



# ESD1201OC

## Low Capacitance TVS/ESD Protection Diodes

### ESD PROTECTION DIODES

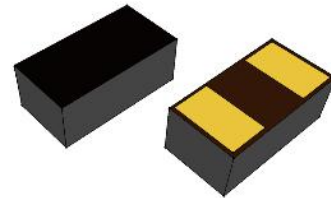
#### DESCRIPTION

ESD1201OC is a low-capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for data, control or power lines. With maximum capacitance of 15pF only, ESD1201OC is designed to protect parasitic-sensitive systems against over-voltage and over-current transient events. It complies with IEC 61000-4-2 (ESD), Level 4 ( $\pm 15\text{kV}$  air,  $\pm 8\text{kV}$  contact discharge), very fast charged device model (CDM) ESD and cable discharge event (CDE), etc. ESD1201OC uses ultra-small DFN1006 package. Each ESD1201OC device can protect one data line. It offers system designers flexibility to protect single data line where space is a premium concern..

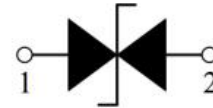
#### Features

- ◆ Peak Power Dissipation 150 W (8/20 $\mu\text{s}$ )
- ◆ Stand-off voltage :12V
- ◆ Low capacitance 15pF(Maximum)
- ◆ Protects I/O Port
- ◆ Low clamping voltage
- ◆ Low Leakage
- ◆ Low Capacitance
- ◆ Response Time is <1ns
- ◆ Meets MSL 1 Requirements
- ◆ Replacement for MLV(0402)

#### Pin Configuration



#### Circuit Diagram



#### Applications

- ◆ Cell Phone Handsets and Accessories
- ◆ Serial and Parallel Ports
- ◆ Projection TV
- ◆ Notebooks, Desktops, and Servers
- ◆ Portable Instrumentation
- ◆ Peripherals
- ◆ MP3 Players

#### Mechanical Characteristics

- ◆ Package: DFN1006
- ◆ Flammability Rating: UL 94V-0
- ◆ High temperature soldering guaranteed: 260  $^{\circ}\text{C}$ /10s
- ◆ Marking: MOC

#### Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter  | Symbol           | Value       | Unit               |
|--|------------------|-------------|--------------------|
| ESD per IEC 61000-4-2 (Air)                            | V <sub>ESD</sub> | $\pm 25$    | kV                 |
| ESD per IEC 61000-4-2 (Contact)                        |                  | $\pm 20$    |                    |
| Peak Pulse Power(tp=8/20us waveform)                   | P <sub>PPP</sub> | 150         | W                  |
| Operating Temperature Range                            | T <sub>J</sub>   | -55 to +125 | $^{\circ}\text{C}$ |
| Storage Temperature Range                              | T <sub>STG</sub> | -55 to +150 | $^{\circ}\text{C}$ |
| Lead Solder Temperature – Maximum (10 Second Duration) | T <sub>L</sub>   | 260         | $^{\circ}\text{C}$ |

The above data are for reference only.



# ESD12010C

## Low Capacitance TVS/ESD Protection Diodes

### Electrical Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise specified)

| Symbol    | Param                     | Test Condition                              | Min  | Typ | Max  | Units         |
|-----------|---------------------------|---|------|-----|------|---------------|
| $V_{RWM}$ | Reverse Working Voltage   |   |      |     | 12.0 | V             |
| $V_{BR}$  | Reverse Breakdown Voltage | $I_T = 1\text{mA}$                          | 13.3 |     |      | V             |
| $I_R$     | Reverse Leakage Current   | $V_{RWM} = 12\text{V}$                      |      |     | 0.2  | $\mu\text{A}$ |
| $V_C$     | Clamping Voltage          | $I_{PP} = 1\text{A}, t_p = 8/20\mu\text{s}$ |      |     | 19   | V             |
|           |                           | $I_{PP} = 5\text{A}, t_p = 8/20\mu\text{s}$ |      |     | 26   | V             |
| $C_J$     | Junction Capacitance      | $V_R = 0\text{V}, f = 1\text{MHz}$          |      | 13  | 15   | pF            |

