# 3-Electrode Gas Discharge Tube (GDT)

## SC3E5 Series

### Description

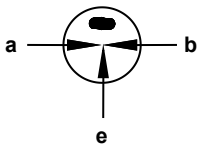
Gas discharge Tubes (GDT) are classical components for protecting the installations of the telecommunications. It is essential that IT and telecommunications systems -with their high-grade but sensitive electronic circuits - be protected by arresters. They are thus fitted at the input of the power supply system together with varistors and at the connection points to telecommunication lines. They have become equally indispensable for protecting base stations in mobile telephone systems as well as extensive cable television (CATV) networks with their repeaters and distribution systems.

These protective components are also indispensable in other sectors, In AC power transmission systems, they are often used with current-limiting varistors, In customer premises equipment such as DSL modems, WLAN routers, TV sets and cable modems In air-conditioning equipment, the integral black-box concept offers graduated protection by combining arresters with varistors, PTC, diodes and inductor.

**SC3E5-XXXL**


**SC3E5-XXXLSMD**


### Schematic Symbol




**a = Tip**
**b = Ring**
**e = Ground**
**(Center electrode)**

### Features

- Non-Radioactive
- RoHS compliant
- Low insertion loss
- Excellent response to fast rising transients
- Ultra low capacitance
- 5KA surge capability tested with 8/20μs pulse as defined by IEC 61000-4-5

### 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
- Consumer electronics

### Agency Approvals

| AGENCY | AGENCY FILE NUMBER |
|---|---|
| | E341061 |

### Product Characteristics

| | | |
|---|---|---|
| **Materials** | **Leaded Device:** Nickel-plated with Tinplated wires<br>**Surface Mount:** Dull Tin-plated | |
| **Product Marking** | **SOCAY**<br>**XXXL**<br>XXX -Nominal voltage<br>L -5KA | |
| **Glow to Arc Transition Current** | < 0.5 Amps | |
| **Glow Voltage** | ~60 Volts | |
| **Storage and Operational Temperature** | -40 to +90°C | |
| **Weight** | **SC3E5-XXXL** | ~0.66g |
| | **SC3E5-XXXLSMD** | ~0.68g |
| **Climatic category (IEC 60068-1)** | 40/ 90/ 21 | |

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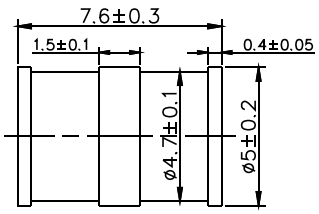
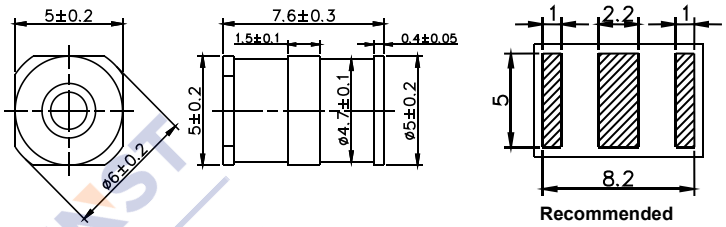
### Dimensions (Unit: mm)

**Without wire Devices (SC3E5-XXXL)**




**Surface Mount Devices (SC3E5-XXXLSMD)**




Recommended Pad Outline

### Electrical Characteristics

| Part Number | Marking | DC Spark-over Voltage | Maximum Impulse Spark-over Voltage | | Minimum Insulation Resistance | Maximum Capacitance | Arc Voltage | Service Life | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Nominal Impulse Discharge Current | Max Impulse Discharge Current | Nominal Alternating Discharge Current | Impulse Life |
| | | @100V/S | @100V/μs | @1KV/μs | | @1MHz | @1A | @8/20μs [4] ±5 times | @8/20μs [4] 1 time | @50Hz [4] 1 Sec 10 times | @10/1000μs [4] 300 times |
| SC3E5-75L<br>SC3E5-75LSMD | SOCAY 75L | 75V±20% | ＜500V | ＜600V | 1 GΩ (at 25V) | ＜1.5pF | ~15V | 5KA | 10KA | 5A | 200A |
| SC3E5-90L<br>SC3E5-90LSMD | SOCAY 90L | 90V±20% | ＜500V | ＜600V | 1 GΩ (at 50V) | ＜1.5pF | ~15V | 5KA | 10KA | 5A | 200A |
| SC3E5-150L<br>SC3E5-150LSMD | SOCAY 150L | 150V±20% | ＜500V | ＜600V | 1 GΩ (at 50V) | ＜1.5pF | ~20V | 5KA | 10KA | 5A | 200A |
| SC3E5-230L<br>SC3E5-230LSMD | SOCAY 230L | 230V±20% | ＜600V | ＜700V | 1 GΩ (at 100V) | ＜1.5pF | ~20V | 5KA | 10KA | 5A | 200A |
| SC3E5-250L<br>SC3E5-250LSMD | SOCAY 250L | 250V±20% | ＜600V | ＜700V | 1 GΩ (at 100V) | ＜1.5pF | ~20V | 5KA | 10KA | 5A | 200A |
| SC3E5-300L<br>SC3E5-300LSMD | SOCAY 300L | 300V±20% | ＜800V | ＜900V | 1 GΩ (at 100V) | ＜1.5pF | ~20V | 5KA | 10KA | 5A | 200A |
| SC3E5-350L<br>SC3E5-350LSMD | SOCAY 350L | 350V±20% | ＜800V | ＜900V | 1 GΩ (at 100V) | ＜1.5pF | ~20V | 5KA | 10KA | 5A | 200A |
| SC3E5-420L<br>SC3E5-420LSMD | SOCAY 420L | 420V±20% | ＜900V | ＜1000V | 1 GΩ (at 100V) | ＜1.5pF | ~20V | 5KA | 10KA | 5A | 200A |
| SC3E5-470L<br>SC3E5-470LSMD | SOCAY 470L | 470V±20% | ＜900V | ＜1000V | 1 GΩ (at 100V) | ＜1.5pF | ~20V | 5KA | 10KA | 5A | 200A |
| SC3E5-600L<br>SC3E5-600LSMD | SOCAY 600L | 600V±20% | ＜1100V | ＜1200V | 1 GΩ (at 100V) | ＜1.5pF | ~20V | 5KA | 10KA | 5A | 200A |

