

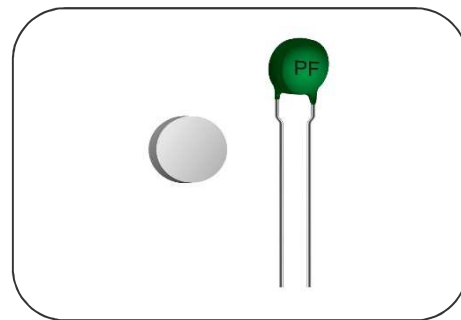
# Ceramic PTC Thermistor: PPL Series

## Overload Protection



### ■ Features

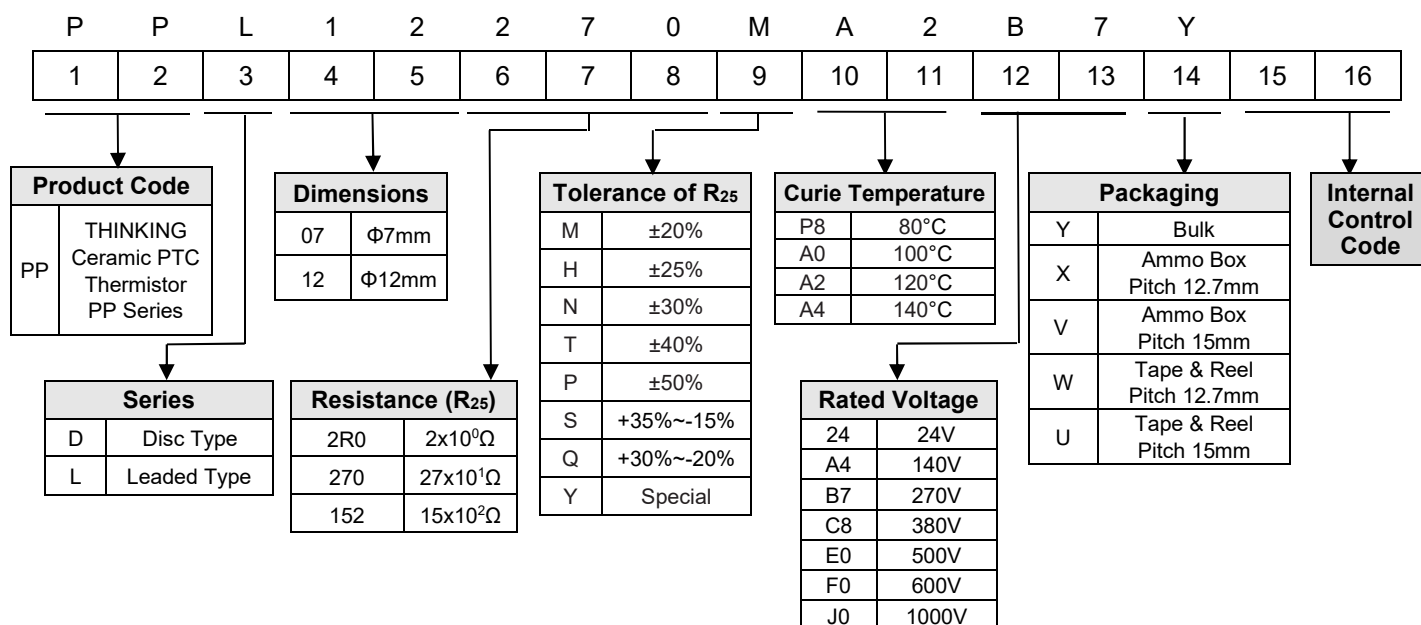
1. RoHS compliant
2. PPD series are disc and PPL are leaded type
3. Voltage rating:  $12V_{ac} \sim 1000V_{ac}$
4. Resistance range:  $0.3\Omega \sim 10K\Omega$
5. Stable over a long time
6. Operating temperature range:  $0 \sim +60^{\circ}C$  ( $V=V_{max}$ )  $T_c \leq 90^{\circ}C$   
 $0 \sim +85^{\circ}C$  ( $V=V_{max}$ )  $T_c > 90^{\circ}C$   
 $-40 \sim +125^{\circ}C$  ( $V=0$ )
7. Agency Recognition: UL/cUL, CQC and TUV  
 UL/cUL File No.: E138827  
 CQC File No.: CQC03001008123~124  
 TUV File No.: R50135521, R50143310, R50171789, R50135484



### ■ Recommended Applications

1. Home appliance
2. Electrical equipment (Electrical machinery, transformer, electric meter)

### ■ Part Number Code

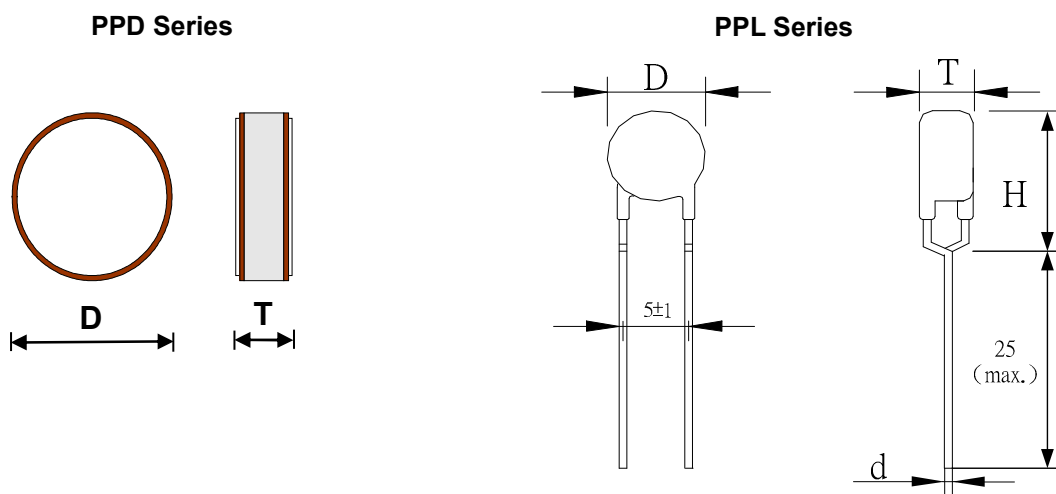


# Ceramic PTC Thermistor: PPL Series

## Overload Protection



### ■ Dimensions



(Unit: mm)

### ■ Characteristics

#### PPD Series

Part No.	Curie Temperature	Zero-power Resistance at 25°C	Non-operating Current at 25°C	Trip Current at 25°C	Rated Voltage	Max. Current	Dimensions		Safety Approvals			
	T <sub>c</sub> (°C)	R <sub>25</sub> (Ω)	I <sub>N</sub> (mA)	I <sub>T</sub> (mA)	V <sub>R</sub> (V <sub>ac</sub> )	I <sub>max</sub> (A)	D(mm)	T(mm)	UL	cUL	CQC	TUV
PPD08650□A2B3	120±10	65	55	110	230	1	8.0±0.3	2.5±0.2	√	√		√
PPD08250□A3B3	130±10	25	125	250	230	1	8.0±0.3	2.5±0.2	√	√		√
PPD08650□A3B3		65	55	130	230	2	8.0±0.3	2.5±0.2	√	√		√
PPD05500□A3B3		50	50	130	230	1.2	5.0±0.3	2.5±0.2	√	√		√
PPD06350□A3B3		35	80	180	230	1	6.0±0.3	2.5±0.2	√	√		√

