SPE0521
Single-Line ESD Protection Array

DESCRIPTION

The SPE0521 are designed by TVS bi-direction device that is to protect sensitive electronics from damage or latch-up due to ESD. They are designed for use in applications where board space is at a premium. SPE0521 will protect single line, and may be used on line where the signal polarities swing above and below ground.

SPE0521 offer desirable characteristics for board level protection including fast response time, low operating and clamping voltage, and no device degradation.

SPE0521 may be used to meet the immunity requirements of IEC 61000-4-2, level 4. The small SOD-523 package makes them ideal for use in portable electronics such as cell phones, PDA's, notebook computers, and digital cameras.

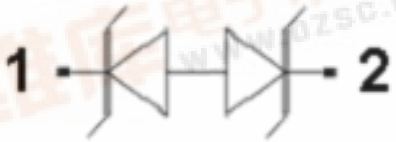
APPLICATIONS

- Cellular Handsets and Accessories
- Cordless Phone
- PDA
- Notebooks and Handhelds
- Portable Instrumentation
- Digital Cameras
- MP3 Player

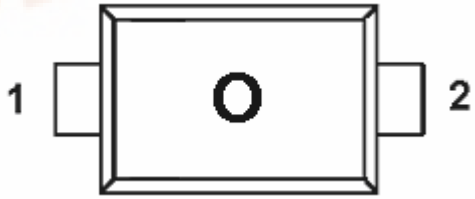
FEATURES

- Transient protection for data lines to
  IEC 61000-4-2 (ESD) ±15kV (air), ±8kV (contact)
  IEC 61000-4-4 (EFT) 40A (5/50ns)
- Protects single I/O lines
- Working voltage: 5V
- Low leakage current
- Low operating and clamping voltages

PIN CONFIGURATION (SOD-523)



PART MARKING



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ORDERING INFORMATION

Part Number	Package	Part Marking
SPE0521D52RG	SOD-523	B

※ SPE0521D52RG : Tape Reel ; Pb – Free

ABSOULTE MAXIMUM RATINGS

(T_A=25℃ Unless otherwise noted)

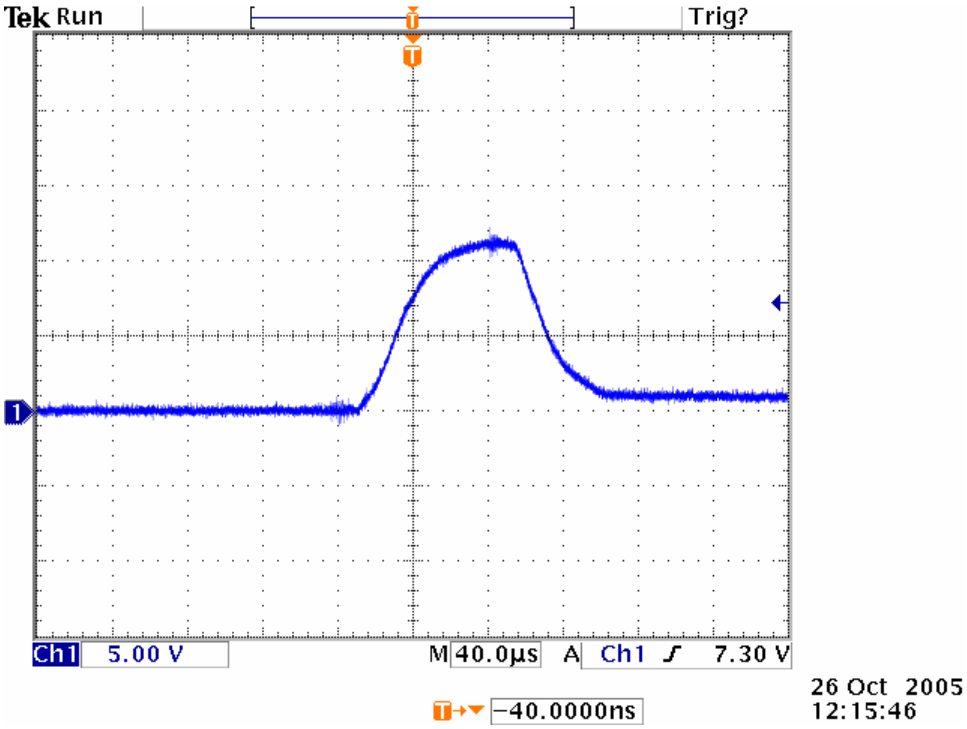
Parameter	Symbol	Typical	Unit
Peak Pulse Power (tp = 8/20 μs)	Ppk	250	W
Maximum Peak Pulse Current (tp = 8/20 μs)	Ipp	7	A
ESD per ICE 61000 – 4 – 2 (Air)	Vpp	±15	KV
ESD per ICE 61000 – 4 – 2 (Contact)	Vpp	±8	KV
Operating Junction Temperature	T_J	-55 ~ 150	℃
Storage Temperature Range	T_{STG}	-55 ~ 150	℃
Lead Soldering Temperature	T_L	260 (10sec)	℃

