MST1241N
1-Line Bi-directional Low Capacitance TVS Diode

Description

The MST1241N4 is a 12V bi-directional low capacitance TVS diode, utilizing leading monolithic silicon technology to provide fast response time, very low capacitance and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive data and power line. The MST1241N4 complies with the IEC 61000-4-2 (ESD) standard with ±30kV air and ±30kV contact dis-charge. It is assembled into an ultra-small 1.0x0.6x0.5mm lead-free DFN package. The small size and high ESD surge protection make MST1241N4 an ideal choice to pro-tect cell phone, digital cameras, audio players, and many other portable applications.

Features

- Ultra small package: 1.0x0.6x0.5mm
- Low capacitance: 9pF typical
- Protects one data or power line
- Ultra low leakage: nA level
- Low operating voltage: 12V
- Low clamping voltage
- 2-pin leadless package
- Complies with following standards:
  - – IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±30kV
    - Contact discharge: ±30kV
  - – IEC61000-4-4 (EFT) 40A (5/50ns)
- RoHS Compliant

Mechanical Characteristics

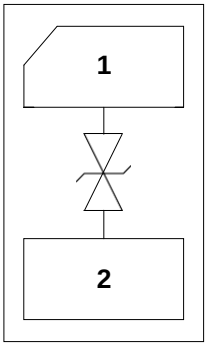
- Package: DFN1006-2
- Case Material: “Green” Molding Compound.
- Terminal Connections: See Diagram Below

Marking Information

Applications

- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- RFID
- FM Antennas
- Peripherals
- Battery, Power Lines
- Keypads, Side Keys, LCD Displays

PIN Identification and Configuration



Circuit and Pin Schematic

Ordering Information

Part Number	Packaging	Reel Size
MST1241N4	10000/Tape & Reel	7 inch

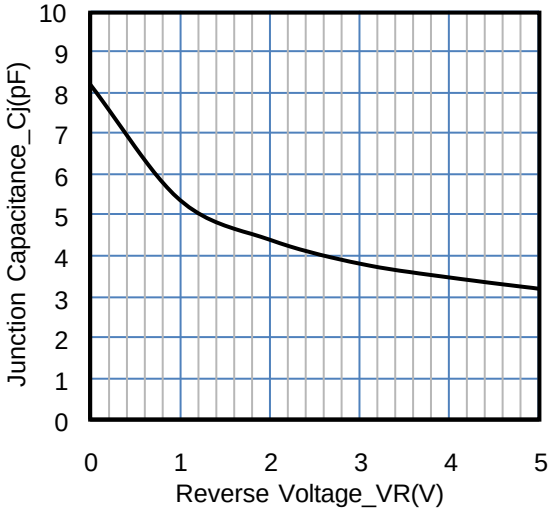
Absolute Maximum Ratings (T_A=25˚C unless otherwisespecified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	160	W
Peak Pulse Current (8/20μs)	Ipp	8	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	±30 ±30	kV
Operating Temperature Range	T_J	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

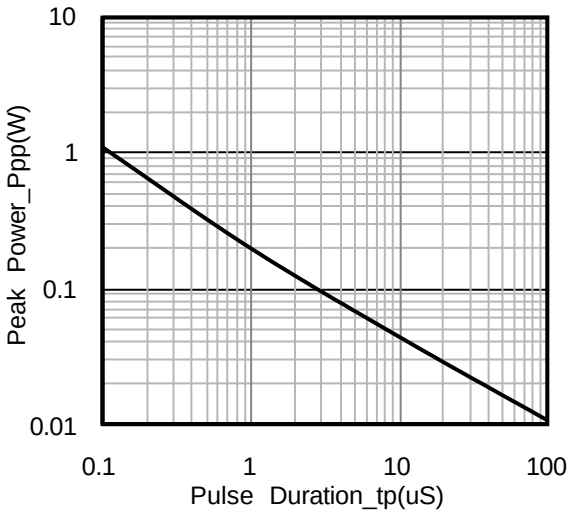
Electrical Characteristics (T_A=25˚C unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			12	V	
Breakdown Voltage	V_{BR}	13			V	I_T = 1mA
Reverse Leakage Current	I_R			0.2	uA	V_{RWM} = 12V
Clamping Voltage	V_C			13	V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			20	V	I_{PP} = 8A (8 x 20μs pulse)
Junction Capacitance	C_J		8	12	pF	VR = 0V, f = 1MHz