Note: □ is tolerance of R<sub>25</sub>

#### PPL Series

##### 24V<sub>ac</sub> / 80°C

Part No.	Curie Temperature	Zero-power Resistance at 25°C	Non-operating Current at 25°C	Trip Current at 25°C	Rated Voltage	Max. Current	Dimensions				Safety Approvals			
	T <sub>c</sub> (°C)	R <sub>25</sub> (Ω)	I <sub>N</sub> (mA)	I <sub>T</sub> (mA)	V <sub>R</sub> (V <sub>ac</sub> )	I <sub>max</sub> (A)	D (mm)	T (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL07100□P824	80±10	10	80	330	24	2.0	6.5-9.0	1.5-3.5	0.6	12.5	√	√	√	√

##### 24V<sub>ac</sub> / 120°C

Part No.	Curie Temperature	Zero-power Resistance at 25°C	Non-operating Current at 25°C	Trip Current at 25°C	Rated Voltage	Max. Current	Dimensions				Safety Approvals			
	T <sub>c</sub> (°C)	R <sub>25</sub> (Ω)	I <sub>N</sub> (mA)	I <sub>T</sub> (mA)	V <sub>R</sub> (V <sub>ac</sub> )	I <sub>max</sub> (A)	D (mm)	T (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL03130□A224	120±10	13	120	240	24	0.7	2.5-4.0	1.5-3.5	0.5	8.5	√	√		√

Note: □ is tolerance of R<sub>25</sub>

# Ceramic PTC Thermistor: PPL Series

## Overload Protection



### 24V<sub>ac</sub> / 140°C

Part No.	Curie Temperature	Zero-power Resistance at 25°C	Non-operating Current at 25°C	Trip Current at 25°C	Rated Voltage	Max. Current	Dimensions				Safety Approvals			
	T <sub>c</sub> (°C)						R <sub>25</sub> (Ω)	I <sub>N</sub> (mA)	I <sub>T</sub> (mA)	V <sub>R</sub> (V <sub>ac</sub> )	I <sub>max</sub> (A)	D (mm)	T (mm)	d±0.02 (mm)
PPL056R0□A424	140±10	6.0	270	540	24	2.5	4.5-7.0	2.0-5.0	0.6	10.5	√	√		√
PPL05130□A424		13	180	360	24	1.7	4.5-7.0	2.0-5.0	0.6	10.5	√	√		√
PPL073R0□A424		3.0	410	820	24	4.5	6.5-9.0	2.0-5.0	0.6	12.5	√	√		√
PPL075R0□A424		5.0	320	640	24	3.5	6.5-9.0	2.0-5.0	0.6	12.5	√	√		√
PPL121R1□A424		1.1	830	1660	24	10.0	11.5-14.0	2.0-5.0	0.6	17.5	√	√		√

### 42V<sub>ac</sub> / 80°C

Part No.	Curie Temperature	Zero-power Resistance at 25°C	Non-operating Current at 25°C	Trip Current at 25°C	Rated Voltage	Max. Current	Dimensions				Safety Approvals			
	T <sub>c</sub> (°C)						R <sub>25</sub> (Ω)	I <sub>N</sub> (mA)	I <sub>T</sub> (mA)	V <sub>R</sub> (V <sub>ac</sub> )	I <sub>max</sub> (A)	D (mm)	T (mm)	d±0.02 (mm)
PPL06220□P842	80±10	22	45	220	42	1.1	5.5-8.0	2.0-4.0	0.6	11.5	√	√	√	√
PPL06330□P842		33	40	180	42	0.9	5.5-8.0	2.0-4.0	0.6	11.5	√	√	√	√
PPL06470□P842		47	35	150	42	0.7	5.5-8.0	2.0-4.0	0.6	11.5	√	√	√	√
PPL06560□P842		56	30	140	42	0.7	5.5-8.0	2.0-4.0	0.6	11.5	√	√	√	√

### 48V<sub>ac</sub> / 120°C

Part No.	Curie Temperature	Zero-power Resistance at 25°C	Non-operating Current at 25°C	Trip Current at 25°C	Rated Voltage	Max. Current	Dimensions				Safety Approvals			
	T <sub>c</sub> (°C)						R <sub>25</sub> (Ω)	I <sub>N</sub> (mA)	I <sub>T</sub> (mA)	V <sub>R</sub> (V <sub>ac</sub> )	I <sub>max</sub> (A)	D (mm)	T (mm)	d±0.02 (mm)
PPL04420□A248	120±10	42	105	210	48	0.75	3.5-6.5	2.0-5.0	0.6	10.5	√	√		√
PPL04600□A248		60	90	180	48	0.6	3.5-6.5	2.0-5.0	0.6	10.5	√	√		√
PPL04900□A248		90	70	140	48	0.46	3.5-6.5	2.0-5.0	0.6	10.5	√	√		√
PPL06220□A248		22	155	310	48	1.3	5.5-8.0	2.0-5.0	0.6	11.5	√	√		√
PPL06320□A248		32	130	260	48	0.95	5.5-8.0	2.0-5.0	0.6	11.5	√	√		√
PPL08180□A248		18	195	390	48	1.6	7.5-10.0	2.0-5.0	0.6	13.5	√	√		√
PPL10120□A248		12	230	460	48	2.2	9.5-12.0	2.0-5.0	0.6	15.5	√	√		√
PPL126R5□A248		6.5	350	700	48	4.0	11.5-14.0	2.0-5.0	0.6	17.5	√	√		√
PPL129R0□A248		9.0	285	570	48	2.9	11.5-14.0	2.0-5.0	0.6	17.5	√	√		√
PPL134R3□A248		4.3	425	850	48	6.3	12.5-15.0	2.0-5.0	0.6	18.5	√	√		√
PPL162R6□A248		2.6	605	1210	48	12	15.0-17.5	2.0-5.0	0.6	21.5	√	√		√
PPL163R8□A248		3.8	505	1010	48	7.3	15.0-17.5	2.0-5.0	0.6	21.5	√	√		√
PPL201R6□A248		1.6	870	1750	48	18	19.0-22.0	2.0-5.0	0.6	25.5	√	√		√
PPL202R2□A248		2.2	725	1450	48	14	19.0-22.0	2.0-5.0	0.6	25.5	√	√		√

Note: □ is tolerance of R<sub>25</sub>

# Ceramic PTC Thermistor: PPL Series

## Overload Protection



### 48V<sub>ac</sub> / 140°C

Part No.	Curie Temperature	Zero-power Resistance at 25°C	Non-operating Current at 25°C	Trip Current at 25°C	Rated Voltage	Max. Current	Dimensions				Safety Approvals			
	T <sub>c</sub> (°C)	R <sub>25</sub> (Ω)	I <sub>N</sub> (mA)	I <sub>T</sub> (mA)	V <sub>R</sub> (V <sub>ac</sub> )	I <sub>max</sub> (A)	D (mm)	T (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL05500□A448	140±10	50	94	188	48	0.8	4.5-7.0	2.0-5.0	0.6	10.5	√	√		√

### 63V<sub>ac</sub> / 120°C

Part No.	Curie Temperature	Zero-power Resistance at 25°C	Non-operating Current at 25°C	Trip Current at 25°C	Rated Voltage	Max. Current	Dimensions				Safety Approvals			
	T <sub>c</sub> (°C)	R <sub>25</sub> (Ω)	I <sub>N</sub> (mA)	I <sub>T</sub> (mA)	V <sub>R</sub> (V <sub>ac</sub> )	I <sub>max</sub> (A)	D (mm)	T (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL03510□A263	120±10	51	55	165	63	0.7	2.5-5.0	2.0-4.0	0.5	8.5	√	√	√	√
PPL05240□A263		24	90	270	63	1.0	4.5-7.0	2.0-4.0	0.6	10.5	√	√	√	√
PPL089R1□A263		9.1	160	480	63	3.0	7.5-10.0	2.0-4.0	0.6	13.5	√	√	√	√
PPL113R6□A263		3.6	320	960	63	5.0	11.0-13.5	2.0-4.0	0.6	16.5	√	√	√	√
PPL152R4□A263		2.4	460	1400	63	7.5	14.0-17.5	2.0-4.0	0.6	21.5	√	√	√	√
PPL201R7□A263		1.7	700	1400	63	10	19.0-22.0	2.0-5.0	0.6	25.5	√	√		√