**Notes:**

1). Terms in accordance with ITU-T K.12 and GB/T 9043-2008
2). At delivery AQL 0.65 level Ⅱ, DIN ISO 2859
3). Tip or ring electrode to center electrode
4). Total current through center electrode, half value through tip respectively ring electrode

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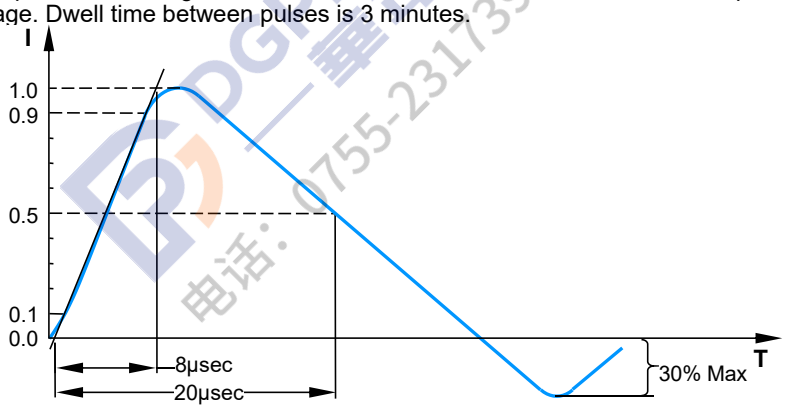
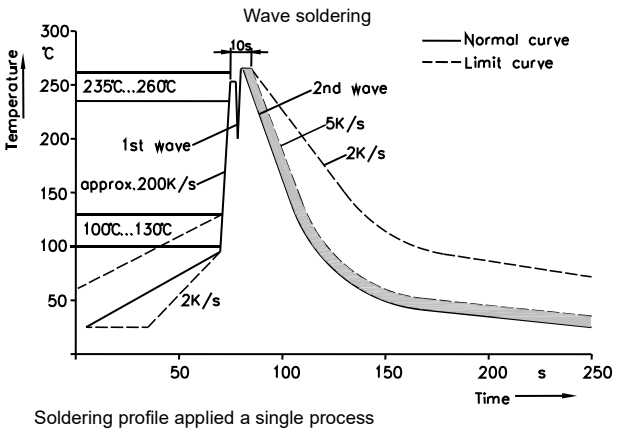
## SC3E5 Series

