



308 Constitution Drive  
Menlo Park, CA 94025-1164  
Phone: 800-227-4856  
[www.circuitprotection.com](http://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

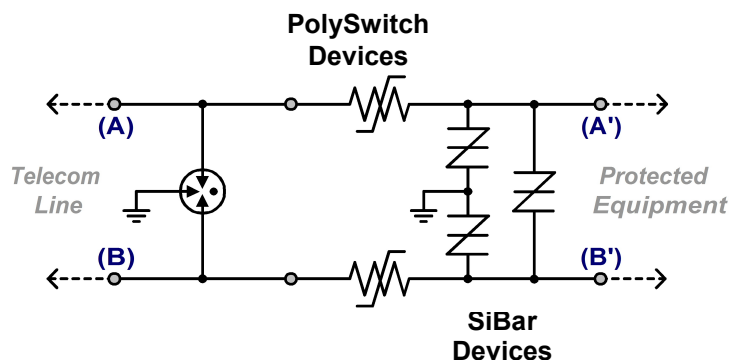
## APPLICATIONS

- 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





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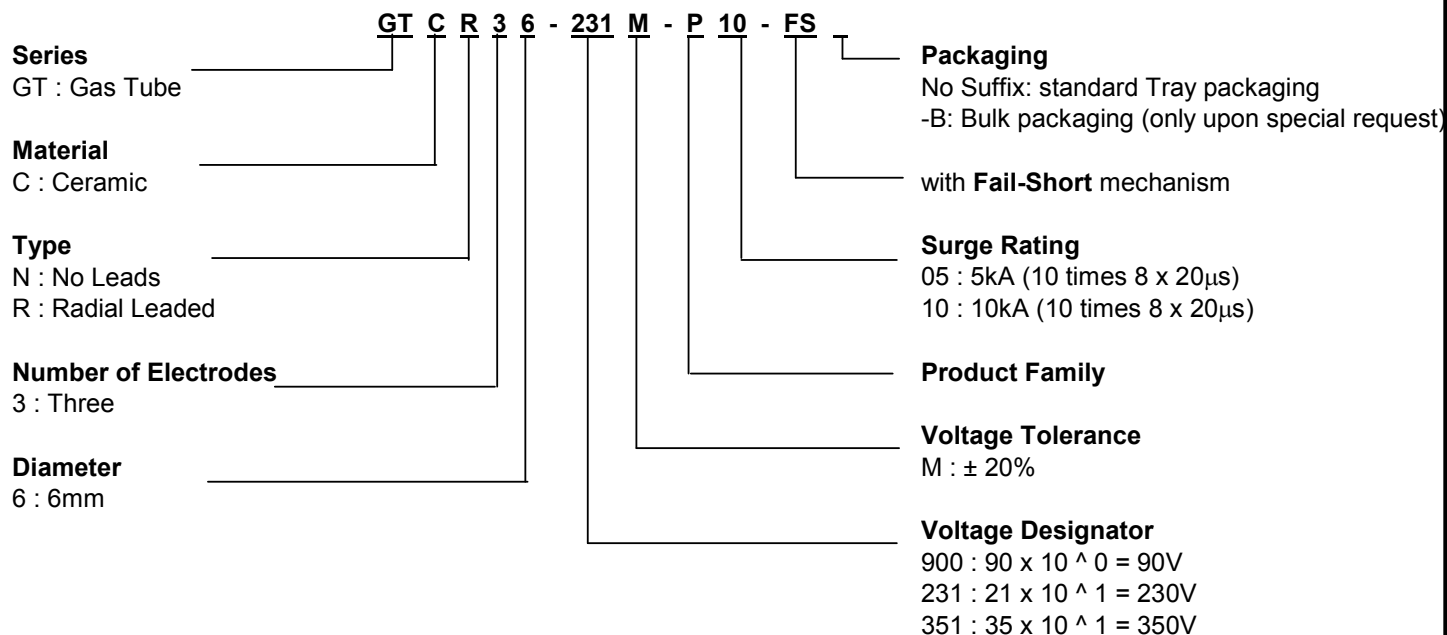
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PAGE NO.: 2 OF 6

