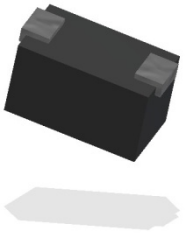
Low-Capacitance Bidirectional Micro Packaged TVS Diodes for ESD Protection

The CLAMP0551P1 is designed with Weipan Punch-Through process TVS technology to protect voltage sensitive components from ESD. Excellent clamping capability, low leakage, and fast response time provide best in class protection on designs that are exposed to ESD. Because of its small size, it is suited for use in cellular phones, MP3 players, digital cameras and many other portable applications where board space comes at a premium.

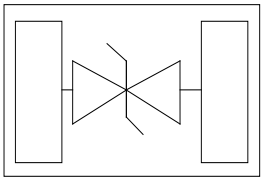
This series has been specifically designed to protect sensitive components which are connected to data and transmission lines from overvoltage caused by ESD (electrostatic discharge), and EFT (electrical fast transients).

Features

- Peak Power Dissipation − 60 W (8 x 20 us Waveform)
- Stand-off Voltage: 5.0 V
- Low capacitance for high-speed interfaces
- Replacement for MLV (0402)
- Protects I/O、VCC Port
- Low Clamping Voltage
- Low Leakage Current：5nA
- Low Capacitance
- Response Time is < 1 ns
- Meets MSL 1 Requirements
- ROHS compliant
- WeiPan technology



DFN1006



Main applications

- Serial and Parallel Ports
- Notebooks, Desktops, Servers
- Projection TV
- Cellular handsets and accessories
- Portable instrumentation
- Peripherals

Protection solution to meet

- IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- IEC61000-4-5 (Lightning) 8A (8/20μs)

Ordering Information

Device	Marking	Qty per Reel	Reel Size
CLAMP0551P1	F1	10000pcs	7inch

Maximum ratings (Tamb=25℃ Unless Otherwise Specified)			
Parameter	**Symbol**	**Value**	**Unit**
Peak Pulse Power (tp=8/20μs waveform)	P_{PPP}	90	Watts
Peak pulse current (tp=8/20μs waveform)	I_{PP}	8	A
ESD Rating per IEC61000-4-2： Contact Air		30 30	KV
Lead Soldering Temperature	T_L	260 (10 sec.)	℃
Operating Temperature Range	T_J	-55 ~ 150	℃
Storage Temperature Range	T_{STG}	-55 ~ 150	℃

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.

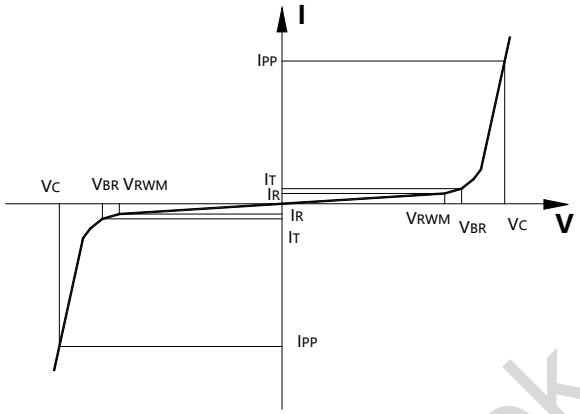
**Other voltages may be available upon request.*

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

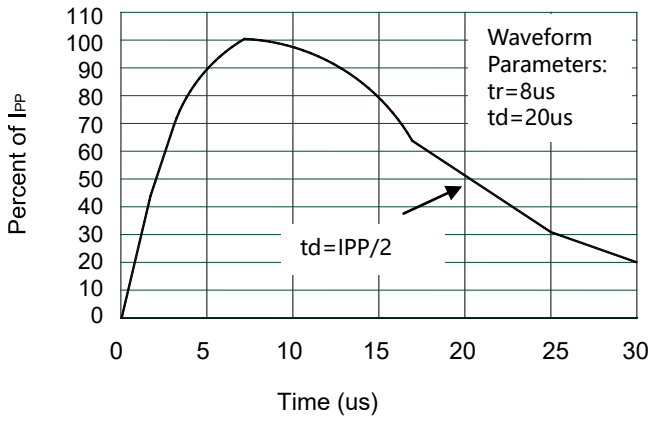
Electrical characteristics (Tamb=25℃ Unless Otherwise Specified)						
Symbol	**Parameter**	**Conditions**	**Min.**	**Typ.**	**Max.**	**Units**
V_{RWM}	Reverse Working Voltage				5	V
V_{BR}	Reverse Breakdown Voltage	IT = 1mA,	5.5	6.4		V
I_R	Reverse Leakage Current	V_{RWM} = 5V,		0.005	0.1	μA
V_C	Clamping Voltage	I_{PP} = 1A, tp =8/20μs,		7	10	V
		I_{PP} = 8A, tp =8/20μs,		8.5	12	V
I_{PP}	Peak Pulse Current	tp =8/20μs			8	A
C_J	Junction Capacitance	V_R = 1.5V, f = 1MHz,		13		pF