### 110V<sub>ac</sub> / 120°C

Part No.	Curie Temperature	Zero-power Resistance at 25°C	Non-operating Current at 25°C	Trip Current at 25°C	Rated Voltage	Max. Current	Dimensions				Safety Approvals			
	T <sub>c</sub> (°C)	R <sub>25</sub> (Ω)	I <sub>N</sub> (mA)	I <sub>T</sub> (mA)	V <sub>R</sub> (V <sub>ac</sub> )	I <sub>max</sub> (A)	D (mm)	T (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL09160□A2A1	120±10	16	150	450	110	1.5	8.5-11.0	2.0-5.0	0.6	14.5	√	√		√
PPL126R8□A2A1		6.8	290	660	110	1.0	11.5-14.0	2.0-4.5	0.6	17.5	√	√		√
PPL12100□A2A1		10	220	500	110	1.0	11.5-14.0	2.0-4.5	0.6	17.5	√	√		√
PPL164R7□A2A1		4.7	390	900	110	2.0	15.0-17.5	2.0-5.0	0.6	21.5	√	√		√

### 110V<sub>ac</sub> / 140°C

Part No.	Curie Temperature	Zero-power Resistance at 25°C	Non-operating Current at 25°C	Trip Current at 25°C	Rated Voltage	Max. Current	Dimensions				Safety Approvals			
	T <sub>c</sub> (°C)	R <sub>25</sub> (Ω)	I <sub>N</sub> (mA)	I <sub>T</sub> (mA)	V <sub>R</sub> (V <sub>ac</sub> )	I <sub>max</sub> (A)	D (mm)	T (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL05400□A4A1	140±10	40	110	220	110	0.5	4.5-7.0	3.0-5.0	0.6	10.5	√	√		√
PPL05550□A4A1		55	93	186	110	0.45	4.5-7.0	3.0-5.0	0.6	10.5	√	√		√
PPL05121□A4A1		120	65	130	110	0.3	4.5-7.0	3.0-5.0	0.6	10.5	√	√		√
PPL05241□A4A1		240	47	94	110	0.2	4.5-7.0	3.0-5.0	0.6	10.5	√	√		√
PPL088R0□A4A1		8.0	270	540	110	2.2	7.5-10.0	3.0-5.0	0.6	13.5	√	√		√
PPL089R4□A4A1		9.4	250	500	110	2.0	7.5-10.0	3.0-5.0	0.6	13.5	√	√		√
PPL105R3□A4A1		5.3	360	720	110	3.5	9.5-12.0	3.0-5.0	0.6	15.5	√	√		√
PPL106R7□A4A1		6.7	320	640	110	3.0	9.5-12.0	3.0-5.0	0.6	15.5	√	√		√
PPL123R8□A4A1		3.8	450	900	110	5.0	11.5-14.0	3.0-5.0	0.6	17.5	√	√		√
PPL124R6□A4A1		4.6	410	820	110	4.5	11.5-14.0	3.0-5.0	0.6	17.5	√	√		√

Note: □ is tolerance of R<sub>25</sub>

# Ceramic PTC Thermistor: PPL Series

## Overload Protection



### 220V<sub>ac</sub> / 80°C

Part No.	Curie Temperature	Zero-power Resistance at 25°C	Non-operating Current at 25°C	Trip Current at 25°C	Rated Voltage	Max. Current	Dimensions				Safety Approvals			
	T <sub>c</sub> (°C)						R <sub>25</sub> (Ω)	I <sub>N</sub> (mA)	I <sub>T</sub> (mA)	V <sub>R</sub> (V <sub>ac</sub> )	I <sub>max</sub> (A)	D (mm)	T (mm)	d±0.02 (mm)
PPL03151□P8B2	80±10	150	15	60	220	0.3	2.5-5.0	3.0-5.0	0.5	8.5	√	√	√	√
PPL03301□P8B2		300	10	35	220	0.2	2.5-5.0	3.0-5.0	0.5	8.5	√	√		√
PPL03601□P8B2		600	18	36	220	0.2	2.5-5.0	3.0-5.0	0.5	8.5	√	√		√
PPL04302□P8B2		3000	5	10	220	0.2	4.0-6.5	3.0-5.0	0.6	10.5	√	√		√
PPL05450□P8B2		45	40	150	220	0.5	4.5-7.0	3.0-5.0	0.6	10.5	√	√		√
PPL05680□P8B2		68	35	110	220	0.5	4.5-7.0	3.0-5.0	0.6	10.5	√	√	√	√
PPL05301□P8B2		300	15	40	220	0.1	4.5-7.0	3.0-5.0	0.6	10.5	√	√		√
PPL05331□P8B2		330	12	36	220	0.3	4.5-7.0	3.0-5.0	0.6	10.5	√	√		√
PPL06251□P8B2		250	15	50	220	0.6	5.5-8.0	3.0-5.0	0.6	11.5	√	√		√
PPL07180□P8B2		18	70	200	220	0.8	6.5-9.0	3.0-5.0	0.6	12.5	√	√		√
PPL07250□P8B2		25	60	130	220	1.0	6.5-9.0	3.0-5.0	0.6	12.5	√	√		√
PPL07360□P8B2		36	45	180	220	0.7	6.5-9.0	3.0-5.0	0.6	12.5	√	√	√	√
PPL08220□P8B2		22	65	195	220	1.2	7.5-10.0	3.0-5.0	0.6	13.5	√	√	√	√
PPL08101□P8B2		100	30	90	220	0.5	7.5-10.0	3.0-5.0	0.6	13.5	√	√		√
PPL08152□P8B2		1500	7	14	220	0.1	7.5-10.0	3.0-5.0	0.6	13.5	√	√		√
PPL09150□P8B2		15	90	270	220	1.5	8.5-11.0	3.0-5.0	0.6	14.5	√	√	√	√
PPL09180□P8B2		18	75	225	220	1.3	8.5-11.0	3.0-5.0	0.6	14.5	√	√	√	√
PPL11100□P8B2		10	120	360	220	2.3	11.0-13.5	3.0-5.0	0.6	16.5	√	√	√	√
PPL155R6□P8B2		5.6	180	540	220	4.5	14.0-17.5	3.0-5.0	0.6	21.5	√	√	√	√
PPL203R9□P8B2		3.9	240	720	220	7.0	19.0-22.0	3-6.0	0.6	26.0	√	√	√	√
PPL242R7□P8B2		2.7	350	1050	220	9.5	24.0-27.0	3-6.0	0.8	30.5				

