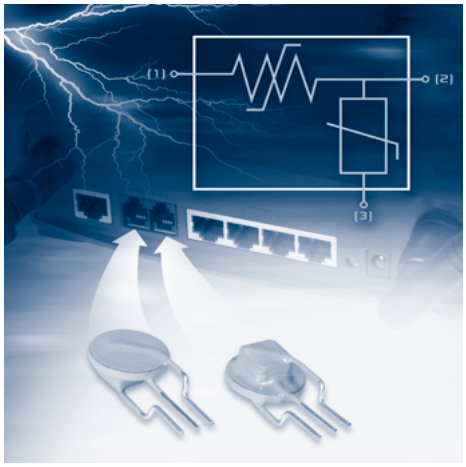
tyco Electronics

Raychem CIRCUIT PROTECTION

2Pro Devices Help Provide Reliable Connectivity



Raychem Circuit Protection, the leader in innovative circuit protection solutions, has introduced the industry's first integrated overcurrent/overvoltage protection solution—the 2Pro device. The RoHS-compliant component incorporates PolySwitch PPTC (Polymeric Positive Temperature Coefficient) and metal oxide varistor technology in a single device to reduce board space requirements and component count.

Damage to telephony communications equipment can be caused by various sources including lightning and ESD surges, power contact and induction with AC lines. The 2Pro TM2P-10271 and TM2P-10271E devices help provide current limiting during overcurrent events, and voltage clamping during overvoltage events. After a fault condition is removed and power is cycled, 2Pro devices will reset so that communications equipment remains operational.

With the introduction of the 2Pro devices Raychem Circuit Protection addresses the need for resettable circuit protection devices for use in cost-sensitive PSTN (Public Switched Telephone Network) and VoIP (Voice over Internet Protocol) telephony equipment. The widespread use of VoIP gateways in homes and enterprise environments as the primary means of voice delivery requires the utmost safety and reliability in equipment. 2Pro circuit protection devices are designed specifically to help manufacturers comply with global safety standards, including UL 60950, TIA-968-A, IEC 60950, and ITU-T K.20/K.21. The UL 497A listed protector also helps provide ESD protection.

Benefits:

- Single device helps reduce component count and footprint
- Helps reduce warranty returns
- Helps equipment comply with surge tests per: TIA-968-A, IEC 60950, ITU-T K.20/K.21
- Helps simplify UL 60950 testing
- Helps equipment comply with UL 60950

Features:

- Single overcurrent, overvoltage and ESD protection device
- Resettable overcurrent protection
- UL 497A listed protector (#E258475)
- RoHS compliant

Applications:

- Cordless telephones
- VoIP gateways
- Fax machines
- Data modems
- Set-top boxes
- Security systems
- MDF modules
- Analog and ISDN linecards

TM2P Electrical Characteristics

Overcurrent (terminals 1 – 2)—Performance ratings @ 20°C

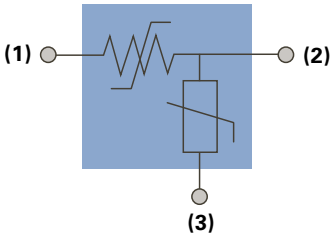
Part Number	IHOLD (A)	ITRIP (A)	Resistance† (Ω) R min.	R max.	R1 max*	Time to Trip (s)† @ 1A Typ	Max
TM2P-10271	0.15	0.30	7.0	14.0	16.0	0.3	3
TM2P-10271E‡	0.15	0.30	6.0	12.0	14.0	0.4	4

Overvoltage (terminals 2 – 3)

Part Number	Varistor Voltage V @ 1mA DC (V)	Tolerance	DC Resistance @ 100V (MΩ)	Maximum Clamping Voltage @ 25A (V)	Rated Wattage (W)
TM2P-10271	270	± 10%	>10	455	0.25
TM2P-10271E‡	270	± 10%	>10	455	0.25

* Maximum device resistance at 20°C measured 1 hour post trip.
† Corresponds to operation below varistor voltages.
‡ Data is preliminary.

Electrical Schematic



Part Numbering System

TM 2P- 10 271 E -2

Packaging
Blank: Bulk
-2: Tape & reel

Modifier (optional)
E = Enhanced lightning

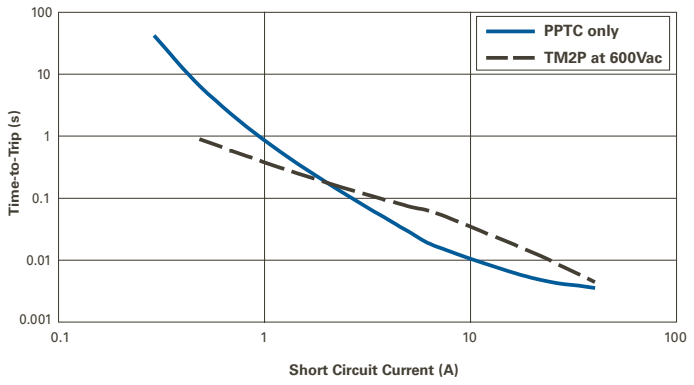
Varistor voltage indicator
The first two digits indicate voltage.
The third digit signifies the power of ten.
For example:
220: 22 x 10^0 = 22v
221: 22 x 10^1 = 220v
112: 11 x 10^2 = 1100v

Typical PPTC resistance (ohms)

2Pro™ Series

Telecom Module

Typical Time-to-Trip at 25°C for 2Pro Devices



Packaging and Marking Information

Part Number	Bag Quantity	Tape & Reel Quantity	Standard Package	Part Marking	Agency Recognition
TM2P-10271	500	-	10,000	1027 & Batch #	UL 497A/File No. E258475
TM2P-10271-2	-	1,500	7,500	1027 & Batch #	UL 497A/File No. E258475
TM2P-10271E	500	-	10,000	3527 & Batch #	Pending
TM2P-10271E-2	-	1,500	7,500	3527 & Batch #	Pending

Ordering Information

Bulk	500 pieces/bag 10,000 pieces/box
Tape & Reel	1,500 pieces/reel 7,500 pieces/box

Physical Characteristics

Lead material	22 AWG Sn plated copper
Flammability	IEC 695-2-2 Needle flame test for 20s
Soldering characteristics	ANSI approved IPC/EIA/JEDEC J-STD-002, Category 3
Solder heat withstand	IEC-STD 68-2-20, Section 5, Test Tb, Method 1A

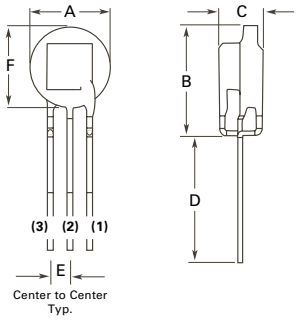
Environmental Specifications

Test	Conditions
Passive aging	60°C, 1000 hours / 85°C, 1000 hours
Humidity aging	85°C, 85% RH, 1000 hours
Active aging	60°C, 90% RH, 60Vdc bias,1000 hours
Thermal shock	125°C, -55°C (10 times)
Solvent resistance	MIL-STD-202, Method 215K

Note: Storage conditions: 40°C max., 70% RH max., devices should remain in original sealed bag prior to use. Devices may not meet specified values if these storage conditions are exceeded.

Mechanical Dimensions

	A		B		C		D		E	F	
	Min	Max	Min	Max	Min	Max	Min	Max	Nom	Min	Max
mm	—	12	—	15	—	6.6	6.0	—	2.5	—	12
inch	—	(0.47)	—	(0.59)	—	(0.26)	(0.236)	—	(0.098)	—	(0.47)



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