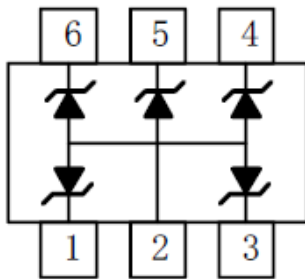


## 5-Line , Uni-directional , Transient Voltage Suppressor



**SOT-363**

### Features

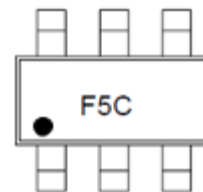
- Ultra small package
- Stand-off voltage: 5V
- Transient protection for each line according to IEC61000-4-2(ESD):  $\pm 30\text{kV}$  (contact)  
IEC61000-4-5(surge): 8A (8/20ns)
- Low clamping voltage
- RoHS Compliant

### Applications

- Peripherals
- Industrial Equipment
- Notebook Computers
- Portable Instrumentation
- Microprocessor Based Equipment
- Cell Phone Handsets and Accessories
- Personal Digital Assistants (PDAs) and Pagers

### Mechanical Characteristics

- Package: SOT-363
- Case Material: "Green" Molding Compound.
- Marking Information: See Below



### Definitions of electrical characteristics

$V_F$  Forward voltage

$I_F$  Forward current

$V_{FC}$  Forward clamping voltage

$I_{PP}$  Peak pulse current

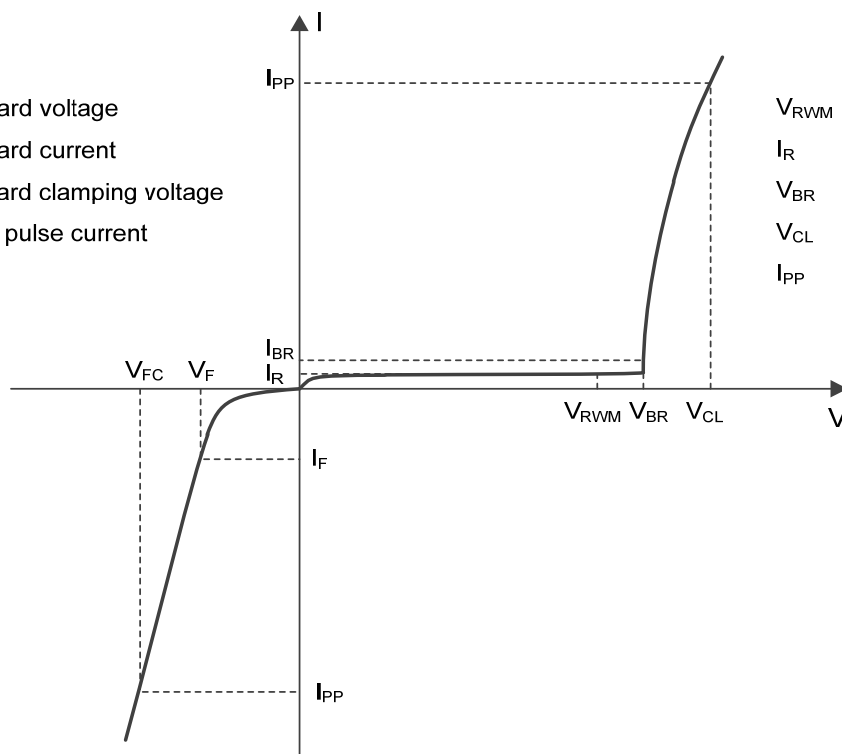
$V_{RWM}$  Reverse stand-off voltage

$I_R$  Reverse leakage current

$V_{BR}$  Reverse breakdown voltage

$V_{CL}$  Clamping voltage

$I_{PP}$  Peak pulse current





## ESD0505S3

### ■Absolute Maximum Ratings (Ta=25°C unless otherwise specified)

| PARAMETER                                       | SYMBOL    | VALUE    | UNIT |
|-------------------------------------------------|-----------|----------|------|
| Peak pulse power ( $t_p = 8/20\mu s$ )          | $P_{pk}$  | 100      | W    |
| Peak pulse Current ( $t_p = 8/20\mu s$ )        | $I_{PP}$  | 8        | A    |
| ESD according to IEC61000-4-2 air discharge     | $V_{ESD}$ | $\pm 30$ | KV   |
| ESD according to IEC61000-4-2 contact discharge |           | $\pm 30$ | KV   |
| Junction temperature                            | $T_J$     | -55~125  | °C   |
| Storage Temperature Range                       | $T_{STG}$ | -55~150  | °C   |