### 220V<sub>ac</sub> / 120°C

Part No.	Curie Temperature	Zero-power Resistance at 25°C	Non-operating Current at 25°C	Trip Current at 25°C	Rated Voltage	Max. Current	Dimensions				Safety Approvals			
	T <sub>c</sub> (°C)						R <sub>25</sub> (Ω)	I <sub>N</sub> (mA)	I <sub>T</sub> (mA)	V <sub>R</sub> (V <sub>ac</sub> )	I <sub>max</sub> (A)	D (mm)	T (mm)	d±0.02 (mm)
PPL03151□A2B2	120±10	150	30	90	220	0.3	2.5-5.0	3.0-5.0	0.5	8.5	√	√	√	√
PPL03102□A2B2		1000	13	27	220	0.2	2.5-5.0	3.0-5.0	0.5	8.5	√	√		√
PPL03302□A2B2		3000	9	18	220	0.2	2.5-5.0	3.0-5.0	0.5	8.5	√	√		√
PPL04381□A2B2		380	35	70	220	0.25	4.0-6.5	3.0-5.0	0.6	10.5	√	√		√
PPL04561□A2B2		560	30	60	220	0.2	4.0-6.5	3.0-5.0	0.6	10.5	√	√		√
PPL04751□A2B2		750	15	45	220	0.3	4.0-6.5	3.0-5.0	0.6	10.5	√	√		√
PPL04851□A2B2		850	25	50	220	0.16	4.0-6.5	3.0-5.0	0.6	10.5	√	√		√
PPL04122□A2B2		1200	20	40	220	0.13	4.0-6.5	3.0-5.0	0.6	10.5	√	√		√
PPL04192□A2B2		1900	15	30	220	0.11	4.0-6.5	3.0-5.0	0.6	10.5	√	√		√
PPL05750□A2B2		75	50	150	220	0.5	4.5-7.0	3.0-5.0	0.6	10.5	√	√	√	√
PPL05151□A2B2		150	35	70	220	0.2	4.5-7.0	3.0-5.0	0.6	10.5	√	√		√
PPL05181□A2B2		180	29	70	220	0.3	4.5-7.0	3.0-5.0	0.6	10.5	√	√		√

Note: □ is tolerance of R<sub>25</sub>

# Ceramic PTC Thermistor: PPL Series

## Overload Protection



### 220V<sub>ac</sub> / 120°C

Part No.	Curie Temperature	Zero-power Resistance at 25°C	Non-operating Current at 25°C	Trip Current at 25°C	Rated Voltage	Max. Current	Dimensions				Safety Approvals			
	T <sub>c</sub> (°C)						R <sub>25</sub> (Ω)	I <sub>N</sub> (mA)	I <sub>T</sub> (mA)	V <sub>R</sub> (V <sub>ac</sub> )	I <sub>max</sub> (A)	D (mm)	T (mm)	d±0.02 (mm)
PPL06450□A2B2	120±10	45	80	160	220	0.7	5.5-8.0	3.0-5.0	0.6	11.5	√	√		√
PPL06720□A2B2		72	70	180	220	0.6	5.5-8.0	3.0-5.0	0.6	11.5	√	√		√
PPL06121□A2B2		120	35	100	220	0.4	5.5-8.0	3.0-5.0	0.6	11.5	√	√	√	√
PPL06201□A2B2		200	50	100	220	0.35	5.5-8.0	3.0-5.0	0.6	11.5	√	√		√
PPL06281□A2B2		280	45	90	220	0.29	5.5-8.0	3.0-5.0	0.6	11.5	√	√		√
PPL06301□A2B2		300	33	66	220	0.2	5.5-8.0	3.0-5.0	0.6	11.5	√	√		√
PPL07250□A2B2		25	125	250	220	1.0	6.5-9.0	3.0-5.0	0.6	11.5	√	√		√
PPL07560□A2B2		56	60	200	220	0.8	6.5-9.0	3.0-5.0	0.6	12.5	√	√		√
PPL07820□A2B2		82	60	160	220	0.5	6.5-9.0	3.0-5.0	0.6	12.5	√	√		√
PPL07401□A2B2		400	22	55	220	0.4	6.5-9.0	3.0-5.0	0.6	12.5	√	√		√
PPL08150□A2B2		15	150	300	220	1.0	7.5-10.0	3.0-5.0	0.6	13.5	√	√		√
PPL08240□A2B2		24	100	300	220	1.1	7.5-10.0	3.0-5.0	0.6	13.5	√	√		√
PPL08360□A2B2		36	85	250	220	1.0	7.5-10.0	3.0-5.0	0.6	13.5	√	√	√	√
PPL08500□A2B2		50	105	210	220	0.73	7.5-10.0	3.0-5.0	0.6	13.5	√	√		√
PPL08510□A2B2		51	65	195	220	1.0	7.5-10.0	3.0-5.0	0.6	13.5	√	√	√	√
PPL08620□A2B2		62	55	165	220	1.0	7.5-10.0	3.0-5.0	0.6	13.5	√	√	√	√
PPL08720□A2B2		72	90	180	220	0.6	7.5-10.0	3.0-5.0	0.6	13.5	√	√		√
PPL09160□A2B2		16	150	450	220	1.5	8.5-11.0	3.0-5.0	0.6	14.5	√	√	√	√
PPL10150□A2B2		15	140	280	220	1.5	9.5-12.0	3.0-5.0	0.6	15.5	√	√		√
PPL10260□A2B2		26	155	310	220	1.1	9.5-12.0	3.0-5.0	0.6	15.5	√	√		√
PPL11110□A2B2		11	200	600	220	2.2	11.0-13.5	3.0-5.0	0.6	16.5	√	√	√	√
PPL12100□A2B2		10	230	650	220	2.3	11.0-14.0	3.0-5.0	0.6	17.5	√	√	√	√
PPL12140□A2B2		14	230	460	220	1.7	11.0-14.0	3.0-5.0	0.6	17.5	√	√		√
PPL12200□A2B2		20	195	390	220	1.3	11.0-14.0	3.0-5.0	0.6	17.5	√	√		√
PPL14180□A2B2		18	180	450	220	1.8	13.5-16.0	3.0-5.0	0.6	19.5	√	√		√
PPL14800□A2B2		80	80	240	220	1.5	13.5-16.0	3.0-5.0	0.6	19.5	√	√		√
PPL156R2□A2B2		6.2	320	960	220	4.0	14.0-17.5	3.0-5.0	0.6	21.5	√	√	√	√
PPL168R0□A2B2		8.0	350	700	220	2.5	14.0-17.5	3.0-6.0	0.6	21.5	√	√		√
PPL203R6□A2B2		3.6	460	1380	220	7.0	19.0-22.0	3.0-6.0	0.6	26.0	√	√	√	√
PPL205R0□A2B2		5.0	505	1010	220	3.6	19.0-22.0	3.0-6.0	0.6	26.0	√	√		√
PPL207R0□A2B2	7.0	425	850	220	3.0	19.0-22.0	3.0-6.0	0.6	26.0	√	√		√	
PPL242R4□A2B2	2.4	660	1980	220	10.5	24.0-27.0	3.0-6.0	0.8	30.5	√	√		√	

### 220V<sub>ac</sub> / 130°C

Part No.	Curie Temperature	Zero-power Resistance at 25°C	Non-operating Current at 25°C	Trip Current at 25°C	Rated Voltage	Max. Current	Dimensions				Safety Approvals			
	T <sub>c</sub> (°C)						R <sub>25</sub> (Ω)	I <sub>N</sub> (mA)	I <sub>T</sub> (mA)	V <sub>R</sub> (V <sub>ac</sub> )	I <sub>max</sub> (A)	D (mm)	T (mm)	d±0.02 (mm)
PPL04161□A3B2	130±10	160	55	90	220	0.2	4.0-6.5	3.0-5.0	0.6	10.5	√	√		√
PPL08250□A3B2		25	140	230	220	1.0	7.5-10.0	3.0-5.0	0.6	13.5	√	√		√
PPL10130□A3B2		13	200	320	220	1.5	9.5-12.0	3.0-5.0	0.6	15.5	√	√		√
PPL129R0□A3B2		9.0	330	500	220	2.2	11.0-14.0	3.0-5.0	0.6	17.5	√	√		√

