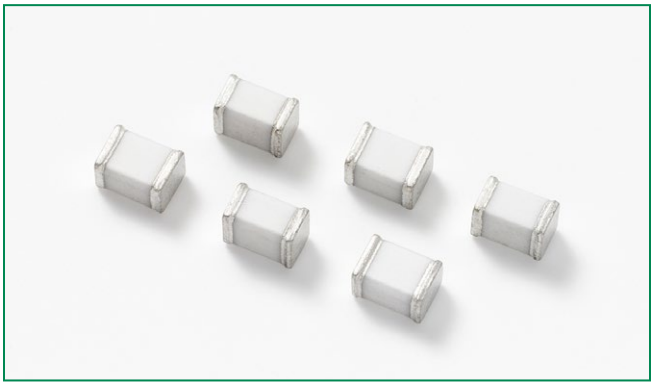
# SG Series



## Agency Approvals

| AGENCY | AGENCY FILE NUMBER |
|---|---|
| | E128662 |

## 2 Electrode GDT Graphical Symbol

## Additional Information

Datasheet | Resources | Samples

## Description

Littelfuse SG series GDT offers high surge ratings in a miniature package. It's designed for surface mounting on PCB with small size 4.5x3.2x2.7mm. Low insertion loss is perfectly suited to broadband equipment applications. The capacitance does not vary with voltage, and will not cause operational problems with ADSL2+, where capacitance variation across Tip and Ring is undesirable. These devices are extremely robust and are able to divert a 1000A pulse without destruction.

## Features

- RoHS compliant and Lead-free
- GHz working frequency
- Excellent stability on multiple pulse duty cycle
- Excellent response to fast rising transients.
- Ultra Low Insertion Loss
- 1-2KA surge capability tested with 8/20µS pulse as defined by IEC 61000-4-5
- Ultra small devices offered in a variety of mounting lead forms
- Non-Radioactive
- Low capacitance (<1pF)
- Voltage Ranges 75V to 600V
- UL recognized
- Conforms to ITU-T K12, IEC 1000-4-5
- Square Outline

## Applications

- Communication equipment
- CATV equipment
- Test equipment
- Data lines
- Power supplies
- Telecom SLIC protection
- Broadband equipment
- ADSL equipment, including ADSL2+
- XDSL equipment
- Satellite and CATV equipment
- General telecom equipment

© 2017 Littelfuse, Inc.
Specifications are subject to change without notice.
Revised: 12/12/17

## Electrical Characteristics

| Part Number | Device Specifications (at 25°C) | | | | | | | | | Life Ratings | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC Breakdown in Volts (@100V/s) | | | Impulse Breakdown in Volts (@100V/µs) | Impulse Breakdown In Volts (@1 Kv/µsec) | Insulation Resistance | Capacitance (@1MHz) | Arc Voltage (@1A) | Glow to Arc Transition Current | Glow Voltage | Nominal AC Discharge Current (x10 @50Hz) | Nominal Impulse Discharge Current (x10 @8/20µs) | Nominal Impulse Discharge Current (10/1000µs 100 cycles) |
| | MIN | TYP | MAX | MAX | | MIN | MAX | | | | | | |
| SG75 | 52 | 75 | 98 | 500 | 650 | >1GΩ (at 50VDC) | <1 pf | ~10 V | ~1.0 A | ~60 V | 2 A | 2kA | 10 A |
| SG90 | 63 | 90 | 117 | 500 | 600 | | | | | | | | |
| SG150 | 105 | 150 | 195 | 500 | 600 | | | | | | | | |
| SG200 | 140 | 200 | 260 | 550 | 700 | >1GΩ (at 100VDC) | | | | | 2.5 A | 1kA | |
| SG230 | 172 | 230 | 288 | 650 | 800 | >1GΩ (at 50VDC) | | | | | 2 A | | |
| SG300 | 225 | 300 | 375 | 700 | 850 | | | ~12 V | ~0.5 A | ~90 V | | | |
| SG300Q | 210 | 300 | 390 | 580 | 650 | | | ~20 V | ~0.8 A | ~140 V | NA* | | |
| SG350 | 263 | 350 | 437 | 750 | 900 | | <0.8 pf | ~12 V | ~0.5 A | ~90 V | 2 A | | |
| SG350Q | 263 | 350 | 437 | 600 | 700 | | | | | ~140 V | NA* | | |
| SG400 | 300 | 400 | 500 | 800 | 950 | | | | | ~90 V | 2 A | | |
| SG420 | 315 | 420 | 525 | 800 | 1000 | | <1 pf | ~10 V | <1.0 A | ~60 V | 2 A | | |
| SG420Q | 315 | 420 | 525 | 650 | 750 | | | ~20 V | | ~140 V | NA* | | |
| SG450Q | 370 | 450 | 500 | 680 | 750 | >1GΩ (at 100VDC) | | ~20 V | | | 1 A | | |
| SG500Q | 400 | 500 | 600 | 950 | 1050 | | <0.5 pf | ~16 V | ~0.1 A | | 2 A | | |
| SG600Q | 450 | 600 | 750 | 1100 | 1200 | | <1 pf | ~20 V | <0.5 A | | | | |

