

DESCRIPTION

ESD0501OC is a low-capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for data, control or power lines. With typical capacitance of 10pF only, ESD0501OC 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 61000-4-4 (electrical fast transient - EFT) (40A, 5/50 ns), very fast charged device model (CDM) ESD and cable discharge event (CDE), etc.

ESD0501OC uses ultra-small DFN1006 package. Each ESD0501OC device can protect one data line. It offers system designers flexibility to protect single data line where space is a premium concern.

ORDERING INFORMATION

- ✧ Device: ESD0501OC
- ✧ Package: DFN1006
- ✧ Marking: FOC
- ✧ Material: RoHS compliant, Halogen free
- ✧ Packing: Tape & Reel
- ✧ Quantity per reel: 10,000pcs

FEATURES

- ✧ Transient protection for high-speed data lines
 - IEC 61000-4-2 (ESD) $\pm 30\text{kV}$ (Contact)
 - $\pm 30\text{kV}$ (Air)
 - IEC 61000-4-4 (EFT) 40A (5/50 ns)
 - Cable Discharge Event (CDE)
- ✧ Package optimized for high-speed lines
- ✧ Ultra-small package (1.0mm $\times$ 0.6mm $\times$ 0.4mm)
- ✧ Protects one data, control or power line
- ✧ Low capacitance
- ✧ Low leakage current
- ✧ Low clamping voltage

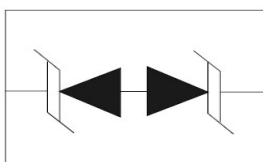
MACHANICAL DATA

- ✧ DFN1006 package
- ✧ Flammability Rating: UL 94V-0
- ✧ High temperature soldering guaranteed:
 - 260 $^{\circ}\text{C}$ /10s
- ✧ Packaging: Tape and Reel
- ✧ Reel size: 7 inch
- ✧ MSL3

APPLICATIONS

- ✧ Portable Electronics
- ✧ Desktops, Servers and Notebooks
- ✧ Cellular Phones
- ✧ MP3 Ports
- ✧ Digital Ports
- ✧ Subscriber Identity Module (SIM) card

CIRCUIT DIAGRAM



PIN CONFIGURATION



ABSOLUTE MAXIMUM RATING

Symbol	Parameter	Value	Units
V_{ESD}	ESD per IEC 61000-4-2 (Contact)	± 30	kV
	ESD per IEC 61000-4-2 (Air)	± 30	
P_{PP}	Peak Pulse Power (8/20 μ s)	150	W
T_{OPT}	Operating Temperature	-40~125	$^{\circ}$ C
T_{STG}	Storage Temperature	-40~150	$^{\circ}$ C

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

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
V_{RWM}	Reverse Working Voltage				5.0	V
V_{BR}	Reverse Breakdown Voltage	$I_T = 1\text{mA}$	5.6		7.8	V
I_R	Reverse Leakage Current	$V_{RWM} = 5\text{V}$			1.0	μ A
V_C	Clamping Voltage	$I_{PP} = 5\text{A}$, $t_p = 8/20\mu\text{s}$			11.6	V
V_C	Clamping Voltage	$I_{PPmax} = 9.4\text{A}$, $t_p = 8/20\mu\text{s}$			16.0	V
C_J	Junction Capacitance	$V_R = 0\text{V}$, $f = 1\text{MHz}$		10	15	pF

ELECTRICAL CHARACTERISTICS CURVE

Fig 1 8/20 μ s Waveform per IEC61000-4-5

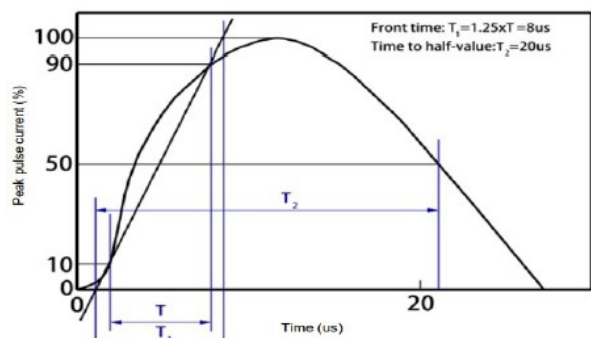


Fig 2 Contact Discharge Current Waveform per IEC 61000-4-2)