Note: □ is tolerance of R<sub>25</sub>

# Ceramic PTC Thermistor: PPL Series

## Overload Protection



### 220V<sub>ac</sub> / 140°C

Part No.	Curie Temperature	Zero-power Resistance at 25°C	Non-operating Current at 25°C	Trip Current at 25°C	Rated Voltage	Max. Current	Dimensions				Safety Approvals			
	T <sub>c</sub> (°C)						R <sub>25</sub> (Ω)	I <sub>N</sub> (mA)	I <sub>T</sub> (mA)	V <sub>R</sub> (V <sub>ac</sub> )	I <sub>max</sub> (A)	D (mm)	T (mm)	d±0.02 (mm)
PPL04302□A4B2	140±10	3000	11	17	220	0.08	4-6.5.0	3.0-5.0	0.6	10.5	√	√		√
PPL05121□A4B2		120	63	126	220	0.45	4.5-7.0	3.0-5.0	0.6	10.5	√	√		√
PPL05261□A4B2		260	39	78	220	0.3	4.5-7.0	3.0-5.0	0.6	10.5	√	√		√
PPL05501□A4B2		500	28	56	220	0.2	4.5-7.0	3.0-5.0	0.6	10.5	√	√		√
PPL05122□A4B2		1200	19	38	220	0.14	4.5-7.0	3.0-5.0	0.6	10.5	√	√		√
PPL05192□A4B2		1900	15	30	220	0.11	4.5-7.0	3.0-5.0	0.6	10.5	√	√		√
PPL07290□A4B2		29	140	280	220	0.8	6.5-9.0	3.0-5.0	0.6	12.5	√	√		√
PPL07480□A4B2		48	110	220	220	0.65	6.5-9.0	3.0-5.0	0.6	12.5	√	√		√
PPL08180□A4B2		18	190	380	220	1.0	7.5-10.0	3.0-5.0	0.6	13.5	√	√		√
PPL08220□A4B2		22	170	340	220	0.9	7.5-10.0	3.0-5.0	0.6	13.5	√	√		√
PPL08240□A4B2		24	110	330	220	1.0	7.5-10.0	3.0-5.0	0.6	13.5	√	√		√
PPL09160□A4B2		16	150	450	220	1.5	8.5-11.0	3.0-5.0	0.6	14.5	√	√		√
PPL10120□A4B2		12	250	500	220	1.5	9.5-12.0	3.0-5.0	0.6	15.5	√	√		√
PPL10170□A4B2		17	210	420	220	1.3	9.5-12.0	3.0-5.0	0.6	15.5	√	√		√
PPL164R4□A4B2		4.4	490	980	220	3.5	14.0-17.5	3.0-6.0	0.6	21.5	√	√		√
PPL166R6□A4B2		6.6	400	800	220	3.0	14.0-17.5	3.0-6.0	0.6	21.5	√	√		√

### 250V<sub>ac</sub> / 100°C

Part No.	Curie Temperature	Zero-power Resistance at 25°C	Non-operating Current at 25°C	Trip Current at 25°C	Rated Voltage	Max. Current	Dimensions				Safety Approvals			
	T <sub>c</sub> (°C)						R <sub>25</sub> (Ω)	I <sub>N</sub> (mA)	I <sub>T</sub> (mA)	V <sub>R</sub> (V <sub>ac</sub> )	I <sub>max</sub> (A)	D (mm)	T (mm)	d±0.02 (mm)
PPL07220□A0B5	100±10	22	100	260	250	0.5	6.5-9.0	3.0-6.0	0.6	12.5	√	√		√

### 270V<sub>ac</sub> / 120°C

Part No.	Curie Temperature	Zero-power Resistance at 25°C	Non-operating Current at 25°C	Trip Current at 25°C	Rated Voltage	Max. Current	Dimensions				Safety Approvals			
	T <sub>c</sub> (°C)						R <sub>25</sub> (Ω)	I <sub>N</sub> (mA)	I <sub>T</sub> (mA)	V <sub>R</sub> (V <sub>ac</sub> )	I <sub>max</sub> (A)	D (mm)	T (mm)	d±0.02 (mm)
PPL05102□A2B7	120±10	1000	18	36	270	0.1	4.5-7.0	3.0-5.0	0.6	10.5	√	√		√
PPL05332□A2B7		3300	8	16	270	0.12	4.5-7.0	3.0-5.0	0.6	10.5	√	√		√
PPL08390□A2B7		39	75	240	270	1.2	7.5-10.0	3.0-5.0	0.6	13.5	√	√		√
PPL10390□A2B7		39	100	250	270	1.2	9.5-12.0	3.0-5.0	0.6	15.5	√	√		√
PPL12270□A2B7		27	120	350	270	1.5	11.0-14.0	3.0-5.0	0.6	17.5	√	√		√
PPL16220□A2B7		22	230	500	270	8.0	14.0-18.0	3.5-7.0	0.6	21.5	√	√		√
PPL16500□A2B7		50	160	320	270	4.0	14.0-18.0	3.5-7.0	0.6	21.5	√	√		√

Note: □ is tolerance of R<sub>25</sub>

# Ceramic PTC Thermistor: PPL Series

## Overload Protection



### 300V<sub>ac</sub> / 120°C

Part No.	Curie Temperature	Zero-power Resistance at 25°C	Non-operating Current at 25°C	Trip Current at 25°C	Rated Voltage	Max. Current	Dimensions				Safety Approvals			
	T <sub>c</sub> (°C)	R <sub>25</sub> (Ω)	I <sub>N</sub> (mA)	I <sub>T</sub> (mA)	V <sub>R</sub> (V <sub>ac</sub> )	I <sub>max</sub> (A)	D (mm)	T (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL10820□A2C0	120±10	82	80	250	300	0.5	9.5-12.0	3.0-5.5	0.6	15.5	√	√		√
PPL10151□A2C0		150	60	150	300	0.3	9.5-12.0	3.0-5.5	0.6	15.5	√	√		√
PPL10351□A2C0		350	35	100	300	0.3	9.5-12.0	3.0-5.5	0.6	15.5	√	√		√

### 380V<sub>ac</sub> / 120°C

Part No.	Curie Temperature	Zero-power Resistance at 25°C	Non-operating Current at 25°C	Trip Current at 25°C	Rated Voltage	Max. Current	Dimensions				Safety Approvals			
	T <sub>c</sub> (°C)	R <sub>25</sub> (Ω)	I <sub>N</sub> (mA)	I <sub>T</sub> (mA)	V <sub>R</sub> (V <sub>ac</sub> )	I <sub>max</sub> (A)	D (mm)	T (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL05601□A2C8	120±10	600	21	39	380	0.2	4.5-7.0	3.0-5.0	0.6	10.5	√	√		√
PPL07131□A2C8		130	45	90	380	1.0	6.5-9.0	4.0-7.0	0.6	12.5	√	√		√
PPL08700□A2C8		70	64	127	380	1.4	7.5-10.0	4.5-7.0	0.6	13.5	√	√		√
PPL08121□A2C8		120	49	100	380	1.4	7.5-10.0	4.5-7.0	0.6	13.5	√	√		√
PPL08151□A2C8		150	43	86	380	1.4	7.5-10.0	4.5-7.0	0.6	13.5	√	√		√
PPL11250□A2C8		25	123	245	380	2.0	10.5-13.0	4.5-7.0	0.6	16.5	√	√		√
PPL11500□A2C8		50	87	173	380	2.0	10.5-13.0	4.5-7.0	0.6	16.5	√	√		√
PPL11800□A2C8		80	69	137	380	2.0	10.5-13.0	4.5-7.0	0.6	16.5	√	√		√
PPL11121□A2C8		120	56	112	380	2.0	10.5-13.0	4.5-7.0	0.6	16.5	√	√		√
PPL11151□A2C8		150	50	100	380	2.0	10.5-13.0	4.5-7.0	0.6	16.5	√	√		√

