PTC Thermistors, Time Delay for Lighting



QUICK REFERENCE DATA		
PARAMETER	VALUE	UNIT
Rated voltage (RMS)	80 to 200	V_{RMS}
Nominal switching current	150 to 500	mA
Resistance at 25 °C (R_{25})	100 to 625	Ω
Tolerance on R_{25} value	20 to 30	%
Maximum overload current I_{ol}	0.5 to 1.0	A
Tripping time	0.3 to 1	s
Operating temperature range at rated voltage	-20 to 105	°C

DESCRIPTION

Positive temperature coefficient (PTC) thermistors for overload protection have proved to be the ideal electronic ballast component for increased lamp life-time.

When the rectified mains is first applied, the PTC thermistor is cold, so its resistance is low. The lamp voltage will be below the necessary ignition value, so the current will flow through the cathodes, heating them to their emission temperature. At the same time, the PTC thermistor will heat up to its switch temperature, whereupon its resistance will rise rapidly, allowing the lamp voltage to reach its ignition value and light the lamp.

Once the lamp is lit, the cathodes are fed by a high-frequency lamp supply, to avoid flicker and improve efficiency. The PTC thermistor plays no further part until the lamp is switched off, whereupon it is ready to resume its smooth-starting function.

We supply a range of lighting PTC thermistors for this application offering a wide choice of voltage and switch times.

FEATURES

- Reliable lamp starting, due to well defined inrush-current generated time delay
- Accurate resistance for ease of circuit design
- Small size and durable
- Available bulk-packed or taped-on-reel
- Long life: More than 20 000 starts for a 20 W CFL lamp
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

APPLICATIONS

Fluorescent lighting and lighting ballasts for:

- CFL 5 to 25 W range
- TL HF-ballasts

MOUNTING

The leads are suitable for soldering in any position. The lacquer may cover the leads up to 1.0 mm from the seating plane.

ELECTRICAL DATA AND ORDERING INFORMATION

R_{25} (Ω)		SWITCH TEMPERATURE (°C)	MAXIMUM PEAK VOLTAGE (4) (V_{peak})	TYPICAL (1) TRIP TIME at 25 °C		CATALOG NUMBER
MIN.	MAX.			t_{trip} (s)	at I_t (mA)	SAP CODING
500	750	≈ 110	700	0.4	200	PTCLL05P131TBE (2)
185	300	≈ 120	700	0.5	300	PTCLL05P211TTE (2)
75	125	≈ 80	700	0.7	300	PTCLL05P251TTE (2)
225	375	≈ 105	900	0.75	300	PTCLL07P261VTE (3)
75	125	≈ 105	1 000	0.85	500	PTCLL07P421WTE (3)

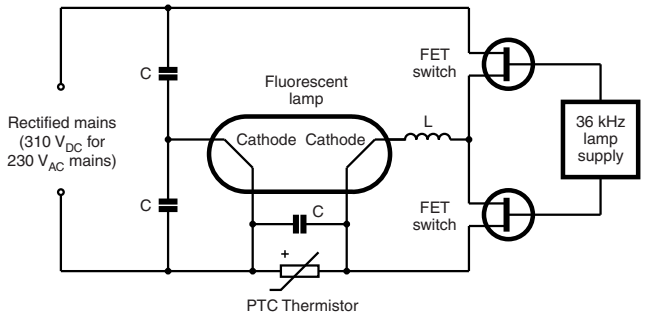
Notes

(1) Ignition time of the lamp approximately equals the tripping time.
(2) Specific for CFL lamp electronic starter.
(3) Specific for HF-TL ballast.
(4) Highest lamp ignition voltage should be smaller than the maximum allowable peak voltage.

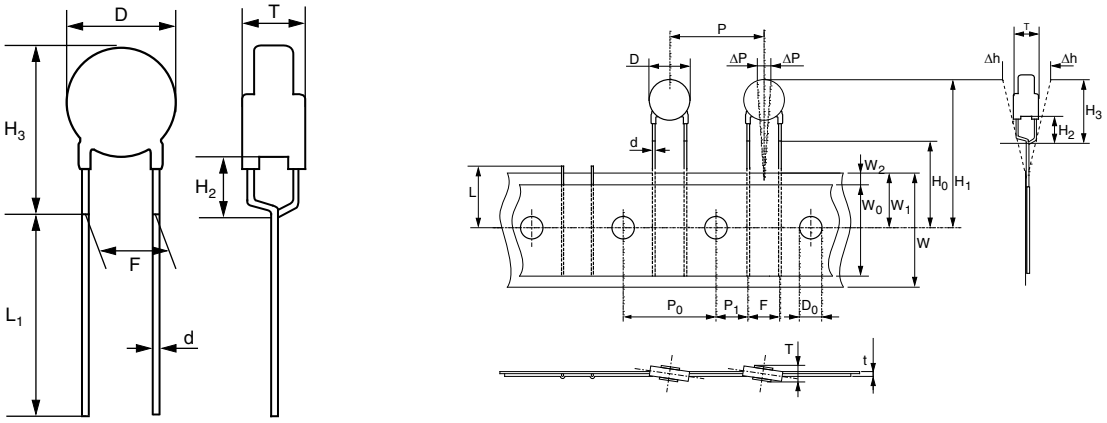
For technical questions, contact: nlr@vishay.com

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TYPICAL ELECTRONIC BALLAST CIRCUIT



DIMENSIONS in millimeters



$D_{max.}$	$T_{max.}$	H_3	L_1	WEIGHT (g)	FIGURES	PACKAGING	SPQ	MATERIAL ORDERING NUMBER
5.4	4.5	10	3.5 ± 0.5	≈ 0.33	Fig. 1	Bulk	500	PTCLL05P131TBE
5.4	4.5	9	-	≈ 0.45	Fig. 2	On tape	1500	PTCLL05P211TTE
5.4	4.5	10	-	≈ 0.45	Fig. 2	On tape	1500	PTCLL05P251TTE
7.0	5.0	12	-	≈ 0.66	Fig. 2	On tape	1500	PTCLL07P261VTE
7.0	5.0	12	-	≈ 0.66	Fig. 2	On tape	1500	PTCLL07P421WTE

TAPE AND OTHER DEVICE DIMENSIONS in millimeters according IEC 60286 for tape on reel

SYMBOL	PARAMETER	DIMENSIONS	TOLERANCE
d	Lead diameter	0.6	± 0.05
P	Pitch between thermistors	12.7	± 1
F	Lead to lead distance guaranteed between component and tape	5	+0.5 / -0.2
H_2	Component body to seating plane	4	± 1
H_0	Lead-wire clinch height	16	± 0.5

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