

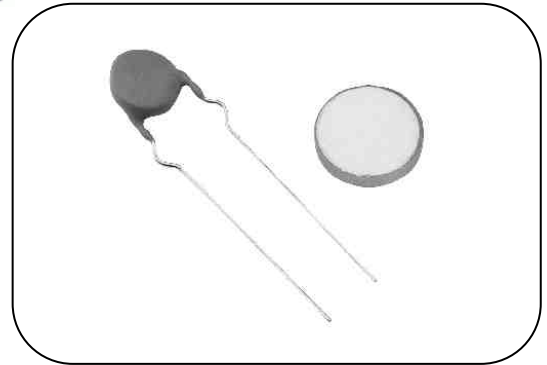
# CPTC Thermistor: PP Series

## Overload Protection



### ■ Features

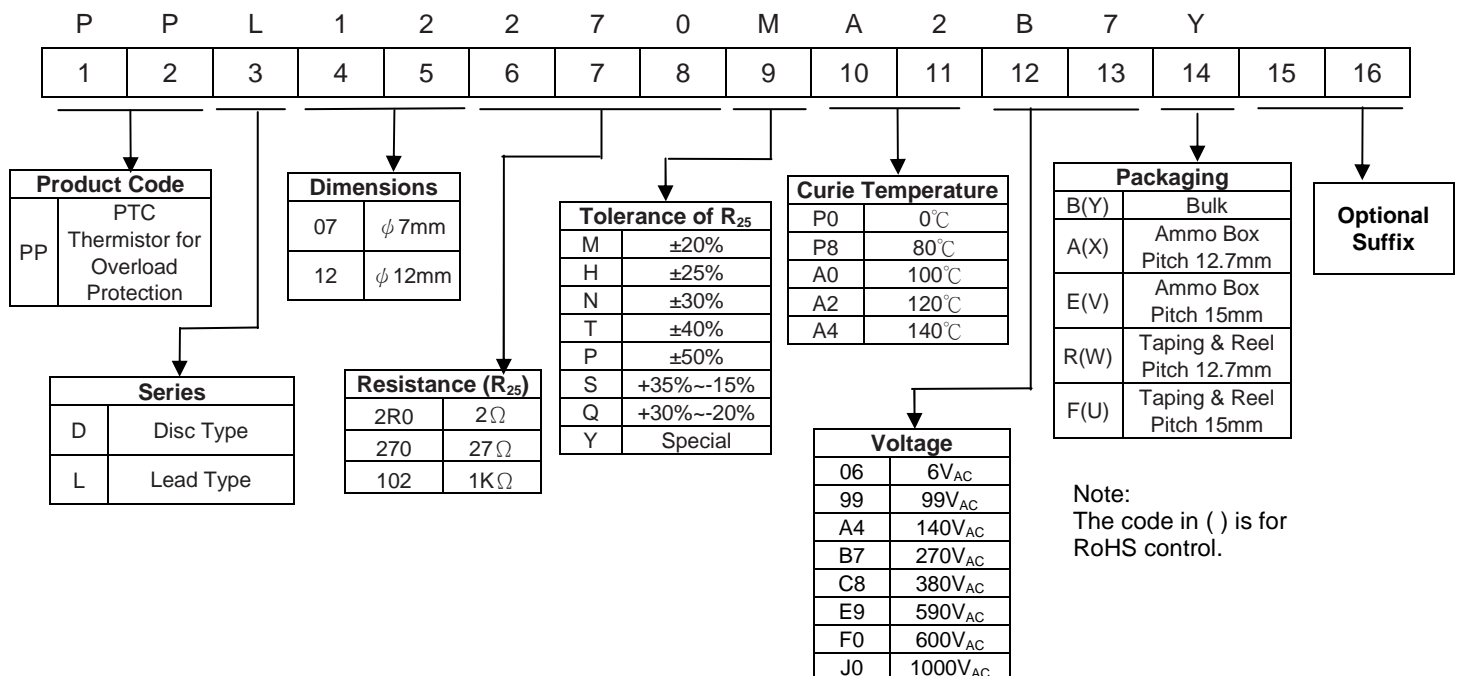
1. RoHS compliant
2. PPD type are naked
3. PPL type are leaded
4. Low, medium and high voltage ratings
5. Low resistance; Small size
6. No need to reset supply after overload
7. No noise generated
8. Stable over a long time
9. Operating temperature range : 0 ~ +60°C (V=Vmax)  
-25 ~ +125°C (V=0)
10. Agency Recognition: UL /cUL / CQC/TUV



### ■ Recommended Applications

1. Telecommunications (Program-controller)
2. Electrical equipment (Electrical machinery,Transformer)
3. Automotive electronics

### ■ Part Number Code



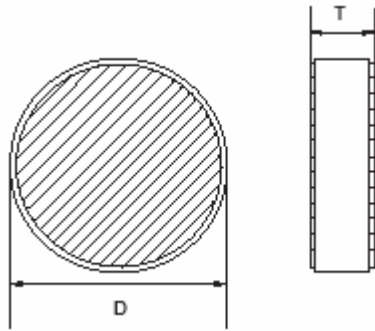
# CPTC Thermistor: PP Series

## Overload Protection



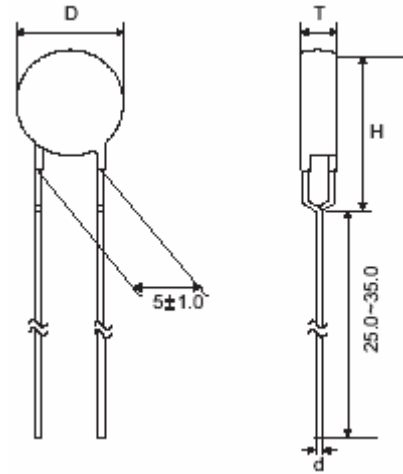
### ■ Dimensions

PPD Series



(Unit: mm)

PPL Series



(Unit: mm)

