Ceramic PTC Thermistor: PPL Series

Twin SMD Type for Telecom Application

■ Features

1. RoHS compliant
2. Two resistance-matched PTCs in a plastic housing
3. Wide resistance range in telecom area from 10Ω to 50Ω
4. Compliant with ITU-T standards
5. Operating temperature range:
   0 ~ +85°C (V=Vmax)
   -25 ~ +125°C (V=0)
6. Agency recognition: UL/cUL, TUV
   UL/cUL File No. E138827
   TUV File No. R 50171789

■ Recommended Applications

1. Cable Modem, ADSL Modem with VOIP
2. Customer Premise Equipment (CPE)
3. Central Office (CO)
4. Access Equipment (AE)
5. Main Distribution Frame (MDF)
6. Public Switched Telephone Network (PSTN)
7. Exchanger

■ Part Number Code

P	P	L	0	7	5	0	0	M	A	0	C	0			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Product Code

PPL	THINKING Ceramic PTC Thermistor PP Series

Dimensions

07	ϕ7mm

Resistance (R_{25})

7R0	7Ω
100	10Ω
500	50Ω

Tolerance of R_{25}

K	±10%
L	±15%
M	±20%
H	±25%
N	±30%
Y	Special

Curie Temperature

P8	80℃
A0	100℃
A2	120℃
A4	140℃

Max. Voltage

A4	140V
B5	250V
C0	300V

Internal Control Code

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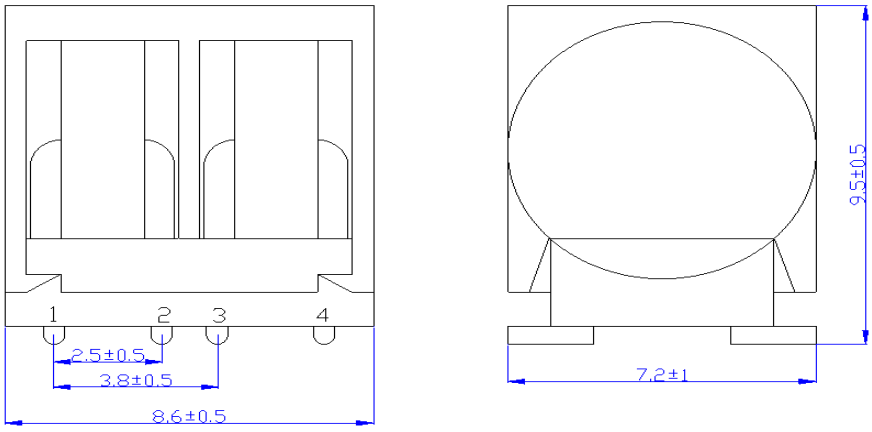
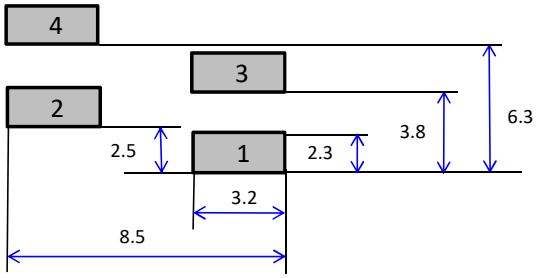
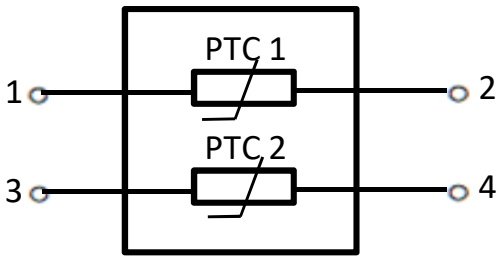
■ Structure and Dimensions



