

**Gas Discharge Tube**  
**Three Electrode 7.5mm Diameter**  
**Overvoltage Protection Device**

*Raychem Circuit Protection Products*

PRODUCT: GTCx37

DOCUMENT: SCD 25821  
REV LETTER: D  
REV DATE: MAY 25, 2007  
PAGE NO.: 1 OF 6

## Specification Status: Released

### GENERAL DESCRIPTION

#### 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
- Various lead configurations
- Non-radioactive materials

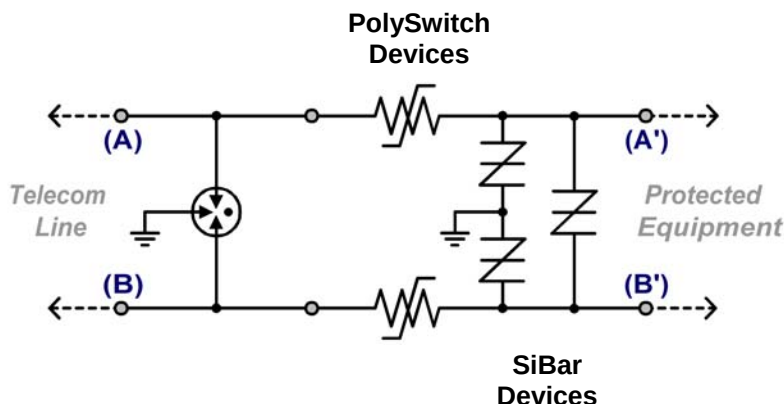
### APPLICATIONS

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

### SYMBOL



### TYPICAL APPLICATION SCHEMATIC



## Gas Discharge Tube Three Electrode 7.5mm Diameter Overvoltage Protection Device

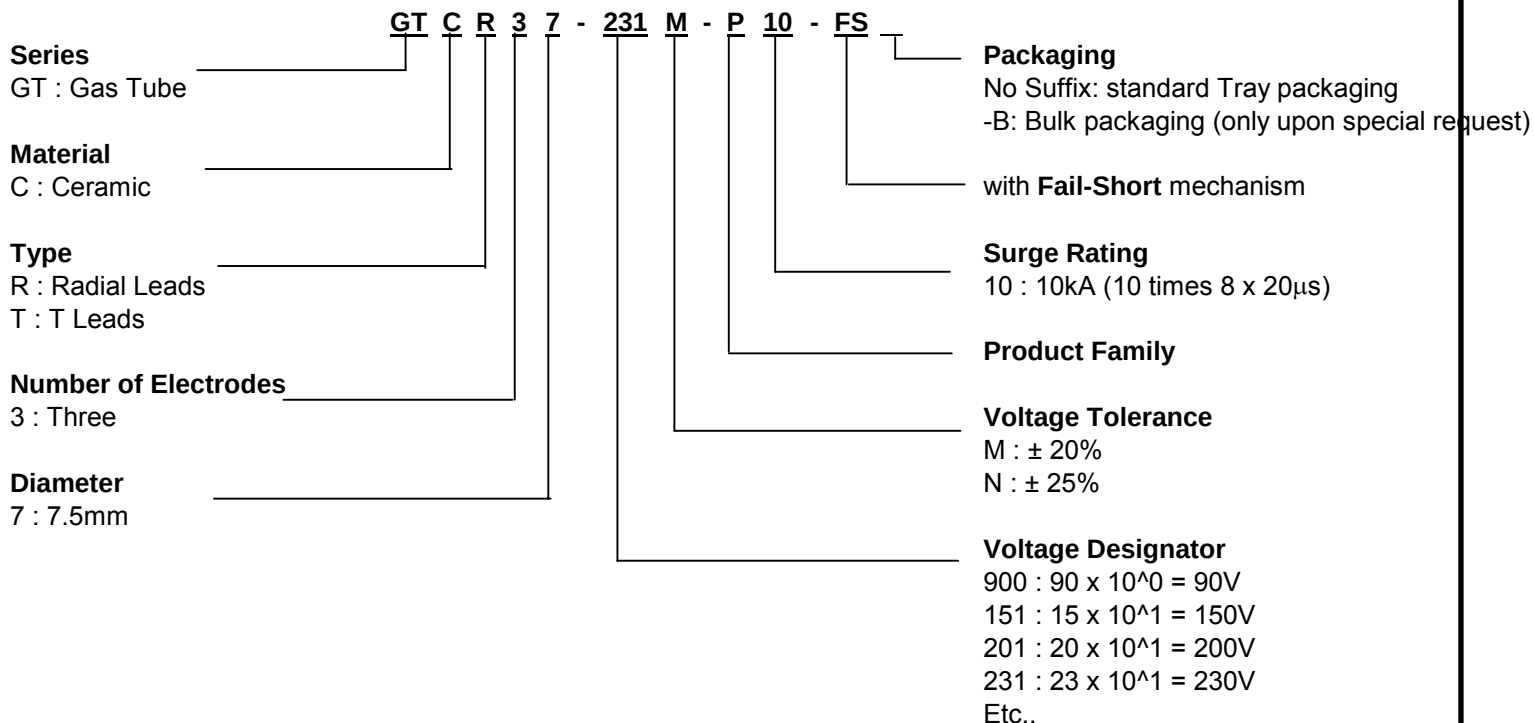