### ■ Characteristics

#### PPD Series

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 40°C	Trip Current at 25°C	Voltage	Maximum Current	Dimensions	
	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)
PPD08120□P6B2	60±10	12	80	200	220	2	8±0.5	1.5~2.2
PPD08150□P6B2		15	80	190	220	2	8±0.5	1.5~2.2
PPD08180□P6B2		18	80	180	220	2	8±0.5	1.5~2.2
PPD08100□P9B2	90±10	10	110	250	220	2	8±0.5	1.5~2.2
PPD08120□P9B2		12	110	250	220	2	8±0.5	1.5~2.2
PPD08150□P9B2		15	110	240	220	2	8±0.5	1.5~2.2
PPD08180□P9B2		18	110	240	220	2	8±0.5	1.5~2.2
PPD06180□A0B2	100±10	18	110	200	220	2	6.5±0.5	1.5~2.2
PPD05180□A1B2	110±10	18	110	200	220	2	5.5±0.5	1.5~2.2

Note: □=Tolerance of R<sub>25</sub>

# CPTC Thermistor: PP Series

## Overload Protection



### PPL Series

#### 12V<sub>AC</sub> / 120°C

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>ma</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL04130□A212	120±10	13	120	240	12	0.7	6.5	3.5	0.6	10.5	√	√		
PPL054R6□A212		4.6	250	500	12	1.0	7.0	3.5	0.6	10.5	√	√		
PPL081R8□A212		1.8	450	900	12	3.0	10	3.5	0.6	13.5	√	√		
PPL091R0□A212		1.0	410	1120	12	3.0	11	3.5	0.6	14.5	√	√		
PPL091R4□A212		1.4	350	1060	12	3.0	11	3.5	0.6	14.5	√	√		
PPL101R2□A212		1.2	600	1200	12	4.3	12	3.5	0.6	15.5	√	√		
PPL120R8□A212		0.8	850	1700	12	5.5	14	3.5	0.6	17.5	√	√		
PPL140R4□A212		0.4	950	2700	12	5.0	16	3.5	0.6	19.5	√	√		
PPL140R5□A212		0.5	870	2450	12	5.0	16	3.5	0.6	19.5	√	√		
PPL140R9□A212		0.9	430	1210	12	5.0	16	3.5	0.6	19.5	√	√		
PPL160R5□A212		0.5	1300	2600	12	8.0	17.5	5.0	0.6	21.5	√	√		
PPL200R3□A212		0.3	1800	3600	12	10.0	22	5.0	0.6	25.5	√	√		

#### 24V<sub>AC</sub> / 80°C

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>max</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL077R0□P824	80±10	7.0	90	360	24	2.0	9.0	3.5	0.6	12.5	√	√	√	√
PPL07100□P824		10	80	330	24	2.0	9.0	3.5	0.6	12.5	√	√	√	√
PPL083R0□P824		3.0	145	570	24	2.0	10	3.5	0.6	13.5	√	√	√	√
PPL092R0□P824		2.0	185	720	24	2.0	11	3.5	0.6	14.5	√	√	√	√

#### 24V<sub>AC</sub> / 120°C

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>max</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL084R7□A224	120±10	4.7	295	700	24	3.5	10	3.5	0.6	13.5	√	√	√	√
PPL103R9□A224		3.9	340	800	24	4.3	12	3.5	0.6	15.5	√	√	√	√
PPL143R3□A224		3.3	420	980	24	5.0	16	3.5	0.6	19.5	√	√	√	√

# CPTC Thermistor: PP Series

## Overload Protection



24V<sub>AC</sub>/ 140°C

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>max</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)
PPL056R0□A424	140±10	6.0	270	540	24	2.5	7.0	5.0	0.6	10.5	√	√		
PPL05130□A424		13	180	360	24	1.7	7.0	5.0	0.6	10.5	√	√		
PPL073R0□A424		3.0	410	820	24	4.5	9.0	5.0	0.6	12.5	√	√		
PPL075R0□A424		5.0	320	640	24	3.5	9.0	5.0	0.6	12.5	√	√		
PPL081R9□A424		1.9	540	1080	24	6.0	10	5.0	0.6	13.5	√	√		
PPL082R5□A424		2.5	470	940	24	5.0	10	5.0	0.6	13.5	√	√		
PPL101R3□A424		1.3	700	1400	24	8.0	12	5.0	0.6	15.5	√	√		
PPL101R7□A424		1.7	610	1220	24	7.0	12	5.0	0.6	15.5	√	√		
PPL120R9□A424		0.9	920	1840	24	11.0	14	5.0	0.6	17.5	√	√		
PPL121R1□A424		1.1	830	1660	24	10.0	14	5.0	0.6	17.5	√	√		
PPL160R5□A424		0.5	1390	2780	24	16.0	17.5	5.0	0.6	21.5	√	√		
PPL160R7□A424		0.7	1170	2340	24	13.5	17.5	5.0	0.6	21.5	√	√		
PPL200R3□A424		0.3	2050	4100	24	23.0	22	5.0	0.6	25.5	√	√		
PPL200R4□A424		0.4	1770	3540	24	20.0	22	5.0	0.6	25.5	√	√		

42V<sub>AC</sub>/ 80°C

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>max</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)
PPL06150□P842	80±10	15	60	230	42	1.5	8.0	4.0	0.6	11.5	√	√	√	√
PPL06220□P842		22	45	220	42	1.1	8.0	4.0	0.6	11.5	√	√	√	√
PPL06330□P842		33	40	180	42	0.9	8.0	4.0	0.6	11.5	√	√	√	√
PPL06470□P842		47	35	150	42	0.7	8.0	4.0	0.6	11.5	√	√	√	√
PPL06560□P842		56	30	140	42	0.7	8.0	4.0	0.6	11.5	√	√	√	√

42V<sub>AC</sub>/ 160°C

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>max</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)
PPL03510□A642	160±10	51	55	165	42	0.6	5.0	4.0	0.5	8.5				
PPL05240□A642		24	95	285	42	1.0	7.0	4.0	0.6	10.5				
PPL089R1□A642		9.1	175	525	42	3.0	10	4.0	0.6	13.5				
PPL095R1□A642		5.1	290	870	42	4.5	11	4.0	0.6	14.5				
PPL113R6□A642		3.6	360	1080	42	5.0	13.5	4.0	0.6	16.5				

