

**Specification Status: Released**

**BENEFITS**

- Helps provide overvoltage fault protection against high energy surges
- Suitable for sensitive equipment due to excellent impulse sparkover 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

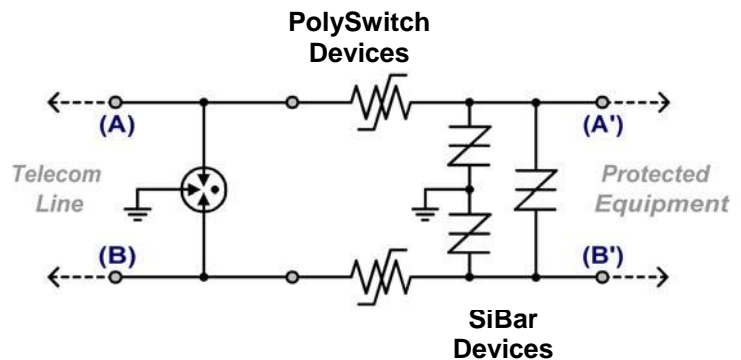
**APPLICATIONS**

- 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**



## Gas Discharge Tube Miniature Three Electrode Overvoltage Protection Device

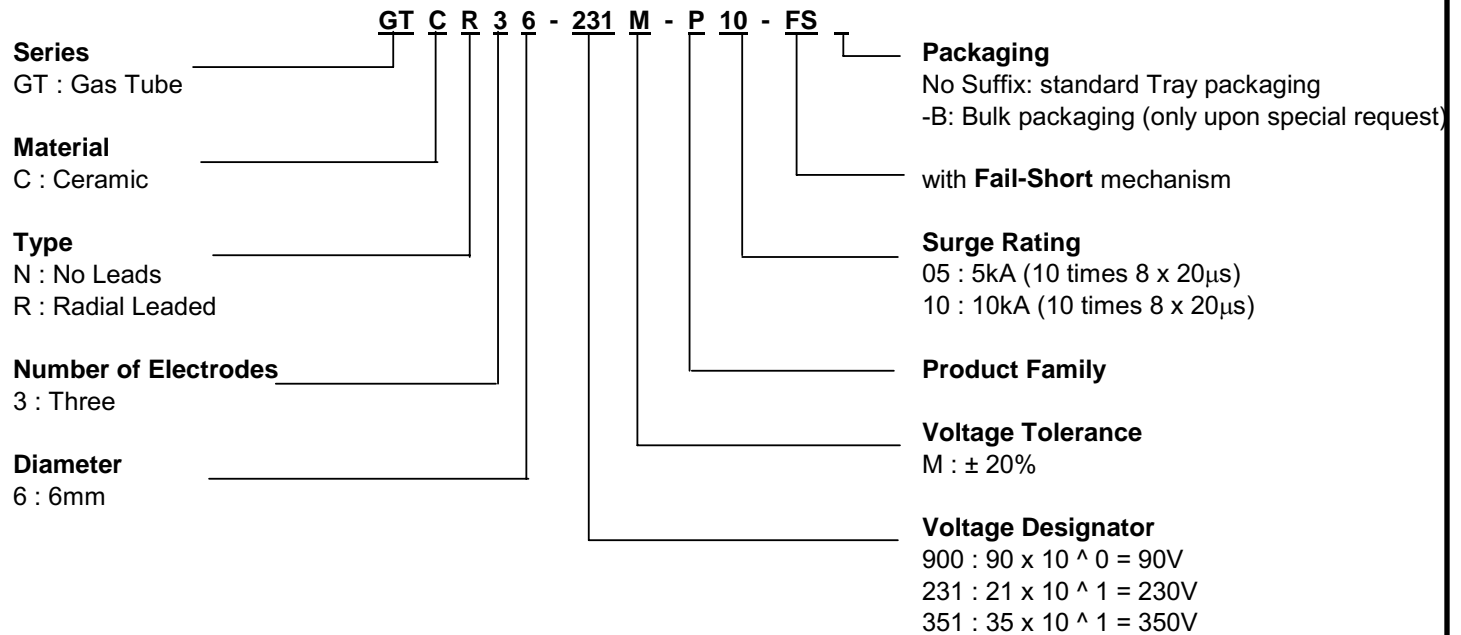
*Raychem Circuit Protection Products*

**PRODUCT: GTCx36**

DOCUMENT: SCD 25815  
REV LETTER: E  
REV DATE: MAY 25, 2007  
PAGE NO.: 2 OF 6

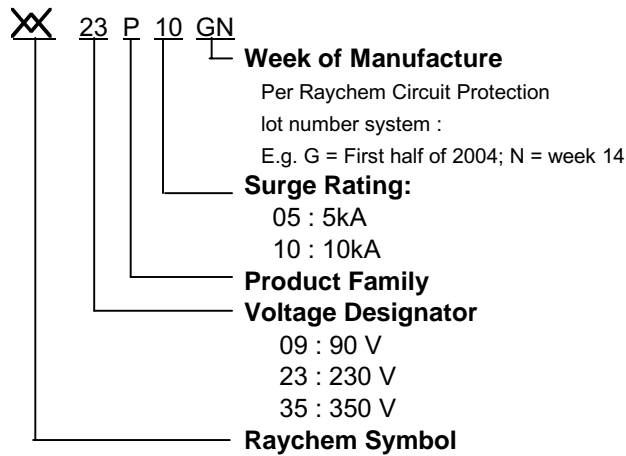
### PART NUMBERING

**EXAMPLE:**



### DEVICE MARKING

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



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### 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

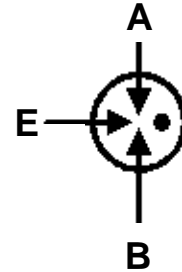
