tyco Electronics

Raychem
Overvoltage Devices

www.tycopowercomponents.com

Document: SCD 25815
Status: Released
Rev. C Date: September 3, 2004

Gas Discharge Tube
GTCx36
Miniature Three Electrode

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

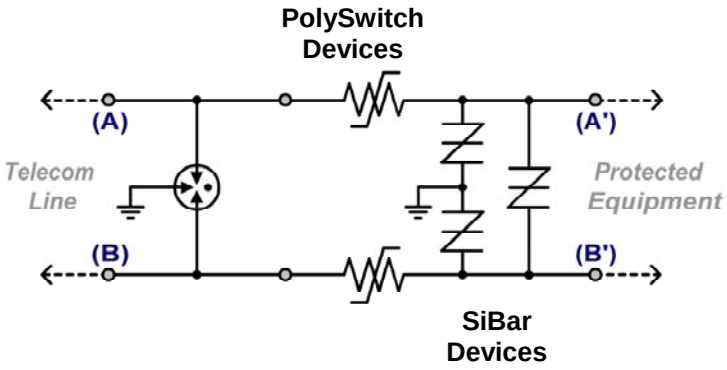
- Crowbar device with low arc-voltage
- Low capacitance and insertion loss
- High accuracy spark-over voltages for high precision designs
- Tested per ITU K.12 recommendations
- Optional Fail-Short mechanism
- Non-radioactive materials

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 R 3 6 - 231 M - P 10 - FS

Series
GT : Gas Tube

Material
C : Ceramic

Type
N : No Leads
R : Radial Leaded

Number of Electrodes
3 : Three

Diameter
6 : 6mm

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

with **Fail-Short** mechanism

Surge Rating
05 : 5kA (10 times 8 x 20µs)
10 : 10kA (10 times 8 x 20µs)

Product Family

Voltage Tolerance
M : ± 20%

Voltage Designator
900 : 90 x 10 ^ 0 = 90V
231 : 21 x 10 ^ 1 = 230V
351 : 35 x 10 ^ 1 = 350V

DEVICE MARKING

EXAMPLE : GTCR36-231M-P10

XX 23 P 10 GN

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

Surge Rating:
05 : 5kA
10 : 10kA

Product Family

Voltage Designator
09 : 90 V
23 : 230 V
35 : 350 V

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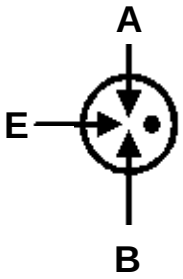
GENERAL CHARACTERISTICS

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_{DC}	@ 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[1]	≤ 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_{DC}

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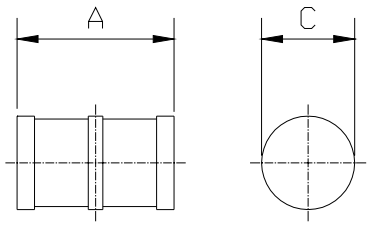
DIMENSIONS

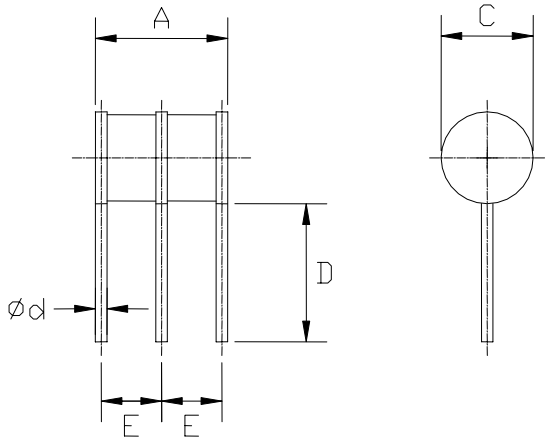
No Leads, no Fail-Short mechanism
(GTCN36)



