

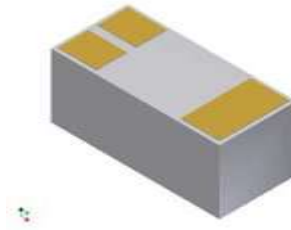
Ultra Low capacitance double Uni-directional ESD protection diodes

The MESD05ULA device is characterized by their ultra low capacitance, low operating and clamping voltages, and fast response time. This makes it ideal for use as board level protection of sensitive semiconductor components. The dual-junction common-anode design allows the user to protect two bidirectional lines.

It has been specifically designed to protect sensitive components which are connected to data and transmission lines from overvoltage caused by ESD(electrostatic discharge), CDE (Cable Discharge Events),and EFT (electrical fast transients).

Features

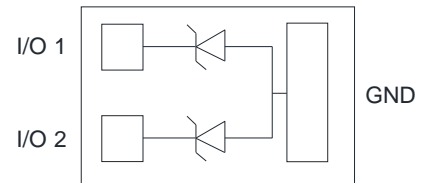
- Ultra small package(DFN1006) for use in portable electronics
- ESD protection of two lines
- Ultra Low leakage current
- Ultra Low capacitance: $C_j=0.45\text{pF}$ typ
- Response Time is < 1 ns
- Working voltages :5.5V
- Solid-state silicon avalanche technology
- Device Meets MSL 1 Requirements
- ROHS compliant



DFN1006-3L

Main applications

- USB1.1/2.0/3.0/3.1 Data lines
- HDMI 2.0
- Industrial Controls
- Computers and peripherals
- Portable instrumentation
- Notebook Computers
- DVI
- Projection TV
- Audio and video equipment
- Subscriber Identity Module (SIM) card protection



Protection solution to meet

- IEC61000-4-2 (ESD): $\pm 20\text{kV}$ (air), $\pm 20\text{kV}$ (contact)
- IEC61000-4-4 (EFT): 50A (5/50ns)
- IEC61000-4-5 (Lightning): 7A 8/20 μs

Ordering Information

Device	Qty per Reel	Reel Size	Marking
MESD05ULA	10000	7 Inch	L.



Maximum ratings (Tamb=25°C Unless Otherwise Specified)

Parameter	Symbol	Value	Unit
ESD Rating per IEC61000-4-2:	Contact	20	KV
	Air	20	
Lead Soldering Temperature	TL	260 (10 sec.)	°C
Operating Temperature Range	TJ	-55 ~ 150	°C
Storage Temperature Range	TSTG	-55 ~ 150	°C

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

*Other voltages may be available upon request.

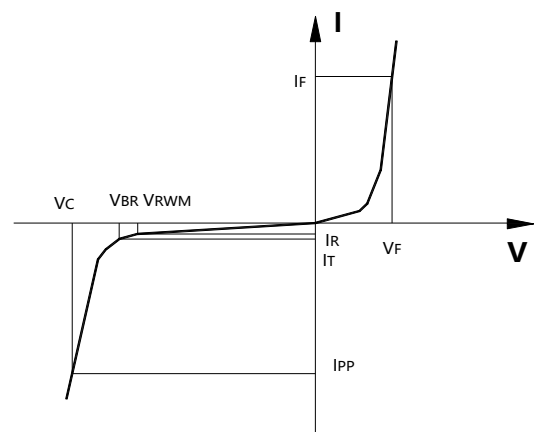
1. Non-repetitive current pulse, per Figure 1.

Electrical characteristics (Tamb=25°C Unless Otherwise Specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
V _{RWM}	Reverse Working Voltage	any I/O pin to Ground			5.5	V
V _{BR}	Reverse Breakdown Voltage	I _T =0.1mA	6.0			V
I _{RM}	Reverse Leakage Current	V _{RWM} =5.5V			0.1	uA
V _F	Forward Voltage	I _T = 15mA Pin3 to Pin1、Pin2		0.9	1.2	V
V _C	Clamping Voltage	I _{PP} =2A, t _p =8/20μs;		3.4	6.0	V
		I _{PP} =7A, t _p =8/20μs;		4.0	6.5	
V _{TLP}	Clamping Voltage	I _{PP} = 2A ⁽¹⁾ , TLP		2.3	4.5	V
		I _{PP} = 16A ⁽¹⁾ , TLP		5.0	6.5	
C _J	Junction Capacitance	V _R = 0V, f = 1MHz Any I/O pin to Ground		0.45	0.65	pF

