

**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
- Non-radioactive materials

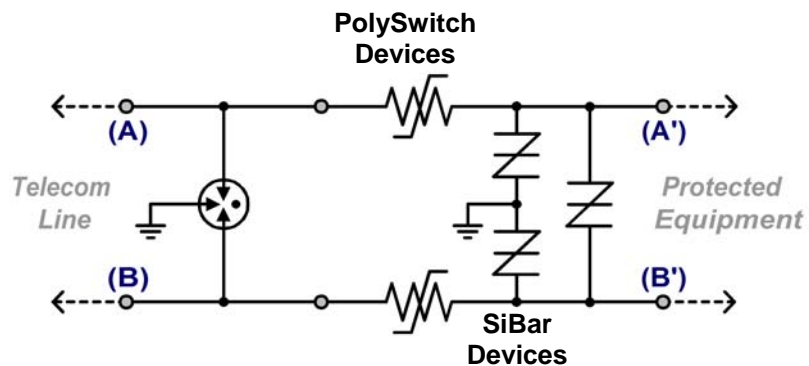
**APPLICATIONS**

- 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 Three Electrode Series Overvoltage Protection Device

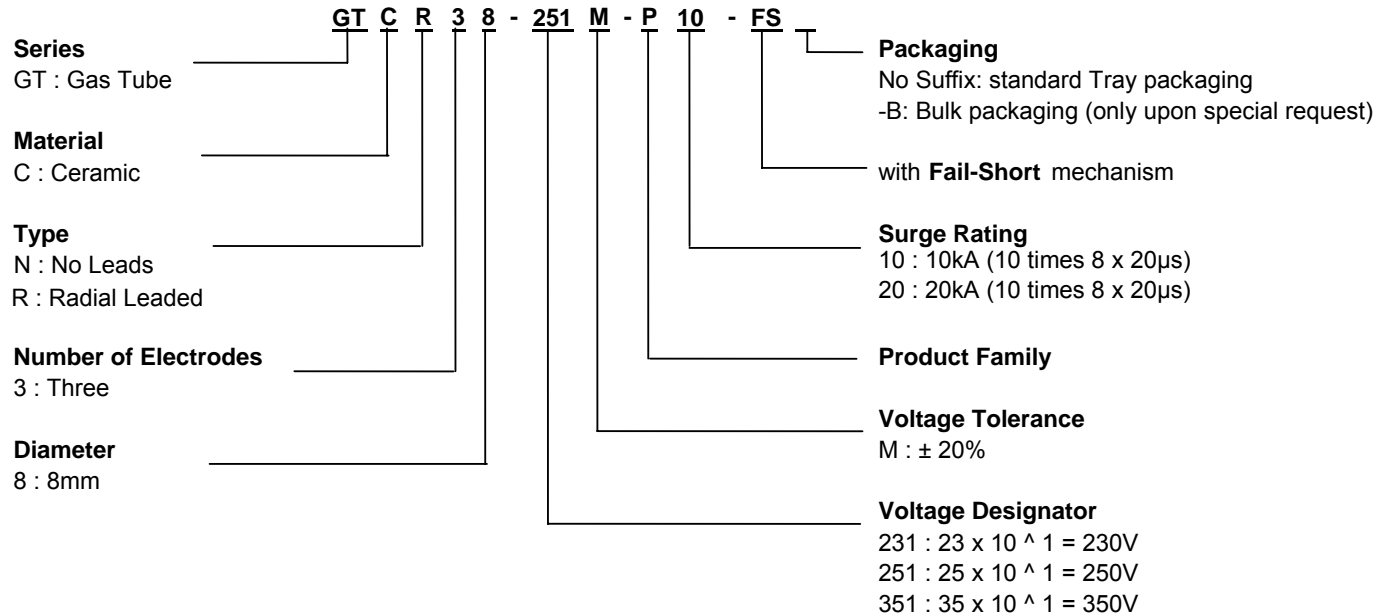
*Raychem Circuit Protection Products*

**PRODUCT: GTCx38-xxxx-Pxx**

DOCUMENT: SCD 25816  
REV LETTER: F  
REV DATE: JULY 7, 2008  
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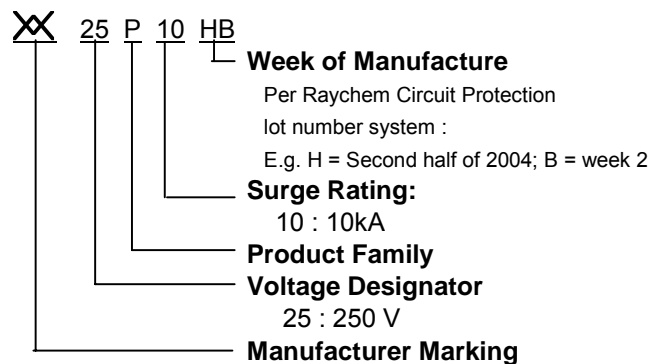
### PART NUMBERING

