

TYPICAL APPLICATIONS

- Transistor Protection
- Motor Protection
- Transformer Protection
- Telecommunication Line Protection

PTC Over Current Protectors are used in series to protect from over current conditions. The PTC will switch from its normal low resistance to a very high resistance state reducing the current flow to a safe level. Once this over current condition has been removed, the PTC will cool to its normal (low) resistance.

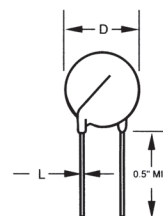
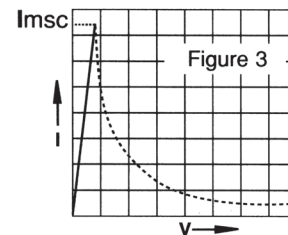


Figure 3 illustrates the Static Voltage/Current curve relationship

DEFINITIONS

Maximum Continuous Current (Imcc)

The maximum amount of current which a PTC Thermistor must be able to pass without switching into its high resistance state. Expressed in Amps

Minimum Switching Current (Imsc)

The minimum amount of current necessary to switch the thermistor into its high resistance state. Expressed in Amps.

Part Number	Ro@25°C (Ω)±20%	Switch Temp. Tsw±5°C	Maximum Continuous Current-Imcc (Amps.)				Vmax	Max. Current (Amps.)	Dc (mW/°C)	D Max. Body Dia. (In.)	L Lead Dia. (In.)
			55°C	35°C	15°C	0°C					
WC8004DA0R8M	0.8	120 (DA)	0.78	0.96	1.60	1.76	12	4	17	0.80	0.032
WC6004DA1R0M	1.0		0.60	0.75	1.30	1.43	15	3.5	14	0.60	0.032
WC8004DA0R3M	1.3		0.55	0.70	1.20	1.28	15	3.5	14	0.60	0.032
WC5504DA1R5M	1.5		0.50	0.60	1.05	1.12	20	3	13	0.55	0.032
WC5504DA2R0M	2.0		0.43	0.50	0.90	0.97	25	2	13	0.55	0.032
WC4504DA3R3M	3.3		0.30	0.35	0.68	0.73	25	2	10	0.45	0.025
WC4004DA4R7M	4.7		0.22	0.28	0.50	0.55	25	2	9	0.40	0.025
WC4004DA7R5M	7.5		0.17	0.22	0.42	0.48	50	1.5	8	0.40	0.020
WC4004DA100M	10.0		0.15	0.19	0.35	0.42	50	1.5	8	0.40	0.020
WC4004DA150M	15.0		0.12	0.15	0.30	0.35	50	1.5	8	0.40	0.020
WC3005DA200M	20.0	110 (DB)	0.100	0.123	0.25	0.30	50	1.5	7	0.30	0.020
WC4006DA500M	50.0		0.065	0.080	0.15	0.18	50	0.8	8	0.40	0.025
WC3505DA101M	100.0		0.045	0.06	0.095	0.12	50	0.8	7	0.35	0.020
WC7510DB4R7M	4.7		0.28	0.35	0.65	0.70	132	2	17	0.75	0.032
WC6010DB6R8M	6.8		0.22	0.28	0.50	0.55	132	1	15	0.60	0.032
WC4505DB5R0M	5.0		0.20	0.25	0.47	0.52	25	2	10	0.45	0.025
WC6010DB100M	10.0		0.18	0.22	0.45	0.49	132	1	15	0.60	0.032
WC4004DB7R5M	7.5		0.15	0.20	0.40	0.45	50	1.5	8	0.40	0.020
WC6010DB150M	15.0		0.15	0.19	0.35	0.42	132	1	15	0.60	0.032
WC5510DB220M	22.0		0.110	0.15	0.30	0.35	132	0.8	13	0.55	0.032
WC3505DB250M	25.0	80 (DE)	0.075	0.10	0.20	0.25	50	1.5	7	0.35	0.020
WC4008DB330M	33.0		0.075	0.095	0.20	0.25	132	0.5	9	0.40	0.025
WC3507DB500M	50.0		0.055	0.070	0.14	0.17	132	0.5	7	0.35	0.020
WC3508DB750M	75.0		0.045	0.055	0.10	0.13	175	0.3	7	0.35	0.020
WC3507DB101M	100.0		0.035	0.050	0.090	0.110	132	0.3	7	0.35	0.020
WC3507DB151M	150.0		0.030	0.040	0.085	0.100	175	0.2	7	0.35	0.020
WC2508DB501M	500.0		0.015	0.020	0.040	0.050	250	0.3	6	0.25	0.020
WC2508DB102M	1000.0		0.010	0.015	0.030	0.035	300	0.2	6	0.25	0.020
WC6010DD100M	10.0	90 (DD)	0.10	0.18	0.35	0.42	132	1	15	0.60	0.032
WC6010DD150M	15.0		0.085	0.15	0.30	0.35	132	1	15	0.60	0.032
WC4504DE3R3M	3.3	80 (DE)	0.20	0.45	0.49	0.52	25	2	10	0.45	0.025
WC4504DE4R7M	4.7		0.18	0.35	0.42	0.45	25	2	10	0.45	0.025
WC4505DE6R8M	6.8		0.15	0.30	0.35	0.38	25	2	10	0.45	0.025
WC4004DE100M	10.0		0.11	0.25	0.30	0.32	25	2	9	0.40	0.025
WC4004DE330M	33.0		0.060	0.13	0.16	0.18	25	1.5	9	0.40	0.025
WC3504DE500M	50.0		0.045	0.095	0.120	0.15	25	1.5	7	0.35	0.020
WC3506DE680M	68.0		0.035	0.085	0.100	0.12	25	1.5	7	0.35	0.020
WC3505DE101M	100.0		0.030	0.075	0.090	0.11	25	1	7	0.35	0.020
WC3505DE151M	150.0		0.025	0.060	0.070	0.08	25	1	7	0.35	0.020
WC6010DF100M	10.0	70 (DF)	0.10	0.30	0.35	0.42	132	1	15	0.60	0.032
WC6010DF150M	5.0		0.085	0.25	0.30	0.35	132	1	15	0.60	0.032

