Littelfuse
Expertise Applied | Answers Delivered

# Gas Discharge Tubes

## GTCX35-XXXM-R05 Series

Littelfuse Circuit Protection 5mm 3Pole GDTs (ceramic gas discharge tubes), are commonly used to help protect sensitive telecom equipment such as communication lines, signal lines and data transmission lines from damage caused by transient surge voltages that typically result from lightning strikes and equipment switching operations.

Littelfuse Circuit Protection GDTs offer a high level of surge protection, low capacitance and a broad array of breakover voltage levels, making them suitable for applications such as MDF (Main Distribution Frame) modules, high data-rate telecom applications (e.g. ADSL, VDSL), and surge protection on power lines. Littelfuse Circuit Protection GDTs can help equipment meet the most stringent regulatory standards.



### Benefits:

- Compact, small form factor suitable for efficient assembly
- Helps provide overvoltage fault protection against high energy surges
- Suitable for high-frequency applications

### Features:

- 3Pole, 5mm devices
- Broad voltage range from 75V-600V
- Various form factors: surface-mount, leaded, no leads
- Optional fail-short mechanism on some devices
- Low capacitance and insertion loss
- Crowbar overvoltage protection
- UL 497B recognized
- RoHS compliant
- Devices tested per ITU K.12 recommendations
- Non-radioactive materials

### Applications:

- Telecommunications
  - MDF modules, xDSL equipment, RF system protection, antenna, base station
- Industrial and consumer electronics, such as
  - Surge protectors
  - Alarm system

© 2016 Littelfuse,Inc.
Specifications are subject to change without notice.

# GTCX35-XXXM-R05 Series

## Device Voltage Ratings and Part Marking

| Part Number | DC Sparkover | Impulse Sparkover | | DC Holdover Voltage | On-State Voltage |
|---|---|---|---|---|---|
| | @100V/s ±20% Tolerance (V) | @100 Vμs (V) | @1000 Vμs (V) | Per ITU K.12 (<150ms) (V) | Nominal (@ 1A) (V) |
| GTCX35-750M-R05 | 75 | 450 | 550 | <52 | 20 |
| GTCX35-900M-R05 | 90 | 450 | 550 | <52 | 20 |
| GTCX35-141M-R05 | 140 | 500 | 600 | <80 | 20 |
| GTCX35-151M-R05 | 150 | 500 | 600 | <80 | 20 |
| GTCX35-201M-R05 | 200 | 600 | 700 | <135 | 20 |
| GTCX35-231M-R05 | 230 | 600 | 700 | <135 | 20 |
| GTCX35-251M-R05 | 250 | 600 | 700 | <135 | 20 |
| GTCX35-261M-R05 | 260 | 700 | 800 | <135 | 20 |
| GTCX35-301M-R05 | 300 | 800 | 900 | <150 | 20 |
| GTCX35-351M-R05 | 350 | 900 | 1000 | <150 | 20 |
| GTCX35-401M-R05 | 400 | 900 | 1000 | <150 | 20 |
| GTCX35-421M-R05 | 420 | 900 | 1000 | <150 | 20 |
| GTCX35-471M-R05 | 470 | 1050 | 1150 | <150 | 20 |
| GTCX35-501M-R05 | 500 | 1100 | 1200 | <150 | 20 |
| GTCX35-551M-R05 | 550 | 1300 | 1400 | <150 | 20 |
| GTCX35-601M-R05 | 600 | 1300 | 1400 | <150 | 20 |

## Device Surge Rating, Capacitance, Insulation Resistance, UL

| Part Number | Impulse Discharge Current | Impulse Life | AC Discharge Current (1sec duration; 10 hits) | Capacitance | Insulation Resistance | UL Rating |
|---|---|---|---|---|---|---|
| | 8x20μs 10 hits | 10x1000μs 300 hits | @50 Hz | @1Mhz | @100V* | UL497B #E179610 |
| GTCx35-xxxM-R05 | 5kA | 100A | 5Arms | <1pF | 10,000 (MΩ) | All Devices |

* Devices <=150V measured @ 50V
Devices >= 500V measured @ 250V

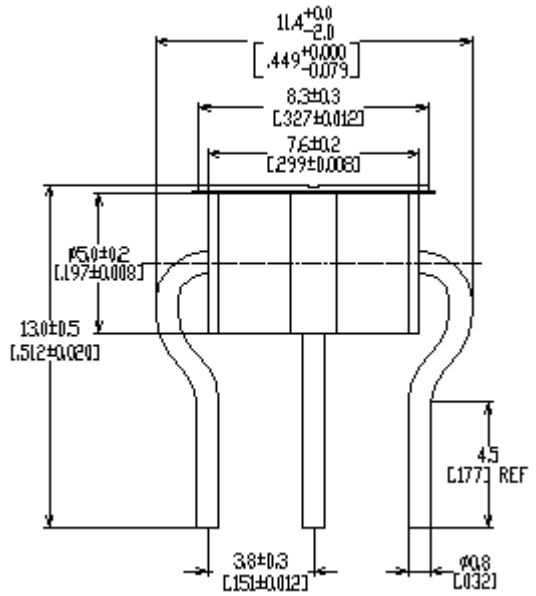
© 2016 Littelfuse,Inc.
Specifications are subject to change without notice.