# CPTC Thermistor: PP Series

## Overload Protection



### 48V<sub>AC</sub>/ 120°C

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>max</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)
PPL04420□A248	120±10	42	105	210	48	0.75	6.5	5.0	0.6	10.5	√	√		
PPL04600□A248		60	90	180	48	0.6	6.5	5.0	0.6	10.5	√	√		
PPL04900□A248		90	70	140	48	0.46	6.5	5.0	0.6	10.5	√	√		
PPL06220□A248		22	155	310	48	1.3	8.0	5.0	0.6	11.5	√	√		
PPL06320□A248		32	130	260	48	0.95	8.0	5.0	0.6	11.5	√	√		
PPL08180□A248		18	195	390	48	1.6	10	5.0	0.6	13.5	√	√		
PPL10120□A248		12	230	460	48	2.2	12	5.0	0.6	15.5	√	√		
PPL126R5□A248		6.5	350	700	48	4.0	14	5.0	0.6	17.5	√	√		
PPL129R0□A248		9.0	285	570	48	2.9	14	5.0	0.6	17.5	√	√		
PPL134R3□A248		4.3	425	850	48	6.3	15	5.0	0.6	18.5	√	√		
PPL162R6□A248		2.6	605	1210	48	12	17.5	5.0	0.6	21.5	√	√		
PPL163R8□A248		3.8	505	1010	48	7.3	17.5	5.0	0.6	21.5	√	√		
PPL201R6□A248		1.6	870	1750	48	18	22	5.0	0.6	25.5	√	√		
PPL202R2□A248		2.2	725	1450	48	14	22	5.0	0.6	25.5	√	√		

### 48V<sub>AC</sub>/ 140°C

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>max</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)
PPL05250□A448	140±10	25	130	260	48	1.2	7.0	5.0	0.6	10.5	√	√		
PPL05500□A448		50	94	188	48	0.8	7.0	5.0	0.6	10.5	√	√		

### 63V<sub>AC</sub>/ 120°C

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>max</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)
PPL03510□A263	120±10	51	55	165	63	0.7	5.0	4.0	0.5	8.5	√	√	√	√
PPL05240□A263		24	90	270	63	1.0	7.0	4.0	0.6	10.5	√	√	√	√
PPL089R1□A263		9.1	160	480	63	3.0	10	4.0	0.6	13.5	√	√	√	√
PPL095R1□A263		5.1	280	850	63	4.5	11	4.0	0.6	14.5	√	√	√	√
PPL113R6□A263		3.6	320	960	63	5.0	13.5	4.0	0.6	16.5	√	√	√	√
PPL152R4□A263		2.4	460	1400	63	7.5	17.5	4.0	0.6	21.5	√	√	√	√
PPL201R7□A263		1.7	700	1400	63	10	22	5.0	0.6	25.5	√	√		

# CPTC Thermistor: PP Series

## Overload Protection



63V<sub>AC</sub>/ 130°C

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>max</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL04620□A363	130±10	62	85	130	63	0.7	6.5	5.0	0.6	10.5	√	√		
PPL05200□A363		20	150	240	63	1.0	7.0	5.0	0.6	10.5	√	√		
PPL088R0□A363		8.0	250	380	63	3.0	10	5.0	0.6	13.5	√	√		
PPL104R9□A363		4.9	320	500	63	4.3	12	5.0	0.6	15.5	√	√		
PPL123R3□A363		3.3	450	690	63	5.5	14	5.0	0.6	17.5	√	√		
PPL162R2□A363		2.2	700	1100	63	8.0	17.5	5.0	0.6	21.5	√	√		
PPL201R2□A363		1.2	1000	1500	63	10.0	22	5.0	0.6	25.5	√	√		

110V<sub>AC</sub>/ 120°C

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>max</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL126R8□A2A1	120±10	6.8	290	660	110	1.0	14	4.5	0.6	17.5	√	√		
PPL12100□A2A1		10	220	500	110	1.0	14	4.5	0.6	17.5	√	√		
PPL164R7□A2A1		4.7	390	900	110	2.0	17.5	5.0	0.6	21.5	√	√		

110V<sub>AC</sub>/ 140°C

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>max</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL05280□A4A1	140±10	28	130	260	110	0.6	7.0	5.0	0.6	10.5				
PPL05400□A4A1		40	110	220	110	0.5	7.0	5.0	0.6	10.5				
PPL05550□A4A1		55	93	186	110	0.45	7.0	5.0	0.6	10.5				
PPL05121□A4A1		120	65	130	110	0.3	7.0	5.0	0.6	10.5				
PPL05241□A4A1		240	47	94	110	0.2	7.0	5.0	0.6	10.5	√	√		
PPL07120□A4A1		12	210	420	110	1.4	9.0	5.0	0.6	12.5				
PPL07190□A4A1		19	170	340	110	1.0	9.0	5.0	0.6	12.5				
PPL088R0□A4A1		8.0	270	540	110	2.2	10	5.0	0.6	13.5				
PPL089R4□A4A1		9.4	250	500	110	2.0	10	5.0	0.6	13.5				
PPL105R3□A4A1		5.3	360	720	110	3.5	12	5.0	0.6	15.5				
PPL106R7□A4A1		6.7	320	640	110	3.0	12	5.0	0.6	15.5				
PPL123R8□A4A1		3.8	450	900	110	5.0	14	5.0	0.6	17.5				
PPL124R6□A4A1		4.6	410	820	110	4.5	14	5.0	0.6	17.5				
PPL162R1□A4A1		2.1	710	1420	110	8.5	17.5	5.0	0.6	21.5				
PPL162R9□A4A1		2.9	600	1200	110	7.2	17.5	5.0	0.6	21.5				
PPL201R3□A4A1		1.3	1000	2000	110	13	22	5.0	0.6	25.5				
PPL201R7□A4A1		1.7	880	1760	110	11	22	5.0	0.6	25.5				