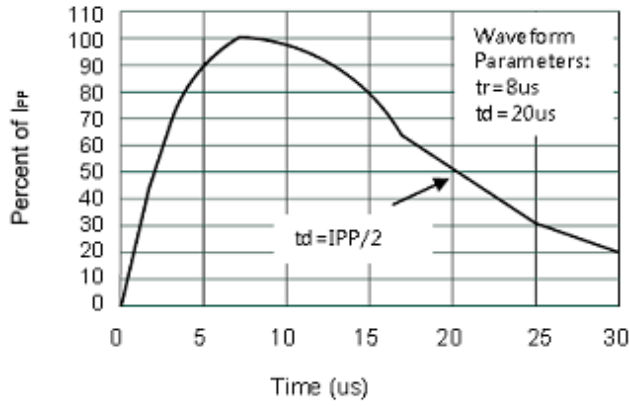
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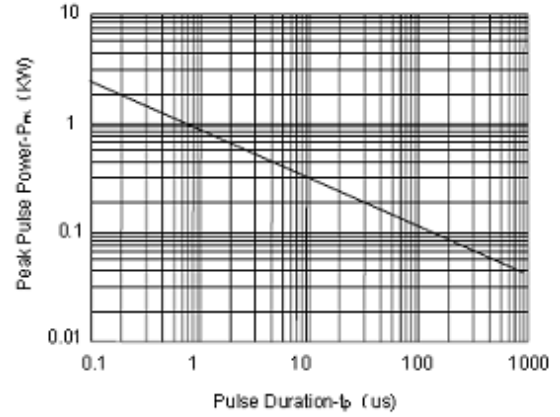
# ESD12010C

## Low Capacitance TVS/ESD Protection Diodes

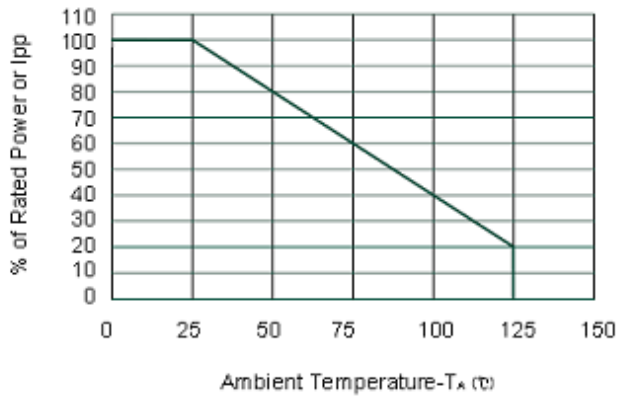
### ELECTRICAL CHARACTERISTICS CURVE



Pulse Waveform



Non-Repetitive Peak Pulse Power vs. Pulse Time

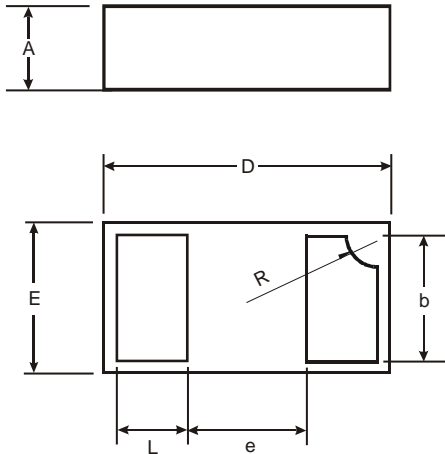


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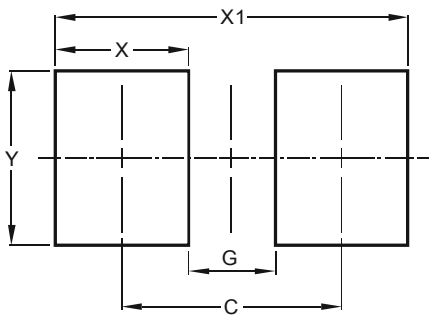
### Outline Drawing

#### DFN1006 Package Outline Dimensions



| DFN1006              |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A                    | 0.45 | 0.55 | 0.50 |
| b                    | 0.45 | 0.55 | 0.50 |
| D                    | 0.95 | 1.05 | 1.00 |
| E                    | 0.55 | 0.65 | 0.60 |
| e                    | -    | -    | 0.40 |
| L                    | 0.20 | 0.30 | 0.25 |
| R                    | 0.07 | 0.17 | 0.12 |
| All Dimensions in mm |      |      |      |

### Suggested Pad Layout



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 0.90          |
| G          | 0.40          |
| X          | 0.50          |
| X1         | 1.10          |
| Y          | 0.50          |

Note:

1. Controlling dimension: in/millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.

### PACKAGE SPECIFICATIONS

| Package | Reel Size | Reel DIA. (mm) | Q'TY/Reel (pcs) | Box Size (mm) | QTY/Box (pcs) | Carton Size (mm) | Q'TY/Carton (pcs) |
|---------|-----------|----------------|-----------------|---------------|---------------|------------------|-------------------|
| DFN1006 | 7'        | 178            | 10,000          | 210×210×205   | 100,000       | 445×445×230      | 400,000           |

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