# GTCX35-XXXM-R05 Series

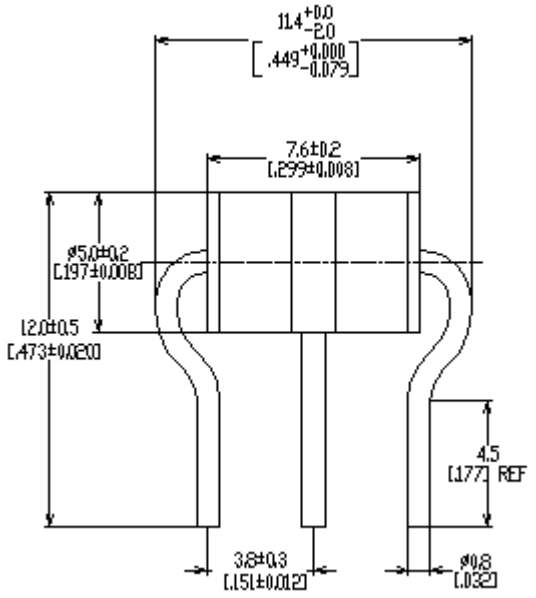
## Product Dimensions

**DIMENSIONS = MILLIMETERS [INCHES]**

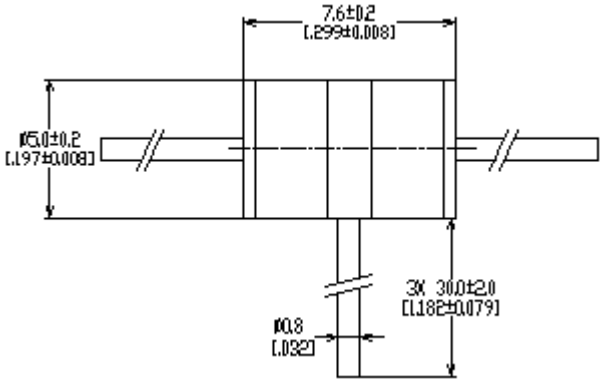
### Axial Leaded (GTCA35-XXXM-R05-FT)



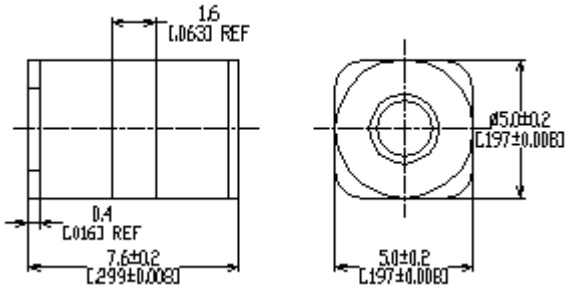

### Axial Leaded (GTCA35-XXXM-R05)



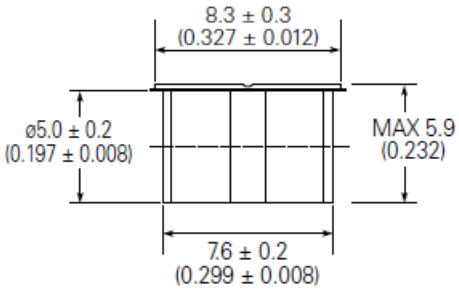

### "T" Leaded (GTCT35-XXXM-R05)



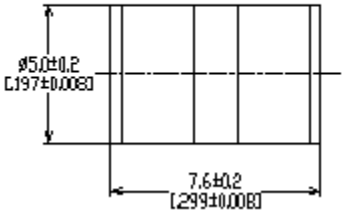

### Surface-mount (GTCS35-XXXM-R05)




### No Leads with –FT (GTCN35-XXXM-R05-FT)




### No Leads (GTCN35XXM-R05)

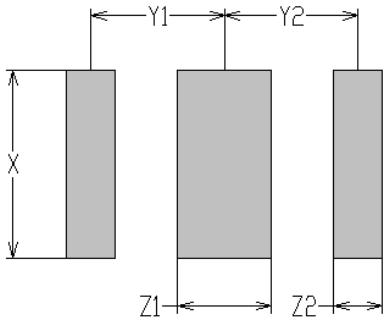



© 2016 Littelfuse,Inc.
Specifications are subject to change without notice.