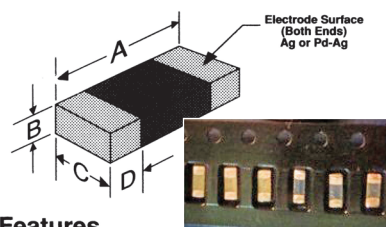
SURFACE MOUNT PTC CHIP THERMISTORS

Applications

- * Over Temp. Sensing
- * Self Regulating Heaters
- * Temperature Compensation

Options

- * Special dimensions
- * Termination materials
- * Special resistance values



Features

- * Five sided terminations
- * Solid state ceramic composition

PTC CHIP THERMISTORS

Applications

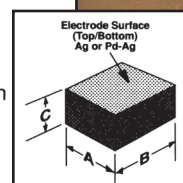
- * Over Temp. Sensing
- * Self Regulating Heaters
- * Temperature Compensation

Options

- * Termination materials
- * Special resistance values
- * Special dimensions

Features

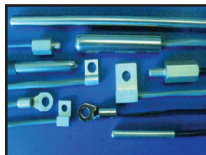
- * Solid state ceramic composition



PTC CHIP THERMISTOR

Part Number	Ro@25°C (Ω)±30%	Tsw±5% (Curve)	Reference Dimensions (Inches)			
			A	B	C	D
WS8055DA201N	200	120 (DA)	0.100	0.055	0.080	0.02
WS8040DA301N	300		0.100	0.040	0.080	0.02
WS6540DA401N	400		0.100	0.040	0.065	0.02
WS6540DA501N	500		0.110	0.040	0.065	0.02
WS6535DA601N	600		0.110	0.035	0.065	0.02
WS6535DA801N	800		0.110	0.035	0.065	0.02
WS6035DA102N	1000		0.110	0.035	0.060	0.02
WS6035DA202N	2000		0.110	0.035	0.060	0.02
WS6035DA302N	3000		0.110	0.035	0.060	0.02
WS6035DA502N	5000		0.110	0.035	0.060	0.02
WS6035DA103N	10000	80 (DE)	0.110	0.035	0.060	0.02
WS6540DE501N	500		0.110	0.040	0.065	0.02
WS6535DE601N	600		0.110	0.035	0.065	0.02
WS6535DE801N	800		0.110	0.035	0.065	0.02
WS6035DE102N	1000		0.110	0.035	0.060	0.02
WS6035DE202N	2000		0.110	0.035	0.060	0.02
WS6035DE302N	3000		0.110	0.035	0.060	0.02
WS6035DE502N	5000		0.110	0.035	0.060	0.02
WS6035DE103N	10000		0.110	0.035	0.060	0.02
	Ro@-40°C					
WS7540DJ102N	1000	40 (DJ)	0.100	0.040	0.075	0.02
WS7540DJ202N	2000		0.100	0.040	0.075	0.02
WS7540DJ302N	3000		0.100	0.040	0.075	0.02
WS6535DJ502N	5000		0.100	0.035	0.065	0.02
WS6535DJ103N	10000		0.100	0.035	0.065	0.02
WS7540DL102N	1000	20 (DL)	0.100	0.040	0.075	0.02
WS7540DL202N	2000		0.100	0.040	0.075	0.02
WS6536DL502N	5000		0.100	0.035	0.065	0.02
WS6535DL103N	10000		0.100	0.035	0.065	0.02
WS7540DN102N	1000	0 (DN)	0.100	0.040	0.075	0.02
WS7540DN202N	2000		0.100	0.040	0.075	0.02
WS6535DN502N	5000		0.100	0.035	0.065	0.02
WS6535DN103N	10000		0.100	0.035	0.065	0.02

Part Number	Ro@25°C (Ω)±30%	Tsw±5% (curve)	Reference Dimensions (inches)		
			A	B	C
WH1010DA600N	60	120 (AR)	0.100	0.100	0.035
WH0909DA800N	80		0.090	0.090	0.035
WH0808DA101N	100		0.080	0.080	0.035
WH0707DA201N	200		0.070	0.070	0.035
WH0505DA501N	500		0.050	0.050	0.035
WH0505DA102N	1000		0.050	0.050	0.035
WH0505DA202N	2000		0.050	0.050	0.040
WH0808DE201N	200	80 (DE)	0.080	0.080	0.035
WH0505DE501N	500		0.050	0.050	0.035
WH0505DE102N	1000		0.050	0.050	0.035
WH0505DE202N	2000		0.050	0.050	0.035
Ro@-40°C					
WH0606DJ501N	500	40 (DJ)	0.060	0.060	0.035
WH0505DJ102N	1000		0.050	0.050	0.035
WH0505DJ202N	2000		0.050	0.050	0.035
WH0606DL501N	500	20 (DL)	0.060	0.060	0.035
WH0505DL102N	1000		0.050	0.050	0.035
WH0505DL202N	2000		0.050	0.050	0.035
WH0606DN501N	500	0 (DN)	0.060	0.060	0.035
WH0505DN102N	1000		0.050	0.050	0.035
WH0505DN202N	2000		0.050	0.050	0.035



PROBES/ASSEMBLIES

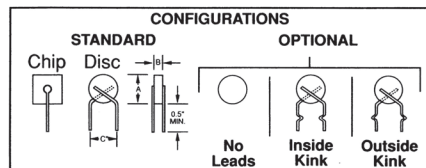
Many probes and assemblies are available for numerous applications. Please contact **WECC** Applications Engineering with specific requirements.



NTC THERMISTORS

NTC (Negative Temperature Coefficient) Thermistors are thermally sensitive resistors which show a large (2 to 6%/°C) decrease in resistance as temperature increases. Figure 1 illustrates the resistance ratio-temperature curves of four standard thermistor materials. These materials are manufactured using transition metal oxides that are formed into the desired shape and sintered at very high temperatures (~1200 °C).