### ■Electrical Characteristics (Ta=25°C Unless otherwise specified)

| PARAMETER                       | Symbol     | UNIT    | Conditions                        | Min | Typ | Max |
|---------------------------------|------------|---------|-----------------------------------|-----|-----|-----|
| Reverse maximum working voltage | $V_{RWM}$  | V       |                                   |     |     | 5   |
| Reverse leakage current         | $I_R$      | $\mu A$ | $V_{RWM} = 5V$ ,                  |     |     | 0.2 |
| Reverse breakdown voltage       | $V_{(BR)}$ | V       | $I_T = 1mA$ ,                     | 6   |     | 8.5 |
| Clamping voltage                | $V_{CL}$   | V       | $I_{PP} = 1A$ , $t_p = 8/20\mu s$ |     |     | 9   |
|                                 |            | V       | $I_{PP} = 8A$ , $t_p = 8/20\mu s$ |     |     | 12  |
| Junction capacitance            | CJ         | pF      | $V_R = 0V$ , $f = 1MHz$           |     | 60  |     |

Notes:

- (1). TLP parameter:  $Z_0 = 50\Omega$ ,  $t_p = 100ns$ ,  $t_r = 2ns$ , averaging window from 60ns to 80ns. RDYN is calculated from 4A to 16A.
- (2). Contact discharge mode, according to IEC61000-4-2.
- (3). Non-repetitive current pulse, according to IEC61000-4-5

### ■Ordering Information (Example)

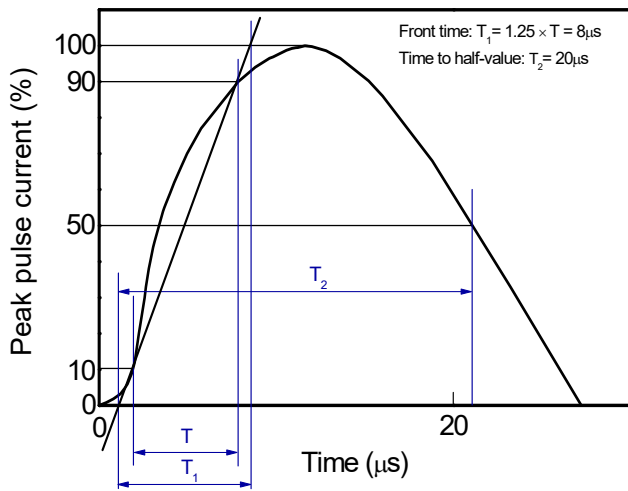
| PREFERRED P/N | UNIT WEIGHT(mg) | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---------------|-----------------|----------------------|-------------------------|----------------------------|---------------|
| ESD0505S3     | Approximate 9   | 3000                 | 30000                   | 120000                     | Tape & reel   |