* Specification is not applicable for quick response (SGxxx**Q**) version of product

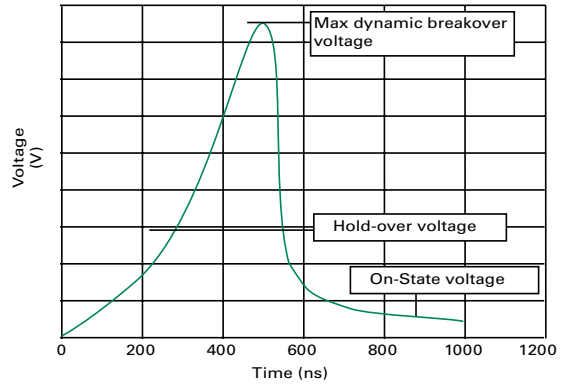
## Product Characteristics

| | |
|---|---|
| **Materials** | Device Tin Plated 17.5±12.5 Microns Construction Ceramic Insulator. |
| **Storage and Operational Temperature** | -40 to +90 °C |

## Typical Insertion Loss

| |
|---|
| @ 1.0 GHz = 0.01 dB |
| @ 1.4GHz = 0.1 dB |
| @ 1.8 GHz = 0.53 dB |
| @ 2.1 GHz = 0.81 dB |
| @ 2.45 GHz= 1 dB |
| @ 2.8 GHz = 1.2 dB |
| @ 3.1 GHz = 1.5 dB |
| @ 3.5 GHz = 2.1 dB |

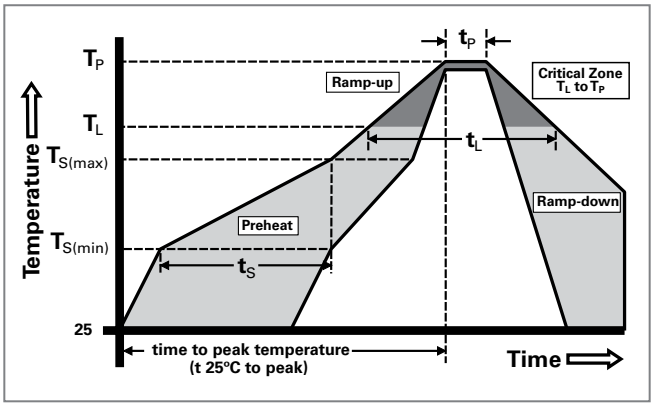
## Voltage vs. Time Characteristic




© 2017 Littelfuse, Inc.
Specifications are subject to change without notice.
Revised: 12/12/17

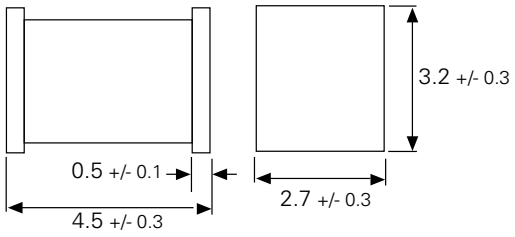
## Soldering Parameters - Reflow Soldering (Surface Mount Devices)

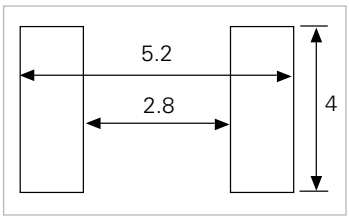
| Reflow Condition | | Pb – Free assembly |
|---|---|---|
| Pre Heat | -Temperature Min ($T_{s(min)}$) | 150°C |
| | -Temperature Max ($T_{s(max)}$) | 200°C |
| | -Time (Min to Max) ($t_s$) | 60 – 180 secs |
| Average ramp up rate (Liquidus Temp ($T_L$) to peak | | 3°C/second max |
| $T_{S(max)}$ to $T_L$ - Ramp-up Rate | | 5°C/second max |
| Reflow | -Temperature ($T_L$) (Liquidus) | 217°C |
| | -Temperature ($t_L$) | 60 – 150 seconds |
| Peak Temperature ($T_P$) | | $260^{+0/-5}$ °C |
| Time within 5°C of actual peak Temperature ($t_p$) | | 10 – 30 seconds |
| Ramp-down Rate | | 6°C/second max |
| Time 25°C to peak Temperature ($T_P$) | | 8 minutes Max. |
| Do not exceed | | 260°C |




## Device Dimensions

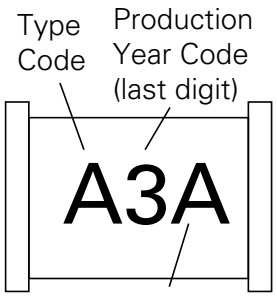
Dimensions in Millimeters.




