



308 Constitution Drive  
Menlo Park, CA 94025-1164  
Phone: 800-227-4856  
www.circuitprotection.com

## Gas Discharge Tube Miniature Three Electrode Overvoltage Protection Device

Raychem Circuit Protection Products

PRODUCT: GTCx36

DOCUMENT: SCD 25815  
REV LETTER: E1  
REV DATE: 15-Apr-11  
PAGE NO.: 1 OF 6

# Specification Status: Released

## BENEFITS

- Helps provide overvoltage fault protection against high energy surges
- Suitable for sensitive equipment due to excellent impulse spark over response
- Suitable for high-frequency applications
- Highly reliable performance

## FEATURES

- Crowbar device with low arc-voltage
- Low capacitance and insertion loss
- High accuracy spark-over voltages for high precision designs
- Tested per ITU K.12 recommendations
- Optional Fail-Short mechanism
- Non-radioactive materials

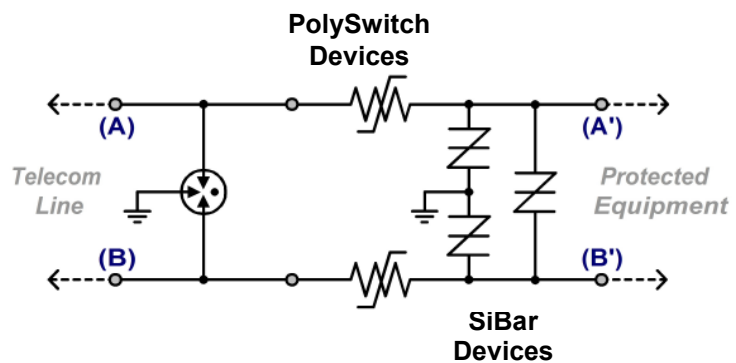
## APPLICATIONS

- Telecommunications:
  - MDF modules, xDSL equipment, RF system protection
- Industrial Electronics and Commercial Electronics, such as
  - Power Supplies, Surge Protectors, Alarm systems