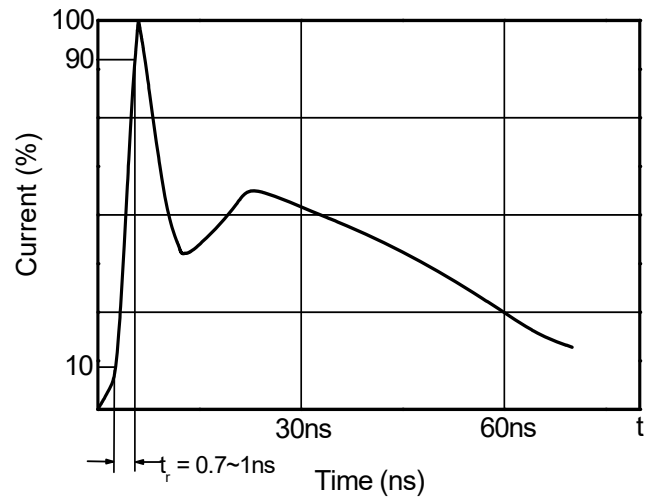
## ESD0505S3

### ■ Typical Performance Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise Specified)

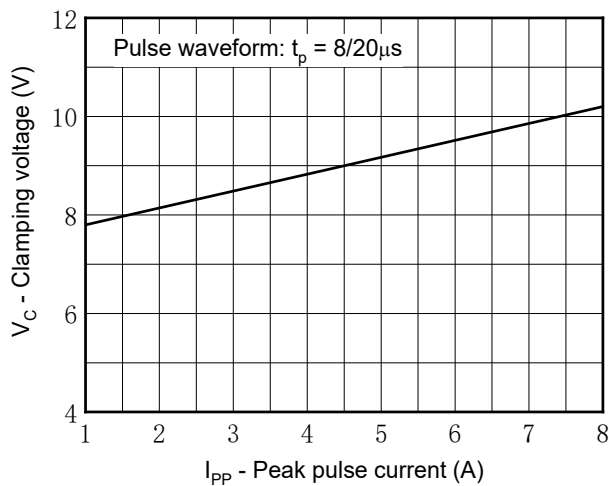
8/20 $\mu\text{s}$  waveform per IEC61000-4-5



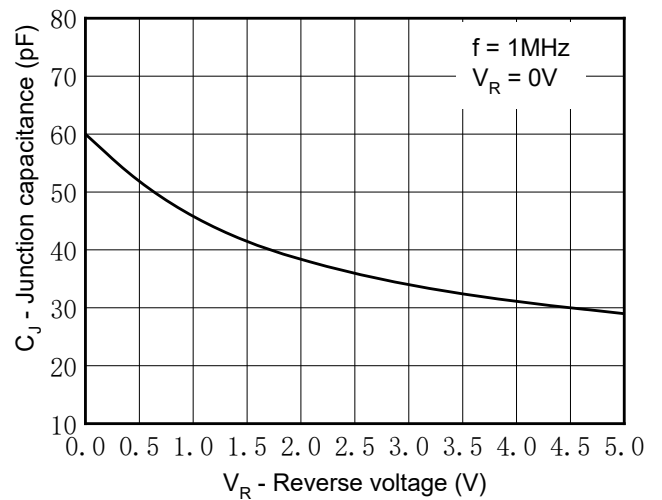
Contact discharge current waveform per IEC61000-4-2