Part Number	Base Resist. R ₀ @25°C (Ω)±10%	TCR@25°C (%/°C) (Curve)	Dissipation Constant Dc(mW/°C)	Time Constant Tc(Sec)	Body Type	Reference Dimensions (Inches)			
						A	B	C	LEAD AWG#
WN5004D2R5K	2.50	-3.3 (D)	14.00	60.00	DISC	0.500	0.040	0.30	22.00
WN4005D5R0K	5.00		9.00	50.00	DISC	0.400	0.050	0.30	22.00
WN3003D5R0K	5.00		8.00	35.00	DISC	0.300	0.030	0.20	24.00
WN4008D7R5K	7.50		9.00	65.00	DISC	0.400	0.080	0.30	22.00
WN3005D7R5K	7.50		8.00	42.00	DISC	0.300	0.045	0.20	24.00
WN3508D100K	10.00		9.00	60.00	DISC	0.350	0.080	0.25	22.00
WN2304D100K	10.00		7.00	22.00	DISC	0.225	0.035	0.20	24.00
WN2707D150K	15.00		8.50	55.00	DISC	0.270	0.070	0.20	24.00
WN2004D150K	15.00		7.00	20.00	DISC	0.200	0.040	0.20	24.00
WN2508D200K	20.00		8.00	45.00	DISC	0.250	0.080	0.20	24.00
WN2005D200K	20.00	-3.9 (A)	7.00	25.00	DISC	0.200	0.050	0.20	24.00
WN1705D250K	25.00		7.00	19.00	DISC	0.170	0.050	0.20	24.00
WN2008D300K	30.00		7.00	25.00	DISC	0.200	0.080	0.20	24.00
WN1708D400K	40.00		7.00	22.00	DISC	0.170	0.075	0.20	24.00
WN1104D400K	40.00		2.50	4.00	CHIP	0.110	0.040	—	28.00
WN1004D500K	50.00		2.50	4.00	CHIP	0.100	0.040	—	28.00
WN0804D400K	40.00		2.00	4.00	CHIP	0.080	0.040	—	28.00
WN0704D101K	100.00		2.00	4.00	CHIP	0.070	0.040	—	28.00
WN0503D151K	150.00		2.00	3.00	CHIP	0.050	0.040	—	28.00
WN0504D201K	200.00		2.00	3.00	CHIP	0.050	0.030	—	28.00
WN0404D301K	300.00	-4.4 (B)	2.00	2.00	CHIP	0.040	0.040	—	28.00
WN0407D501K	500.00		2.00	2.00	CHIP	0.040	0.070	—	28.00
WN5004A250K	25.00		14.00	60.00	DISC	0.500	0.040	0.30	22.00
WN4005A500K	50.00		9.00	50.00	DISC	0.400	0.055	0.30	22.00
WN3003A500K	50.00		8.00	48.00	DISC	0.350	0.040	0.20	24.00
WN4008A750K	75.00		9.00	65.00	DISC	0.400	0.080	0.30	22.00
WN3005A750K	75.00		8.00	42.00	DISC	0.300	0.045	0.20	24.00
WN3508A101K	100.00		9.00	60.00	DISC	0.350	0.080	0.20	22.00
WN2304A101K	100.00		7.00	22.00	DISC	0.225	0.035	0.20	24.00
WN2707A151K	150.00		8.50	55.00	DISC	0.270	0.070	0.20	24.00
WN2004A151K	150.00	-4.9 (C)	7.00	20.00	DISC	0.200	0.040	0.20	24.00
WN2508A201K	200.00		8.00	45.00	DISC	0.250	0.080	0.20	24.00
WN2005A201K	200.00		7.00	25.00	DISC	0.200	0.055	0.20	24.00
WN2008A301K	300.00		7.00	25.00	DISC	0.200	0.080	0.20	24.00
WN1104A401K	400.00		2.50	4.00	CHIP	0.110	0.040	—	28.00
WN1004A501K	500.00		2.50	4.00	CHIP	0.100	0.040	—	28.00
WN0804A601K	600.00		2.00	4.00	CHIP	0.080	0.040	—	28.00
WN0704A102K	1000.00		2.00	4.00	CHIP	0.070	0.040	—	28.00
WN0503A152K	1500.00		2.00	3.00	CHIP	0.055	0.040	—	28.00
WN0504A202K	2000.00		2.00	3.00	CHIP	0.050	0.040	—	28.00
WN0404A302K	3000.00	-3.3 (D)	2.00	2.00	CHIP	0.040	0.040	—	28.00
WN0406A402K	4000.00		2.00	2.00	CHIP	0.040	0.055	—	28.00
WN0407A502K	5000.00		2.00	2.00	CHIP	0.040	0.070	—	28.00
WN5005B201K	200.00		14.00	60.00	DISC	0.500	0.050	0.30	22.00
WN4004B251K	250.00		9.00	50.00	DISC	0.400	0.040	0.30	22.00
WN3505B501K	500.00		8.00	55.00	DISC	0.350	0.050	0.30	22.00
WN3004B501K	500.00		8.00	35.00	DISC	0.300	0.040	0.20	24.00
WN3308B751K	750.00		8.00	52.00	DISC	0.330	0.080	0.25	22.00
WN2701B751K	750.00		8.00	33.00	DISC	0.270	0.050	0.20	24.00
WN2707B102K	1000.00		8.00	38.00	DISC	0.270	0.070	0.20	24.00
WN2004B102K	1000.00	-3.9 (A)	7.00	22.00	DISC	0.200	0.040	0.20	24.00
WN1704B152K	1500.00		7.00	20.00	DISC	0.170	0.040	0.20	24.00
WN2008B202K	2000.00		7.00	26.00	DISC	0.200	0.080	0.20	24.00
WN1204B202K	2000.00		3.00	6.00	CHIP	0.120	0.035	—	28.00
WN1004B302K	3000.00		3.00	5.00	CHIP	0.100	0.035	—	28.00
WN0804B502K	5000.00		3.00	5.00	CHIP	0.080	0.040	—	28.00
WN0804B602K	6000.00		2.00	4.00	CHIP	0.075	0.040	—	30.00
WN0704B802K	8000.00		2.00	3.00	CHIP	0.065	0.040	—	30.00
WN0605B103K	10000.00		2.00	3.00	CHIP	0.060	0.045	—	30.00
WN0607B153K	15000.00		2.00	4.00	CHIP	0.060	0.065	—	30.00
WN0607B203K	20000.00	-4.9 (C)	2.00	4.00	CHIP	0.055	0.070	—	30.00
WN5005C202K	2000.00		14.00	60.00	DISC	0.500	0.050	0.30	22.00
WN4004C252K	2500.00		9.00	50.00	DISC	0.400	0.040	0.30	22.00
WN3004C502K	5000.00		8.00	35.00	DISC	0.300	0.040	0.20	24.00
WN3308C752K	750.00		8.00	52.00	DISC	0.330	0.080	0.25	22.00
WN2705C752K	750.00		8.00	33.00	DISC	0.270	0.050	0.20	24.00
WN2707C103K	1000.00		8.00	38.00	DISC	0.270	0.070	0.20	24.00
WN2004C103K	1000.00		7.00	22.00	DISC	0.200	0.040	0.20	24.00
WN2008C203K	2000.00		7.00	26.00	DISC	0.200	0.080	0.20	24.00
WN1204C203K	2000.00		3.00	6.00	CHIP	0.120	0.035	—	28.00
WN1104C253K	2500.00	-3.3 (D)	3.00	6.00	CHIP	0.110	0.035	—	28.00
WN1004C303K	3000.00		3.00	5.00	CHIP	0.100	0.035	—	28.00
WN0804C503K	5000.00		3.00	5.00	CHIP	0.080	0.040	—	28.00
WN0804C603K	6000.00		2.00	4.00	CHIP	0.075	0.040	—	30.00
WN0704C803K	8000.00		2.00	3.00	CHIP	0.065	0.040	—	30.00
WN0605C104K	10000.00		2.00	3.00	CHIP	0.060	0.045	—	30.00
WN0607C154K	15000.00		2.00	4.00	CHIP	0.060	0.065	—	30.00
WN0607C204K	20000.00		2.00	4.00	CHIP	0.055	0.070	—	30.00
WN0507C304K	30000.00		2.00	4.00	CHIP	0.045	0.070	—	30.00
WN0408C404K	40000.00		2.00	4.00	CHIP	0.040	0.075	—	30.00
WN0410C504K	50000.00	-4.9 (C)	2.00	5.00	CHIP	0.040	0.095	—	30.00