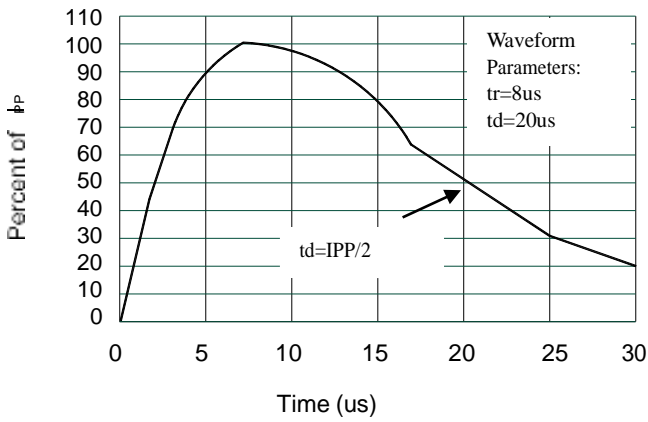
Notes:(1)Measurements performed using a 100ns Transmission Line Pulse(TLP) system, Fig 6

Symbol	Parameter
V _{RWM}	Working Peak Reverse Voltage
V _{BR}	Breakdown Voltage @ I _T
V _C	Clamping Voltage @ I _{PP}
I _T	Test Current
I _{RM}	Leakage current at V _{RWM}
I _{PP}	Peak pulse current
C _O	Off-state Capacitance
C _J	Junction Capacitance

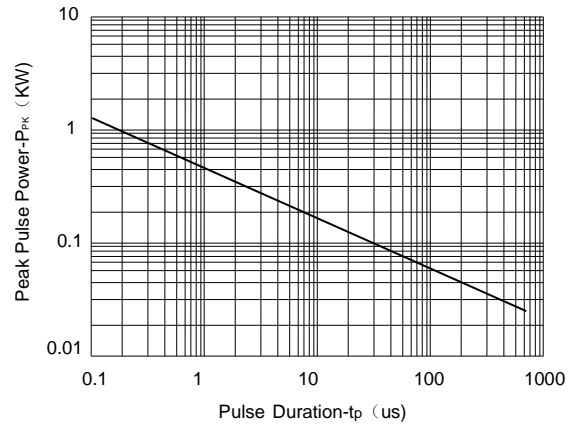


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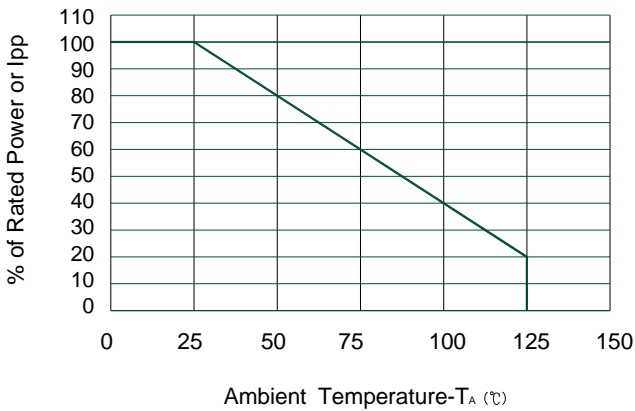
Typical electrical characterist applications