### 400V<sub>ac</sub> / 120°C

Part No.	Curie Temperature	Zero-power Resistance at 25°C	Non-operating Current at 25°C	Trip Current at 25°C	Rated Voltage	Max. Current	Dimensions				Safety Approvals			
	T <sub>c</sub> (°C)	R <sub>25</sub> (Ω)	I <sub>N</sub> (mA)	I <sub>T</sub> (mA)	V <sub>R</sub> (V <sub>ac</sub> )	I <sub>max</sub> (A)	D (mm)	T (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL05251□A2D0	120±10	250	32	65	400	0.3	4.5-7.0	3.0-5.0	0.6	10.5	√	√		√
PPL05381□A2D0		380	30	56	400	0.3	4.5-7.0	3.0-5.0	0.6	10.5	√	√		√
PPL05561□A2D0		560	22	44	400	0.3	4.5-7.0	3.0-5.0	0.6	10.5	√	√		√
PPL05601□A2D0		600	18	38	400	0.3	4.5-7.0	3.0-5.0	0.6	10.5	√	√		√

### 500V<sub>ac</sub> / 120°C

Part No.	Curie Temperature	Zero-power Resistance at 25°C	Non-operating Current at 25°C	Trip Current at 25°C	Rated Voltage	Max. Current	Dimensions				Safety Approvals			
	T <sub>c</sub> (°C)	R <sub>25</sub> (Ω)	I <sub>N</sub> (mA)	I <sub>T</sub> (mA)	V <sub>R</sub> (V <sub>ac</sub> )	I <sub>max</sub> (A)	D (mm)	T (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL05122□A2E0	120±10	1200	15	30	500	0.1	4.5-7.0	3.0-5.5	0.6	10.5	√	√		√
PPL05152□A2E0		1500	12	24	500	0.1	4.5-7.0	3.0-5.5	0.6	10.5	√	√		√
PPL08501□A2E0		500	24	48	500	1.0	7.5-10.0	4.5-7.0	0.6	13.5	√	√		√
PPL08112□A2E0		1100	16	32	500	1.0	7.5-10.0	4.5-7.0	0.6	13.5	√	√		√
PPL11501□A2E0		500	28	55	500	1.4	10.5-13.0	4.5-7.0	0.6	17	√	√		√

Note: □ is tolerance of R<sub>25</sub>

# Ceramic PTC Thermistor: PPL Series

## Overload Protection



### 600V<sub>ac</sub> / 90°C

Part No.	Curie Temperature	Zero-power Resistance at 25°C	Non-operating Current at 25°C	Trip Current at 25°C	Rated Voltage	Max. Current	Dimensions				Safety Approvals			
	T <sub>c</sub> (°C)						R <sub>25</sub> (Ω)	I <sub>N</sub> (mA)	I <sub>T</sub> (mA)	V <sub>R</sub> (V <sub>ac</sub> )	I <sub>max</sub> (A)	D (mm)	T (mm)	d±0.02 (mm)
PPL05801□P9F0	90±10	800	18	36	600	0.3	4.5-7.0	3.0-5.5	0.6	10.5	√	√		√
PPL05102□P9F0		1000	15	30	600	0.3	4.5-7.0	3.0-5.5	0.6	10.5	√	√		√
PPL05132□P9F0		1300	13	26	600	0.3	4.5-7.0	3.0-5.5	0.6	10.5	√	√		√

### 600V<sub>ac</sub> / 100°C

Part No.	Curie Temperature	Zero-power Resistance at 25°C	Non-operating Current at 25°C	Trip Current at 25°C	Rated Voltage	Max. Current	Dimensions				Safety Approvals			
	T <sub>c</sub> (°C)						R <sub>25</sub> (Ω)	I <sub>N</sub> (mA)	I <sub>T</sub> (mA)	V <sub>R</sub> (V <sub>ac</sub> )	I <sub>max</sub> (A)	D (mm)	T (mm)	d±0.02 (mm)
PPL05152□A0F0	100±10	1500	14	28	600	0.1	4.5-7.0	3.0-5.5	0.6	10.5	√	√		√
PPL05212□A0F0		2100	8	18	600	0.1	4.5-7.0	3.0-5.5	0.6	10.5	√	√		√
PPL05272□A0F0		2700	10	20	600	0.2	4.5-7.0	3.0-5.5	0.6	10.5	√	√		√
PPL06103□A0F0		10000	5	12	600	0.1	5.5-8.0	3.0-5.5	0.6	11.5	√	√		√
PPL07152□A0F0		1500	14	28	600	0.2	6.5-9.0	4.0-7.0	0.6	12.5	√	√		√

### 1000V<sub>ac</sub> series

Part No.	Curie Temperature	Zero-power Resistance at 25°C	Non-operating Current at 25°C	Trip Current at 25°C	Rated Voltage	Max. Current	Dimensions				Safety Approvals			
	T <sub>c</sub> (°C)						R <sub>25</sub> (Ω)	I <sub>N</sub> (mA)	I <sub>T</sub> (mA)	V <sub>R</sub> (V <sub>ac</sub> )	I <sub>max</sub> (A)	D (mm)	T (mm)	d±0.02 (mm)
PPL08701□P8J0	80±10	700	\	\	1000	0.7	7.5-10.0	4.5-7.0	0.6	13.5	√			√
PPL08112□P8J0		1100	16	32	1000	0.7	7.5-10.0	4.5-7.0	0.6	13.5	√	√		√
PPL08202□P8J0		2000	\	\	1000	0.25	7.5-10.0	4.5-7.0	0.6	13.5	√	√		√
PPL07152□A0J0	100±10	1500	14	28	1000	0.2	6.5-9.0	4.5-7.0	0.6	12.5	√	√		√
PPL11752□A1J0	110±10	7500	8	17	1000	0.5	10.5-	4.5-7.0	0.6	17.0	√	√		√

Note: □ is tolerance of R<sub>25</sub>

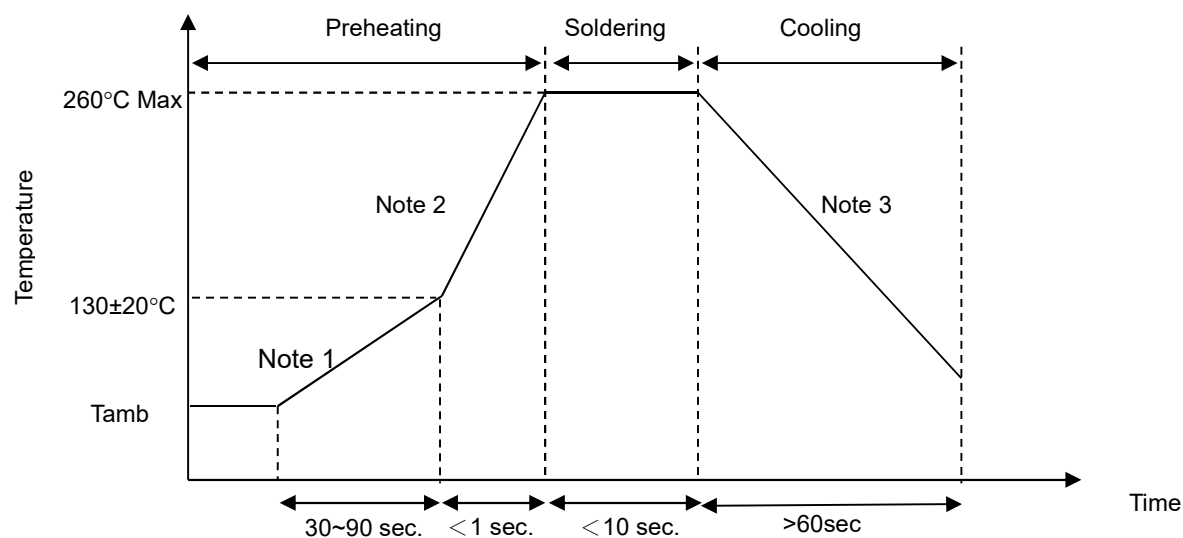
# Ceramic PTC Thermistor: PPL Series

## Overload Protection



### ■ Soldering Recommendation

#### ● Wave Flow Soldering Profile



#### Note

1. 1~3°C /sec.
2. Approx. 200°C/sec
3. 5°C /sec. (Max)