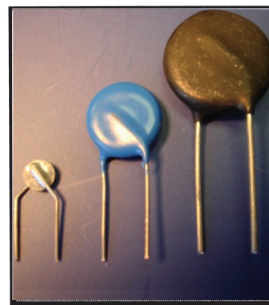
Modification	Dash No.	Body Type
No Leads	-01	Disc/Chip
Inside Kink	-02	Disc Only
Outside Kink	-03	Disc Only
Epoxy Coating (150°C Max. Temp.)	-04	Disc/Chip
Silicone Coating (200°C Max. Temp.)	-05	Disc/Chip
Epoxy/Inside Kink	-06	Disc Only
Epoxy/Outside Kink	-07	Disc Only
Silicone/Inside Kink	-08	Disc Only
Silicone/Outside Kink	-09	Disc Only

Example: WN2005D200K-06 (Standard part with epoxy coating and inside kink leads)

Table 2



Western Electronics Component Company 521-A Spectrum Circle, Oxnard, CA 93030
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TYPICAL APPLICATIONS

- * Temperature Measurement
- * Temperature Control
- * Inrush Current Limiting
- * Temperature Compensation
- * Sensing Liquid Level or Air Flow

STANDARD NTC CURVE CHARACTERISTICS

Curve		D		A		B		C	
Beta In °K 25/75 (°C)		2925±225		3545±150		3965±125		4500±200	
Resis. Ratio 0/50 °C		5.15±8%		7.04±5%		9.1±5%		11.8±6%	
Resis. Ratio 25/125 °C		11.8±15%		19.80±10%		29.4±10%		48.7±10%	
TCR @25°C (%/°C)		-3.3		-3.9		-4.4		-4.9	
Temperature		R-T Curve	TCR (%/°C)	R-T Curve	TCR (%/°C)	R-T Curve	TCR (%/°C)	R-T Curve	TCR (%/°C)
°F	°C								
-58.00	-50.00	23.62	5.400	40.06	6.100	67.06	7.20	98.20	7.40
-49.00	-45.00	18.13		29.62		47.81		67.83	
-40.00	-40.00	14.05	5.050	22.06	5.900	34.01	6.70	47.34	7.00
-31.00	-35.00	10.94		16.59		24.49		33.37	
-22.00	-30.00	8.623	4.700	12.51	5.500	17.84	6.20	23.76	6.60
-13.00	-25.00	6.849		9.633		13.12		17.08	
-4.00	-20.00	5.461	4.400	7.431	5.100	9.766	5.80	12.39	6.30
5.00	-15.00	4.410		5.780		7.331		9.072	
14.00	-10.00	3.588	4.10	4.534	4.80	5.552	5.50	6.700	5.90
23.00	-5.00	2.932		3.879		4.246		4.989	
32.00	0.00	2.417	3.80	2.948	4.50	3.269	5.10	3.746	5.60
41.00	5.00	2.002		2.281		2.539		2.835	
50.00	10.00	1.674	3.60	1.844	4.30	1.988	4.80	2.161	5.30
59.00	15.00	1.397		1.494		1.567		1.661	
68.00	20.00	1.194	3.40	1.216	4.00	1.245	4.50	1.284	5.10
77.00	25.00	1.000	3.30	1.000	3.90	1.000	4.40	1.000	4.90
86.00	30.00	0.8575	3.20	0.8260	3.80	0.8057	4.30	0.7844	4.80
95.00	35.00	0.7340		0.6858		0.6526		0.6190	
104.00	40.00	0.6311	3.00	0.5726	3.60	0.5320	4.00	0.4915	4.50
113.00	45.00	0.5419		0.4804		0.4361		0.3926	
122.00	50.00	0.4673	2.85	0.4051	3.40	0.3596	3.80	0.3174	4.30
131.00	55.00	0.4015		0.3425		0.2983		0.2547	
140.00	60.00	0.3512	2.65	0.2915	3.20	0.2495	3.60	0.2069	4.10
149.00	65.00	0.3066		0.2489		0.2076		0.1689	
158.00	70.00	0.2686	2.50	0.2137	3.00	0.1745	3.40	0.1385	3.90
167.00	75.00	0.2365		0.1837		0.1478		0.1142	
176.00	80.00	0.2090	2.35	0.1592	2.90	0.1257	3.30	0.09453	3.70
185.00	85.00	0.1860		0.1385		0.1070		0.07863	
194.00	90.00	0.1660	2.25	0.1206	2.70	0.09146	3.10	0.06566	3.50
203.00	95.00	0.1485		0.1055		0.07856		0.05509	
212.00	100.00	0.1335	2.10	0.09242	2.60	0.06778	2.90	0.04640	3.40
221.00	105.00	0.1210		0.08137		0.05867		0.03923	
230.00	110.00	0.1100	2.00	0.07182	2.50	0.05094	2.80	0.03329	3.30
239.00	115.00	0.1040		0.06367		0.04443		0.02836	
248.00	120.00	0.09211	1.95	0.05653	2.30	0.03884	2.70	0.02424	3.10
257.00	125.00	0.08472	1.90	0.05033	2.30	0.03407	2.60	0.02059	3.00
266.00	130.00	0.07830	1.90	0.04488	2.20	0.02998	2.50	0.01789	3.00
275.00	135.00	0.07246		0.04022		0.02645		0.01545	
284.00	140.00	0.06767	1.80	0.03622	2.10	0.02340	2.40	0.01338	2.90
293.00	145.00	0.06323		0.03267		0.02079		0.01162	
302.00	150.00	0.05912	1.75	0.02679	2.00	0.01847	2.30	0.010110	2.80