# GTCX35-XXXM-R05 Series

## Pad Layout – Surface-mount Devices

| | X | Y1 | Y2 | Z1 | Z2 |
|---|---|---|---|---|---|
| | NOM | NOM | NOM | NOM | NOM |
| mm: | 6.0 | 3.6 | 3.6 | 2.5 | 1.3 |
| in*: | (0.236) | (0.142) | (0.142) | (0.098) | (0.051) |




## General Characteristics

No Radioactive Material
Storage Temperature: -40ºC to +90ºC
Operating Temperature: -40ºC to +90ºC
Body: Nickel Plated
Leads: Surface-mount, “T” and Axial Devices: Tin Plated
Devices with no leads: Nickel Plated
*Soldering Notes: Devices with no leads: non-solderable; suitable for insertion into a magazine clip*

## Materials Information

RoHS Compliant — Directive 2002/95/EC Compliant

ELV Compliant — Directive 2000/53/EC Compliant

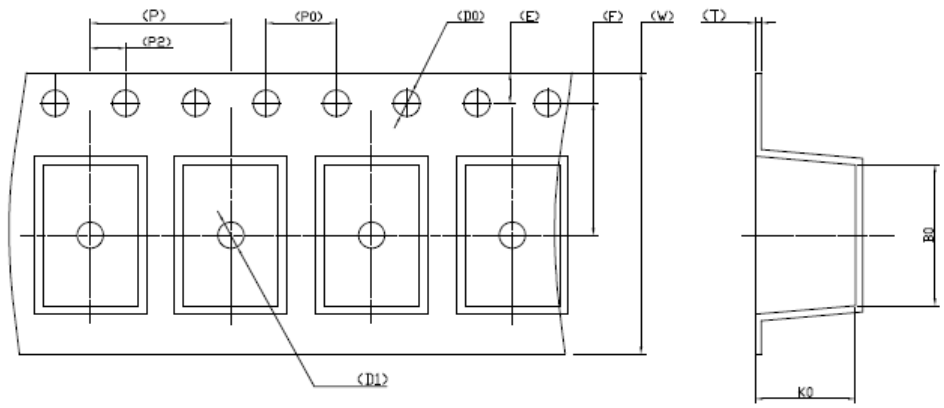
## Packaging Information

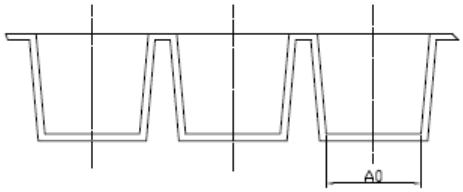
| Part Description | | Tray / Reel | Standard Package |
|---|---|---|---|
| No Leaded: | GTCN35-XXXM-R05 | 100 pcs (Tray) | 2,500 pcs |
| With Leads: | GTCA35-XXXM-R05/GTCT35-XXXM-R05 | 100 pcs (Tray) | 1,000 pcs |
| Surface-mount (T&R): | GTCS35-XXXM-R05-2 | 1,000 pcs (Reel) | 8,000 pcs |

© 2016 Littelfuse,Inc.
Specifications are subject to change without notice.

# GTCX35-XXXM-R05 Series

## Tape and Reel Specification




| | | | | | | | |
|---|---|---|---|---|---|---|---|
| W | 16.00±0.30 | P | 8.00±0.10 | A0 | 5.40±0.10 | B0 | 8.00±0.10 |
| | | P0 | 4.00±0.10 | | | | |
| E | 1.75±0.10 | P2 | 2.00±0.10 | | | | |
| F | 7.50±0.10 | D0 | ø1.50$^{+0.10}_{-0}$ | K0 | 5.70±0.10 | | |
| T | 0.50±0.05 | D1 | ø1.50 MIN | K1 | | COLOR : B | |

## Part Numbering System

### Example Part Number: GTCX35-351M-R05-FT

| | |
|---|---|
| GT = | Gas Tube |
| C = | Ceramic |
| X = | Lead Configuration: **N**= No leads; **A**= Axial Leads; **S**= Surface-mount; **T**= T Configuration Leads |
| 3 = | 3 Electrode device |
| 5 = | 5mm Diameter |
| 351 = | DC Spark Over Voltage of 350V (at 100V/s) |
| M = | Tolerance of 20% on DC Spark Over Voltage |
| R = | Product Family Designator |
| 05 = | Surge rating: 8x20µs 5kA 10 times |
| FT = | With Fail-Short mechanism |
| -2 | Tape and Reel |

© 2016 Littelfuse,Inc.
Specifications are subject to change without notice.

# GTCX35-XXXM-R05 Series

## Part Marking Reference

**Example Part Marking: XX 35 R05 GN**

XX = Manufacturer's Mark
35 = Voltage Designator (35 = 350V)
R05 = Product Family Designator + Surge Current 5kA (8x20µs 10 hits)
GN = Year and Week of Manufacture

Littelfuse products are not designed for, and shall not be used for, any purpose (including, without limitation, automotive, military, aerospace, medical, life-saving, life-sustaining or nuclear facility applications, devices intended for surgical implant into the body, or any other application in which the failure or lack of desired operation of the product may result in personal injury, death, or property damage) other than those expressly set forth in applicable Littelfuse product documentation. Warranties granted by Littelfuse shall be deemed void for products used for any purpose not expressly set forth in applicable Littelfuse documentation. Littelfuse shall not be liable for any claims or damages arising out of products used in applications not expressly intended by Littelfuse as set forth in applicable Littelfuse documentation. The sale and use of Littelfuse products is subject to Littelfuse Terms and Conditions of Sale, unless otherwise agreed by Littelfuse.