

# Ultra-Low Capacitance TVS/ESD Protection

## SE05N7L12GA

### Features

- ◆ Protects two data, control or power line
- ◆ Low capacitance: 0.25 pF Typical (I/O-I/O)
- ◆ Low leakage current: 0.1 $\mu$ A @  $V_{RWM}$  (Typical)
- ◆ Low clamping voltage

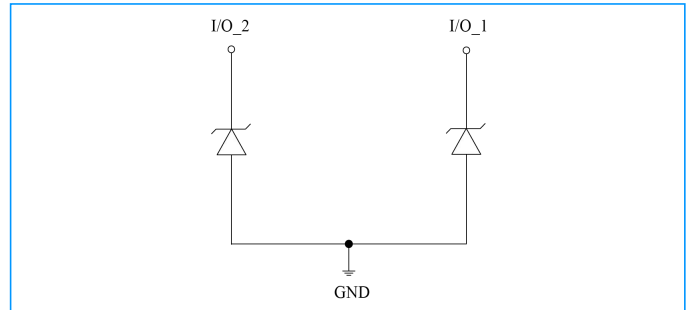
### Applications

- ◆ Desktops, Servers and Notebooks
- ◆ Cellular Phones
- ◆ USB2.0 Power and Data Line Protection
- ◆ Digital Visual Interfaces (DVI)

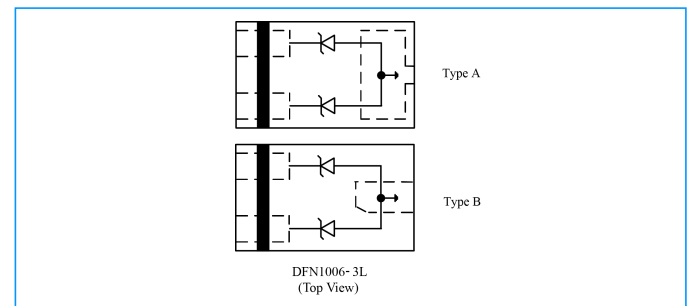
### Mechanical Characteristics

- ◆ DFN1006-3L package
- ◆ Flammability Rating: UL 94V-0
- ◆ Marking: Part number
- ◆ Quantity Per Reel: 10,000pcs
- ◆ Reel size: 7 inch

### Circuit Diagram



### Pin Configuration

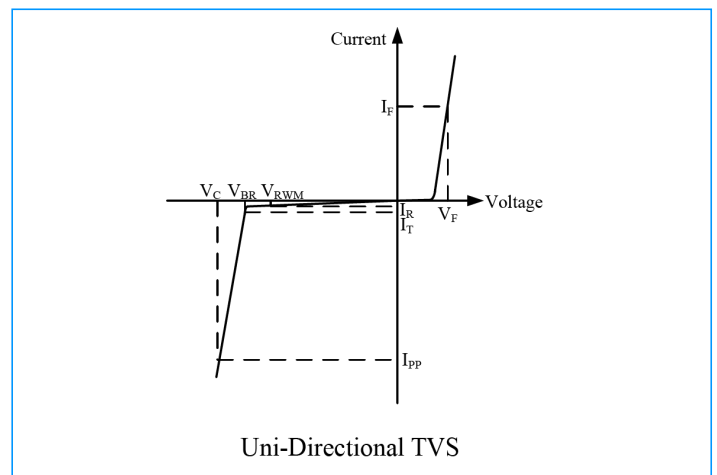


### Absolute Maximum Rating

Symbol	Parameter	Value	Units
$V_{ESD}$	ESD per IEC 61000-4-2(Air)	$\pm 25$	kV
	ESD per IEC 61000-4-2 (Contact)	$\pm 17$	
$T_{OPT}$	Operating Temperature	-55/+125	$^{\circ}$ C
$T_{STG}$	Storage Temperature	-55/+150	$^{\circ}$ C