Part Number	Resis. R ₀ @25°C (Ohms) ±20%	I _{max} Max. Steady State Current (amps)	R ₀ @I _{max} (OHMS)	Physical Dimensions (Inches)		
				"D" (Max. Dia. Over Coating)	"T" (Max. Thickness Over Coating)	"L" Lead Diameter
WS320	1.00	20.00	0.015	0.90	0.30	0.040
WS330	2.00	18.00	0.030	0.90	0.35	0.040
WS340	2.50	3.00	0.150	0.60	0.25	0.032
WS350	2.50	7.00	0.050	0.60	0.25	0.032
WS360	2.50	9.00	0.040	0.60	0.25	0.032
WS370	2.50	10.00	0.040	0.90	0.25	0.040
WS380	2.50	15.00	0.030	0.90	0.30	0.040
WS390	4.00	5.00	0.150	0.50	0.25	0.032
WS400	4.00	8.00	0.070	0.60	0.25	0.040
WS410	4.00	14.00	0.050	0.90	0.35	0.040
WS420	5.00	2.00	0.400	0.60	0.25	0.032
WS430	5.00	4.00	0.150	0.60	0.25	0.032
WS440	5.00	7.00	0.070	0.60	0.25	0.032
WS450	5.00	8.00	0.050	0.70	0.25	0.040
WS460	5.00	9.00	0.060	0.90	0.25	0.040
WS470	5.00	10.00	0.060	0.90	0.35	0.040
WS480	3.00	12.00	0.060	0.90	0.50	0.040
WS490	7.00	3.00	0.140	0.50	0.25	0.032
WS500	7.00	4.00	0.150	0.60	0.30	0.040
WS510	7.00	5.00	0.150	0.60	0.30	0.040
WS520	7.00	6.00	0.150	0.60	0.30	0.040
WS530	10.00	1.50	0.250	0.45	0.25	0.032
WS540	10.00	2.00	0.200	0.45	0.25	0.032
WS550	10.00	3.00	0.200	0.50	0.30	0.032
WS560	10.00	5.00	0.200	0.50	0.35	0.032
WS570	10.00	6.00	0.150	0.60	0.35	0.040
WS580	12.00	4.00	0.220	0.50	0.30	0.040
WS600	20.00	1.75	0.600	0.50	0.35	0.032
WS610	20.00	2.50	0.500	0.50	0.35	0.032
WS620	25.00	1.50	0.600	0.50	0.30	0.032
WS630	40.00	2.00	0.600	0.65	0.25	0.032
WS650	120.00	3.00	0.900	0.95	0.25	0.040

NTC INRUSH CURRENT LIMITERS

Inrush current limiters limit the large initial current present when a circuit is first energized. The relatively high initial resistance of the thermistor acts to limit the inrush current until the power it is dissipating heats it up to a high temperature where its resistance will be reduced to a negligible value.

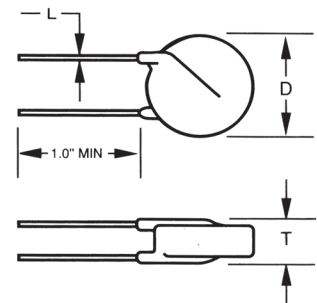
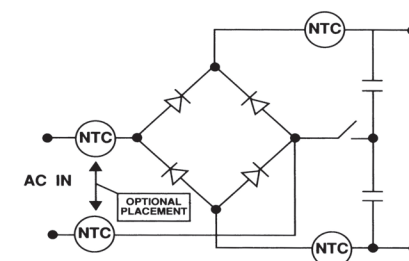
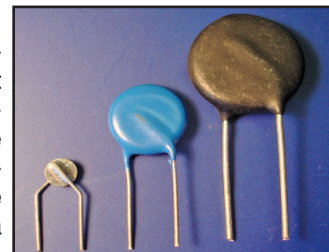


Figure 2

APPLICATIONS

Figure 2 illustrates a typical application in a power supply. The thermistors are placed in either the AC or DC locations of the circuit.

DEFINITIONS

R₀@I_{max}-Approximate resistance at maximum steady state current.

I_{max}- Maximum steady state current (DC or AC).