Recommended Soldering Pad Layout

## Device Marking




| Type Code | |
|---|---|
| A | SG75 |
| B | SG90 |
| C | SG150 |
| D | SG230 |
| E | SG300 |
| F | SG300Q |
| G | SG350 |
| H | SG350Q |
| I | SG400 |
| J | SG420 |
| K | SG420Q |
| L | SG450Q |
| M | SG500Q |
| N | SG600Q |
| O | SG200 |

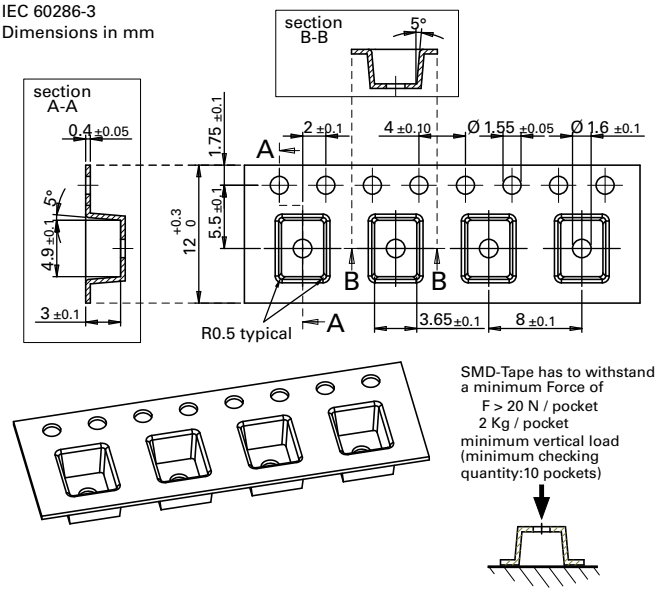
| Month Code | |
|---|---|
| A | January |
| B | February |
| C | March |
| D | April |
| E | May |
| F | June |
| G | July |
| H | August |
| I | September |
| J | October |
| K | November |
| L | December |

© 2017 Littelfuse, Inc.
Specifications are subject to change without notice.
Revised: 12/12/17

## Tape and Reel Dimensions (IEC 60286-3, dimension in mm)

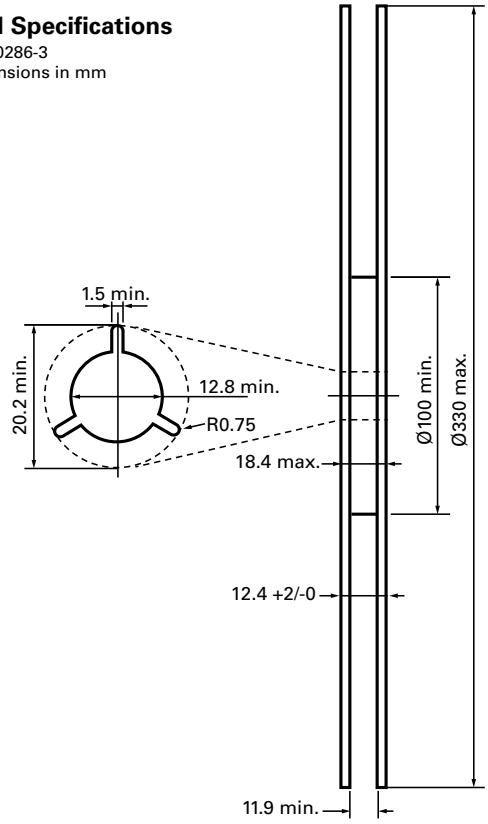
### Tape Specifications

IEC 60286-3
Dimensions in mm




### Reel Specifications

IEC 60286-3
Dimensions in mm




## Part Numbering System and Ordering Information

**SG xxx Q**

**Series**
**Square GDT**

**Breakdown Voltage**
**75 = 75V**
**90 = 90V**
**150 = 150V**
**200 = 200V**
**230 = 230V**
**300 = 300V**
**350 = 350V**
**400 = 400V**
**420 = 420V**
**450 = 450V** (Not available without "Q" suffix)
**500 = 500V** (Not available without "Q" suffix)
**600 = 600V** (Not available without "Q" suffix)

**Device Option Code**
(Blank) = Standard device
**Q** = Quick Response Version (300V, 350V, 420V, 450V, 500V, 600V only)

## Packaging

| Part Number and Device Type | | Quantity and Packaging Description |
|---|---|---|
| SGxxx | Surface mount | 2000pcs/reel in tape and reel |

**Disclaimer Notice -** Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at: www.littelfuse.com/disclaimer-electronics.

© 2017 Littelfuse, Inc.
Specifications are subject to change without notice.
Revised: 12/12/17

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

**Данный компонент на территории Российской Федерации**

**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

http://moschip.ru/get-element

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

**Офис по работе с юридическими лицами:**

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:
moschip.ru
moschip.ru_4
moschip.ru_6
moschip.ru_9