Operating temperature:

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



### DEVICE RATINGS AND CHARACTERISTICS

	DC Sparkover Voltage (A-E) (B-E)	Impulse Sparkover Voltage (A-E) (B-E)	Insulation Resistance	Capacitance	DC Holdover Voltage	Impulse Life (A+B-E)	Impulse Discharge Current 8/20µs (A+B-E)	AC Discharge Current, 50 Hz (A+B-E)
Part Number	@ 100V/s	@1kV/µs	@100V <sub>DC</sub>	@ 1MHz	Per ITU K.12	10/1000µs, 100A	Repeat 10 times (5 times each polarity)	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>

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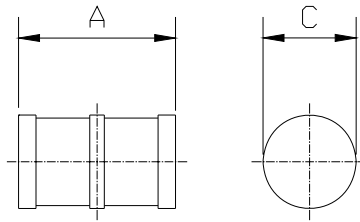
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### DIMENSIONS

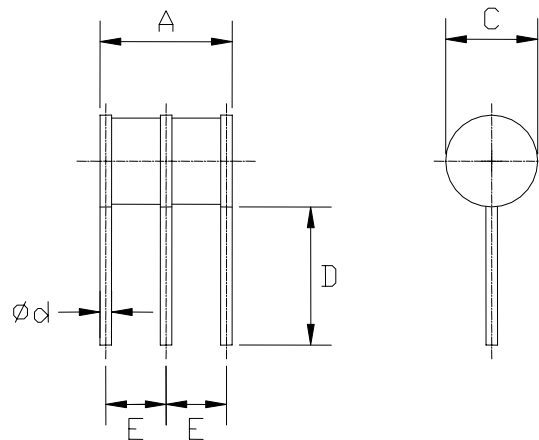
No Leads, no Fail-Short mechanism  
(GTCN36)



	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		$\phi d$
	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