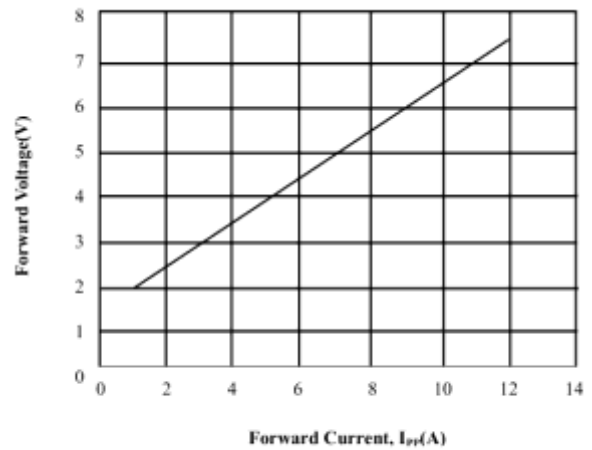
Pulse Waveform



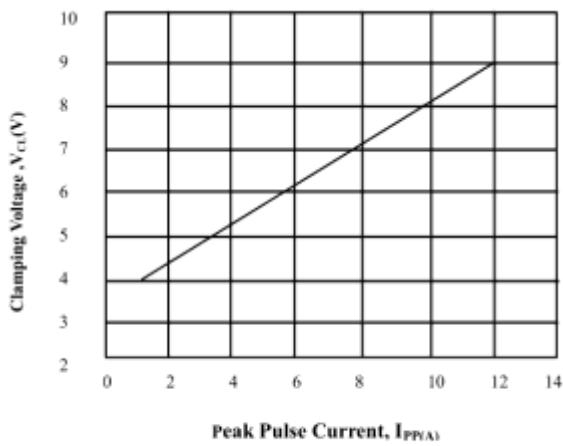
Non-Repetitive Peak Pulse Power vs. Pulse Time



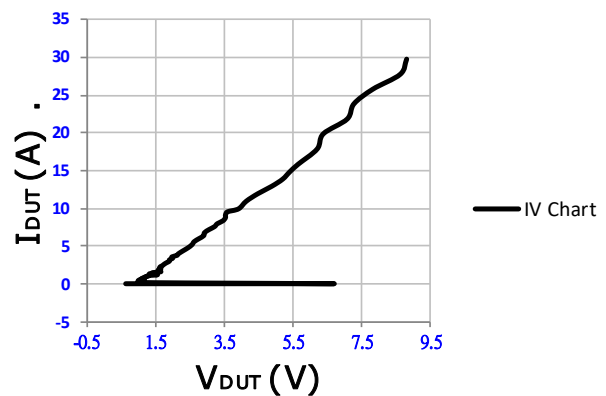
Power Derating Curve



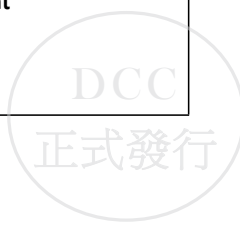
Forward Voltage vs. Forward Peak Pulse Current
 ($t_{period} = 100ns, t_r = 1ns$)

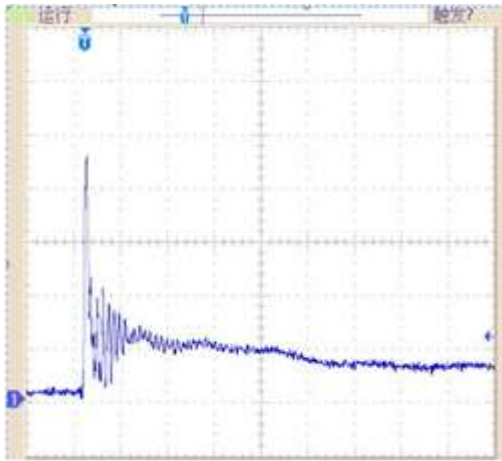


Clamping Voltage vs. Peak Pulse Current
 ($t_{period} = 100ns, t_r = 1ns$)