■ Solder pad



■ Internal circuit



■ Characteristics

Part No.	Nominal Zero-power Resistance	Resistance Matching In Housing	Non-operating Current at 25℃	Non-operating Current at 40℃	Trip Current at 25℃	Responding Time (s)			Max Voltage	Withstanding Voltage	Max. Current	Safety Approvals	
	R_{25} (Ω)	$\lvert R_1-R_2 \rvert$ (Ω)	I_N (mA) @25℃	I_N (mA) @40℃	I_t (mA) @25℃	3A→ 0.5A	1A→ 0.5A	0.5A→ 0.15A	Vmax (V_{AC})	Vw (V_{AC})	I_{max}(A)	UL/ cUL	TUV
PPL07100□A0B5-Y	10	±0.5	130	120	390	0.8	8.0	35	250	250	2.5	√	√
PPL07180□A0B5-Y	18		110	100	330	0.4	2.5	10	250	250	3	√	√
PPL07250□A0B5-Y	25		90	80	225	0.35	2.0	10	250	250	3	√	√
PPL07390□A0B5-Y	39		70	65	180	0.3	1.0	4.0	250	250	3	√	√
PPL07500□A0C0-Y	50		60	55	165	0.15	0.8	3.5	300	600	3	√	√

Note

□: Tolerance of R_{25}

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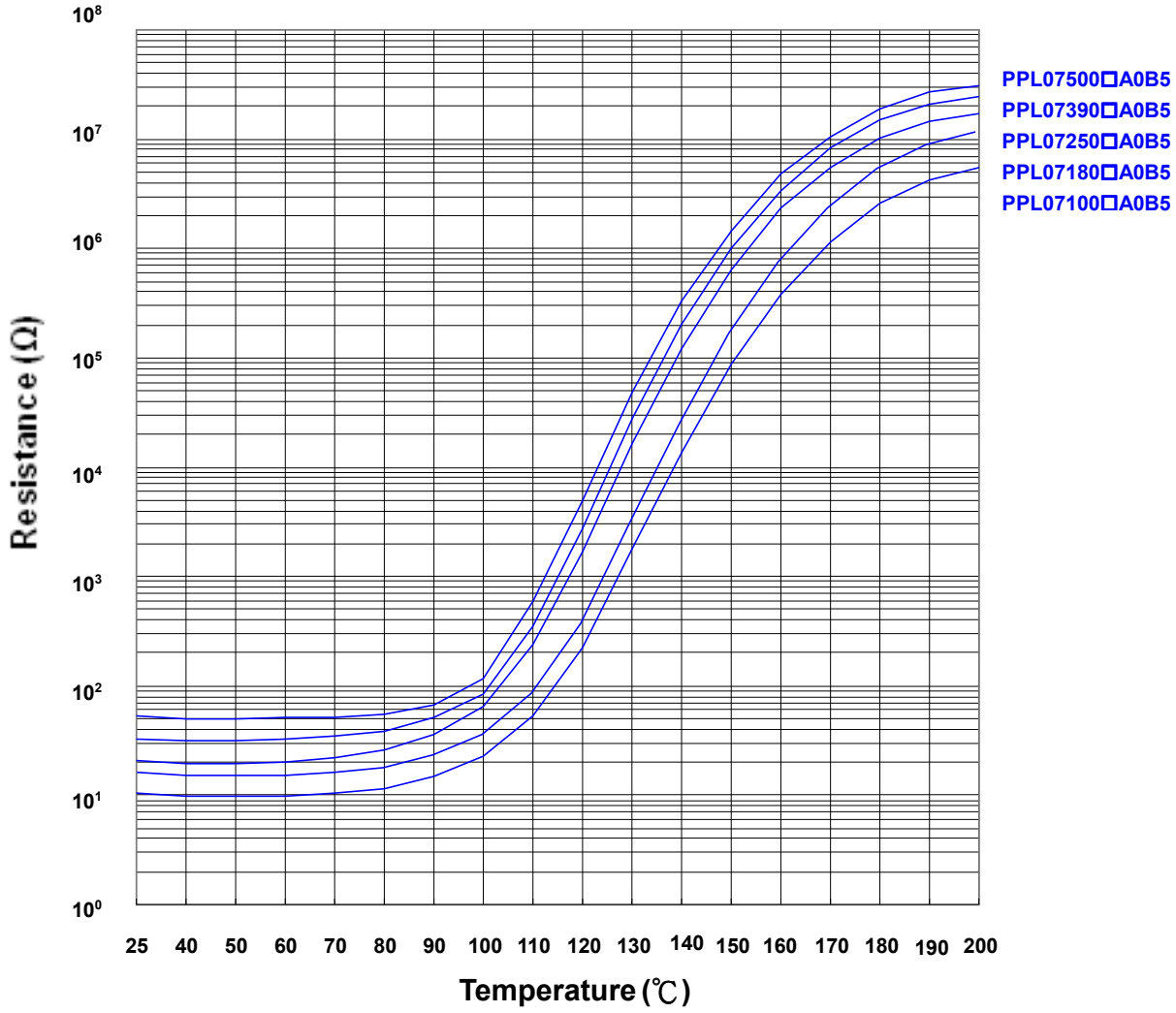
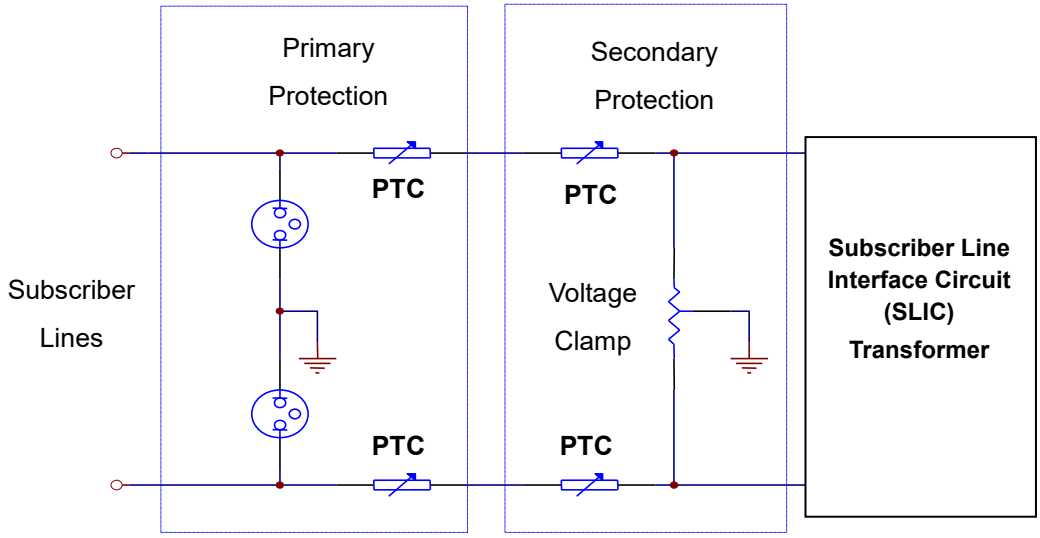
■ R-T Characteristic Curves (Typical)