## SYMBOL



## TYPICAL APPLICATION SCHEMATIC





308 Constitution Drive  
 Menlo Park, CA 94025-1164  
 Phone: 800-227-4856  
 www.circuitprotection.com

## Gas Discharge Tube Miniature Three Electrode Overvoltage Protection Device

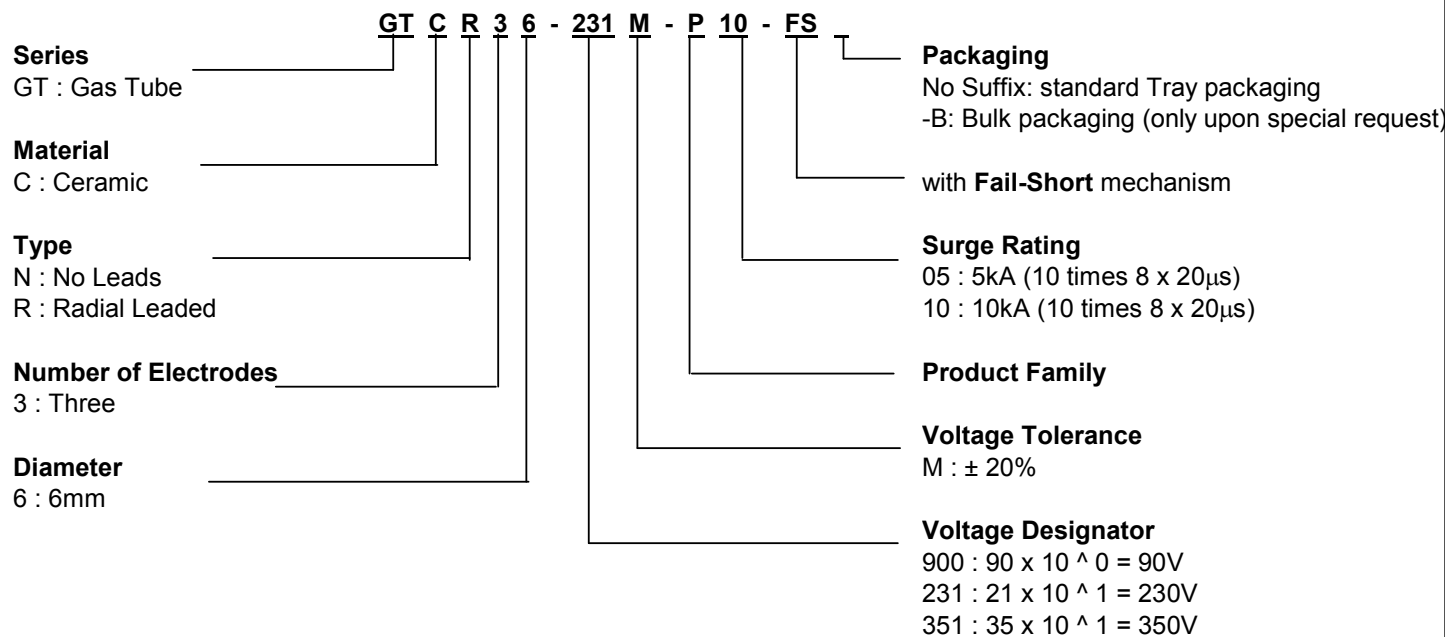
**Raychem Circuit Protection Products**

**PRODUCT: GTCx36**

DOCUMENT: SCD 25815  
 REV LETTER: E1  
 REV DATE: 15-Apr-11  
 PAGE NO.: 2 OF 6

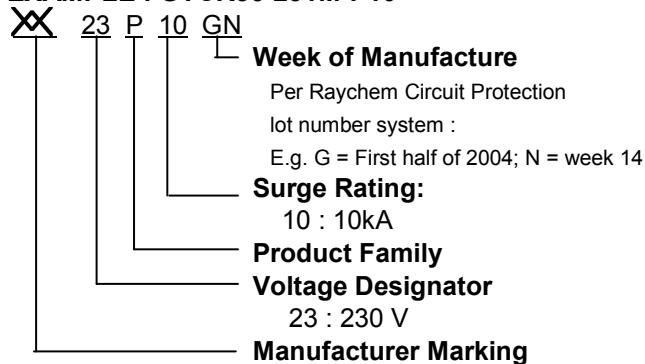
### PART NUMBERING

**EXAMPLE:**



### DEVICE MARKING

**EXAMPLE : GTCR36-231M-P10**





308 Constitution Drive  
Menlo Park, CA 94025-1164  
Phone: 800-227-4856  
www.circuitprotection.com

## Gas Discharge Tube Miniature Three Electrode Overvoltage Protection Device

*Raychem Circuit Protection Products*

PRODUCT: GTCx36

DOCUMENT: SCD 25815  
REV LETTER: E1  
REV DATE: 15-Apr-11  
PAGE NO.: 3 OF 6

### GENERAL CHARACTERISTICS

No Radioactive Materials

Storage temperature:

Devices without Fail-Short mechanism: -40°C ... +90°C  
Devices with Fail-Short mechanism: -20°C ... +65°C

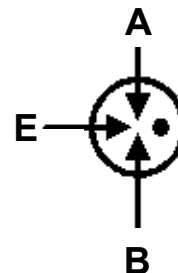
Operating temperature:

Devices without Fail-Short mechanism: -40°C ... +90°C  
Devices with Fail-Short mechanism: -20°C ... +65°C

Body: Nickel Plated

Leads: Tin Plated

UL 497B Pending



### MATERIALS INFORMATION

RoHS Compliant

ELV Compliant

Directive 2002/95/EC  
Compliant

Directive 2000/53/EC  
Compliant

### DEVICE RATINGS AND CHARACTERISTICS

Part Number	DC Spark over Voltage (A-E) (B-E) @ 100V/s	Impulse Spark over Voltage (A-E) (B-E) @1kV/μs	Insulation Resistance @100V <sub>DC</sub>	Capacitance @ 1MHz	DC Holdover Voltage Per ITU K.12	Impulse Life (A+B-E) 10/1000μs, 100A	Impulse Discharge Current 8/20μs (A+B-E) Repeat 10 times (5 times each polarity)	AC Discharge Current, 50 Hz (A+B-E) Repeat 5 times (1s interval)
GTCN36-900M-P05 GTCR36-900M-P05 GTCR36-900M-P05-FS	90V ± 20%	≤ 850V	≥ 10,000MΩ <sup>1</sup>	≤ 3.0pF	≤ 52V	300times	5kA	5A
GTCN36-231M-P10 GTCR36-231M-P10 GTCR36-231M-P10-FS	230V ± 20%	≤ 700V	≥ 10,000MΩ	≤ 3.0pF	≤ 135V	300 times	10kA	10A
GTCN36-351M-P05 GTCR36-351M-P05 GTCR36-351M-P05-FS	350V ± 20%	≤ 750V	≥ 10,000MΩ	≤ 3.0pF	≤ 150V	300 times	5kA	5A

