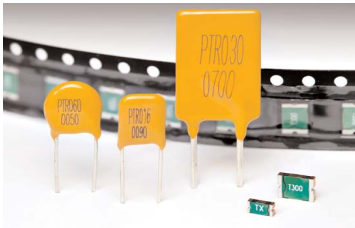


Eaton's PolyTron™ PTC device selection guide



Selecting Polymer Positive Temperature Coefficient (PTC) devices for overcurrent and overtemperature protection

Eaton's Bussmann® Series family of PolyTron™ PTC devices is ideally suited for protecting applications sensitive to high ambient operating temperatures or subject to frequent overcurrent conditions.

PTCs operate as a positive temperature coefficient device. High temperatures and excessive current will cause the device resistance to increase until it limits the unsafe current level.

Upon reaching the design temperature/current limit, the PTC will effectively "open" the circuit to provide protection from the overcurrent or elevated ambient temperature condition.

Once the fault is removed or the ambient temperature cools, the PTC will automatically "reset" and conduct safe current levels again, allowing current to flow through the circuit.

PTCs are commonly used in applications where constant uptime is required and/or in circuits not easily accessible by a user or service technician.

Available in surface mount and radial packages, Eaton's Bussmann series PolyTron PTC devices help improve the safety and reliability of customer equipment worldwide.

PolyTron PTC device packages

- Radial: 16, 30 and 60 Vdc from 0.10 to 15 amps
- Surface Mount: 1206 and 1812 - 6-60 Vdc from 0.1 to 3.0 amps

Features:

- Fast trip times and resettable protection
- Overcurrent and over temperature protection
- Wide range of current (Ihold) and voltage (Vmax) offerings
- Low resistance
- RoHS compliant, lead-free, halogen-free

Applications

- Medical equipment
- Industrial power and transmission
- White goods
- Telecommunications and networking
- Computer and peripherals
- Consumer and automotive electronics
- Battery and rechargeable devices

Agency information

- cULus – UL Recognition for US and Canada
- TÜV – European Standard (Germany Agency)

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Introduction

This is a general selection guide. Its intent is to provide an understanding of the package styles and ratings most suited for an application. For final selection, please consult your local Eaton representative or website for additional details.

Eaton Bussmann Series PolyTron™ PTC devices are ideally suited for applications encountering frequent overcurrent conditions for which traditional fuse protection would prove impractical or undesirable such as consumer electronics, I/O ports, medical equipment and process control applications where constant uptime is required.

PolyTron PTC device selection

- 1) Determine circuit parameters:

- a. Normal operating current – I_{hold}
- b. Maximum circuit voltage – V_{max}
- c. Ambient operating temperature – °C
- d. Maximum fault current – I_{max}

- 2) Select package (radial lead or SMD Chip) based on size constraints and PCB assembly method.

- 3) Compare PolyTron™ PTC device data sheet ratings for V_{max} and I_{max} at www.eaton.com/electronics.

The circuit parameters should not exceed the ratings of the device.






- 4) Verify that the ambient operating temperature of the circuit is within the device's normal operating range. Thermally derate I_{hold} and I_{max} as necessary using the equation:

- a. $I_{hold} = I_{max} / \text{Thermal derating factor}$

- 5) Check that the trip time will adequately protect the circuit.

- 6) Verify that the post trip resistance (R_{1max}) of the device is taken into account.

- 7) Test and evaluate the suitability and performance of the chosen PolyTron PTC device in the actual application.

		PolyTron PTC Device Family				
		Surface Mount		Radial Leaded		
		PTS1206	PTS1812	PTR016V	PTR030V	PTR060V
Specifications						
Chip Size		1206	1812	--	--	--
Hold Current (I _{hold})		0.05-2.0 A	0.10-3.0 A	0.9-15.0 A	0.90-9.0 A	0.10-3.75 A
Max Voltage (V _{max})		6-60 V	6-60 V	16 V	30 V	60 V
Max Fault Current (I _{max})		100 A	10-100 A	40-100 A	40-100 A	40 A
Operating Temperature Range - °C		-40/+85	-40/+85	-40/+85	-40/+85	-40/+85
Applications	Application Areas					
Computers	CPU			X		
	USB	X	X	X		
	IEEE 1284 Parallel data bus	X	X	X		
	IEEE 802.3					X
	IEEE 1394		X		X	
	I/O Ports	X	X	X		
	PC Card	X	X	X		
	SCSI	X	X	X		
	Video port	X	X	X		
Consumer Electronics	LCD Monitor	X	X	X		
	Set top box	X	X			
	Loudspeaker				X	
	Smart card reader	X				
	Mobile phone	X				
	Linear AC/DC adapter	X	X		X	X
	Portable electronic input port	X	X			
Medical Electronics	Electromagnetic loads, motors				X	X
	Solenoid protection		X		X	X
	Voltage/current input terminals	X	X			

Technical Application Assistance

Call 636-527-1270

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Data Sheets: www.eaton.com/electronics

Order samples on-line: <https://tools.eatonelectronics.com/request-form>

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