E24 Resistance Values				
X	+/- 1ppm/C	T	+/- 0.01%	1.0	1.8	3.0	5.0	8.2
Y	+/- 2ppm/C	Q	+/- 0.02%	1.1	2.0	3.3	5.1	9.1
Z	+/- 5ppm/C	A	+/- 0.05%	1.2	2.2	3.6	5.6	
N	+/- 10ppm/C	B	+/- 0.10%	1.3	2.4	3.9	6.2	
E	+/- 25ppm/C	D	+/- 0.50%	1.5	2.5	4.3	6.8	
C	+/- 50ppm/C	F	+/- 1.0%	1.6	2.7	4.7	7.5	

E96 RESISTANCES

1.00	1.33	1.78	2.37	3.16	4.22	5.62	7.50
1.02	1.37	1.82	2.43	3.24	4.32	5.76	7.68
1.05	1.40	1.87	2.49	3.32	4.42	5.90	7.87
1.07	1.43	1.91	2.55	3.40	4.53	6.04	8.06
1.10	1.47	1.96	2.61	3.48	4.64	6.19	8.25
1.13	1.50	2.00	2.67	3.57	4.75	6.34	8.45
1.15	1.54	2.05	2.74	3.65	4.87	6.49	8.66
1.18	1.58	2.10	2.80	3.74	4.99	6.65	8.87
1.21	1.62	2.15	2.87	3.83	5.11	6.81	9.09
1.24	1.65	2.21	2.94	3.92	5.23	6.98	9.31
1.27	1.69	2.26	3.01	4.02	5.36	7.15	9.53
1.30	1.74	2.32	3.09	4.12	5.49	7.32	9.76