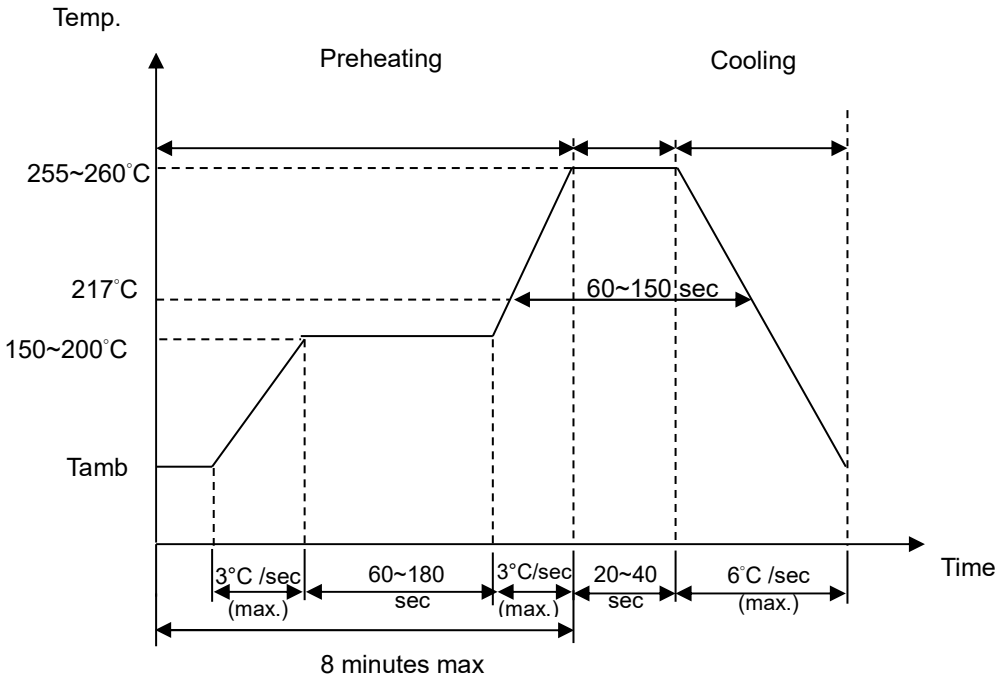


■ Circuit for Typical Application



■ Soldering Recommendation

● IR-Reflow Soldering Profile



● Recommended Reworking Conditions with Soldering Iron

Item	Conditions
Temperature of Soldering Iron-tip	360℃ (max.)
Soldering Time	3 sec (max.)
Diameter of Soldering Iron-tip	3mm (max.)

■ Reliability Test

<table>
<tr><th>Item</th><th>Standard</th><th>Test conditions and methods</th><th>Specifications</th></tr>
<tr><td>Solderability</td><td>IEC 60738-1</td><td>245±3℃ , 2±0.5 sec</td><td>At least 95% of terminal electrode is covered by new solder</td></tr>
<tr><td>Resistance to Soldering Heat</td><td>IEC 60738-1</td><td>260±3℃ , 10±1 sec</td><td>| △ R_{25}/R_{25} | ≦20%
No visible damage</td></tr>
<tr><td>Vibration</td><td>IEC 60738-1</td><td>Frequency range:10~55Hz
Amplitude: 0.75mm or 98m/s^2
Direction: 3 mutually perpendicular directions
Duration: 6hrs (3x2 hrs)</td><td>| △ R_{25}/R_{25} | ≦20%
No visible damage</td></tr>
<tr><td>Shock</td><td>IEC 60738-1</td><td>Wave: half-sine
⊿V: 1.0m/s
Acceleration: 50 m/s^2
Pulse time: 30ms</td><td>| △ R_{25}/R_{25} | ≦20%
No visible damage</td></tr>
<tr><td>Rapid Change of Temperature</td><td>IEC 60738-1</td><td>The thermal shock conditions shown below shall be repeated 5 cycles.
<table>
<tr><th>Step</th><th>Temperature (℃)</th><th>Period (minutes)</th></tr>
<tr><td>1</td><td>-40 ± 5</td><td>30 ± 3</td></tr>
<tr><td>2</td><td>Room temperature</td><td>5 ± 3</td></tr>
<tr><td>3</td><td>85 ± 5</td><td>30 ± 3</td></tr>
<tr><td>4</td><td>Room temperature</td><td>5 ± 3</td></tr>
</table></td><td>| △ R_{25}/R_{25} | ≦20%
No visible damage</td></tr>
<tr><td>Climatic Sequence</td><td>IEC 60738-1</td><td>Dry heat: 125 ℃ for 16 hrs
Damp heat first cycle: 55℃, 95% R.H ,cycle time: 24 hrs
Cold: -40℃ for 2 hrs
Damp heat (cyclic), remaining cycles: 5 cycles
Test according to IEC60068-2-30</td><td>| △ R_{25}/R_{25} | ≦20%
No visible damage</td></tr>
<tr><td>Damp Heat, Steady State</td><td>IEC 60738-1</td><td>40±2℃, 90~95% RH, for 1000±2hrs</td><td>| △ R_{25}/R_{25} | ≦20%
No visible damage</td></tr>
<tr><td>Endurance at Maximum Operating Temperature and Maximum Voltage</td><td>IEC60738-1</td><td>60℃, Vmax, It<I<Imax for 1000 hrs</td><td>| △ R_{25}/R_{25} | ≦20%
No visible damage</td></tr>
<tr><td>Over Current</td><td>Specification Standard</td><td>220Vrms, Imax:2.5A or 3A, 60s on and 600s off , ×20 cycles</td><td>| △ R_{25}/R_{25} | ≦20%
No visible damage</td></tr>
<tr><td>Power Contact</td><td>ITU-T K.20 9.4</td><td>230Vrms, 10Ω, 15Min.</td><td>No fire hazard</td></tr>
<tr><td>Lightning Surge</td><td>ITU-T K30 4.2.5</td><td>DC:1.0KV, 10/1000μs,25A,×30 cycles
DC:1.5KV, 10/310μs,37.5A,x10cycles</td><td>| △ R_{25}/R_{25} | ≦20%
No visible damage</td></tr>
<tr><td>Power Induction</td><td>Specification Standard</td><td>600Vrms, 600Ω, 0.2s on and 60s off, 10 cycles
(For Vw-600V only)</td><td>| △ R_{25}/R_{25} | ≦20%
No visible damage</td></tr>
</table>