NTC CHIP THERMISTORS

Applications

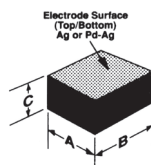
- * Temperature Sensing
- * Temperature Control
- * Temperature Compensation

Options

- * Termination materials
- * Special resistance values
- * Special dimensions

Features

- * Top and bottom termination
- * Allows design flexibility
- * Solid state ceramic composition



SURFACE MOUNT NTC CHIP THERMISTORS

Applications

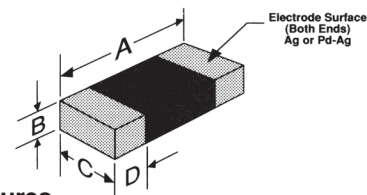
- * Temperature Sensing
- * Temperature Control
- * Temperature Compensation

Options

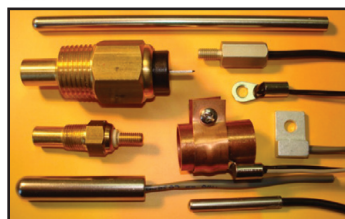
- * Termination materials
- * Special resistance values
- * Special dimensions

Features

- * Five sided wrap-around terminations
- * Allows design flexibility
- * Solid state ceramic composition



Part Number	R ₀ @25°C (Ω)±10%	Curve	TCR@25°C (%/°C)	Physical Dimensions (In.)		
				A	B	C
WR210	50.00	D	-3.3	0.085	0.085	0.030
WR220	70.00	D	-3.3	0.070	0.070	0.030
WR225	80.00	D	-3.3	0.067	0.067	0.030
WR235	100.00	D	-3.3	0.065	0.065	0.035
WR245	150.00	D	-3.3	0.052	0.052	0.035
WR255	200.00	D	-3.3	0.045	0.045	0.035
WR265	300.00	D	-3.3	0.037	0.037	0.035
WR270	300.00	A	-3.9	0.110	0.110	0.030
WR280	500.00	A	-3.9	0.085	0.085	0.030
WR290	700.00	A	-3.9	0.070	0.070	0.030
WR295	800.00	A	-3.9	0.067	0.067	0.030
WR305	1000.00	A	-3.9	0.060	0.060	0.030
WR315	1500.00	A	-3.9	0.050	0.050	0.030
WR325	2000.00	A	-3.9	0.045	0.045	0.035
WR330	2500.00	A	-3.9	0.040	0.040	0.035
WR340	2500.00	B	-4.4	0.100	0.100	0.030
WR345	3000.00	B	-4.4	0.090	0.090	0.030
WR350	5000.00	B	-4.4	0.070	0.070	0.030
WR360	10000.00	B	-4.4	0.050	0.050	0.030
WR370	20000.00	B	-4.4	0.038	0.038	0.035
WR375	30000.00	B	-4.4	0.030	0.030	0.035
WR385	30000.00	C	-4.9	0.090	0.090	0.030
WR395	50000.00	C	-4.9	0.070	0.070	0.030
WR405	70000.00	C	-4.9	0.060	0.060	0.030
WR410	80000.00	C	-4.9	0.055	0.055	0.030
WR420	100000.00	C	-4.9	0.055	0.055	0.035
WR430	200000.00	C	-4.9	0.038	0.038	0.035
WR435	250000.00	C	-4.9	0.035	0.035	0.035



PROBES/ASSEMBLIES

Many probes and assemblies are available for numerous applications. Please contact **WECC** Applications Engineering with specific requirements.

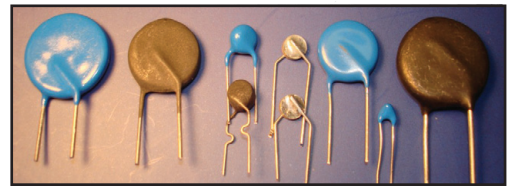
Part Number	R ₀ @25°C (Ω) ±10%	Curve	TCR@25°C (%/°C)	Physical Dimensions (Inches)			
				A	B	C	D
WM0952D201K	200.00	D	-3.30	0.100	0.052	0.090	0.020
WM0935D301K	300.00	D	-3.30	0.100	0.035	0.090	0.020
WM0738D401K	400.00	D	-3.30	0.110	0.038	0.070	0.020
WM0635D501K	500.00	D	-3.30	0.110	0.035	0.060	0.020
WM0634D601K	600.00	D	-3.30	0.125	0.034	0.060	0.020
WM0535D701K	700.00	D	-3.30	0.125	0.035	0.050	0.020
WM0439D801K	800.00	D	-3.30	0.125	0.039	0.040	0.020
WM0434D901K	900.00	D	-3.30	0.125	0.034	0.040	0.020
WM0431D102K	1000.00	D	-3.30	0.125	0.031	0.040	0.020
WM1083A102K	1000.00	A	-3.90	0.090	0.083	0.100	0.020
WM0907A152K	1500.00	A	-3.90	0.100	0.070	0.090	0.020
WM0859A202K	2000.00	A	-3.90	0.100	0.059	0.080	0.020
WM0853A252K	2500.00	A	-3.90	0.110	0.053	0.080	0.020
WM0751A302K	3000.00	A	-3.90	0.110	0.051	0.070	0.020
WM0934A402K	4000.00	A	-3.90	0.125	0.034	0.090	0.020
WM0833A502K	5000.00	A	-3.90	0.125	0.033	0.075	0.020
WM0634A502K	5000.00	A	-3.90	0.100	0.034	0.055	0.020
WM0634A602K	6000.00	A	-3.90	0.125	0.034	0.060	0.020
WM0629A602K	6000.00	A	-3.90	0.100	0.029	0.055	0.020
WM0632A702K	7000.00	A	-3.90	0.125	0.032	0.055	0.020
WM0527A702K	7000.00	A	-3.90	0.100	0.027	0.050	0.020
WM0531A802K	8000.00	A	-3.90	0.125	0.031	0.050	0.020
WM0526A802K	8000.00	A	-3.90	0.100	0.026	0.045	0.020
WM0431A103K	10000.00	A	-3.90	0.125	0.031	0.040	0.020
WM0424A103K	10000.00	A	-3.90	0.100	0.024	0.040	0.020
WM0973B103K	10000.00	B	-4.40	0.100	0.073	0.090	0.020
WM0951B203K	20000.00	B	-4.40	0.125	0.051	0.085	0.020
WM0836B303K	30000.00	B	-4.40	0.125	0.036	0.080	0.020
WM0637B303K	30000.00	B	-4.40	0.100	0.037	0.060	0.020
WM0731B403K	40000.00	B	-4.40	0.125	0.031	0.070	0.020
WM0533B403K	40000.00	B	-4.40	0.100	0.033	0.050	0.020
WM0632B503K	50000.00	B	-4.40	0.125	0.032	0.055	0.020
WM0529B503K	50000.00	B	-4.40	0.100	0.029	0.045	0.020
WM0624B603K	60000.00	B	-4.40	0.125	0.024	0.060	0.020
WM0524B603K	60000.00	B	-4.40	0.100	0.024	0.045	0.020
WM0524B803K	80000.00	B	-4.40	0.125	0.024	0.045	0.020
WM0422B104K	100000.00	B	-4.40	0.125	0.022	0.040	0.020
WM0973C104K	100000.00	C	-4.90	0.100	0.073	0.090	0.020
WM0855C154K	150000.00	C	-4.90	0.100	0.055	0.080	0.020
WM0850C204K	200000.00	C	-4.90	0.110	0.050	0.075	0.020
WM1030C404K	300000.00	C	-4.90	0.125	0.030	0.095	0.020
WM0733C404K	400000.00	C	-4.90	0.125	0.033	0.065	0.020
WM0725C504K	500000.00	C	-4.90	0.125	0.025	0.070	0.020
WM0529C504K	500000.00	C	-4.90	0.100	0.029	0.045	0.020
WM0523C754K	750000.00	C	-4.90	0.125	0.023	0.050	0.020
WM0422C105K	1000000.00	C	-4.90	0.125	0.022	0.040	0.020