# CPTC Thermistor: PP Series

## Overload Protection



220V<sub>AC</sub>/ 80°C

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>max</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL03151□P8B2	80±10	150	15	60	220	0.3	5.0	5.0	0.5	8.5	√	√	√	√
PPL05680□P8B2		68	35	110	220	0.5	7.0	5.0	0.6	10.5	√	√	√	√
PPL07360□P8B2		36	45	180	220	0.7	9.0	5.0	0.6	12.5	√	√	√	√
PPL08220□P8B2		22	65	195	220	1.2	10	5.0	0.6	13.5	√	√	√	√
PPL09150□P8B2		15	90	270	220	1.5	11	5.0	0.6	14.5	√	√	√	√
PPL09180□P8B2		18	75	225	220	1.3	11	5.0	0.6	14.5	√	√	√	√
PPL11100□P8B2		10	120	360	220	2.3	13.5	5.0	0.6	16.5	√	√	√	√
PPL155R6□P8B2		5.6	180	540	220	4.5	17.5	5.0	0.6	21.5	√	√	√	√
PPL203R9□P8B2		3.9	240	720	220	7.0	22	5.0	0.6	25.5	√	√	√	√
PPL242R7□P8B2		2.7	350	1050	220	9.5	26	5.0	0.8	29.5				

# CPTC Thermistor: PP Series

## Overload Protection



220V<sub>AC</sub>/ 120°C

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>max</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)
PPL03151□A2B2	120±10	150	30	90	220	0.3	5.0	5.0	0.5	8.5	√	√	√	√
PPL03302□A2B2		3000	9	18	220	0.2	5.0	5.0	0.5	8.5	√	√		
PPL04381□A2B2		380	35	70	220	0.25	6.5	5.0	0.6	10.5	√	√		
PPL04561□A2B2		560	30	60	220	0.2	6.5	5.0	0.6	10.5	√	√		
PPL04851□A2B2		850	25	50	220	0.16	6.5	5.0	0.6	10.5	√	√		
PPL04122□A2B2		1200	20	40	220	0.13	6.5	5.0	0.6	10.5	√	√		
PPL04192□A2B2		1900	15	30	220	0.11	6.5	5.0	0.6	10.5	√	√		
PPL05750□A2B2		75	50	150	220	0.5	7.0	5.0	0.6	10.5	√	√	√	√
PPL05181□A2B2		180	29	70	220	0.3	7.0	5.0	0.6	10.5	√	√		
PPL06121□A2B2		120	35	100	220	0.4	8.0	5.0	0.6	11.5	√	√	√	√
PPL06201□A2B2		200	50	100	220	0.35	8.0	5.0	0.6	11.5	√	√		
PPL06281□A2B2		280	45	90	220	0.29	8.0	5.0	0.6	11.5	√	√		
PPL07560□A2B2		56	60	200	220	0.8	9.0	5.0	0.6	12.5	√	√		
PPL07820□A2B2		82	60	160	220	0.5	9.0	5.0	0.6	12.5	√	√		
PPL08240□A2B2		24	100	300	220	1.1	10	5.0	0.6	13.5	√	√		
PPL08360□A2B2		36	85	250	220	1.0	10	5.0	0.6	13.5	√	√	√	√
PPL08390□A2B2		39	75	240	220	1.0	10	5.0	0.6	13.5	√	√	√	√
PPL08500□A2B2		50	105	210	220	0.73	10	5.0	0.6	13.5	√	√		
PPL08510□A2B2		51	65	195	220	1.0	10	5.0	0.6	13.5	√	√	√	√
PPL08620□A2B2		62	55	165	220	1.0	10	5.0	0.6	13.5	√	√	√	√
PPL08720□A2B2		72	90	180	220	0.6	10	5.0	0.6	13.5	√	√		
PPL09160□A2B2		16	150	450	220	1.5	11	5.0	0.6	14.5	√	√	√	√
PPL10150□A2B2		15	140	280	220	1.5	12	5.0	0.6	15.5	√	√		
PPL10260□A2B2		26	155	310	220	1.1	12	5.0	0.6	15.5	√	√		
PPL10390□A2B2		39	100	250	220	1.2	12	5.0	0.6	15.5				
PPL11110□A2B2		11	200	600	220	2.2	13.5	5.0	0.6	16.5	√	√	√	√
PPL12100□A2B2		10	230	650	220	2.3	14	5.0	0.6	17.5	√	√	√	√
PPL12140□A2B2		14	230	460	220	1.7	14	5.0	0.6	17.5	√	√		
PPL12200□A2B2		20	195	390	220	1.3	14	5.0	0.6	17.5	√	√		
PPL12270□A2B2		27	120	350	220	1.5	14	5.0	0.6	17.5	√	√	√	√
PPL14180□A2B2		18	180	450	220	1.8	16	5.0	0.6	19.5	√	√		
PPL156R2□A2B2		6.2	320	960	220	4.0	17.5	5.0	0.6	21.5	√	√	√	√
PPL168R0□A2B2		8.0	350	700	220	2.5	17.5	5.0	0.6	21.5	√	√		
PPL203R6□A2B2		3.6	460	1380	220	7.0	22	5.0	0.6	25.5	√	√	√	√
PPL205R0□A2B2		5.0	505	1010	220	3.6	22	5.0	0.6	25.5	√	√		
PPL207R0□A2B2		7.0	425	850	220	3.0	22	5.0	0.6	25.5	√	√		
PPL242R4□A2B2		2.4	660	1980	220	10.5	26	5.0	0.8	29.5				



# CPTC Thermistor: PP Series

## Overload Protection



220V<sub>AC</sub>/ 130°C

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>max</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL04161□A3B2	130±10	160	55	90	220	0.2	6.5	5.0	0.6	10.5	√	√		
PPL05500□A3B2		50	100	150	220	0.4	7.0	5.0	0.6	10.5				
PPL08250□A3B2		25	140	230	220	1.0	10	5.0	0.6	13.5				
PPL10130□A3B2		13	200	320	220	1.5	12	5.0	0.6	15.5				
PPL129R0□A3B2		9.0	330	500	220	2.2	14	5.0	0.6	17.5				
PPL165R0□A3B2		5.0	450	680	220	4.1	17.5	5.0	0.6	21.5				
PPL203R5□A3B2		3.5	650	980	220	7.0	22	5.0	0.6	25.5				