Raychem Circuit Protection Products

PRODUCT: GTCx37

DOCUMENT: SCD 25821  
REV LETTER: D  
REV DATE: MAY 25, 2007  
PAGE NO.: 2 OF 6

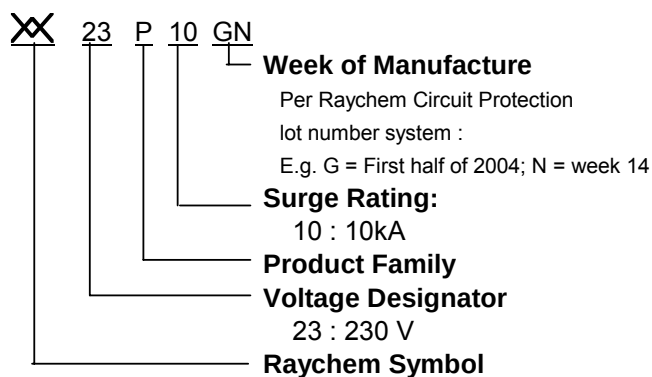
### PART NUMBERING

#### EXAMPLE:



### DEVICE MARKING

EXAMPLE : GTCR37-231M-P10



## Gas Discharge Tube

### Three Electrode 7.5mm Diameter

#### Overvoltage Protection Device

*Raychem Circuit Protection Products*

**PRODUCT: GTCx37**

DOCUMENT: SCD 25821  
REV LETTER: D  
REV DATE: MAY 25, 2007  
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:

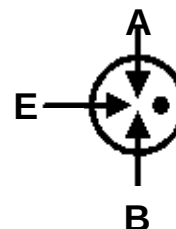
Devices without Fail-Short mechanism: -40°C ... +90°C