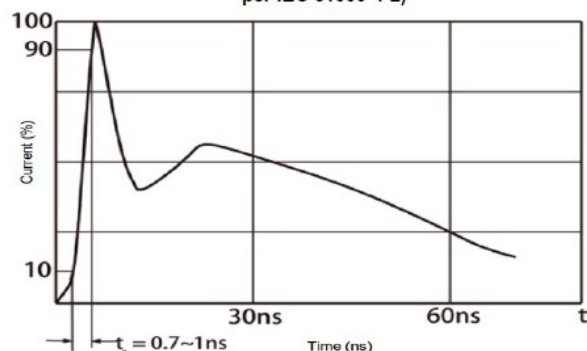


Fig 3 Power Derating Curve

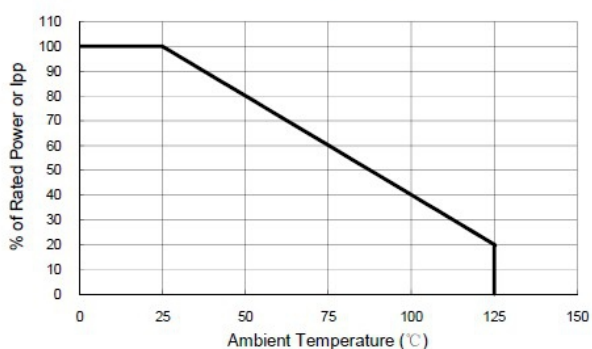


Fig 4 Voltage vs Capacitance

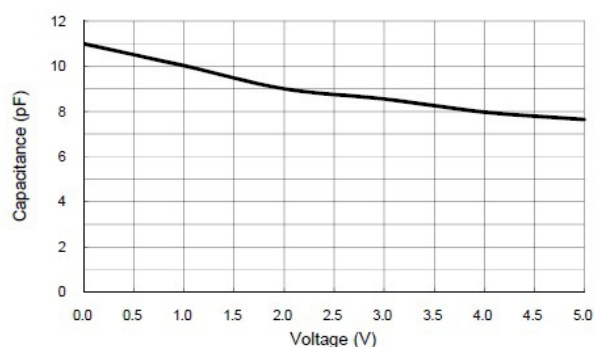


Fig 5 Voltage Sweeping

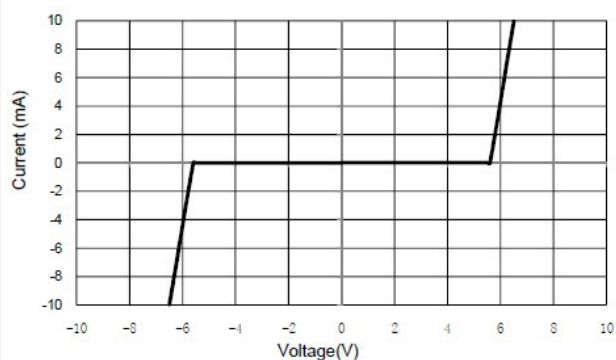
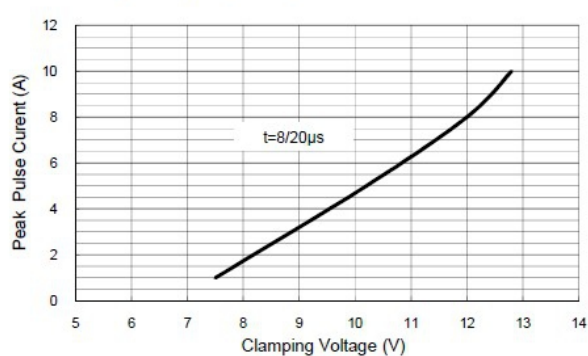
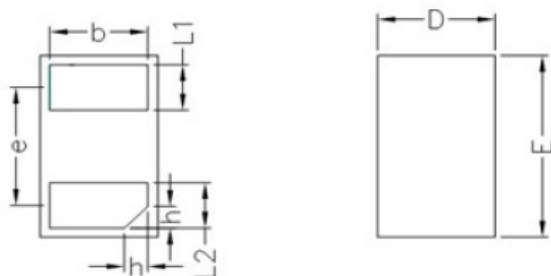


Fig 6 Clamping Voltage vs Peak Pulse Current

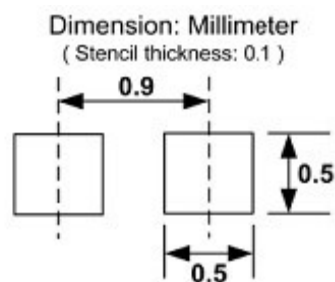


DFN1006 PACKAGE OUTLINE DIMENSIONS



Unit: mm

	MIN	NOM	MAX
D	0.55	0.60	0.65
E	0.95	1.00	1.05
L1	0.20	0.25	0.30
L2	0.20	0.25	0.30
b	0.45	0.50	0.55
e	0.65BSC		
A	0.45	0.50	0.55
h	0.07	0.12	0.17



Soldering Footprint