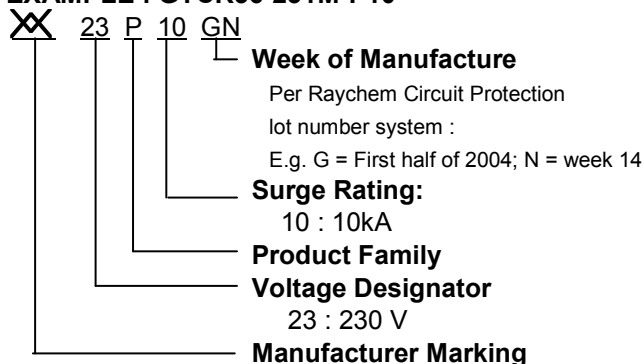
### PART NUMBERING

#### 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:

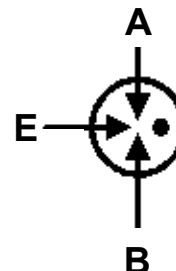
Devices without Fail-Short mechanism: -40°C ... +90°C

Devices with Fail-Short mechanism: -20°C ... +65°C

Body: Nickel Plated

Leads: Tin Plated

UL 497B Pending



### MATERIALS INFORMATION

RoHS Compliant

ELV Compliant

Directive 2002/95/EC  
Compliant

Directive 2000/53/EC  
Compliant

### DEVICE RATINGS AND CHARACTERISTICS

|                                                          | DC Spark<br>over Voltage<br>(A-E) (B-E) | Impulse<br>Spark over<br>Voltage<br>(A-E) (B-E) | Insulation<br>Resistance | Capacitance | DC Holdover<br>Voltage | Impulse Life<br>(A+B-E) | Impulse Discharge<br>Current 8/20µs<br>(A+B-E) | AC Discharge<br>Current, 50 Hz<br>(A+B-E) |
|----------------------------------------------------------|-----------------------------------------|-------------------------------------------------|--------------------------|-------------|------------------------|-------------------------|------------------------------------------------|-------------------------------------------|
| Part Number                                              | @ 100V/s                                | @1kV/µs                                         | @100V <sub>DC</sub>      | @ 1MHz      | Per ITU K.12           | 10/1000µs, 100A         | Repeat 10 times<br>(5 times each polarity)     | Repeat 5<br>times<br>(1s interval)        |
| GTCN36-900M-P05<br>GTCR36-900M-P05<br>GTCR36-900M-P05-FS | 90V ± 20%                               | ≤ 850V                                          | ≥ 10,000MΩ <sup>1</sup>  | ≤ 3.0pF     | ≤ 52V                  | 300times                | 5kA                                            | 5A                                        |
| GTCN36-231M-P10<br>GTCR36-231M-P10<br>GTCR36-231M-P10-FS | 230V ± 20%                              | ≤ 700V                                          | ≥ 10,000MΩ               | ≤ 3.0pF     | ≤ 135V                 | 300 times               | 10kA                                           | 10A                                       |
| GTCN36-351M-P05<br>GTCR36-351M-P05<br>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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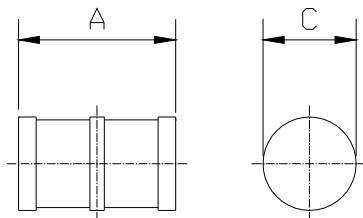
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REV DATE: 15-Apr-11  
PAGE NO.: 4 OF 6

## DIMENSIONS

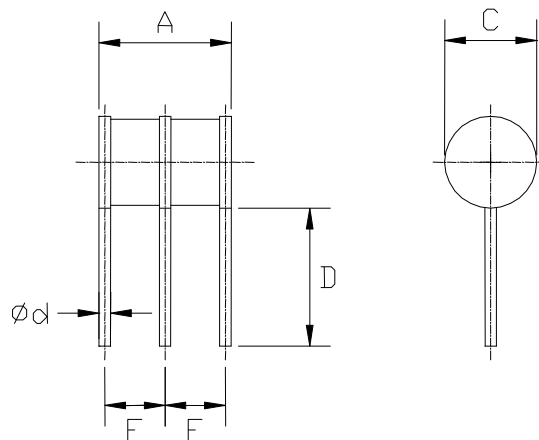
No Leads, no Fail-Short mechanism  
(GTCN36)