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

Body: Nickel Plated

Lead Material : Tin Plated

UL 497B Pending



### DEVICE RATINGS AND CHARACTERISTICS

| Part Number                                              | 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, 50Hz (A+B-E) |                               |
|----------------------------------------------------------|----------------------------------|---------------------------------------|----------|-------------------------|-------------|---------------------|----------------------|------------------------------------------|-----------------------------------------|------------------------------------|-------------------------------|
|                                                          | @ 100V/s                         | @ 100V/µs                             | @ 1kV/µs | @ 100V <sub>DC</sub>    | @ 1MHz      | Per ITU K.12        | 10/1000µs, 400A      | Single Hit                               | Repeat 10 times (5 times each polarity) | Single Hit, 9 Cycles               | Repeat 10 times (1s interval) |
| GTCR37-900M-P10<br>GTCR37-900M-P10-FS<br>GTCT37-900M-P10 | 90V ± 20%                        | ≤ 700V                                | ≤ 850V   | ≥ 10,000MΩ <sup>1</sup> | ≤ 3.0pF     | ≤ 52V               | 300 times            | 20kA                                     | 10kA                                    | 130A                               | 10A                           |
| GTCR37-151M-P10<br>GTCR37-151M-P10-FS<br>GTCT37-151M-P10 | 150V ± 20%                       | ≤ 700V                                | ≤ 850V   | ≥ 10,000MΩ <sup>1</sup> | ≤ 3.0pF     | ≤ 52V               | 300 times            | 20kA                                     | 10kA                                    | 130A                               | 10A                           |
| GTCR37-201N-P1<br>GTCR37-201N-P10-FS<br>GTCT37-201N-P10  | 200V ± 25%                       | ≤ 500V                                | ≤ 650V   | ≥ 10,000MΩ              | ≤ 3.0pF     | ≤ 135V              | 300 times            | 20kA                                     | 10kA                                    | 130A                               | 10A                           |
| GTCR37-231M-P10<br>GTCR37-231M-P10-FS<br>GTCT37-231M-P10 | 230V ± 20%                       | ≤ 500V                                | ≤ 650V   | ≥ 10,000MΩ              | ≤ 3.0pF     | ≤ 135V              | 300 times            | 20kA                                     | 10kA                                    | 130A                               | 10A                           |
| GTCR37-251M-P10<br>GTCR37-251M-P10-FS<br>GTCT37-251M-P10 | 250V ± 20%                       | ≤ 500V                                | ≤ 650V   | ≥ 10,000MΩ              | ≤ 3.0pF     | ≤ 135V              | 300 times            | 20kA                                     | 10kA                                    | 130A                               | 10A                           |
| GTCR37-261M-P10<br>GTCR37-261M-P10-FS<br>GTCT37-261M-P10 | 260V ± 20%                       | ≤ 500V                                | ≤ 650V   | ≥ 10,000MΩ              | ≤ 3.0pF     | ≤ 135V              | 300 times            | 20kA                                     | 10kA                                    | 130A                               | 10A                           |
| GTCR37-301M-P10<br>GTCR37-301M-P10-FS<br>GTCT37-301M-P10 | 300V ± 20%                       | ≤ 600V                                | ≤ 750V   | ≥ 10,000MΩ              | ≤ 3.0pF     | ≤ 135V              | 300 times            | 20kA                                     | 10kA                                    | 130A                               | 10A                           |
| GTCR37-351M-P10<br>GTCR37-351M-P10-FS<br>GTCT37-351M-P10 | 350V ± 20%                       | ≤ 600V                                | ≤ 750V   | ≥ 10,000MΩ              | ≤ 3.0pF     | ≤ 150V              | 300 times            | 20kA                                     | 10kA                                    | 130A                               | 10A                           |
| GTCR37-401M-P10<br>GTCR37-401M-P10-FS<br>GTCT37-401M-P10 | 400V ± 20%                       | ≤ 700V                                | ≤ 850V   | ≥ 10,000MΩ              | ≤ 3.0pF     | ≤ 150V              | 300 times            | 20kA                                     | 10kA                                    | 130A                               | 10A                           |
| GTCR37-551M-P10<br>GTCR37-551M-P10-FS<br>GTCT37-551M-P10 | 550V ± 20%                       | ≤ 850V                                | ≤ 1,000V | ≥ 10,000MΩ              | ≤ 3.0pF     | ≤ 150V              | 300 times            | 20kA                                     | 10kA                                    | 130A                               | 10A                           |

Note 1. Insulation Resistance measured at 50 V<sub>DC</sub>.