#### ● Recommended Reworking Conditions with Soldering Iron

Item	Conditions
Temperature of Soldering Iron-tip	360°C (max.)
Soldering Time	3 sec (max.)
Distance from Coating	2 mm (min.)

# Ceramic PTC Thermistor: PPL Series

## Overload Protection



### ■ Reliability Test

Item	Standard	Test conditions and methods	Specifications															
Robustness of Terminations *1	IEC 60738-1	Gradually apply the specified force and keep the unit fixed for 10±1 sec. <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; border-bottom: 1px solid black;">Terminal diameter (mm)</td> <td style="text-align: center; border-bottom: 1px solid black;">Force T(N)</td> </tr> <tr> <td style="text-align: center;">0.35&lt;d≤0.5</td> <td style="text-align: center;">5.0</td> </tr> <tr> <td style="text-align: center;">0.5&lt;d≤0.8</td> <td style="text-align: center;">10.0</td> </tr> <tr> <td style="text-align: center;">0.8&lt;d≤1.25</td> <td style="text-align: center;">20.0</td> </tr> </table>	Terminal diameter (mm)	Force T(N)	0.35<d≤0.5	5.0	0.5<d≤0.8	10.0	0.8<d≤1.25	20.0	$ \Delta R_{25}/R_{25}  \leq 20\%$ No visible damage							
Terminal diameter (mm)	Force T(N)																	
0.35<d≤0.5	5.0																	
0.5<d≤0.8	10.0																	
0.8<d≤1.25	20.0																	
Solderability*1	IEC 60738-1	245±3°C, 2±0.5 sec	At least 95% of terminal electrode is covered by new solder															
Resistance to Soldering Heat *1	IEC 60738-1	260±3°C, 10±1 sec	$ \Delta R_{25}/R_{25}  \leq 20\%$ No visible damage															
Vibration *1	IEC 60738-1	Frequency range:10~55Hz Amplitude: 0.75mm or acceleration: 98m/s <sup>2</sup> Direction: 3 mutually perpendicular directions Duration: 6hrs(3x2 hrs)	$ \Delta R_{25}/R_{25}  \leq 20\%$ No visible damage															
Shock *1	IEC 60738-1	Wave: half-sine ΔV: 1.0m/s Acceleration: 50 m/s <sup>2</sup> Pulse time: 30ms	$ \Delta R_{25}/R_{25}  \leq 20\%$ No visible damage															
Rapid Change of Temperature	IEC 60738-1	The thermal shock conditions shown below shall be repeated 5 cycles. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Period (minutes)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">-40 ± 3</td> <td style="text-align: center;">30 ± 3</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">Room temperature</td> <td style="text-align: center;">≤ 3</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">85 ± 2</td> <td style="text-align: center;">30 ± 3</td> </tr> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">Room temperature</td> <td style="text-align: center;">≤ 3</td> </tr> </tbody> </table>	Step	Temperature (°C)	Period (minutes)	1	-40 ± 3	30 ± 3	2	Room temperature	≤ 3	3	85 ± 2	30 ± 3	4	Room temperature	≤ 3	$ \Delta R_{25}/R_{25}  \leq 20\%$ No visible damage
Step	Temperature (°C)	Period (minutes)																
1	-40 ± 3	30 ± 3																
2	Room temperature	≤ 3																
3	85 ± 2	30 ± 3																
4	Room temperature	≤ 3																
Climatic Sequence	IEC 60738-1	Dry heat: 125°C for 16 hrs Damp heat first cycle: 40°C, 95% RH, cycle time: 24 hrs Cold: -40°C for 2 hrs Damp heat (cyclic), remaining cycles: 5 cycles Test according to IEC60068-2-30	$ \Delta R_{25}/R_{25}  \leq 20\%$ No visible damage															
Damp Heat, Steady State	IEC 60738-1	40±2°C, 90~95%RH, 1000±2hrs	$ \Delta R_{25}/R_{25}  \leq 20\%$ No visible damage															
Endurance at Maximum Operating Temperature and Maximum Voltage	IEC 60738-1	UCT=60°C, V <sub>R</sub> , I <sub>t</sub> ≤ I ≤ I <sub>max</sub> , 1000±2hrs	$ \Delta R_{25}/R_{25}  \leq 20\%$ No visible damage															
Endurance at Maximum Voltage	IEC60738-1	25±5°C, V <sub>R</sub> , I <sub>t</sub> ≤ I ≤ I <sub>max</sub> 1min. on and 5min. Off ×100cycles	$ \Delta R_{25}/R_{25}  \leq 20\%$ No visible damage															