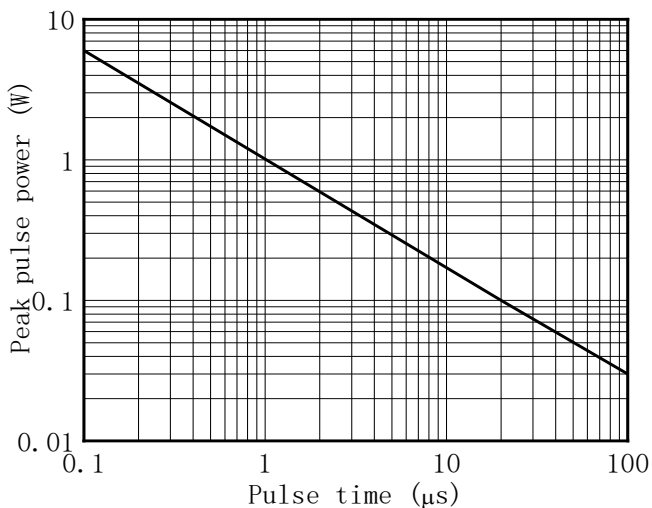
Clamping voltage vs. Peak pulse current



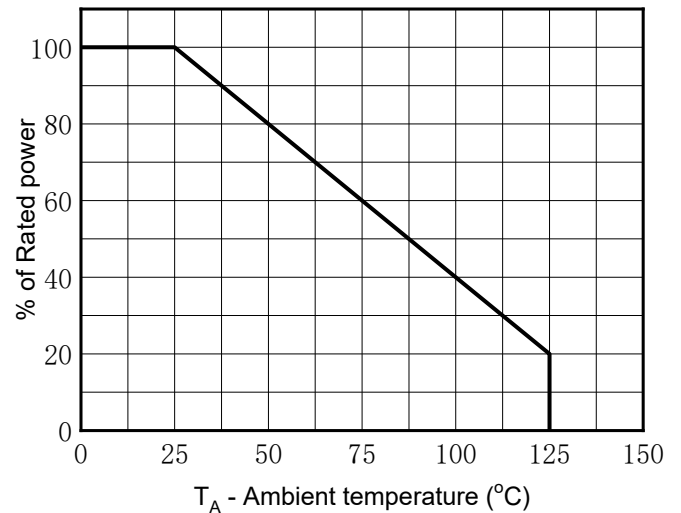
Capacitance vs. Reverse voltage



Non-repetitive peak pulse power vs. Pulse time



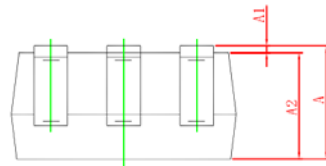
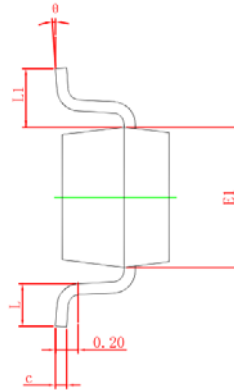
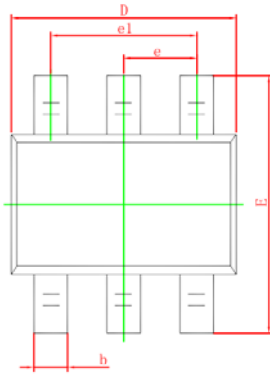
Power derating vs. Ambient temperature





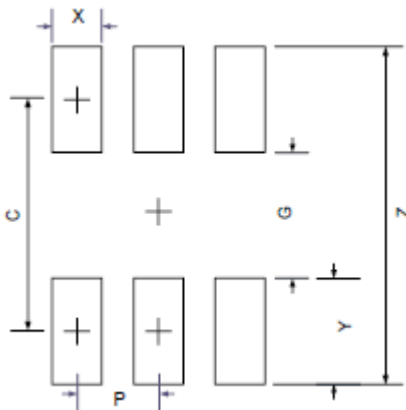
## ESD0505S3

### ■Outline Dimensions



| SYM | DIMENSIONS  |     |       |            |     |       |
|-----|-------------|-----|-------|------------|-----|-------|
|     | MILLIMETERS |     |       | INCHES     |     |       |
|     | MIN         | NOM | MAX   | MIN        | NOM | MAX   |
| A   | 0.900       | -   | 1.100 | 0.035      | -   | 0.043 |
| A1  | 0.000       | -   | 0.100 | 0.000      | -   | 0.004 |
| A2  | 0.900       | -   | 1.000 | 0.035      | -   | 0.039 |
| b   | 0.150       | -   | 0.350 | 0.006      | -   | 0.014 |
| c   | 0.080       | -   | 0.150 | 0.003      | -   | 0.006 |
| D   | 2.000       | -   | 2.200 | 0.079      | -   | 0.087 |
| E   | 2.150       | -   | 2.450 | 0.085      | -   | 0.096 |
| E1  | 1.150       | -   | 1.350 | 0.045      | -   | 0.053 |
| e   | 0.650 TYP.  |     |       | 0.026 TYP. |     |       |
| e1  | 1.200       | -   | 1.400 | 0.047      | -   | 0.055 |
| L   | 0.260       | -   | 0.460 | 0.010      | -   | 0.018 |
| L1  | 0.525 REF.  |     |       | 0.021 REF. |     |       |
| θ   | 0°          | -   | 8°    | 0°         | -   | 8°    |

### ■Recommend land pattern (Unit:mm)



| SYM | DIMENSIONS  |        |
|-----|-------------|--------|
|     | MILLIMETERS | INCHES |
| C   | 1.85        | 0.073  |
| G   | 1.00        | 0.039  |
| P   | 0.65        | 0.026  |
| X   | 0.40        | 0.016  |
| Y   | 0.85        | 0.033  |
| Z   | 2.70        | 0.106  |

#### Notes:

This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.



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