Note 1. Measured at 50V<sub>DC</sub>



308 Constitution Drive  
 Menlo Park, CA 94025-1164  
 Phone: 800-227-4856  
 www.circuitprotection.com

## Gas Discharge Tube Miniature Three Electrode Overvoltage Protection Device

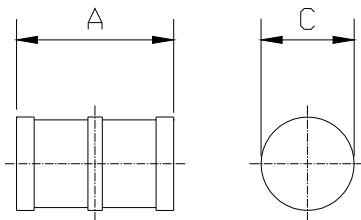
**Raychem Circuit Protection Products**

**PRODUCT: GTCx36**

DOCUMENT: SCD 25815  
 REV LETTER: E1  
 REV DATE: 15-Apr-11  
 PAGE NO.: 4 OF 6

### DIMENSIONS

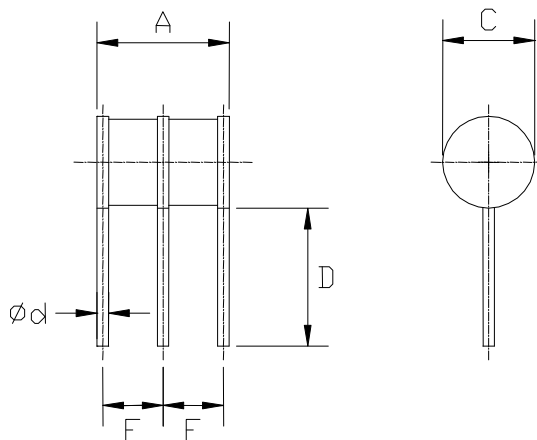
No Leads, no Fail-Short mechanism  
 (GTCN36)



	A		C	
	MIN	MAX	MIN	MAX
mm:	8.3	8.9	5.8	6.2
in*:	0.33	0.35	0.23	0.25

\*Rounded off approximation

Radial Leads, no Fail-Short mechanism  
 (GTCR36)



	A		C		D		E		Ød
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	NOM
mm:	8.3	8.9	5.8	6.2	6.5	7.5	3.5	4.1	0.8
in*:	0.33	0.35	0.23	0.25	0.26	0.30	0.14	0.16	0.03

\* Rounded off approximation



308 Constitution Drive  
 Menlo Park, CA 94025-1164  
 Phone: 800-227-4856  
 www.circuitprotection.com

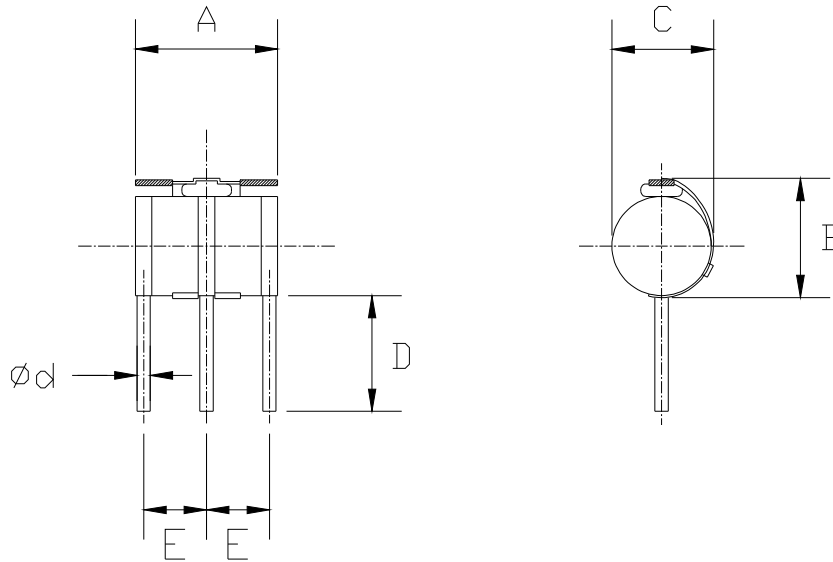
## Gas Discharge Tube Miniature Three Electrode Overvoltage Protection Device