### Electrical Parameters (T=25 $^{\circ}$ C)

Symbol	Parameter
$V_{RWM}$	Nominal Reverse Working Voltage
$I_R$	Reverse Leakage Current @ $V_{RWM}$
$V_{BR}$	Reverse Breakdown Voltage @ $I_T$
$I_T$	Test Current for Reverse Breakdown
$V_C$	Clamping Voltage @ $I_{PP}$
$I_{PP}$	Maximum Peak Pulse Current
$C_J$	Parasitic Capacitance
$V_R$	Reverse Voltage
f	Small Signal Frequency



# Ultra-Low Capacitance TVS/ESD Protection

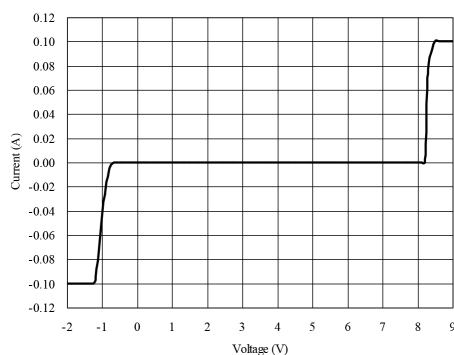
## SE05N7L12GA

### Electrical Characteristics

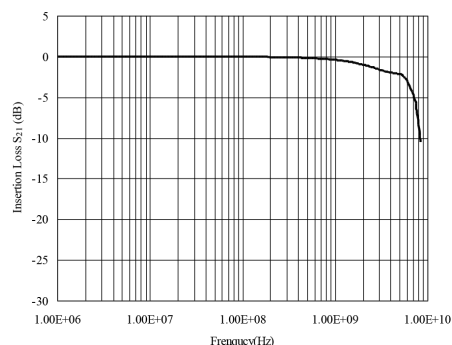
Symbol	Test Condition	Minimum	Typical	Maximum	Units
$V_{RWM}$	—	—	—	5.0	V
$I_R$	$V_{RWM} = 5V, T = 25^\circ C$ Between I/O and GND	—	0.1	1.0	$\mu A$
$V_{BR}$	$I_T = 1mA$ Between I/O and GND	6.0	8.0	10.0	V
$V_C$	$I_{PP} = 2A, t_p = 8/20\mu s$ Between I/O and GND	—	—	12	V
$C_J$	$V_R = 0V, f = 1MHz$ Between I/O and GND	—	0.8	1.2	pF
$C_J$	$V_R = 0V, f = 1MHz$ Between I/O and I/O	—	0.25	0.5	pF

### Typical Characteristics

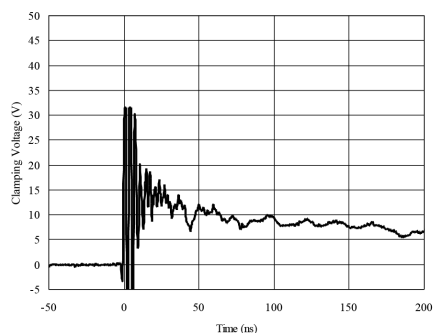
Voltage Sweeping of I/O to I/O



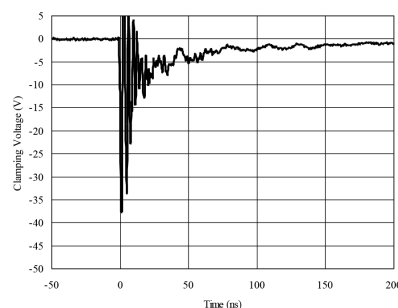
Insertion Loss S21 of I/O to I/O



ESD Clamping of I/O to GND  
(+8kV Contact per IEC 61000-4-2)



ESD Clamping of I/O to GND  
(-8kV Contact per IEC 61000-4-2)