220V<sub>AC</sub>/ 140°C

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>max</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL03181□A4B2	140±10	180	30	90	220	0.3	5.0	5.0	0.5	8.5	√	√		
PPL05560□A4B2		56	95	190	220	0.6	7.0	5.0	0.6	10.5				
PPL05750□A4B2		75	60	180	220	0.4	7.0	5.0	0.6	10.5				
PPL05850□A4B2		85	76	152	220	0.55	7.0	5.0	0.6	10.5	√	√		
PPL05121□A4B2		120	63	126	220	0.45	7.0	5.0	0.6	10.5	√	√		
PPL05261□A4B2		260	39	78	220	0.3	7.0	5.0	0.6	10.5	√	√		
PPL05501□A4B2		500	28	56	220	0.2	7.0	5.0	0.6	10.5	√	√		
PPL05122□A4B2		1200	19	38	220	0.14	7.0	5.0	0.6	10.5	√	√		
PPL05192□A4B2		1900	15	30	220	0.11	7.0	5.0	0.6	10.5	√	√		
PPL05302□A4B2		3000	11	22	220	0.08	7.0	5.0	0.6	10.5	√	√		
PPL07290□A4B2		29	140	280	220	0.8	9.0	5.0	0.6	12.5				
PPL07480□A4B2		48	110	220	220	0.65	9.0	5.0	0.6	12.5				
PPL08180□A4B2		18	190	380	220	1.0	10	5.0	0.6	13.5				
PPL08220□A4B2		22	170	340	220	0.9	10	5.0	0.6	13.5				
PPL08240□A4B2		24	110	330	220	1.0	10	5.0	0.6	13.5				
PPL09160□A4B2		16	150	450	220	1.5	11	5.0	0.6	14.5				
PPL10120□A4B2		12	250	500	220	1.5	12	5.0	0.6	15.5				
PPL10170□A4B2		17	210	420	220	1.3	12	5.0	0.6	15.5				
PPL119R1□A4B2		9.1	220	660	220	2.5	13.5	5.0	0.6	16.5				
PPL128R4□A4B2		8.4	320	640	220	2.2	14	5.0	0.6	17.5				
PPL12110□A4B2		11	280	560	220	1.8	14	5.0	0.6	17.5				
PPL164R4□A4B2		4.4	490	980	220	3.5	17.5	5.0	0.6	21.5				
PPL155R1□A4B2		5.1	350	1050	220	4.5	17.5	5.0	0.6	21.5				
PPL166R6□A4B2		6.6	400	800	220	3.0	17.5	5.0	0.6	21.5				
PPL202R8□A4B2		2.8	700	1400	220	5.5	22	5.0	0.6	25.5				
PPL203R6□A4B2		3.6	470	1400	220	5.0	22	5.0	0.6	25.5				
PPL204R0□A4B2		4.0	590	1180	220	4.5	22	5.0	0.6	25.5				

# CPTC Thermistor: PP Series

## Overload Protection



### 250V<sub>AC</sub>/ 100°C

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>max</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL07220□A0B5	100±10	22	100	260	250	0.5	9.0	6.0	0.6	12.5	√	√		

### 270V<sub>AC</sub>/ 120°C

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>max</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL08390□A2B7	120±10	39	75	240	270	1.2	10	5.0	0.6	13.5	√	√		
PPL10390□A2B7		39	100	250	270	1.2	12	5.0	0.6	15.5	√	√		
PPL12270□A2B7		27	120	350	270	1.5	14	5.0	0.6	17.5	√	√		
PPL16500□A2B7		50	320	160	270	4.0	18	7.0	0.6	21.5	√	√		

### 300V<sub>AC</sub>/ 120°C

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>max</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL10820□A2C0	120±10	82	80	250	300	0.5	12	5.5	0.6	15.5				
PPL10151□A2C0		150	60	150	300	0.3	12	5.5	0.6	15.5				
PPL10351□A2C0		350	35	100	300	0.3	12	5.5	0.6	15.5				

### 380V<sub>AC</sub>/ 120°C

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>max</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL05601□A2C8	120±10	600	21	39	380	0.2	7.0	5.0	0.6	10.5	√	√		

### 400V<sub>AC</sub>/ 120°C

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>max</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL05251□A2D0	120±10	250	32	65	400	0.3	7.0	5.0	0.6	10.5				
PPL05381□A2D0		380	30	56	400	0.3	7.0	5.0	0.6	10.5				
PPL05561□A2D0		560	22	44	400	0.3	7.0	5.0	0.6	10.5				

# CPTC Thermistor: PP Series

## Overload Protection



### 500V<sub>AC</sub>/ 120°C

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>max</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL05122□A2E0	120±10	1200	15	30	500	0.1	7.0	5.0	0.6	10.5	√	√		
PPL05152□A2E0		1500	12	24	500	0.1	7.0	5.0	0.6	10.5	√	√		

### 600V<sub>AC</sub>/ 90°C

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>max</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL05801□P9F0	90±10	800	18	36	600	0.3	7.0	5.0	0.6	10.5				
PPL05102□P9F0		1000	15	30	600	0.3	7.0	5.0	0.6	10.5				
PPL05132□P9F0		1300	13	26	600	0.3	7.0	5.0	0.6	10.5				

### 600V<sub>AC</sub>/ 100°C

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>max</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL05152□A0F0	100±10	1500	14	28	600	0.1	7.0	5.0	0.6	10.5	√	√		
PPL05272□A0F0		2700	10	20	600	0.2	7.0	5.0	0.6	10.5	√	√		

