

DFN1006 Plastic-Encapsulate ESD Protection Diodes

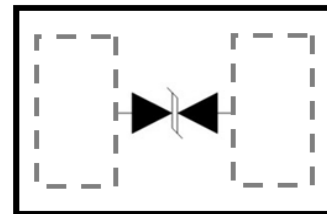
DESCRIPTION

ESD2401QC 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 17pF only, ESD2401QC 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. ESD2401QC uses ultra-small DFN1006 package. Each ESD2401QC 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 : 200W (8/20 μs)
- ◆ IEC61000-4-2 (ESD) $\pm 15\text{kV}$ (air), $\pm 8\text{kV}$ (contact)
- ◆ IEC61000-4-4 (EFT) 40A (5/50ns)
- ◆ IEC61000-4-5 (Lighting) 3A (8/20 μs)
- ◆ Protects one directional I/O line
- ◆ Low clamping voltage
- ◆ Working voltages : 24V
- ◆ Low Capacitance
- ◆ Low leakage current

Pin Configuration



Circuit Diagram



Applications

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

Mechanical Characteristics

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

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

Parameter	Symbol	Value	Unit
ESD per IEC 61000-4-2 (Air)	V _{ESD}	± 30	kV
ESD per IEC 61000-4-2 (Contact)		± 20	
Peak Pulse Power(tp=8/20us waveform)	P _{PP}	200	W
Operating Temperature	T _{OPT}	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	T _{STG}	-55 to +150	$^{\circ}\text{C}$
Lead Solder Temperature – Maximum (10 Second Duration)	T _L	260(10 sec.)	$^{\circ}\text{C}$

The above data are for reference only.



ESD2401QC

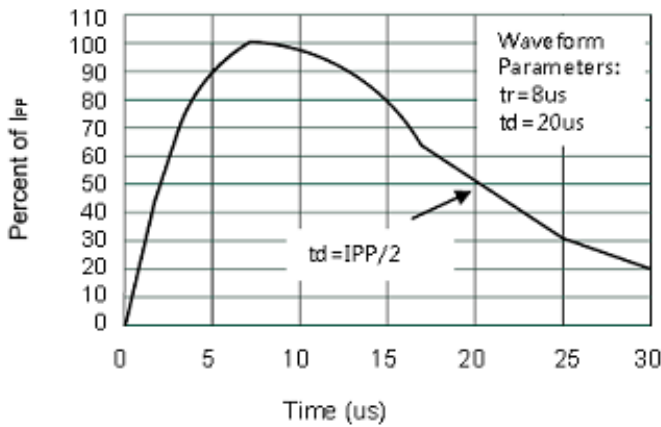
Low Capacitance TVS/ESD Protection Diodes

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

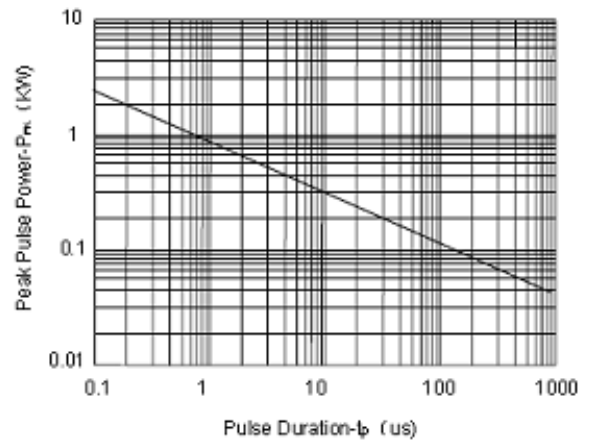
Symbol	Param	Test Condition	Min	Typ	Max	Units
V_{RWM}	Reverse Working Voltage				24	V
V_{BR}	Reverse Breakdown Voltage	$I_T = 1\text{mA}$	26		32	V
I_R	Reverse Leakage Current	$V_{RWM} = 24\text{V}$			1.0	μA
V_C	Clamping Voltage	$I_{PP} = 1\text{A}, t_p = 8/20\mu\text{s}$			36	V
		$I_{PP} = 3\text{A}, t_p = 8/20\mu\text{s}$			50	V
C_J	Junction Capacitance	$V_R = 0\text{V}, f = 1\text{MHz}$		13	17	pF

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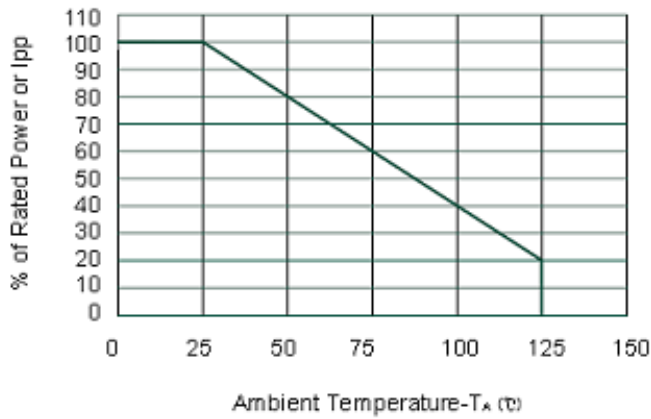
ELECTRICAL CHARACTERISTICS CURVE



Pulse Waveform



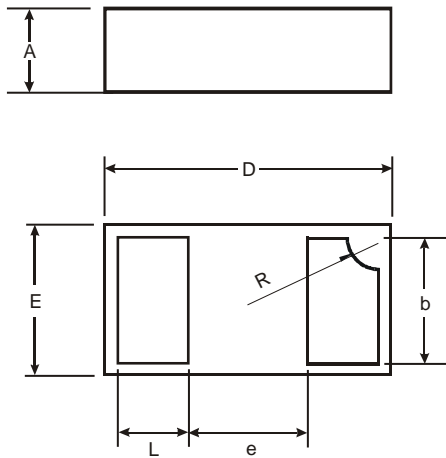
Non-Repetitive Peak Pulse Power vs. Pulse Time



The curve above is for reference only.

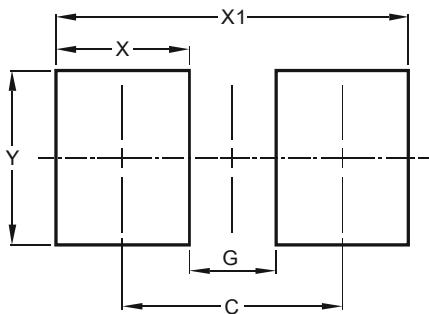
Outlitne Drawing

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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