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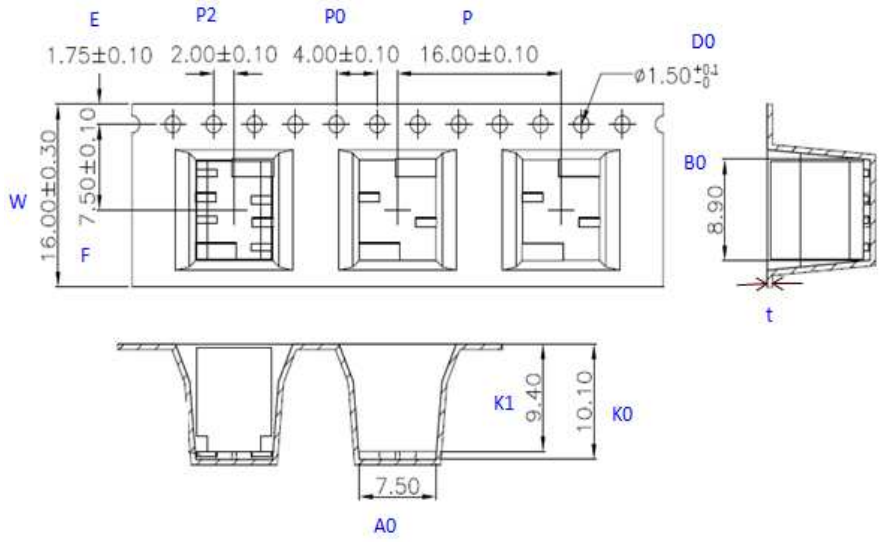
■ Packaging

● Taping Specification

Item	Nominal dimensions	Tolerance
W	16.00	±0.30
P	16.00	±0.10
E	1.75	±0.10
F	7.50	±0.10
P2	2.00	±0.10
P0	4.00	±0.10
D0	1.50	+0.10/-0.00
K1	9.4	±0.10
A0	7.5	±0.10
B0	8.9	±0.10
K0	10.1	±0.10
t	0.5	±0.05

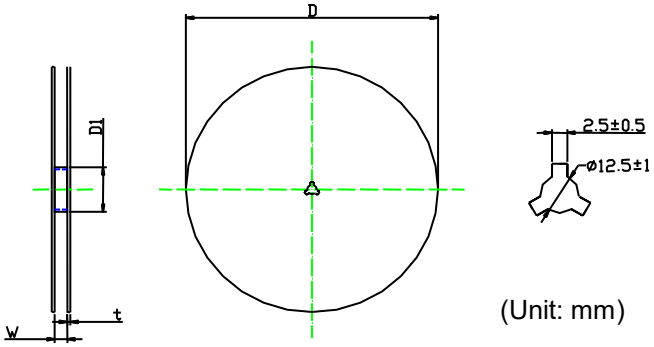


(Unit: mm)

■ Quantity

● Reel packing: 400 pcs per reel

Item	Nominal dimensions	Tolerance
D	340	±5
W	17.5	±0.5
t	2.0	±0.5
D1	75	±1.5



(Unit: mm)

■ Warehouse Storage Conditions of Products

● Storage Conditions:

1. Storage Temperature: -10℃~+40℃
2. Relative Humidity: ≦75%RH
3. Keep away from corrosive atmosphere and sunlight.

● Period of Storage: 1 year

■ Usage

Please keep products away from the conditions mentioned below to avoid their characteristic deterioration and failure.

1. Corrosive gas or deoxidizing gas (Cl_2, H_2S, NH_3, SOx, NOx etc.)
2. Place in a vacuum or put pressure
3. Salt water, oil, solvent and chemical liquid
4. Flammable gas
5. Place in splashed water, or high humidity and dewing place
6. Other places similar to any conditions mentioned above