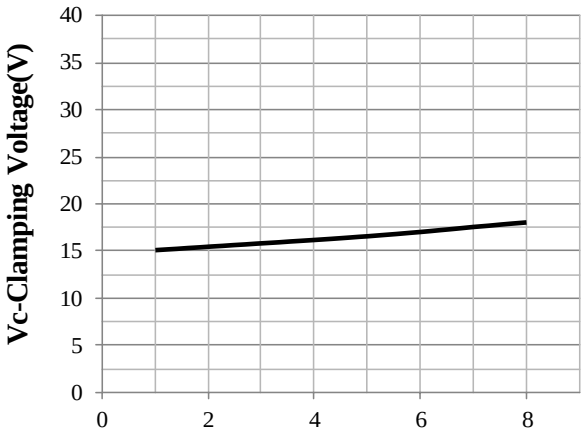
Typical Performance Characteristics (T_A=25˚C unless otherwise specified)



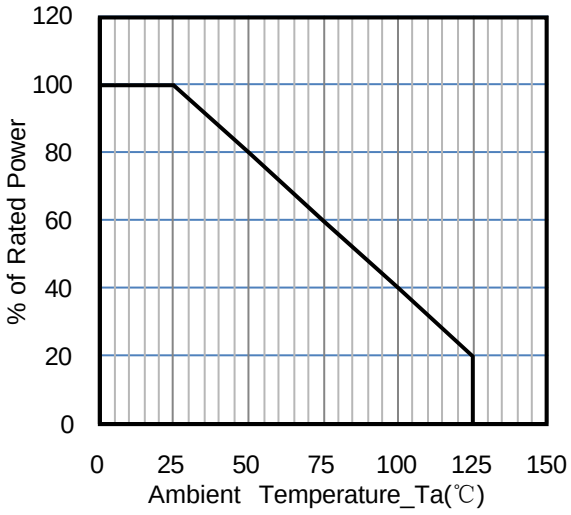
Junction Capacitance vs. Reverse Voltage



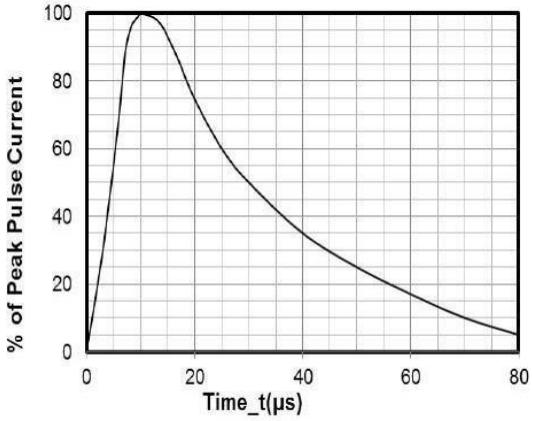
Peak Pulse Power vs. Pulse Time



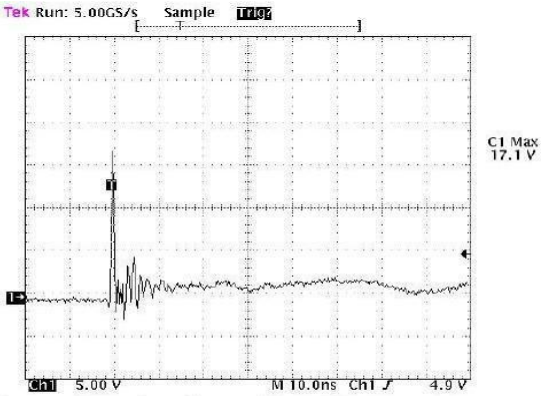
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