### Non-coating Series

Part No.	Curie Temperature	Nominal Zero-power Resistance	Non-operating Current at 25°C	Trip Current at 25°C	Voltage	Maximum 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 <sub>max</sub> (mm)	T <sub>max</sub> (mm)	d±0.02 (mm)	H <sub>max</sub> (mm)	UL	cUL	CQC	TUV
PPL07131□A2C8	120±10	130	45	90	380	1	7.5	7	0.6	12.5	√	√		
PPL08700□A2C8		70	64	127	380	1.4	8.5	7.0	0.6	13.5	√	√		
PPL08121□A2C8		120	49	100	380	1.4	8.5	7.0	0.6	13.5	√	√		
PPL08151□A2C8		150	43	86	380	1.4	8.5	7.0	0.6	13.5	√	√		
PPL11250□A2C8		25	123	245	380	2.0	12.5	7.0	0.6	16.5	√	√		
PPL11500□A2C8		50	87	173	380	2.0	12.5	7.0	0.6	16.5	√	√		
PPL11800□A2C8		80	69	137	380	2.0	12.5	7.0	0.6	16.5	√	√		
PPL11121□A2C8		120	56	112	380	2.0	12.5	7.0	0.6	16.5	√	√		
PPL11151□A2C8		150	50	100	380	2.0	12.5	7.0	0.6	16.5	√	√		
PPL08501□A2E0		500	24	48	500	1.0	8.5	7.0	0.6	13.5	√	√		
PPL08112□A2E0		1100	16	32	500	1.0	8.5	7.0	0.6	13.5	√	√		
PPL11501□A2E0	500	28	55	500	1.4	12.5	7.0	0.6	16.5	√	√			
PPL11752□A1J0	110±10	7500	8	17	1000	0.5	12.5	7.0	0.6	16.5				

Note: □=Tolerance of R<sub>25</sub>

Note: UL/cUL File No. E138827 CQC File No. CQC03001008123~124

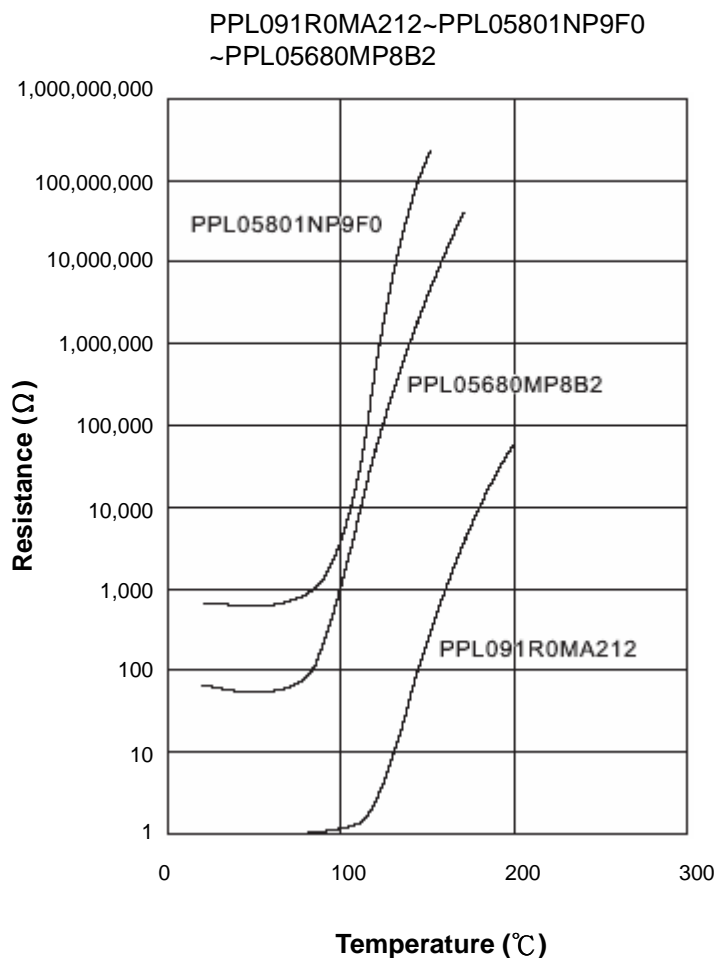
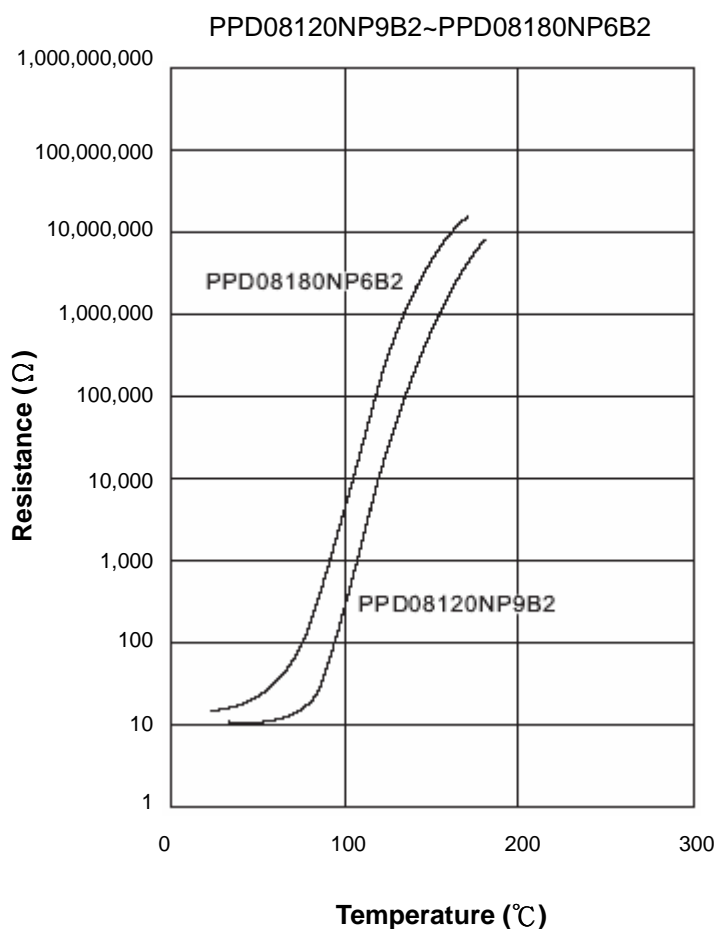
TUV File No. R50025585