**Note:** \*1 Items are applicable for PPL series only.

# Ceramic PTC Thermistor: PPL Series

## Overload Protection



### ■ Packaging

#### ● Taping Specification

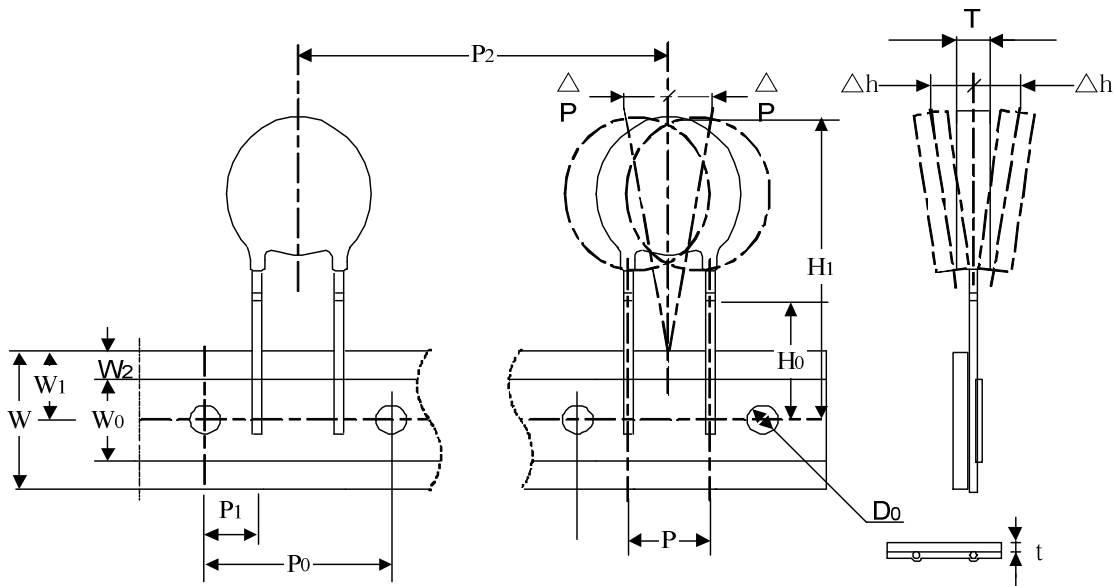


Figure A

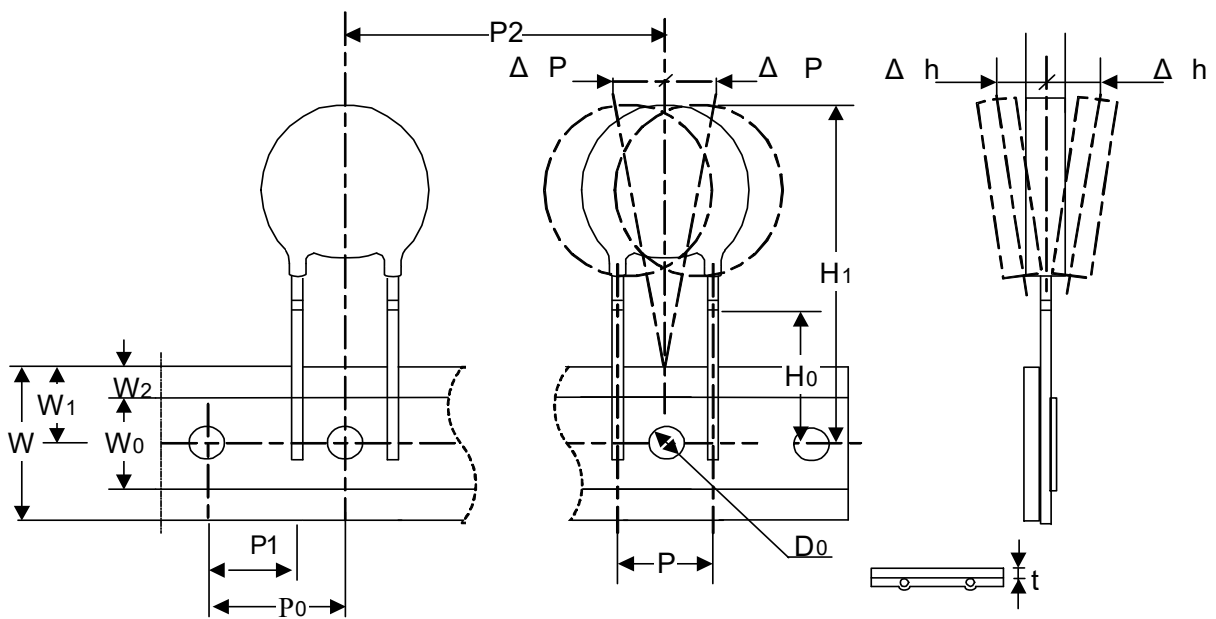


Figure B

# Ceramic PTC Thermistor: PPL Series

## Overload Protection



### ● Parameter List of Kinked Lead

Index	Parameter	Nominal dimensions					Tolerance
P	Lead spacing	2.5	5	7.5	5	7.5	±1
P <sub>0</sub>	Sprocket hole pitch	12.7			15.0		±0.3
P <sub>1</sub>	Ordinate to adjacent component lead	5.1	3.85	8.95	5.0	3.75	±1
P <sub>2</sub> *1	Device pitch	12.7	12.7	25.4	15.0	30	±1
H <sub>0</sub>	Abscissa to plane (kinked lead)	16	16	16	16	16	±0.5
H <sub>1</sub> *2	Abscissa to top	Refer to Table1: H <sub>1max</sub> and P					
W	Carrier tape width	18	18	18	18	18	±1
W <sub>0</sub>	Hold-down tape width	12	12	12	12	12	±1.5
W <sub>1</sub>	Sprocket hole position	9	9	9	9	9	±1
W <sub>2</sub>	Top distance between tape edges	3	3	3	3	3	Max.
△ P	Body tape plane deviation	1	1	1	1	1	Max.
△ h	Body lateral deviation	2	2	2	2	2	Max.
D <sub>0</sub>	Sprocket hole diameter	4	4	4	4	4	±0.2
t	Tape thickness	0.6	0.6	0.6	0.6	0.6	±0.2
Figure		A	A	B	A	A	---

**Table1:** H<sub>1max</sub> and P

Diameter of Disc		03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	
P	P <sub>0</sub> :12.7	12.7									25.4									
	P <sub>0</sub> :15.0	15.0									30.0									
H <sub>1max</sub>		25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.5	34	35	36	37.5	38.0	39.0	40.0	41.0	42.0	

# Ceramic PTC Thermistor: PPL Series

## Overload Protection



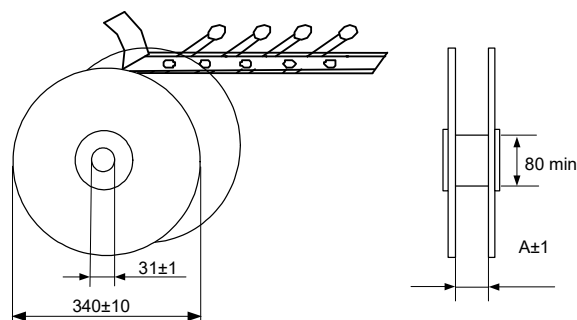
### Quantity

#### Bulk Packing

Disc Size(mm)	Quantity (pcs/bag)
$\Phi \leq 10$	200
$10 < \Phi < 20$	100
$\Phi \geq 20$	50

#### Reel Packing

Disc Size (mm)	Rated Voltage ( $V_R$ )	Quantity (pcs/reel)
$\Phi \leq 07$	$V_R \leq 270V_{ac}$	1,500
	$V_R > 270V_{ac}$	1,000
$07 < \Phi \leq 12$	$V_R \leq 270V_{ac}$	1,000
	$V_R > 270V_{ac}$	750
$12 < \Phi \leq 16$	$V_R \leq 270V_{ac}$	750
	$V_R > 270V_{ac}$	500
$\Phi > 16$	$V_R \leq 270V_{ac}$	500
	$V_R > 270V_{ac}$	250

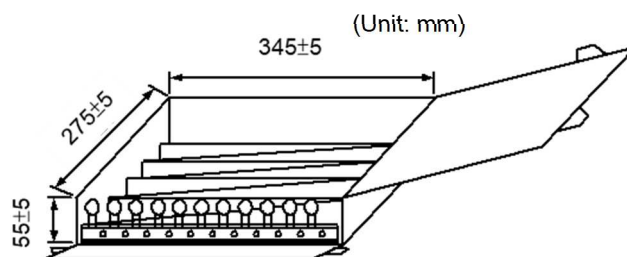


(Unit: mm)

Disc Size	$\Phi < 16$	$\Phi \geq 16$
A	46	55

#### Ammo Packing

Disc Size(mm)	Rated Voltage ( $V_R$ )	Quantity (pcs/box)
$\Phi \leq 07$	$V_R \leq 270V_{ac}$	1,000
	$V_R > 270V_{ac}$	750
$07 < \Phi \leq 12$	$V_R \leq 270V_{ac}$	750
	$V_R > 270V_{ac}$	500
$12 < \Phi \leq 16$	$V_R \leq 270V_{ac}$	500
	$V_R > 270V_{ac}$	250
$\Phi > 16$	---	250



(Unit: mm)

### Warehouse Storage Conditions of Products

#### Storage Conditions:

1. Storage Temperature:  $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$
2. Relative Humidity:  $\leq 75\% \text{RH}$
3. Keep away from corrosive atmosphere and sunlight.

#### Period of Storage: 1 year