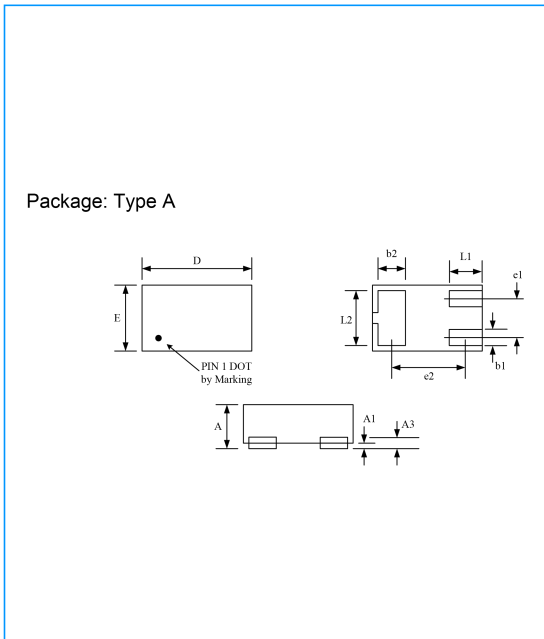


## Ultra-Low Capacitance TVS/ESD Protection

### SE05N7L12GA

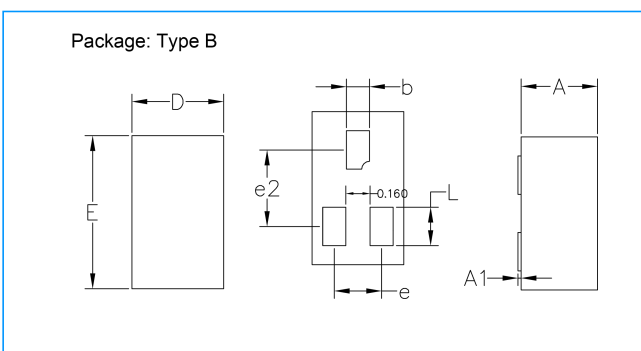
#### Package Outline

- ◆ DFN1006-3L package
- ◆ 3 leads, very small package



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.400	0.550	0.016	0.022
A1	0.000	0.050	0.000	0.002
A3	0.125 REF		0.005 REF	
D	0.950	1.050	0.037	0.041
E	0.550	0.650	0.022	0.026
b1	0.100	0.200	0.004	0.008
b2	0.200	0.300	0.008	0.012
e1	0.350 BSC		0.014 BSC	
e2	0.675 BSC		0.027 BSC	
L1	0.200	0.400	0.008	0.016
L2	0.400	0.600	0.016	0.024

#### Package Outline

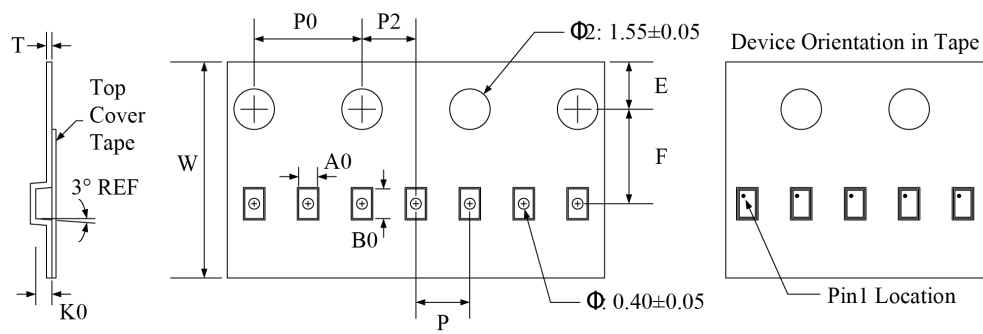


Symbol	Min	Nom	Max
A	0.45	0.50	0.55
A1	0.00	—	0.05
D	0.55	0.60	0.65
E	0.95	1.00	1.05
L	0.20	0.25	0.30
b	0.10	0.15	0.20
e	0.26	0.31	0.36
e2	0.45	0.50	0.55

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#### Tape and Reel Specification



Symbol	W	A0	B0	K0	E	F	P	P0	P2	T
Dimensions (mm)	8.00±0.1	0.7±0.05	1.15±0.05	0.55±0.05	1.75±0.1	3.5±0.05	2.0±0.1	4.0±0.1	2.0±0.05	0.2±0.05