# CPTC Thermistor: PP Series

## Overload Protection



### ■ R-T Characteristic Curve (Representative)



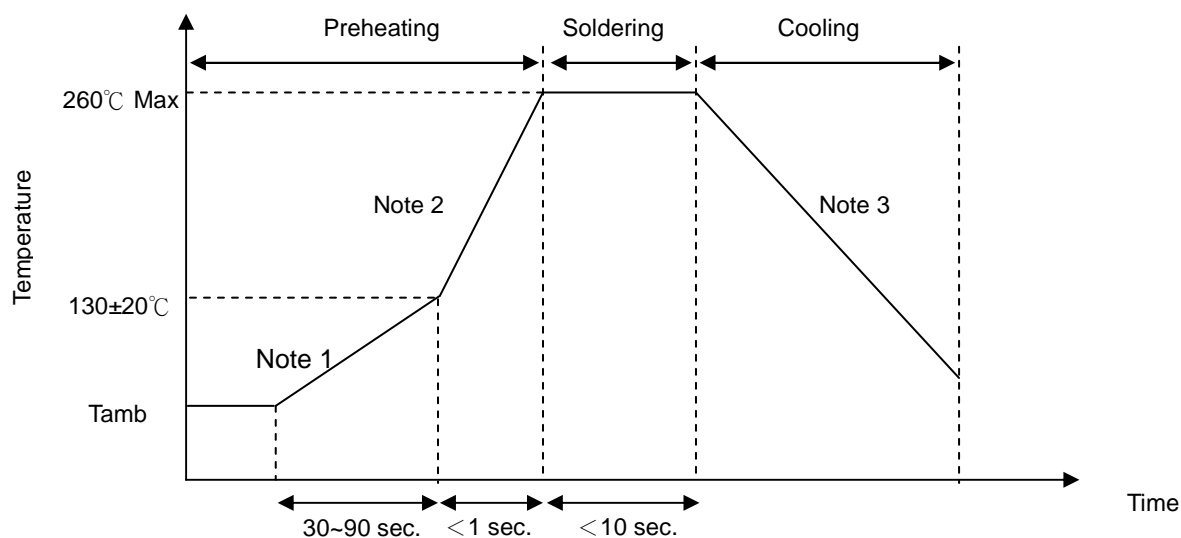
# CPTC Thermistor: PP Series

## Overload Protection



### ■ Soldering Recommendation

#### ● Wave Flow Soldering Profile



Note 1: (1~3°C)/sec

Note 2: Approx. 200°C/sec

Note 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 Thermistor	2 mm (min.)

# CPTC Thermistor: PP Series

## Overload Protection



### ■ Reliability Test

Item	Standard	Test conditions / Methods	Specifications															
Tensile Strength of Terminals *	IEC60068-2-21	Fasten body and apply a force gradually to each lead for 10±1 sec. 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															
Solderability*	IEC60068-2-20	255±5°C ,3±0.5sec, 4±1mm from body .	At least 95% of terminal electrode is covered by new solder															
Resistance to Soldering Heat *	IEC60068-2-20	350±10°C ,3~4 sec, 4±1mm from body	$ \Delta R/R_{25}  \leq 20\%$ No damage observed															
Vibration *	IEC60068-2-6	Frequency range:10~55Hz Amplitude:0.75mm or 98m/S2 Direction:3 mutually perpendicular directions Duration :6HRS(3x2HRS)	$ \Delta R_{25}/R_{25}  \leq 20\%$ No visible damage															
Shock *	IEC60068-2-27	Wave: half-sine ΔV:1.0m/s Acceleration:50m/s2 Pulse time:30ms	$ \Delta R_{25}/R_{25}  \leq 20\%$ No visible damage															
Rapid Change of Temperature	IEC60068-2-14	T The thermal shock conditions shown below shall be repeated 5 cycles	$ \Delta R_{25}/R_{25}  \leq 20\%$ No visible damage															
		<table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Period (minutes)</th> </tr> </thead> <tbody> <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>100 ± 5</td> <td>30 ± 3</td> </tr> <tr> <td>4</td> <td>Room temperature</td> <td>5 ± 3</td> </tr> </tbody> </table>	Step	Temperature (°C)	Period (minutes)	1	-40 ± 5	30 ± 3	2	Room temperature	5 ± 3	3	100 ± 5	30 ± 3	4	Room temperature	5 ± 3	
Step	Temperature (°C)	Period (minutes)																
1	-40 ± 5	30 ± 3																
2	Room temperature	5 ± 3																
3	100 ± 5	30 ± 3																
4	Room temperature	5 ± 3																
Climatic sequence	IEC60738-1	+40 °C ,20%R.H X 24hrs →100 °C X 16hrs→25°C X 2hrs→ +40 °C ,95%R.HX 24hrs→ 0 °C X 2hrs→+40 °C ,95%R.HX 24hrs→ 25 °C X (1~2)hrs	$ \Delta R_{25}/R_{25}  \leq 20\%$ No visible damage															
High Temperature Storage	IEC60068-2-2	60 °C , for 1000hrs	$ \Delta R_{25}/R_{25}  \leq 20\%$ No visible damage															
High Temperature Continuous Load	IEC60738-1	UCT=60°C, V <sub>R</sub> , I <sub>t</sub> ≤I≤I <sub>max</sub> for 1000hrs	$ \Delta R_{25}/R_{25}  \leq 20\%$ No visible damage															
Damp Heat, Steady State	IEC60068-2-3	40±2°C ,90~95%RH, for 1000±2hrs	$ \Delta R_{25}/R_{25}  \leq 20\%$ No visible damage															
Room Temperature Intermittent Load	IEC60738-1	25±5°C, V <sub>R</sub> , I <sub>t</sub> ≤I≤I <sub>max</sub> 1min. on and 5min. Off x100, 1,000, 10,000 or 100,000cycles	$ \Delta R_{25}/R_{25}  \leq 20\%$ No visible damage															

