Tyco Electronics

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

Gas Discharge Tube
High Surge Two Electrode Series
Overvoltage Protection Device

Raychem Circuit Protection Products

PRODUCT: GTCx28-xxxx-P15

DOCUMENT: SCD 25820
REV LETTER: C
REV DATE: MAY 25, 2007

Specification Status: Released

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

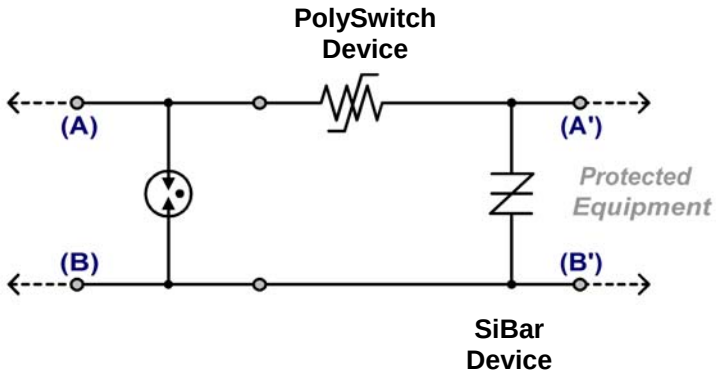
- Crowbar device with low arc-voltage
- Low capacitance and insertion loss
- High accuracy spark-over voltages for high precision designs
- Tested per ITU K.12 recommendations
- Optional Fail-Short mechanism
- Non-radioactive materials

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 2 8 - 231 M - P 15 - FS

Series
GT : Gas Tube

Material
C : Ceramic

Type
N : No Leads
A : Axial Leaded

Number of Electrodes
2 : Two

Diameter
8 : 8mm

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

with **Fail-Short** mechanism

Surge Rating
15 : 15kA (10 times 8 x 20μs)

Product Family

Voltage Tolerance
M : ± 20%

Voltage Designator
900 : 90 x 10^0 = 90V
151 : 15 x 10^1 = 150V
231 : 23 x 10^1 = 230V
251 : 25 x 10^1 = 250V
351 : 35 x 10^1 = 350V

DEVICE MARKING

EXAMPLE : GTCN28-900M-P15

XX 09 P 15 GN

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

Surge Rating:
15 : 15kA

Product Family

Voltage Designator
09 : 90 V

Raychem Symbol

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

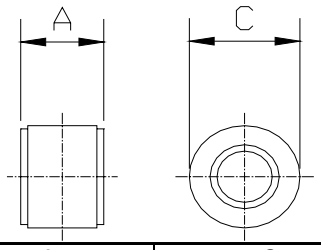
DEVICE RATINGS AND CHARACTERISTICS

	DC Sparkover Voltage	Impulse Sparkover Voltage		Insulation Resistance	Capacitance	DC Holdover Voltage	Impulse Life	Impulse Discharge Current 8/20µs		AC Discharge Current, 50Hz	
Part Number	@ 100V/s	@ 100V/µs	@ 1kV/µs	@ 100V_{DC}	@ 1MHz	Per ITUK.12	10/1000µs, 100A	Single Hit	Repeat 10 times (5 times each polarity)	Single Hit, 9 Cycles	Repeat 10 times (1s interval)
GTCN28-900M-P15 GTCA28-900M-P15	72 - 108V	≤ 450V	≤ 500V	≥ 10,000MΩ[1]	≤ 1.5pF	≤ 52V	300 times	20kA	15kA	90A	20A
GTCN28-151M-P15 GTCA28-151M-P15	120 - 180V	≤ 500V	≤ 600V	≥ 10,000MΩ[1]	≤ 1.5pF	≤ 52V	300 times	20kA	15kA	90A	20A
GTCN28-231M-P15 GTCN28-231M-P15-FS GTCA28-231M-P15	184 -280V	≤ 600V	≤ 700V	≥ 10,000MΩ	≤ 1.5pF ≤ 3.5pF ≤ 1.5pF	≤ 52V	300 times	20kA	15kA	90A	20A
GTCN28-251M-P15 GTCA28-251M-P15	200 - 300V	≤ 600V	≤ 700V	≥ 10,000MΩ	≤ 1.5pF	≤ 52V	300 times	20kA	15kA	90A	20A
GTCN28-351M-P15 GTCA28-351M-P15	280 - 420V	≤ 700V	≤ 800V	≥ 10,000MΩ	≤ 1.5pF	≤ 52V	300 times	20kA	15kA	90A	20A

Note 1. Insulation Resistance measured at 50 V_{DC}.

DIMENSIONS

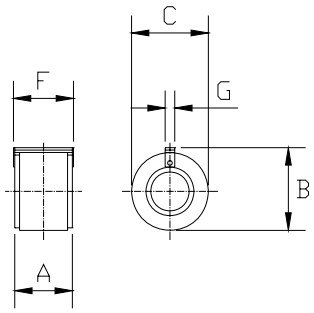
No Leads, no Fail-Short mechanism
(GTCN28-xxxx-P15)



	A		C	
	MIN	MAX	MIN	MAX
mm:	5.8	6.2	7.8	8.2
in*:	0.23	0.24	0.31	0.32

*Rounded off approximation

No Leads, with Fail-Short mechanism
(GTCN28-231M-P15-FS)

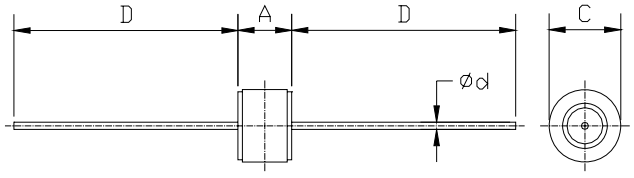


Fail-Short Operation Time
50Hz 0.7A : 210s
2.0A : 60s
7.0A: <1s

	A		B		C		F		G	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
mm:	5.8	6.2	--	9.5	7.8	8.2	--	7.0	--	3.0
in*:	0.23	0.24	--	0.37	0.31	0.32	--	0.28	--	0.12

*Rounded off approximation

Axial Leads, no Fail-Short mechanism
(GTCA28-xxxx-P15)



	A		C		D		Ød
	MIN	MAX	MIN	MAX	MIN	MAX	NOM
mm:	5.8	6.2	7.8	8.2	28.0	32.0	1.0
in*:	0.23	0.24	0.31	0.32	1.10	1.26	0.04

*Rounded off approximation

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**