8 X 20μs Pulse Waveform

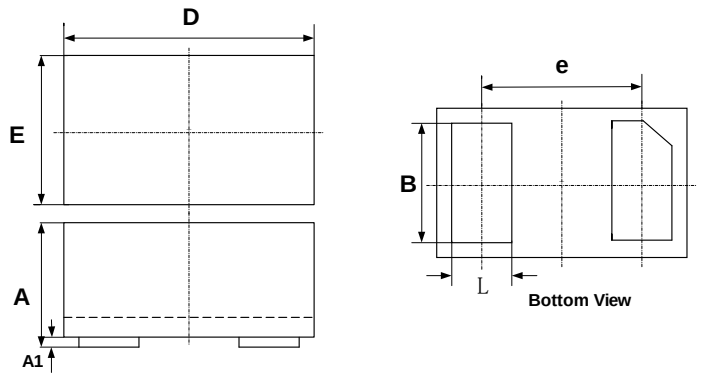


Note: Data is taken with a 10x attenuator

ESD Clamping Voltage

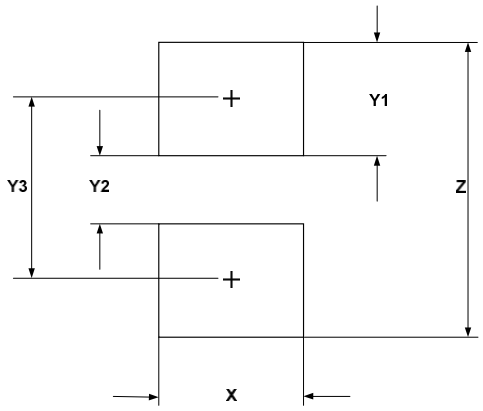
+8 kV Contact per IEC61000-4-2

DFN1006-2 Package Outline Drawing



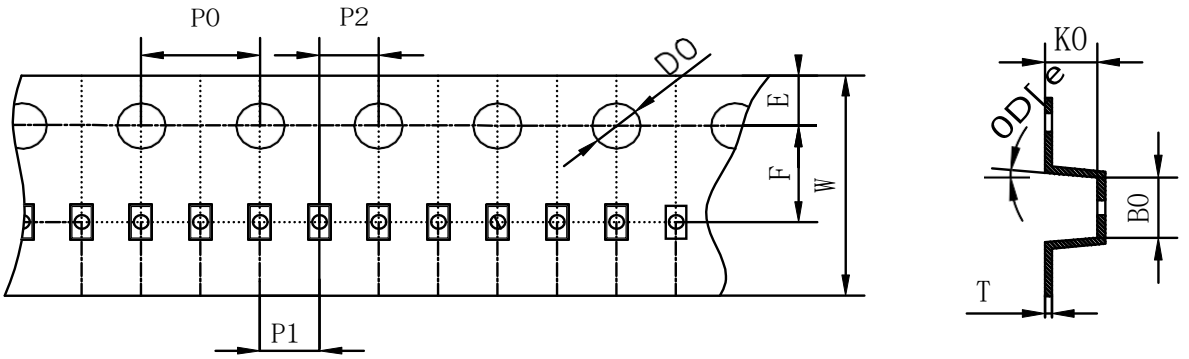
DIMENSIONS		
SYMBOL	MILLIMETER	
	MIN	MAX
A	0.45	0.55
A1	0.00	0.05
B	0.45	0.55
D	0.90	1.10
e	0.65 BSC	
E	0.55	0.65
L	0.20	0.30

Suggested Land Pattern



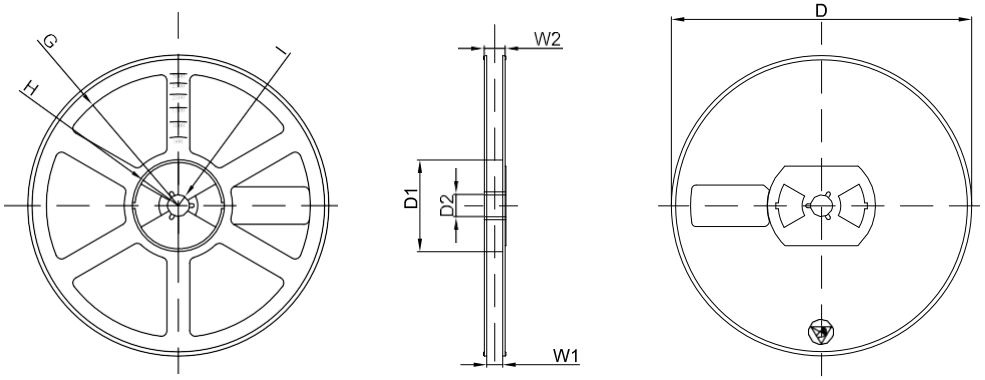
SYM	DIMENSIONS
	MILLIMETERS
X	0.60
Y1	0.50
Y2	0.30
Y3	0.80
Z	1.30

Emboss Carier Tape



Symbol	B0	K0	P0	P1	P2	D0
Spec	1.15±0.10	0.60±0.05	4.00±0.10	2.00±0.05	2.00±0.05	1.50±0.05
Symbol	W	E	F	T		
Spec	8.00±0.20	1.75±0.10	3.50±0.05	0.18±0.05		

Reel



Symbol	D	D1	D2	G	H	I	W1	W2	
Spec	178±2.00	54.4±1.00	13.00±1.00	R78.00	R25.60	R6.50	9.50±1.00	12.30±1.00	