**Raychem Circuit Protection Products**

**PRODUCT: GTCx36**

DOCUMENT: SCD 25815  
 REV LETTER: E1  
 REV DATE: 15-Apr-11  
 PAGE NO.: 5 OF 6

Radial Leads, with Fail-Short mechanism  
 (GTCR36-xxxM-Pxx-FS)



		A		B		C		D		E		∅d
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	NOM
mm:		8.3	8.9	--	7.7	--	6.5	6.5	7.5	3.5	4.1	0.8
in*:		0.33	0.35	--	0.30	--	0.26	0.26	0.30	0.14	0.16	0.03

\* Rounded off approximation



308 Constitution Drive  
 Menlo Park, CA 94025-1164  
 Phone: 800-227-4856  
 www.circuitprotection.com

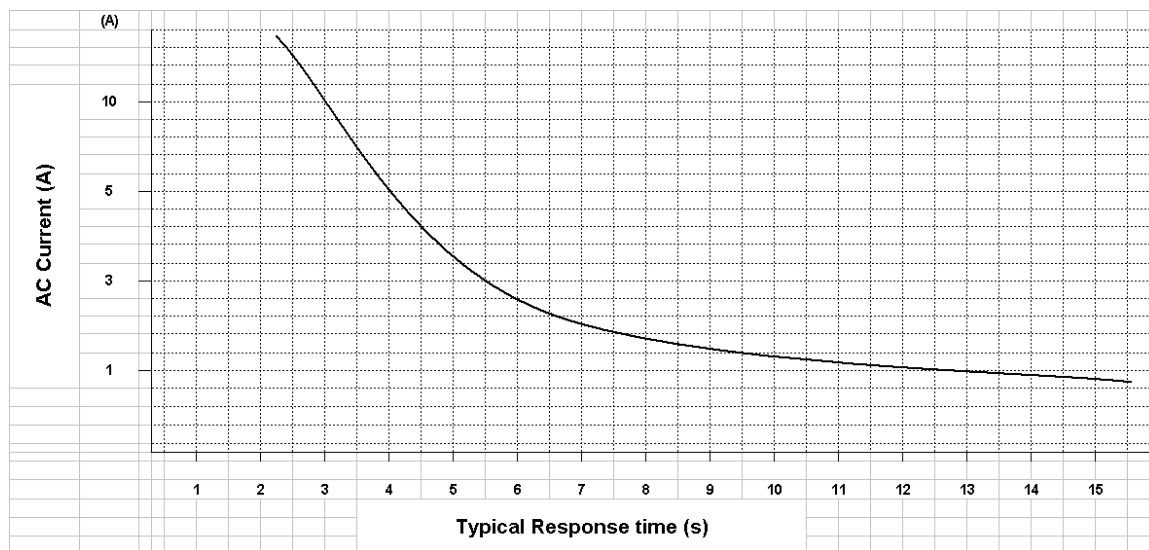
## Gas Discharge Tube Miniature Three Electrode Overvoltage Protection Device

**Raychem Circuit Protection Products**

**PRODUCT: GTCx36**

DOCUMENT: SCD 25815  
 REV LETTER: E1  
 REV DATE: 15-Apr-11  
 PAGE NO.: 6 OF 6

### FAIL-SHORT MECHANISM RESPONSE TIME (Graph represents typical values)



**Note: Both electrodes simultaneously powered, each with the AC current value in the graph**

### PACKAGING

Packaging	Bulk ( vacuum bags)	Tray	Standard Box
Quantity	200*	100	1,000**

\* Standard packaging is in trays.  
 Bulk packaging is only available upon request.

\*\* 5 bags or 10 trays

Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of each product for their applications. TE Connectivity assumes no responsibility for the use of its product or for any infringement of patents or other rights of third parties resulting from the use of its product. No license is granted by implication or otherwise under any patent or proprietary right of TE Connectivity except the right to use such product for the purpose for which it is sold. TE Connectivity reserves the right to change or update, without notice, any information contained in this publication; to change, without notice, the design, construction, processing, or specification of any product; and to discontinue or limit production or distribution of any product. This publication supersedes and replaces all information previously supplied. Without expressed or written consent by an officer of TE Connectivity, TE Connectivity does not authorize the use of any of its products as components in nuclear facility applications, aerospace, or in critical life support devices or systems. TE Connectivity only obligations are those in the TE Connectivity Standard Terms and Conditions of Sale and in no case will TE Connectivity be liable for any incidental, indirect, or consequential damages arising from the sale, resale, use, or misuse of its products.