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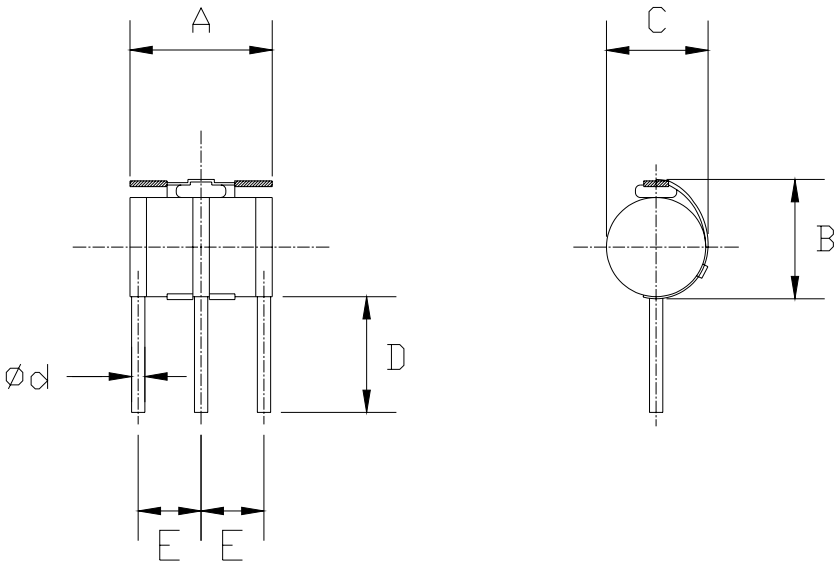
Radial Leads, with Fail-Short mechanism
(GTCR36-xxxM-Pxx-FS)



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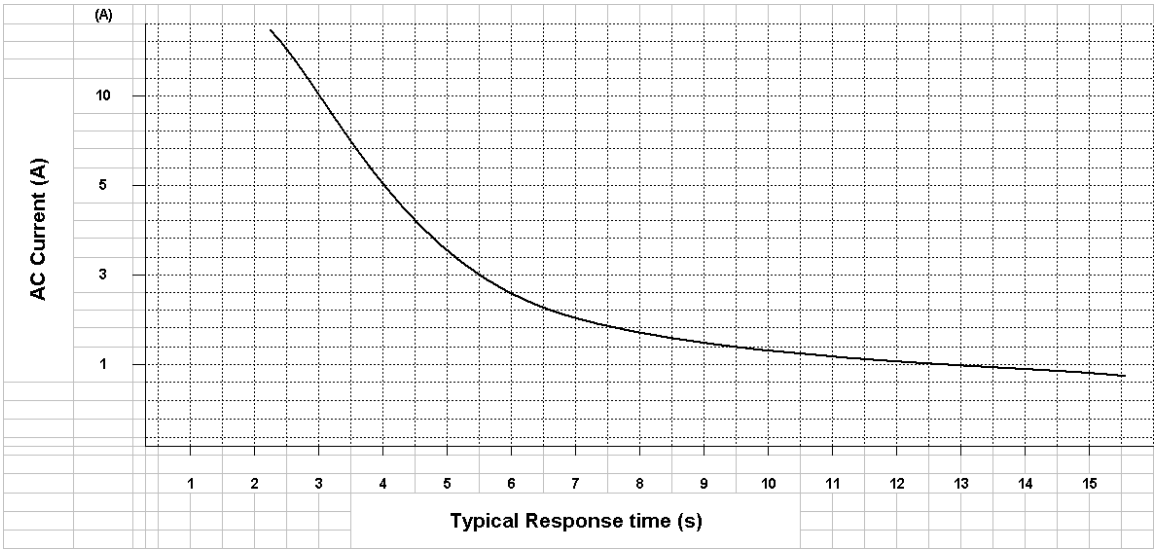
FAIL-SHORT MECHANISM RESPONSE TIME (Graph represents typical values)



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**