Junction capacitance is measured in V_R=0V,F=1MHz

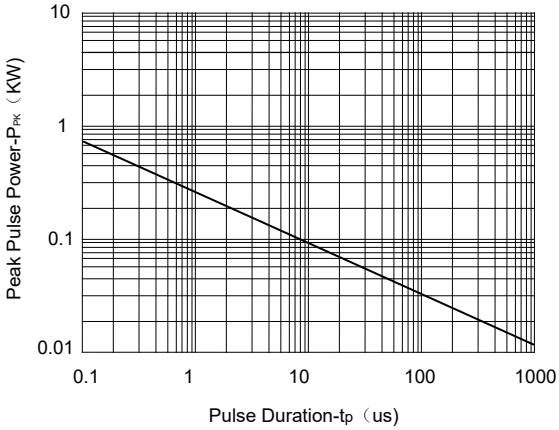
Symbol	Parameter
V_{RWM}	Working Peak Reverse Voltage
V_{BR}	Breakdown Voltage @ I_T
V_C	Clamping Voltage @ I_{PP}
I_T	Test Current
I_{RM}	Leakage current at V_{RWM}
I_{PP}	Peak pulse current
C_O	Off-state Capacitance
C_J	Junction Capacitance



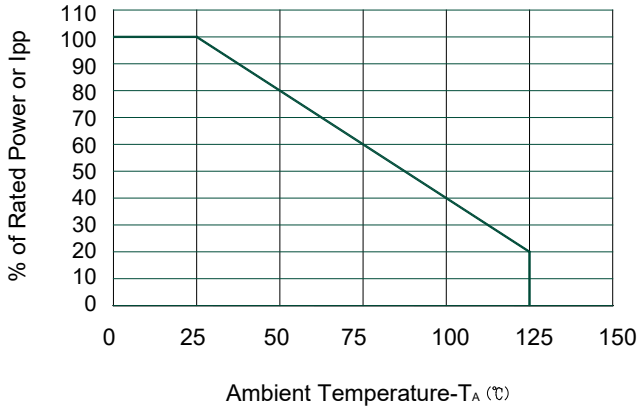
Typical electrical characteristic applications



Pulse Waveform



Non-Repetitive Peak Pulse Power vs. Pulse Time



Power Derating Curve

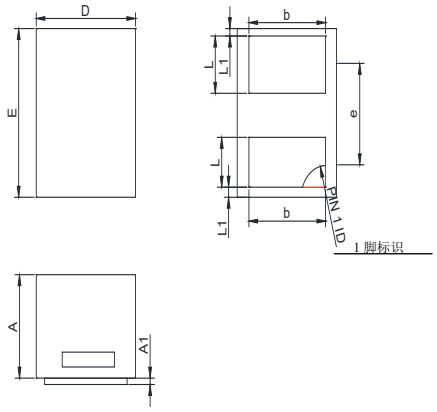
Package Information

DFN1006

Mechanical Data

Case:DFN1006

Case Material: Molded Plastic. UL Flammability



DIM	Millimeters	
	Min	Max
A	0.37	0.55
A1	0.00	0.05
D	0.55	0.65
E	0.95	1.05
b	0.45	0.55
e	0.65TYP	
L	0.2	0.32
L1	0.05REF	

Recommended Pad outline