# Gas Discharge Tube

## Three Electrode 7.5mm Diameter

### Overvoltage Protection Device

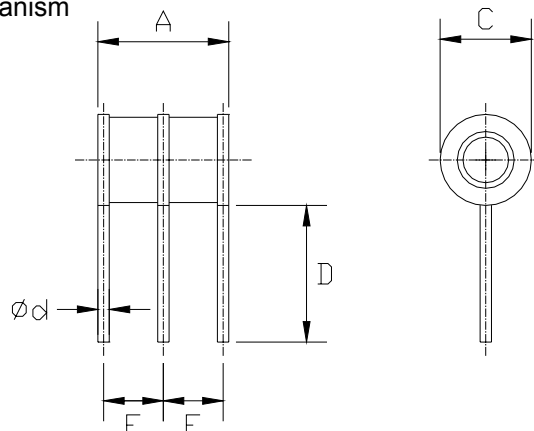
Raychem Circuit Protection Products

PRODUCT: GTCx37

DOCUMENT: SCD 25821  
REV LETTER: D  
REV DATE: MAY 25, 2007  
PAGE NO.: 4 OF 6

## DIMENSIONS

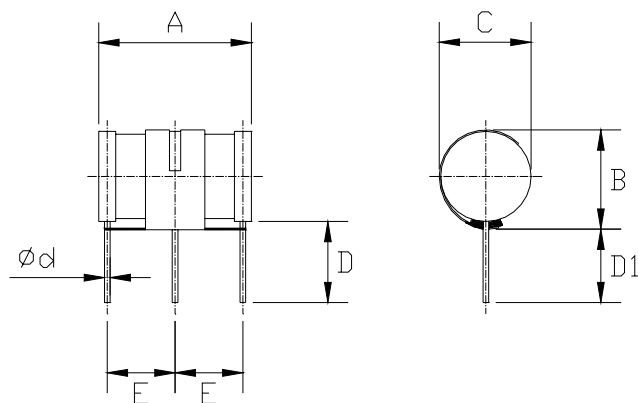
Radial Leads, no Fail-Short mechanism  
(GTCR37-xxxx-P10)



|             |     |      |      |      |      |      |      |      |      |
|-------------|-----|------|------|------|------|------|------|------|------|
| mm:<br>in*: | A   |      | C    |      | D    |      | E    |      | Ød   |
|             | MIN | MAX  | MIN  | MAX  | MIN  | MAX  | MIN  | MAX  | NOM  |
|             | --  | 12.0 | 7.3  | 7.7  | 6.5  | 7.5  | 4.1  | 4.7  | 1.0  |
|             | --  | 0.47 | 0.29 | 0.30 | 0.26 | 0.30 | 0.16 | 0.19 | 0.04 |

\* Rounded off approximation

Radial Leads, with Fail-Short mechanism  
(GTCR37-xxxx-P10-FS)



| A    |     | B    |     | C    |     | D    |      | D1   |      | E   |      | ∅d   |      |
|------|-----|------|-----|------|-----|------|------|------|------|-----|------|------|------|
| MIN  | MAX | MIN  | MAX | MIN  | MAX | MIN  | MAX  | MIN  | MAX  | MIN | MAX  | NOM  |      |
| mm:  | --  | 12.0 | --  | 9.3  | --  | 8.0  | 6.5  | 7.5  | 6.0  | --  | 4.1  | 4.7  | 1.0  |
| in*: | --  | 0.47 | --  | 0.37 | --  | 0.32 | 0.26 | 0.30 | 0.24 | --  | 0.16 | 0.19 | 0.04 |

\* Rounded off approximation

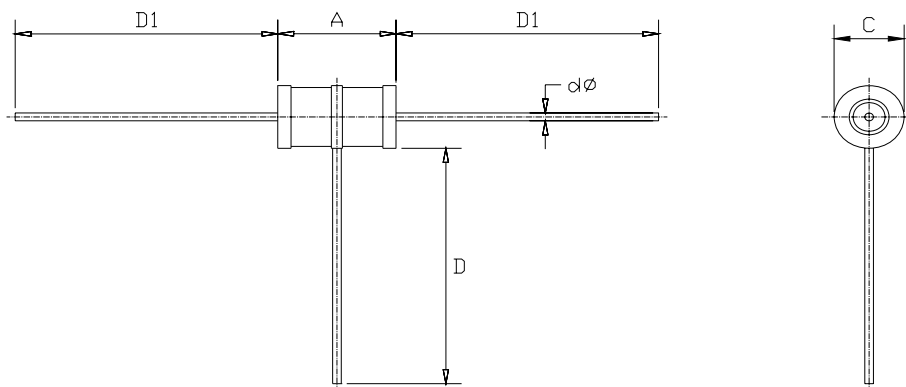
**Gas Discharge Tube**  
**Three Electrode 7.5mm Diameter**  
**Overvoltage Protection Device**