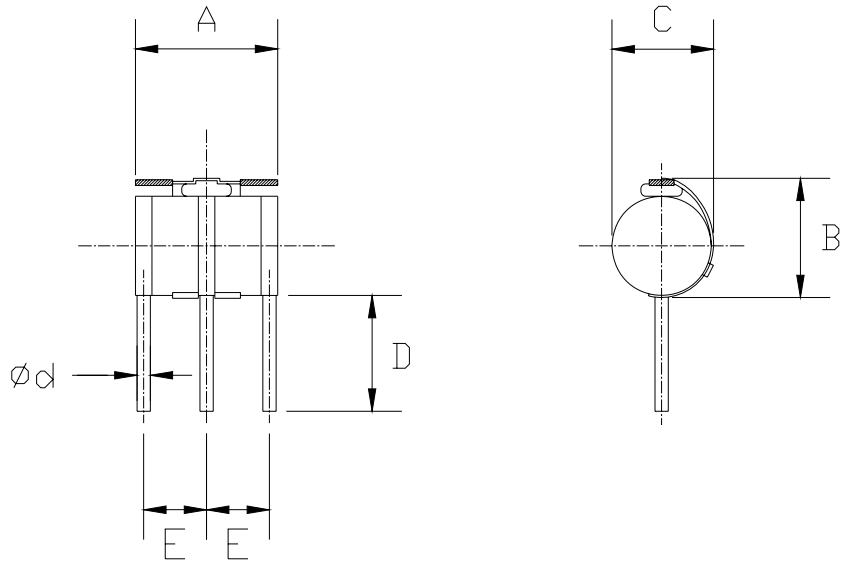
**Gas Discharge Tube  
 Miniature Three Electrode  
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Radial Leads, with Fail-Short mechanism  
 (GTCR36-xxxM-Pxx-FS)



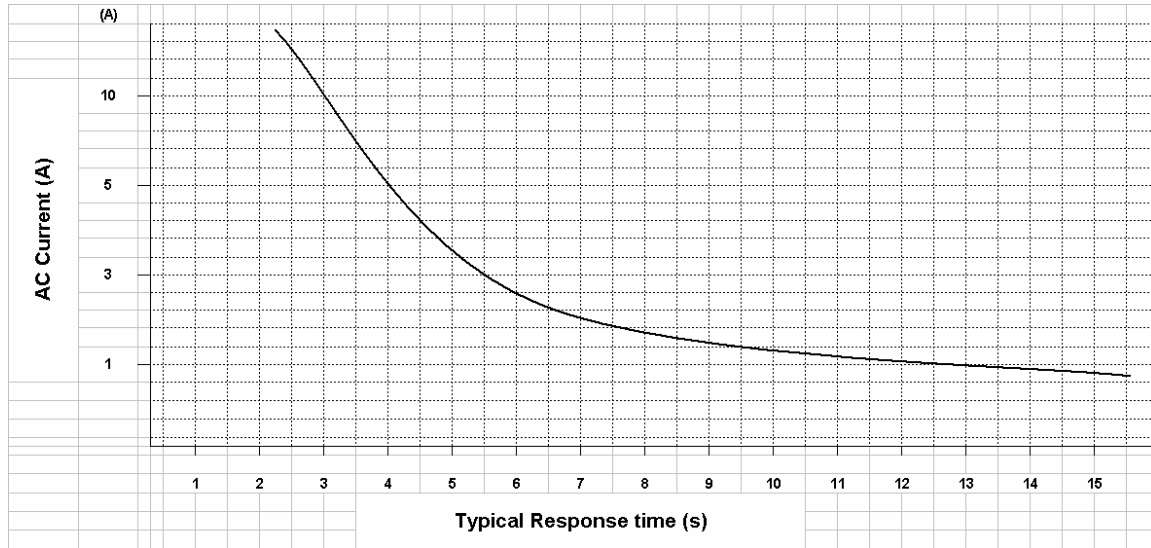
A		B		C		D		E		Ød	
MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	NOM	
mm:	8.3	8.9	--	7.7	--	6.5	6.5	7.5	3.5	4.1	0.8
in*:	0.33	0.35	--	0.30	--	0.26	0.26	0.30	0.14	0.16	0.03

\* Rounded off approximation

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### 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

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