

Extreme Low Capacitance ESD Protection Device

DESCRIPTION

ESD05F6D is an Extreme low- capacitance ESD Protection Device designed to provide electrostatic discharge (ESD) protection for super high-speed data interfaces with typical capacitance of 0.1pF,

ESD05F6D 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), IEC 61000-4-5 (Surge) 2A.

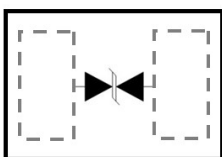
ESD05F6D uses ultra-small DFN0603 package.

Each ESD05F6D device can protect one super high-speed data line. It offers system designers flexibility to protect single data line where space is a premium concern. The combined features of extremely low capacitance, ultra-small size and high ESD robustness make ESD05F6D ideal for super high-speed interface and RF antenna applications.

ORDERING INFORMATION

- ✧ Device: ESD05F6D
- ✧ Package: DFN0603
- ✧ Marking: 5B
- ✧ Material: Halogen free and RoHS compliant
- ✧ Packing: Tape & Reel
- ✧ Packing Code: -T
- ✧ Quantity per reel: 10,000pcs per 7" reel

PIN CONFIGURATION



FEATURES

- ✧ Transient protection for high-speed data line
 - IEC 61000-4-2 (ESD) $\pm 8\text{kV}$ (Contact)
 - IEC 61000-4-2 (ESD) $\pm 15\text{kV}$ (Air)
 - IEC 61000-4-5 (Surge) 2A (8/20 μs)
- Cable Discharge Event (CDE)
- ✧ Package optimized for high-speed lines
- ✧ Ultra-small package(0.6mm \times 0.3mm \times 0.3mm)
- ✧ Protects one data, control line
- ✧ Extreme low capacitance: 0.1pF (Typical)
- ✧ Low leakage current
- ✧ Low clamping voltage

MACHANICAL DATA

- ✧ DFN0603 package
- ✧ Flammability Rating: UL 94V-0
- ✧ Packaging: Tape and Reel
- ✧ High temperature soldering guaranteed:
260 $^{\circ}\text{C}$ /10s

APPLICATIONS

- ✧ Super high-speed interface
- ✧ RF antenna

PACKAGE OUTLINE



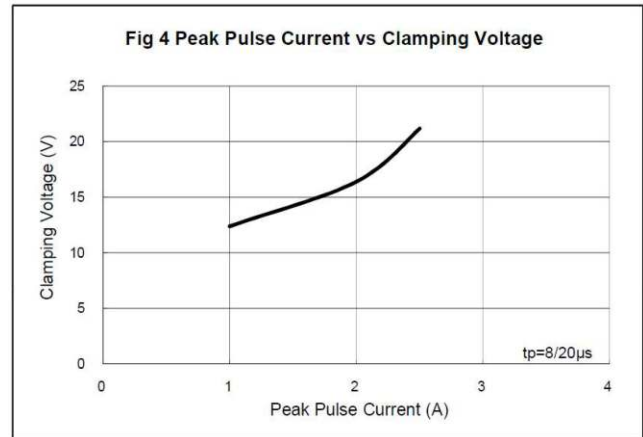
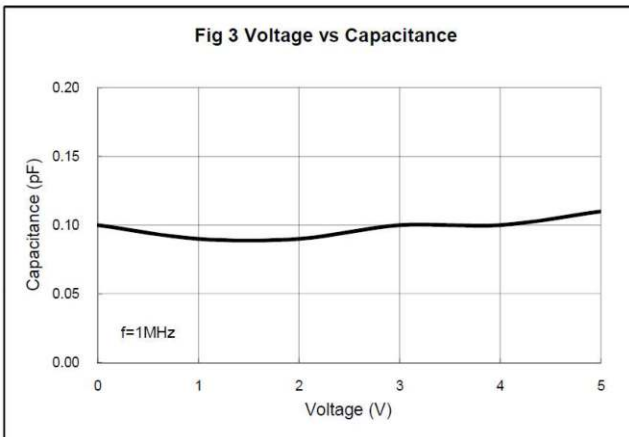
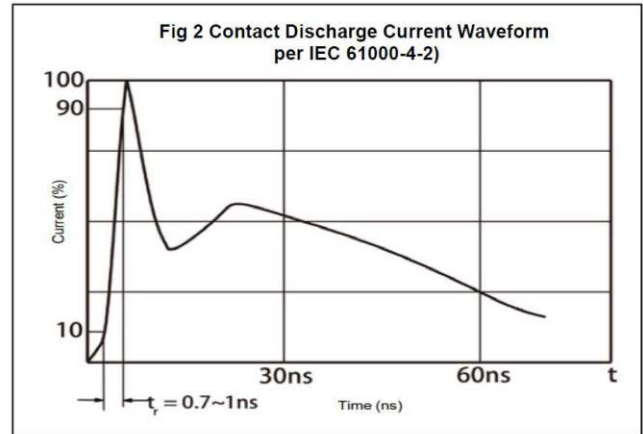
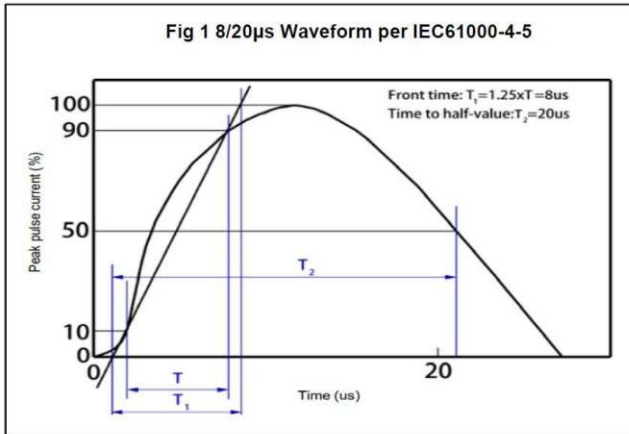
ABSOLUTE MAXIMUM RATING