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PTC SWITCHING THERMISTORS

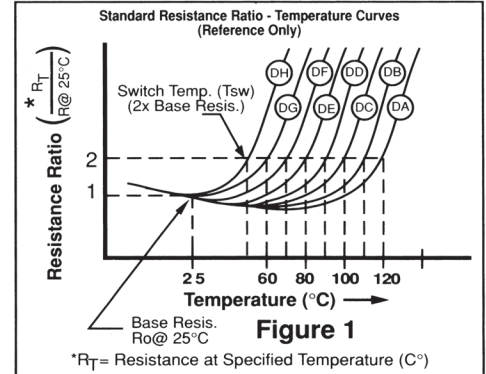


TYPICAL APPLICATIONS

- Self Regulating Heaters
- Single Phase Motor Starting
- Over temperature Protection
- Air Flow/Liquid Level Sensing
- Time Delay
- Degaussing
- Arc Suppression
- Solid State Fusing

INTRODUCTION

Switching PTC (Positive Temperature Coefficient) Thermistors are thermally sensitive resistors. A PTC will exhibit an extremely rapid increase in resistance (several decades) when heated beyond its switching temperature (T_{sw}). Standard resistance Ratio-temperature curves are illustrated in Figure 1. Table 1 defines the curve-switch temperature (T_{sw}) relationship. Figure 2 illustrates a typical static voltage/current curve.



RT CURVE-SWITCH TEMPERATURE (T_{sw}) RELATIONSHIP

CURVE	SWITCH TEMP. (°C)	CURVE	SWITCH TEMP. (°C)
DH	50	DD	90
DG	60	DC	100
DF	70	DB	110
DE	80	DA	120

Table 1

Static Voltage/Current Curve

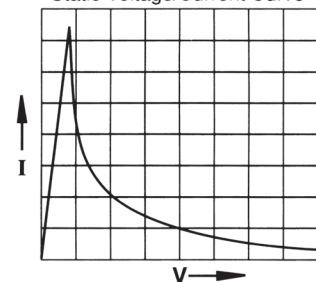


Figure 2

TERMINOLOGY

Base Resistance (R₀)

The resistance value of a thermistor at a specified temperature with negligible electrical power to avoid self heating. Usually base resistance will be defined at 25°C. See Fig. 1.

Switch Temperature (T_{sw})

The temperature when the resistance of the PTC thermistor reaches two (2) times the base resistance, sometimes referred to as curie point or transition temperature. See Fig. 1.

Maximum Operating Voltage (V_{max})

The maximum rated voltage the thermistor can continuously withstand 60 cycle AC or DC.

Dissipation Constant (Dc)

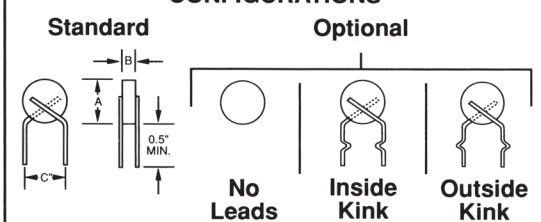
The amount of power through self-heating necessary to raise the thermistor body 1°C (units- Mw/°C)

Time Constant (Tc)

The time, in seconds, required for a thermistor dissipating negligible power to change 63% of the total difference between its initial and final body temperature when subjected to a change in temperature.