|      | 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



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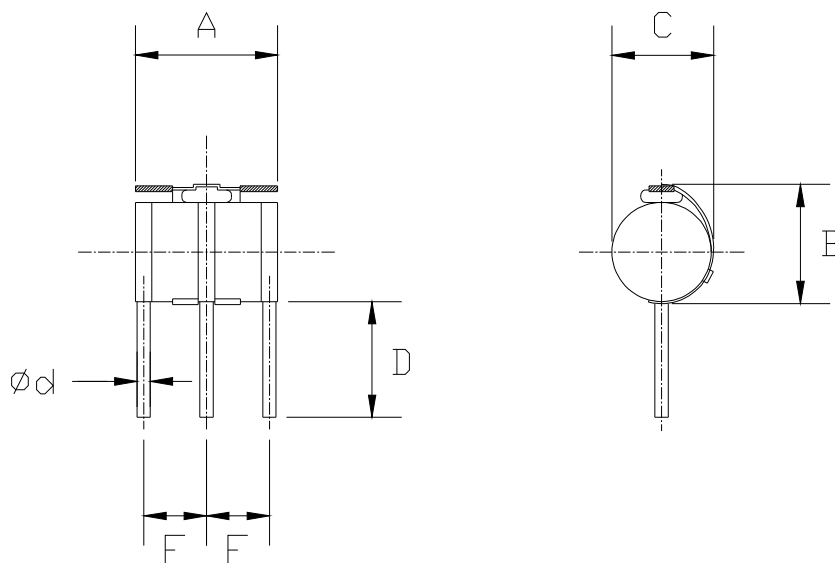
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Radial Leads, with Fail-Short mechanism  
(GTCR36-xxxM-Pxx-FS)



| A    |      | B   |      | C   |      | D    |      | E    |      | Ød   |
|------|------|-----|------|-----|------|------|------|------|------|------|
| MIN  | MAX  | MIN | MAX  | MIN | MAX  | MIN  | MAX  | MIN  | MAX  | NOM  |
| 8.3  | 8.9  | --  | 7.7  | --  | 6.5  | 6.5  | 7.5  | 3.5  | 4.1  | 0.8  |
| 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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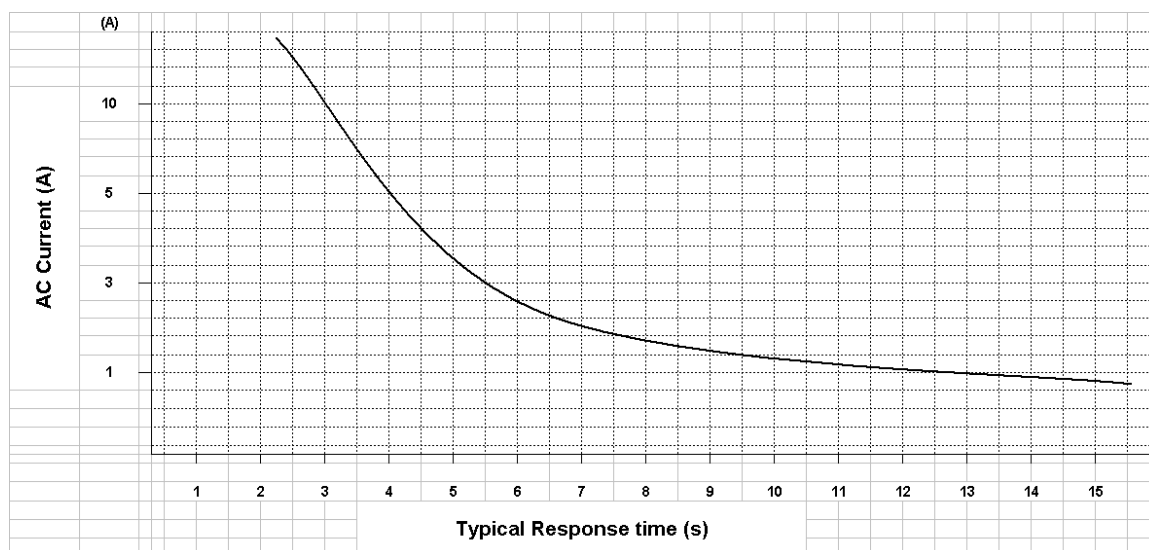
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### FAIL-SHORT MECHANISM RESPONSE TIME (Graph represents typical values)



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

### PACKAGING

| Packaging | Bulk<br>( 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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