| Symbol | Parameter | Value | Units |
|-----------|--|---------------------|--------------|
| V_{ESD} | ESD per IEC 61000-4-2 (Contact) ESD per IEC 61000-4-2 (Air) | ± 8 ± 15 | kV |
| P_{PP} | Peak Pulse Power (8/20 μ s) | 36 | W |
| T_{OPT} | Operating Temperature | -55~125 | $^{\circ}$ C |
| T_{STG} | Storage Temperature | -55~150 | $^{\circ}$ C |

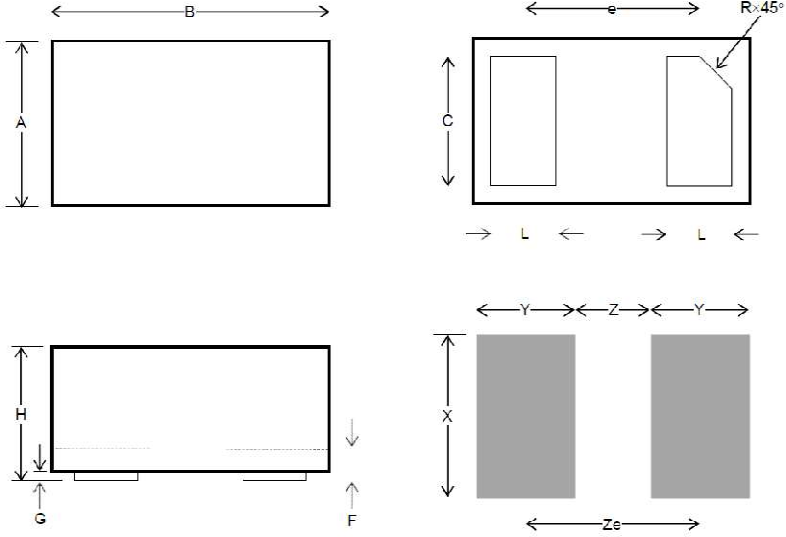
ELECTRICAL CHARACTERISTICS ($T_{amb}=25^{\circ}$ C)

| Symbol | Parameter | Test Condition | Min | Typ | Max | Units |
|-----------|---------------------------|---|-----|-----|-----|-------|
| V_{RWM} | Reverse Working Voltage | | | | 5.5 | V |
| V_{BR} | Reverse Breakdown Voltage | $I_T = 1\text{mA}$ | 6.0 | | | V |
| I_R | Reverse Leakage Current | $V_{RWM} = 5.5\text{V}$ | | | 100 | nA |
| V_C | Clamping Voltage | $I_{PP} = 1\text{A}, t_p = 8/20\mu\text{s}$ | | | 15 | V |
| | | $I_{PP} = 2\text{A}, t_p = 8/20\mu\text{s}$ | | | 18 | V |
| C_J | Junction Capacitance | $V_R = 0\text{V}, f = 1\text{MHz}$ | | 0.1 | 0.2 | pF |

RATING AND CHARACTERISTICS CURVES (ESD05F6D)



DFN0603 PACKAGE OUTLINE DIMENSIONS



| DFN0603 | | | |
|---------|-------------|------|------|
| SYMBOL | Millimeters | | |
| | MIN | NOM | MAX |
| A | 0.29 | 0.32 | 0.34 |
| B | 0.58 | 0.62 | 0.65 |
| C | 0.2 | 0.25 | 0.3 |
| G | - | 0.02 | 0.05 |
| H | 0.28 | 0.3 | 0.34 |
| L | 0.14 | 0.19 | 0.24 |
| e | 0.34 | 0.35 | 0.37 |
| R | - | 0.05 | 0.1 |
| X | | 0.27 | |
| Y | | 0.19 | |
| Z | | 0.19 | |
| Ze | | 0.38 | |
| | | | |

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