**Raychem Circuit Protection Products**

**PRODUCT: GTCx37**

DOCUMENT: SCD 25821  
REV LETTER: D  
REV DATE: MAY 25, 2007  
PAGE NO.: 5 OF 6

T Leads, no Fail-Short mechanism  
(GTCT37)



| A   |      | D    |      | D1   |      | Ød   |
|-----|------|------|------|------|------|------|
| MIN | MAX  | MIN  | MAX  | MIN  | MAX  | NOM  |
| --  | 12.0 | 23.0 | 29.0 | 28.0 | 32.0 | 1.0  |
| --  | 0.47 | 0.91 | 1.14 | 1.10 | 1.26 | 0.04 |

mm:  
in\*:

approximation

\* Rounded off

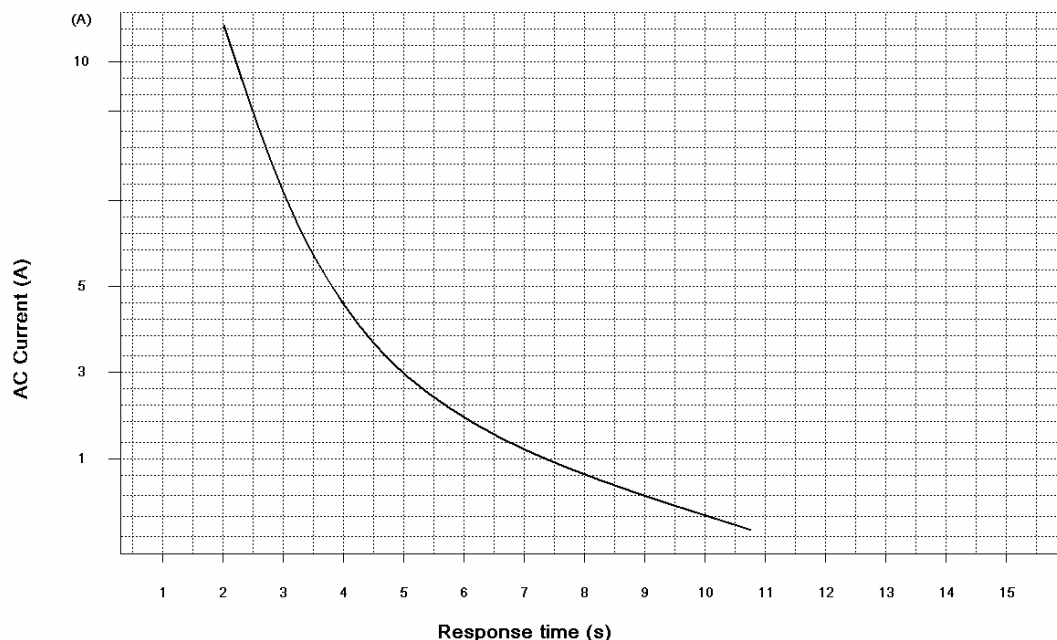
## Gas Discharge Tube Three Electrode 7.5mm Diameter Overvoltage Protection Device

*Raychem Circuit Protection Products*

PRODUCT: GTCx37

DOCUMENT: SCD 25821  
REV LETTER: D  
REV DATE: MAY 25, 2007  
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*<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

Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of each product for their applications. Tyco Electronics Corporation 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 Tyco Electronics except the right to use such product for the purpose for which it is sold. Tyco Electronics 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 Tyco Electronics, Tyco Electronics 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. Tyco Electronics' only obligations are those in the Tyco Electronics Standard Terms and Conditions of Sale and in no case will Tyco Electronics be liable for any incidental, indirect, or consequential damages arising from the sale, resale, use, or misuse of its products.