\* : Only application for PPL series

# CPTC Thermistor: PP Series

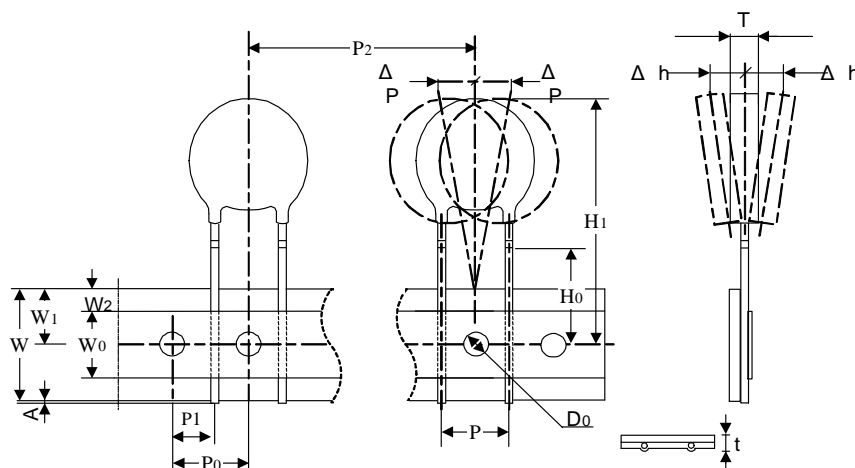
## Overload Protection



### ■ Packaging

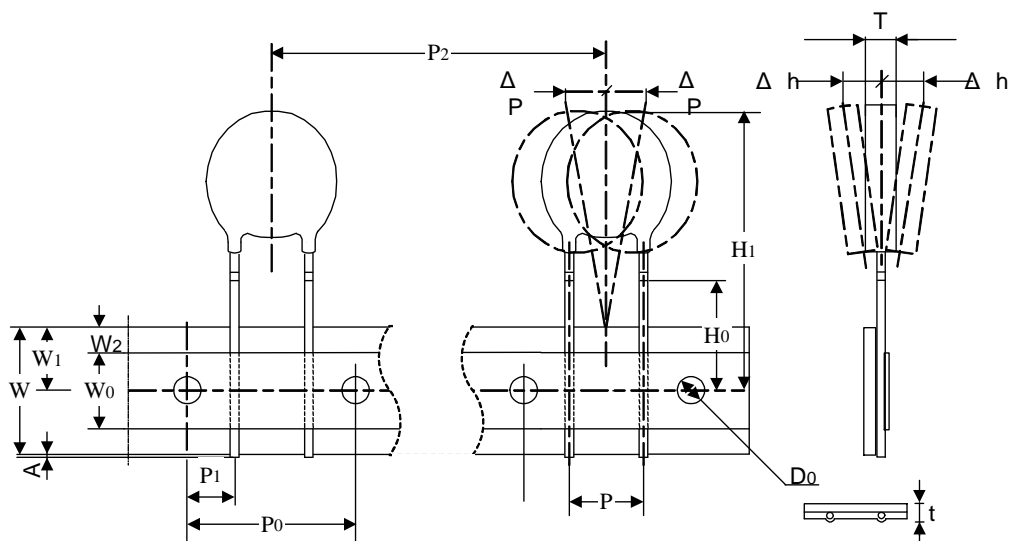
#### ● Taping Specification

*Lead Space 7.5mm (P0=12.7mm)*



*Lead Space 2.5mm & 5.0mm & 7.5mm (P0=15mm)*

*Lead Space 2.5mm & 5.0mm (P0=12.7mm)*



# CPTC Thermistor: PP Series

## Overload Protection



(Unit: mm)

Index	Parameter	Nominal dimensions				Tolerance
P	Lead spacing	5	7.5	5	7.5	±1
P0	Sprocket hole pitch	12.7	12.7	15	15	±0.3
P1	Lead location	3.85	8.95	5	3.75	±1
P2	Component pitch	12.7 (D ≤ 10)		15.0 (D ≤ 10)		±1
		25.4 (D > 10)		30.0 (D > 10)		
H0	Height between component and tape centre	16	16	16	16	±0.5
W	Carrier tape width	18	18	18	18	±1
W0	Adhesive tape width	12	12	12	12	±1
W1	Sprocket hole position	9	9	9	9	±1
W2	Adhesive tape position	3	3	3	3	Max. 3
△P	Component alignment	1	1	1	1	Max. 1
△h	Component alignment	2	2	2	2	Max. 2
A	Tip length	0.5	0.5	0.5	0.5	Max. 0.5
D <sub>0</sub>	Sprocket hole diameter	4	4	4	4	±0.2
t	Total tape thickness	0.6	0.6	0.6	0.6	±0.2



# CPTC Thermistor: PP Series

## Overload Protection



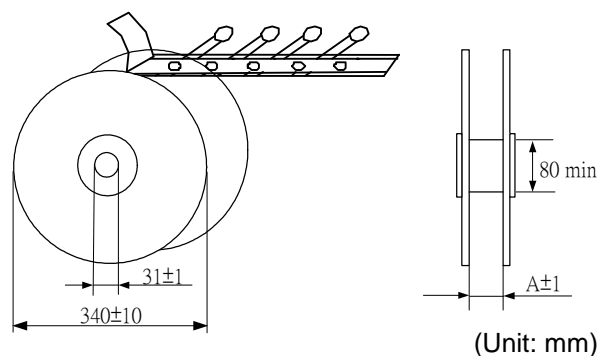
### Quantity

#### Bulk Packing

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

#### Reel Packing

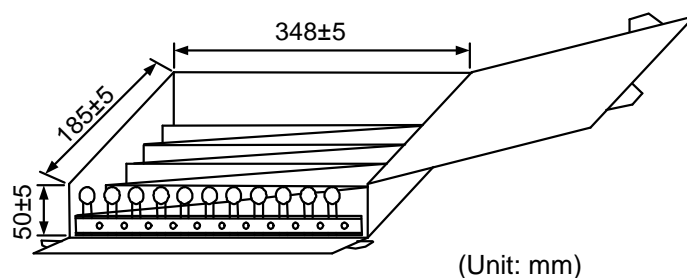
Disc Size/mm	Voltage( $V_R$ )	Quantity/Reel
$\Phi \leq 07$	$V_R \leq 270V_{AC}$	1500
	$V_R > 270V_{AC}$	1000
$07 < \Phi \leq 12$	$V_R \leq 270V_{AC}$	1000
	$V_R > 270V_{AC}$	750
$12 < \Phi \leq 16$	$V_R \leq 270V_{AC}$	750
	$V_R > 270V_{AC}$	500
	$V_R \leq 270V_{AC}$	500
	$V_R > 270V_{AC}$	250



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

#### Ammo packing

Disc Size/mm	Voltage( $V_R$ )	Quantity/box
$\Phi \leq 07$	$V_R \leq 270V_{AC}$	1000
	$V_R > 270V_{AC}$	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



### 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