**EXAMPLE:**



### DEVICE MARKING

**EXAMPLE : GTCR38-251M-P10-FS**



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### GENERAL CHARACTERISTICS

No Radioactive Material

Storage temperature:

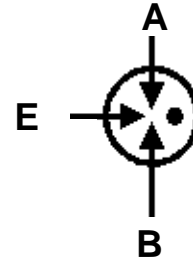
Devices without Fail-Short Mechanism: -40°C ... +90°C  
Devices with Fail-Short Mechanism: -20°C ... +65°C

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



### MATERIALS INFORMATION

RoHS Compliant

ELV Compliant

Directive 2002/95/EC  
Compliant

Directive 2000/53/EC  
Compliant

### 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, 50Hz (A + B - E)
Part Number	@ 100V/s	@ 1kV/µs	@ 100V <sub>DC</sub>	@ 1MHz	Per ITU K.12	10/1000µs, 200A	Repeat 10 times (5 times each polarity)	Repeat 5 times (1s interval)
GTCN38-231M-P10	Part has been replaced, please use GTCN38-231M-Q10							
GTCN38-231M-P10-FS	Part has been replaced, please use GTCN38-231M-Q10-FS							
GTCR38-231M-P10	Part has been replaced, please use GTCR38-231M-Q10							
GTCR38-231M-P10-FS	184 - 280V	≤ 700V	≥ 10,000MΩ	≤ 3.0pF	≤ 135V	300 times	10kA	10A
GTCN38-251M-P10	Part has been replaced, please use GTCN38-251M-Q10							
GTCN38-251M-P10-FS	Part has been replaced, please use GTCN38-251M-Q10-FS							
GTCR38-251M-P10	Part has been replaced, please use GTCR38-251M-Q10							
GTCR38-251M-P10-FS	200 - 300V	≤ 700V	≥ 10,000MΩ	≤ 3.0pF	≤ 135V	300 times	10kA	10A
GTCN38-351M-P20	Part has been replaced, please use GTCN38-351M-Q20							
GTCN38-351M-P20-FS	Part has been replaced, please use GTCN38-351M-Q20-FS							
GTCR38-351M-P20	Part has been replaced, please use GTCR38-351M-Q20							
GTCR38-351M-P20-FS	280 - 420V	≤ 900V	≥ 10,000MΩ	≤ 3.0pF	≤ 80V	300 times	20kA	20A

## Gas Discharge Tube Three Electrode Series Overvoltage Protection Device

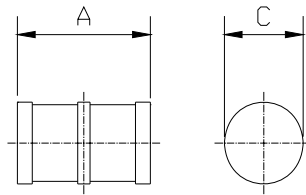
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### DIMENSIONS

No Leads, no Fail-Short mechanism  
(GTCN38-351M-P20)

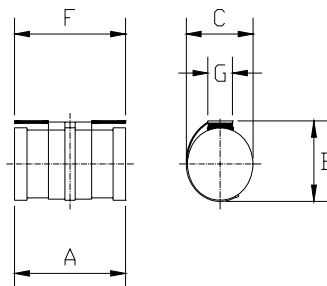


mm:  
in\*:

A		C	
MIN	MAX	MIN	MAX
9.7	10.3	7.8	8.2
0.38	0.41	0.31	0.32

\* Rounded off approximation

No Leads, with Fail-Short mechanism  
(GTCN38-351M-P20-FS)



mm:  
in\*:

A		B		C		F		G	
MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
9.7	10.3	--	9.5	--	8.2	--	10.5	--	3.0
0.38	0.41	--	0.37	--	0.32	--	0.41	--	0.12