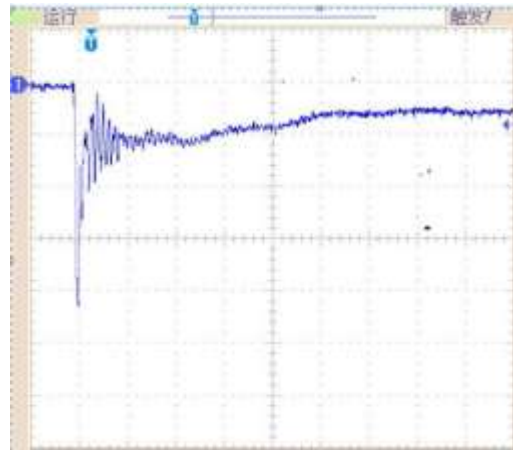


Transmission Line Pulsing (TLP) Measurement





Clamping Voltage
+8KV IEC61000-4-2 Contact



Clamping Voltage
-8KV IEC61000-4-2 Contact

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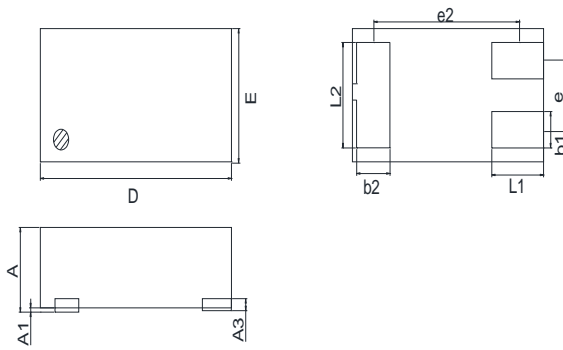
Package information

DFN1006-3L

Mechanical Data

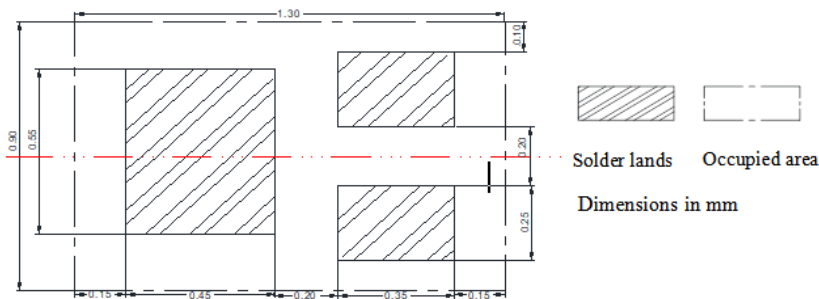
Case: DFN1006-3L

Case Material: Molded Plastic. UL Flammability

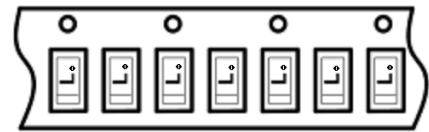


Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	0.40	0.55	0.016	0.022
A1	0.01	0.10	0.0004	0.004
A3	0.125REF		0.005REF	
D	0.95	1.05	0.037	0.041
E	0.55	0.65	0.022	0.026
b1	0.10	0.20	0.004	0.008
b2	0.20	0.30	0.008	0.012
L1	0.20	0.40	0.008	0.016
L2	0.40	0.60	0.016	0.024
e1	0.30	0.40	0.012	0.016
e2	0.675BSC		0.027BSC	

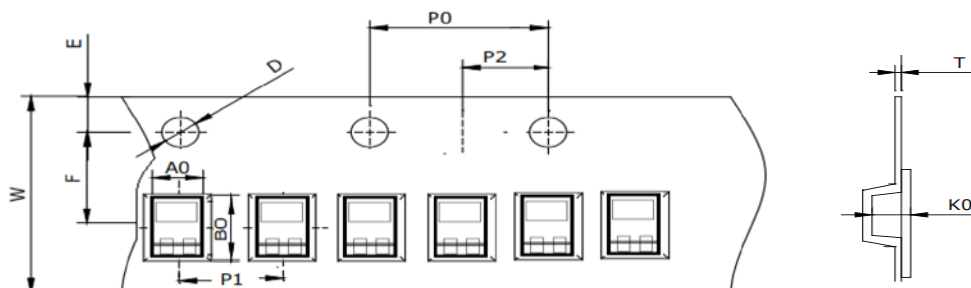
Recommended Pad outline



Device Orientation in Tape



DFN1006-3L Reel Dim



PACKAGE	W	E	F	P0	D	P2	P1	T	A0	B0	K0
DFN1006-3L	8mm ±0.1	1.75mm ±0.1	3.5mm ±0.05	4mm ±0.1	1.5mm ±0.1	2mm ±0.1	2mm ±0.1	0.23mm ±0.02	0.67mm ±0.05	1.2mm ±0.05	0.55mm ±0.05