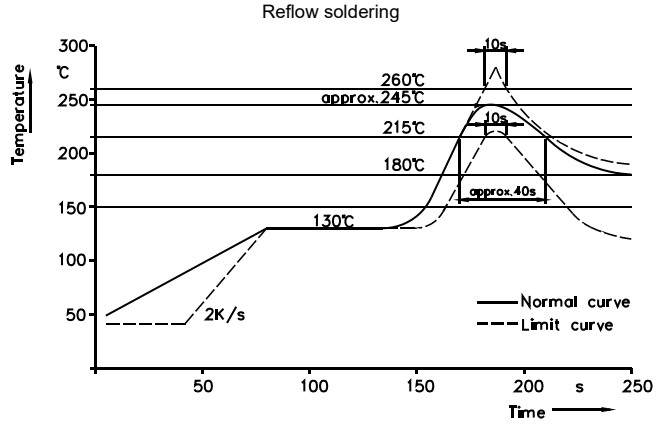
### Electrical Rating

| Item | Test Condition / Description | Requirement |
|---|---|---|
| **DC Spark-over Voltage** | The voltage is measured with a slowly rate of rise dv / dt=100V/s | To meet the specified value |
| **Impulse Spark-over Voltage** | The maximum impulse spark-over voltage is measured with a rise time of dv / dt=100V//μs or 1KV/μs | |
| **Insulation Resistance** | The resistance of gas tube shall be measured each terminal each other terminal, please see above spec. | |
| **Capacitance** | The capacitance of gas tube shall be measured each terminal to each other terminal.<br>Test frequency :1MHz | |
| **Nominal Impulse Discharge Current** | The maximum current applying a waveform of 8/20μs that can be applied across the terminals of the gas tube. One hour after the test is completed, re-testing of the DC spark-over voltage does not exceed ±30% of the nominal DC spark-over voltage. Dwell time between pulses is 3 minutes.<br>  | |
| **Nominal Alternating Discharge Current** | Rated RMS value of AC current at 50Hz, 1 sec. 10 times. Intervals: 3min. The DC spark-over voltage does not exceed ±30% of the nominal DC spark-over voltage.<br>IR > $10^8$ohms. | |

### Recommended Soldering Profile




Soldering profile applied a single process




### Soldering Parameters - Hand Soldering

Solder Iron Temperature: 350°C +/-5°C
Heating Time: 5 seconds max.

# 3-Electrode Gas Discharge Tube (GDT)

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### Part Numbering

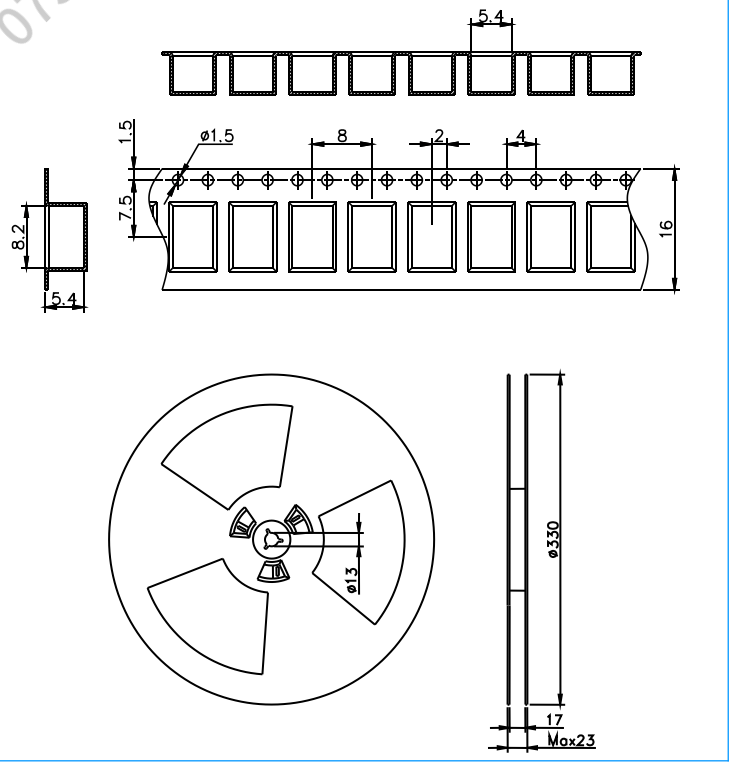
**S C 3 E 5 – X X X L S M D**

- SMD, Surface Mount
  NO, without wire
- 8/20μs Level L, 5KA
- Nominal DC Spark-over Voltage
  75 = 75V 300=300V
  90 =90V 350 =350V
  150 = 150V 470 =470V
  230 = 230V 600 = 600V
- Series

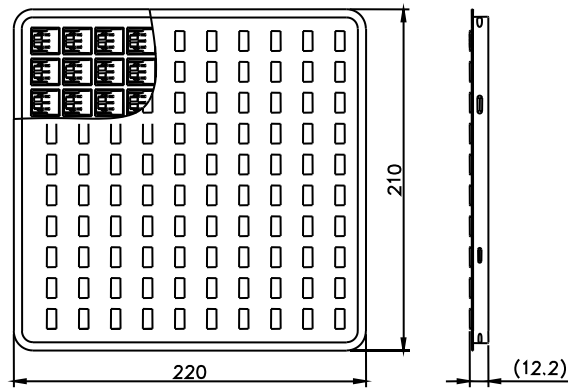
### Packaging

| Part Number | Description | Quantity |
|---|---|---|
| SC3E5-XXXL | 100PCS per Tray, 10 Trays / Inner | 1000 PCS |
| SC3E5-XXXLSMD | 100PCS per Tray, 10 Trays/ Inner | 1000 PCS |
| | 16mmTape & 13″ Reel | 1000 PCS |

**Tape and Reel Dimension (Unit: mm)**




**Tray Dimension (Unit: mm)**




### Cautions and Warnings

- Gas discharge tubes (GDT) must not be operated directly in power supply networks.
- Gas discharge tubes (GDT) may become hot in case of longer periods of current stress (danger of burning).
- Gas discharge tubes (GDT) may be used only within their specified values. In the event of overload, the head contacts may fail or the component may be destroyed.
- Damaged Gas discharge tubes (GDT) must not be re-used.