\* Rounded off approximation

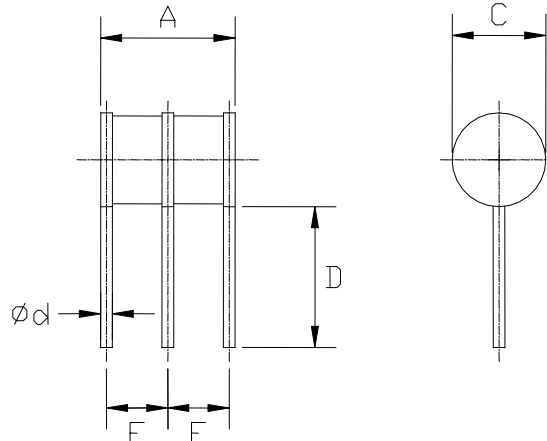
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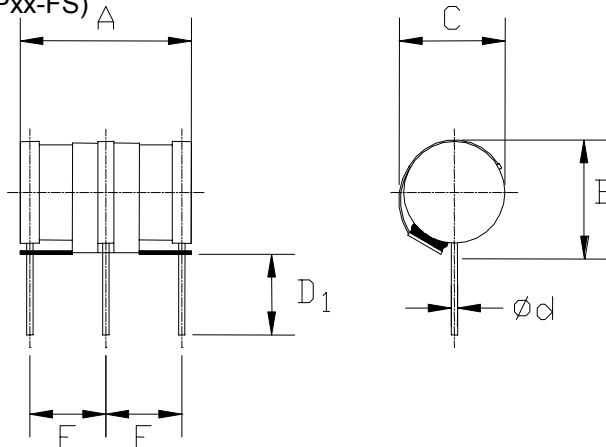
Radial Leads, no Fail-Short mechanism  
(GTCR38-351M-P20)



A		C		D		E		Ød	
MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	NOM	
mm:	9.7	10.3	7.8	8.2	6.5	7.5	4.1	4.7	1.0
in*:	0.38	0.41	0.31	0.32	0.26	0.30	0.16	0.19	0.04

\* Rounded off approximation

Radial Leads, with Fail-Short mechanism  
(GTCR38-xxxx-Pxx-FS)



A		B		C		D1		E		Ød	
MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	NOM	
mm:	9.7	10.3	--	9.5	--	8.2	6.0	--	4.1	4.7	1.0
in*:	0.38	0.41	--	0.37	--	0.32	0.24	--	0.16	0.19	0.04

• Rounded off approximation

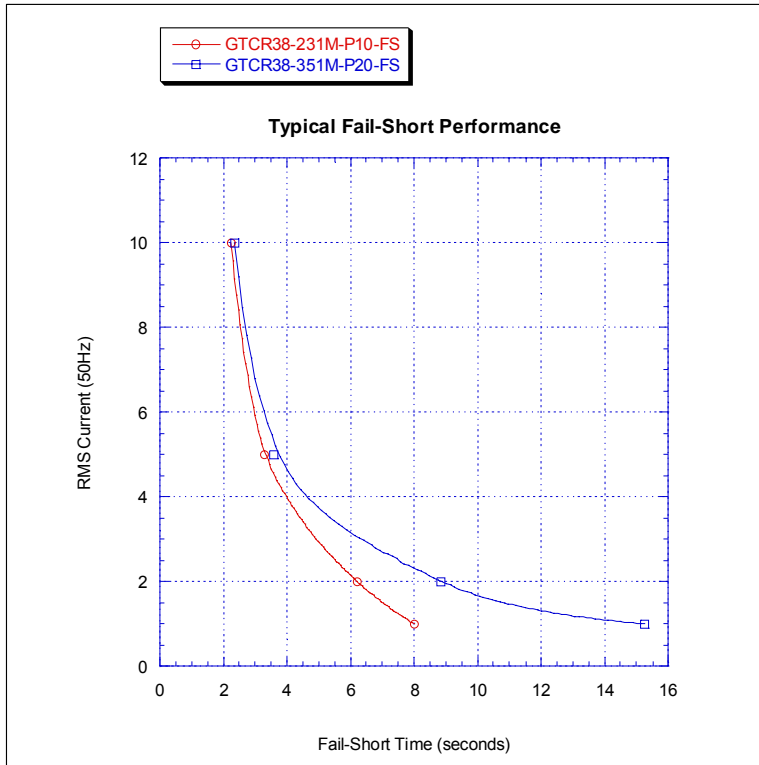
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**FAIL-SHORT MECHANISM RESPONSE TIME** (Graph represents typical values)



**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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