

## PH, T, C-E, C-L PRECISION WIRE WOUND RESISTORS

These are high precision wire wound resistors, providing excellent stability over temperature and time. They use balanced multiple n, low reactance windings employing an exclusive 'air cushion' technique, providing virtually stress free elements. They are 'non inductively' wound with the direction of winding reversed at the half turns point. They are suitable for most analogue precision circuits, e.g, gain setting, bridge balancing, voltage dividing, referencing, etc.



### GENERAL SPECIFICATIONS



Model	Power Rating [W]	Resistance [ $\Omega$ ]	Tolerance [%]	Maximum Voltage	Operating Temp	Temp. Coefficient
PH04	0.4	1 to 56K	[+-0.005(V) R>50 $\Omega$ [+-0.01(T) R>10 $\Omega$ [+-0.05(A) R $\geq$ 1 $\Omega$	200	-30 to 100C	[+-5ppm/C R>10 $\Omega$ [+-10ppm/C R<10 $\Omega$
PH06	0.6	1 to 80K		300		
PH08	0.8	1 to 200K		300		
PH10	1.0	1 to 300K		600		
PH12	1.2	1 to 500K		700		



Model	Power Rating [W]	Resistance [ $\Omega$ ]	Tolerance [%]	Maximum Voltage	Operating Temp	Temp. Coefficient
T56E	0.125	10 to 27K	[+-0.01(T) R>50 $\Omega$ [+-0.05(A) R>10 $\Omega$	150	-30 to 100C	+-5ppm/C
T55E	0.25	10 to 56K		200		
T53E	0.5	10 to 180K		300		



Model	Power Rating [W]	Resistance [ $\Omega$ ]	Tolerance [%]	Maximum Voltage	Operating Temp	Temp. Coefficient
C0603E	0.1	0.1 to 30K	[+-0.02(Q) +0.05(A) R>10 $\Omega$ [+-0.1(B) R $\geq$ 1 $\Omega$	60	-65 to 145C	[+-20ppm/C R $\geq$ 10 $\Omega$ [+-50ppm/C 10>R $\geq$ 1 $\Omega$ [+-90ppm/C 1>R $\geq$ 0.1 $\Omega$
C0806E	0.125	0.1 to 125K		150		
C1306E	0.15	0.1 to 225K		200		
C2610E	0.4	0.1 to 1.2M		600		
C2613E	1.0	0.1 to 1.5M		700		



Model	Power Rating [W]	Resistance [ $\Omega$ ]	Tolerance [%]	Maximum Voltage	Operating Temp	Temp. Coefficient
C0806L	0.125	0.1 to 20K	[+0.02(Q) +0.05(A) R>10 $\Omega$ ] [+0.1(B) R $\geq$ 1 $\Omega$ ]	60	-65 to 145C	[+20ppm/C R $\geq$ 10 $\Omega$ ] [+50ppm/C 10>R $\geq$ 1 $\Omega$ ] [+90ppm/C 1>R $\geq$ 0.1 $\Omega$ ]
C1310L	0.25	0.1 to 240K		300		
C1910L	0.33	0.1 to 450K		300		

### CHARACTERISTICS

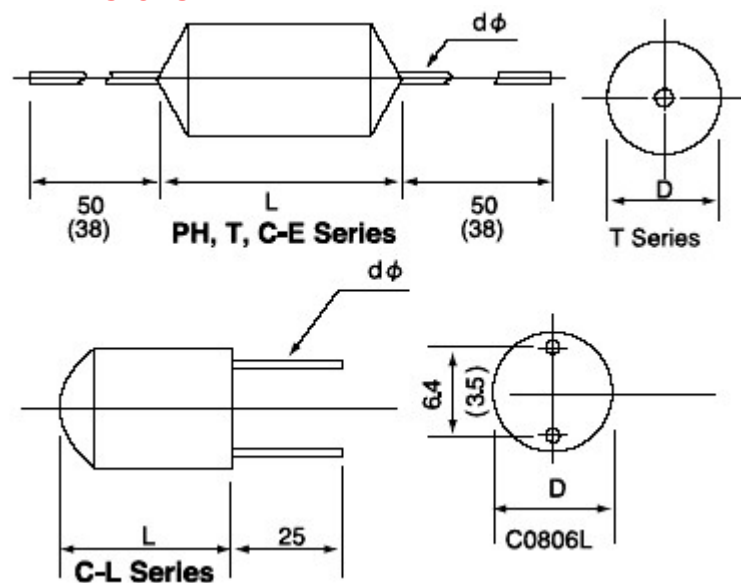
Values in [ ] mean change in ohmic value after test