Part Number	Base resistance R ₀ @25°C (Ω) ±30%	Switch Temp. T _{sw} ±5°C (Curve)	Maximum Operating Voltage V _{max}	Time Constant Tc (Sec)	Dissipation Constant Dc(mW/°C)	Reference Dimensions (In.)			
						A	B	C	Lead Dia. (in.)
WP5004DA1R0N	1.0	120 (DA)	15	65	15	0.55	0.04	0.30	0.032
WP5004DA1R5N	1.5		20	55	14	0.50	0.04	0.30	0.032
WP5004DA2R0N	2.0		25	55	14	0.50	0.04	0.30	0.032
WP5004DA2R2N	2.2		25	50	12	0.50	0.04	0.30	0.025
WP4504DA3R3N	3.3		25	45	11	0.45	0.04	0.30	0.025
WP4005DA4R7N	4.7		35	45	10	0.40	0.05	0.30	0.025
WP4005DA5R0N	5.0		35	45	10	0.40	0.05	0.30	0.025
WP3505DA7R5N	7.5		50	40	9	0.35	0.05	0.25	0.020
WP3005DA100N	10.0		50	35	8	0.30	0.05	0.25	0.020
WP5010DA100N	10.0		132	75	15	0.50	0.10	0.30	0.025
WP3005DA200N	20.0		50	35	8	0.30	0.05	0.20	0.020
WP5010DA200N	20.0		132	85	16	0.50	0.10	0.30	0.032
WP2505DA250N	25.0	110 (DB)	50	30	7	0.25	0.05	0.25	0.020
WP2505DA330N	33.0		50	30	7	0.25	0.05	0.20	0.020
WP3006DA500N	50.0		50	35	8	0.30	0.06	0.25	0.020
WP4510DA500N	50.0		132	55	12	0.45	0.10	0.30	0.025
WP2506DA750N	75.0		50	30	7	0.25	0.06	0.20	0.020
WP2005DA101N	100.0		50	30	7	0.20	0.05	0.20	0.020
WP2008DA251N	250.0		150	30	6	0.20	0.08	0.20	0.020
WP2010DA501N	500.0		250	30	6	0.20	0.10	0.20	0.020
WP5004DB2R2N	2.2		25	50	12	0.50	0.04	0.30	0.025
WP4504DB3R3N	3.3		25	45	11	0.45	0.04	0.30	0.025
WP4005DB5R0N	5.0		35	45	10	0.40	0.05	0.30	0.025
WP3505DB7R5N	7.5		50	40	9	0.35	0.05	0.25	0.020
WP3005DB100N	10.0	100 (DC)	50	35	8	0.30	0.05	0.25	0.020
WP5010DB100N	10.0		132	75	15	0.50	0.10	0.30	0.025
WP3005DB200N	20.0		50	35	8	0.30	0.05	0.20	0.020
WP5010DB200N	20.0		132	85	16	0.50	0.10	0.30	0.032
WP3510DB350N	35.0		132	40	9	0.35	0.10	0.25	0.025
WP4510DB500N	50.0		132	55	12	0.45	0.10	0.30	0.025
WP2005DB101N	100.0		50	30	7	0.20	0.05	0.20	0.020
WP5010DB101N	100.0		265	75	15	0.50	0.10	0.30	0.025
WP2008DB251N	250.0		150	30	6	0.20	0.08	0.20	0.020
WP2010DB501N	500.0		250	30	6	0.20	0.10	0.20	0.020
WP2010DB152N	1500.0		350	30	6	0.20	0.10	0.20	0.020
WP4005DC5R0N	5.0	90 (DD)	35	45	10	0.40	0.05	0.30	0.025
WP3505DC7R5N	7.5		50	40	9	0.35	0.05	0.25	0.020
WP3005DC100N	10.0		50	35	8	0.30	0.05	0.25	0.020
WP5010DC100N	10.0		132	75	15	0.50	0.10	0.30	0.025
WP3005DC200N	20.0		50	35	8	0.30	0.05	0.20	0.020
WP5010DC200N	20.0		132	85	16	0.50	0.10	0.30	0.032
WP3510DC350N	35.0		132	40	9	0.35	0.10	0.25	0.025
WP3006DC500N	50.0		50	35	8	0.30	0.06	0.25	0.020
WP4510DC500N	50.0		132	55	12	0.45	0.10	0.30	0.025
WP2005DC101N	100.0		50	30	7	0.20	0.05	0.20	0.020
WP3005DD200N	20.0	80 (DE)	50	35	8	0.30	0.05	0.20	0.020
WP3006DD500N	50.0		50	35	8	0.30	0.06	0.25	0.020
WP2005DD101N	100.0		50	30	7	0.20	0.05	0.20	0.020
WP3005DE100N	10.0		50	35	8	0.30	0.05	0.25	0.020
WP5010DE100N	10.0		132	75	15	0.50	0.10	0.30	0.025
WP3005DE200N	20.0		50	35	8	0.30	0.05	0.20	0.020
WP5010DE200N	20.0		132	85	16	0.50	0.10	0.30	0.032
WP3006DE500N	50.0		50	35	8	0.30	0.06	0.25	0.020
WP4510DE500N	50.0		132	55	12	0.45	0.10	0.30	0.025
WP2005DE101N	100.0		50	30	7	0.20	0.05	0.20	0.020
WP3005DF100N	10.0	70 (DF)	50	35	8	0.30	0.05	0.25	0.020
WP5010DF100N	10.0		132	75	15	0.50	0.10	0.30	0.025
WP3005DF200N	20.0		50	35	8	0.30	0.05	0.20	0.020
WP3510DF350N	35.0		132	40	9	0.35	0.10	0.25	0.025
WP3006DF500N	50.0		50	35	8	0.30	0.06	0.25	0.020
WP4510DF500N	50.0		132	55	12	0.45	0.10	0.30	0.025
WP5510DF500N	50.0		265	85	16	0.55	0.10	0.30	0.032
WP2005DF101N	100.0		50	30	7	0.20	0.05	0.20	0.020
WP5010DG100N	10.0	60 (DG)	132	75	15	0.50	0.10	0.30	0.025
WP3005DG200N	20.0		50	35	8	0.30	0.05	0.20	0.020
WP5010DG200N	20.0		132	85	16	0.50	0.10	0.30	0.032
WP3510DG350N	35.0		132	40	9	0.35	0.10	0.25	0.025
WP3006DG500N	50.0		50	35	8	0.30	0.06	0.25	0.020
WP4510DG500N	50.0		132	55	12	0.45	0.10	0.30	0.025
WP5510DG500N	50.0		265	90	16	0.55	0.10	0.30	0.032
WP2005DG101N	100.0		50	30	7	0.20	0.05	0.20	0.020
WP3005DH200N	20.0	50 (DH)	50	35	8	0.30	0.05	0.20	0.020
WP3006DH500N	50.0		50	35	8	0.30	0.06	0.25	0.020
WP2005DH101N	100.0		50	30	7	0.20	0.05	0.20	0.020

CONFIGURATIONS



Modification	Dash No.
No Leads	-01
Inside Kink	-02
Outside Kink	-03
Epoxy Coating (150°C Max. Temp.)	-04
Silicone Coating (200°C Max. Temp.)	-05
Epoxy/Inside Kink	-06
Epoxy/Outside Kink	-07
Silicone/Inside Kink	-08
Silicone/Outside Kink	-09

Example: WP5004DB2R2N -06 (Standard part with epoxy coating and inside Kink leads)

Table 2

Options: If one of the modifications in Table 2 is required, add the dash number listed to the part number (see example). Other options are available including non-standard base resistance values and tolerances.