Tyco Electronics

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

Gas Discharge Tube
Three Electrode Q Series
Overvoltage Protection Device

Raychem Circuit Protection Products

PRODUCT: GTCx38-xxxx-Q10

DOCUMENT: SCD 25913
REV LETTER: D
REV DATE: JULY 7, 2008

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

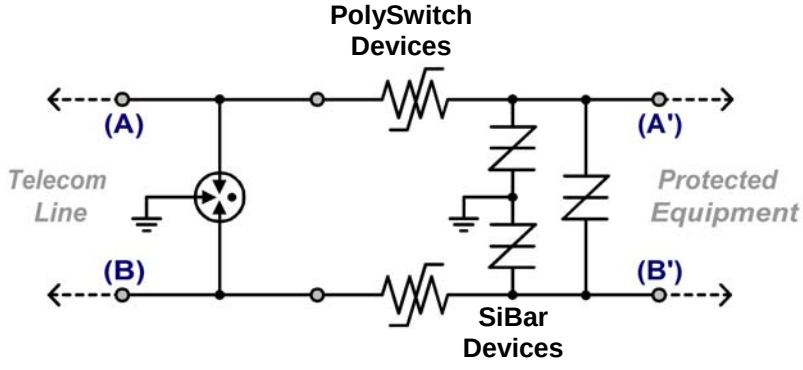
- Crowbar device with low arc-voltage
- Low capacitance and insertion loss
- High accuracy spark-over voltages for high precision designs
- Tested per ITU K.12 recommendations
- Optional Fail-Short mechanism
- Non-radioactive materials

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



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PART NUMBERING

EXAMPLE:

GT C N 3 8 - 251 M - Q 10 - FS

Series
GT : Gas Tube

Material
C : Ceramic

Type
N : No Leads
R : Radial Leaded

Number of Electrodes
3 : Three

Diameter
8 : 8mm

Packaging
No Suffix: standard Tray packaging
-B: Bulk packaging (only upon special request)

with **Fail-Short** mechanism

Surge Rating
10 : 10kA (10 times 8 x 20μs)

Product Family

Voltage Tolerance
M : ± 20%

Voltage Designator
900 : 90 x 10 ^ 0 = 90V
151 : 15 x 10 ^ 1 = 151V
231 : 23 x 10 ^ 1 = 230V
251 : 25 x 10 ^ 1 = 250V
351 : 35 x 10 ^ 1 = 350V
421 : 42 x 10 ^ 1 = 421V
501 : 50 x 10 ^ 1 = 501V

DEVICE MARKING

EXAMPLE : GTCR38-231M-Q10

XX 23 Q 10 GN

Week of Manufacture
Per Raychem Circuit Protection
lot number system :
E.g. G = First half of 2004; N = week 14

Surge Rating:
10 : 10kA
20 : 20kA

Product Family

Voltage Designator
23 : 230 V
25 : 250 V
35 : 350 V

Manufacturer Marking

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GENERAL CHARACTERISTICS

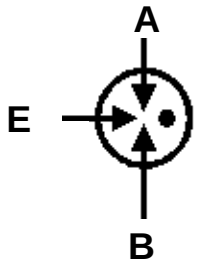
No Radioactive Material

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

Directive 2002/95/EC Compliant

ELV Compliant

Directive 2000/53/EC Compliant

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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	@ 100V/µs	@ 1kV/µs	@ $100V_{DC}$	@ 1MHz	Per ITU K.12	10/1000µs, 200A	Repeat 10 times (5 times each polarity)	Repeat 5 times (1s interval)
GTCN38-900M-Q10 GTCN38-900M-Q10-FS GTCR38-900M-Q10 GTCR38-900M-Q10-FS	72-108	≤ 450	≤ 500V	≥ 10,000MΩ	≤ 3.0pF	≤ 52V	300 times	10kA	10A
GTCN38-151M-Q10 GTCN38-151M-Q10-FS GTCR38-151M-Q10 GTCR38-151M-Q10-FS	120 - 180	≤ 500	≤ 600	≥ 10,000MΩ	≤ 3.0pF	≤ 52V	300 times	10kA	10A
GTCN38-231M-Q10 GTCN38-231M-Q10-FS GTCR38-231M-Q10 GTCR38-231M-Q10-FS	184 - 280V	≤ 600	≤ 700V	≥ 10,000MΩ	≤ 3.0pF	≤ 135V	300 times	10kA	10A
GTCN38-251M-Q10 GTCN38-251M-Q10-FS GTCR38-251M-Q10 GTCR38-251M-Q10-FS	200 - 300V	≤ 600	≤ 700V	≥ 10,000MΩ	≤ 3.0pF	≤ 135V	300 times	10kA	10A
GTCN38-351M-Q10 GTCN38-351M-Q10-FS GTCR38-351M-Q10 GTCR38-351M-Q10-FS	280 - 420V	≤ 900	≤ 900V	≥ 10,000MΩ	≤ 3.0pF	≤ 135V	300 times	10kA	10A
GTCN38-421M-Q10 GTCN38-421M-Q10-FS GTCR38-421M-Q10 GTCR38-421M-Q10-FS	300 - 500	≤ 900	≤ 1000	≥ 10,000MΩ	≤ 3.0pF	≤ 135V	300 times	10kA	10A
GTCN38-501M-Q10 GTCN38-501M-Q10-FS GTCR38-501M-Q10 GTCR38-501M-Q10-FS	400 - 600	≤ 1100	≤ 1200	≥ 10,000MΩ	≤ 3.0pF	≤ 135V	300 times	10kA	10A