Test	Limit			Conditions
	C-E, C-L Series	T Series	PH Series	
Short Time Overload	$\pm(0.1\%+0.05\Omega)$	$\pm 0.005\%$	$\pm 0.005\%$	2X W Rating 10min.
Temperature Cycling	$\pm(0.2\%+0.05\Omega)$ 1:125 C	$\pm 0.02\%$ 2:70 C	$\pm 0.01\%$ 3:85 C	See Note1
Insulation Resistance	$\geq 1000M\Omega$	$\geq 1000M\Omega$	$\geq 1000M\Omega$	DC 500V
Dielectric Resistance	$\pm(0.05\%+0.05\Omega)$	$\pm 0.02\%$	$\pm 0.005\%$	AC 1000V 1min.
Load Life	$\pm(0.5\%+0.05\Omega)$ 4:125 C	$\pm 0.05\%$ 5:70 C	$\pm 0.01\%$ 6:room temp	See Note2

Note1: -30 C(30min) to Normal Temp. (15min) to 1, 2, 3(30min)to Normal Temp.(15min) Repeat 5cycles

Note2: Wattage rating (4, 5, 6) 1500hrs.

### DIMENSIONS

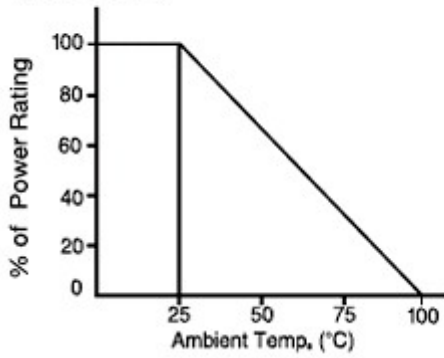


Model	L(mm)	D(mm)	d(mm)	Model	L(mm)	D(mm)	d(mm)
PH04	17	7.5	0.8	C0603E	10	4	0.6
PH06	23	7.5	0.8	C0806E	10	7	0.9
PH08	24	10.5	0.8	C1306E	15	7	0.9
PH10	30	10.5	0.8	C2610E	28	10	0.9
PH12	31	12.5	0.8	C2613E	28	13	0.9
T56E	11	6.8	0.9	C0806L	8	6.8	0.6
T55E	15	6.8	0.9	C1310L	13	10	0.8
T53E	20	10	0.9	C1910L	19	10	0.8

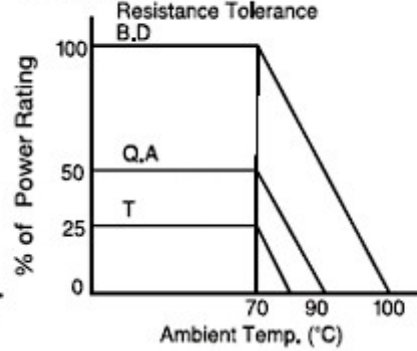


**DERATING CURVES**

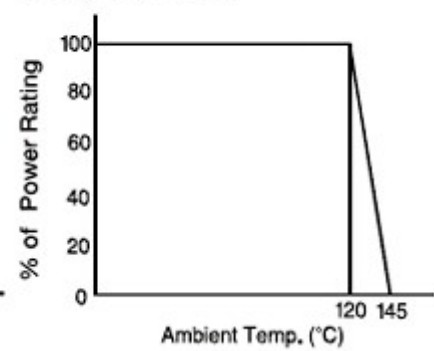
**Ambient Temp. Derating Curve  
 (PH Series)**



**Ambient Temp. Derating Curve  
 (T Series)**



**Ambient Temp. Derating Curve  
 (C-E, C-L Series)**



**ORDERING PROCEDURE EXAMPLE**

**C1310L**

Model #

**100Ω**

Resistance Value

**B**

Tolerance