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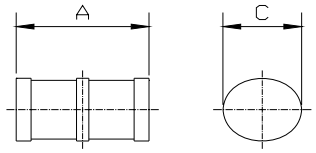
DIMENSIONS

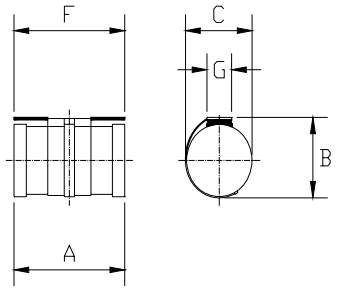
No Leads, no Fail-Short mechanism
(GTCN38-xxxx-Q10)



	A		C	
	MIN	MAX	MIN	MAX
mm:	9.7	10.3	7.8	8.2
in*:	0.38	0.41	0.31	0.32

* R

No Leads, with Fail-Short mechanism
(GTCN38-xxxx-10-FS)



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

- Rounded off approximation

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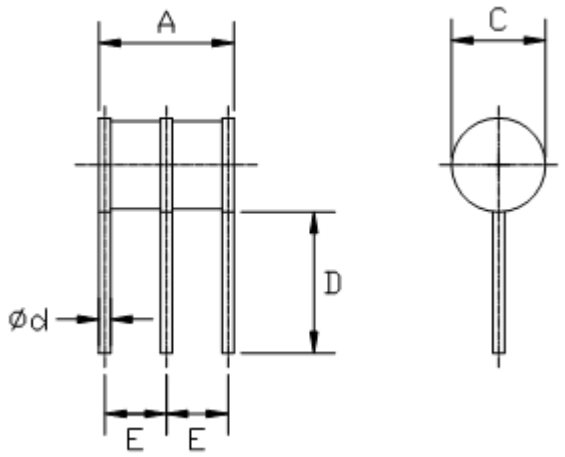
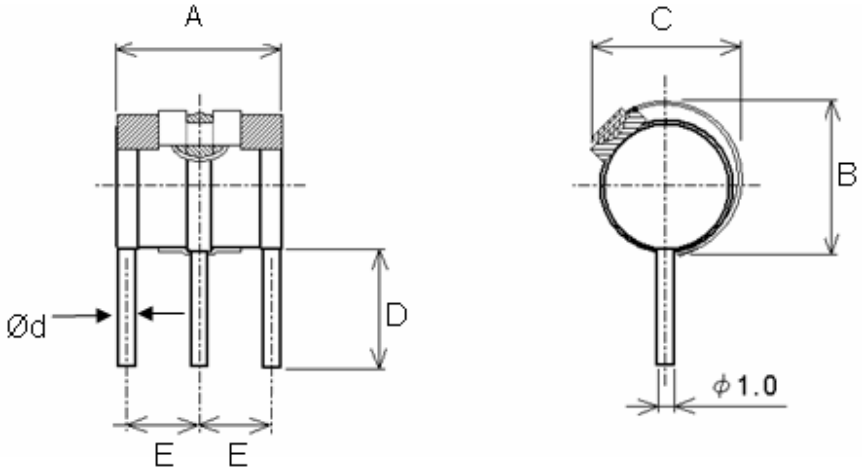
Radial Leads, no Fail-Short mechanism
(GTCR38-xxxx-Q10)



	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-xxxxQ10-FS)



	A		B		C		D		E		Ød
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	NOM
mm:	9.7	10.3	--	9.5	--	8.5	6.0	--	4.1	4.7	1.0
in*:	0.38	0.41	--	0.37	--	0.34	0.24	--	0.16	0.19	0.04

* Rounded off approximation

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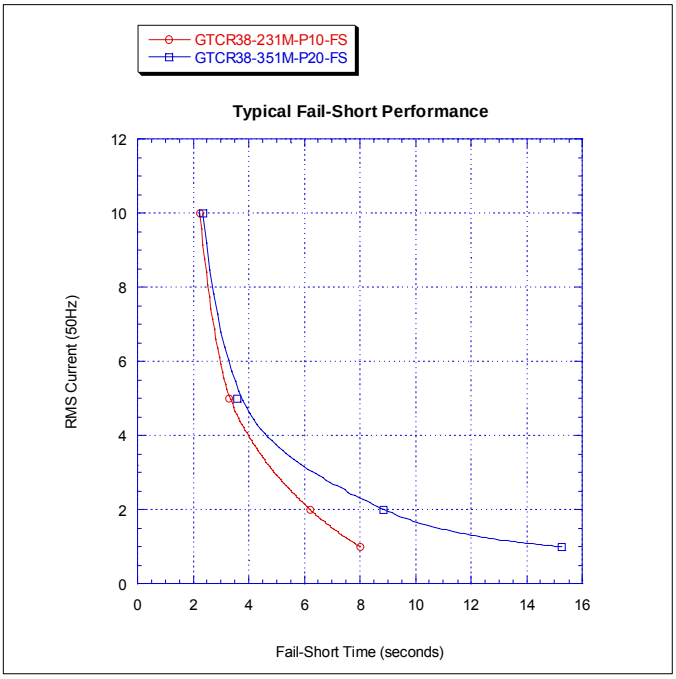
FAIL-SHORT MECHANISM RESPONSE TIME (Graph represents typical values)



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**