ELECTRICAL CHARACTERISTICS

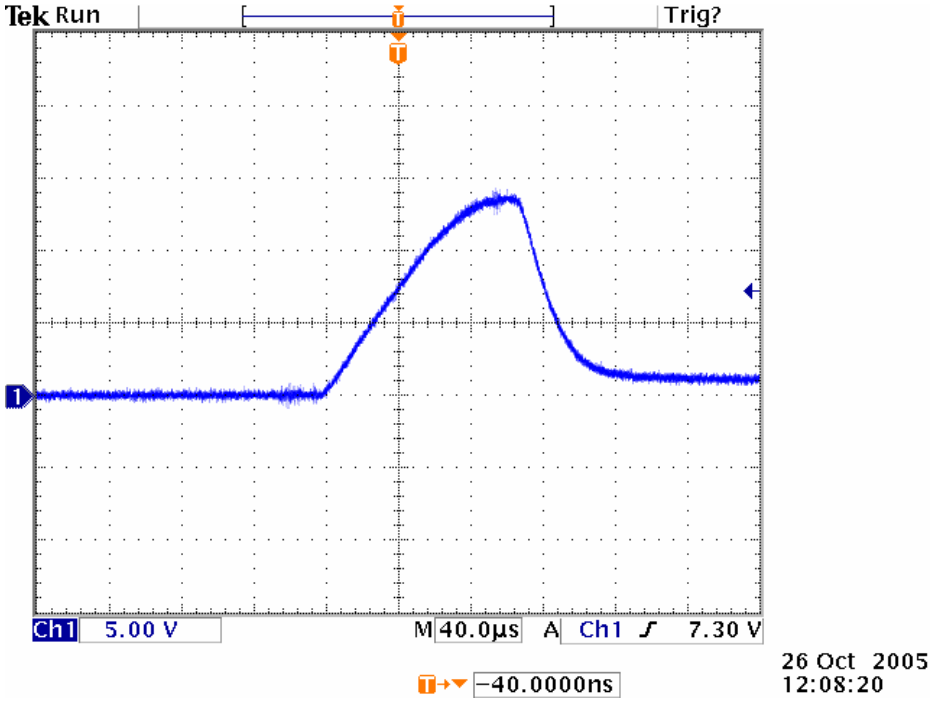
(T_A=25℃ Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Reverse Stand – Off Voltage	V_{RWM}				5	V
Reverse Breakdown Voltage	V_{BR}	It = 1mA	6			V
Reverse Leakage Current	I_R	V_{RWM} = 5V , T=25℃		0.01	1	μA
Reverse Leakage Current	I_R	V_{RWM} = 3V , T=25℃		0.01	0.5	μA
Clamping Voltage	V_C	Ipp = 1A , tp = 8/20 μs			13	V
Clamping Voltage	V_C	Ipp = 7A , tp = 8/20 μs			15	V
Junction Capacitance	Cj	Between I/O Pin and GND V_R = 0V , f = 1MHz		5	10	pF

TYPICAL CHARACTERISTICS



Clamping Voltage (Ipp = 1A , tp = 8/20 µs)



Clamping Voltage (Ipp = 7A , tp = 8/20 µs)

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TYPICAL CHARACTERISTICS

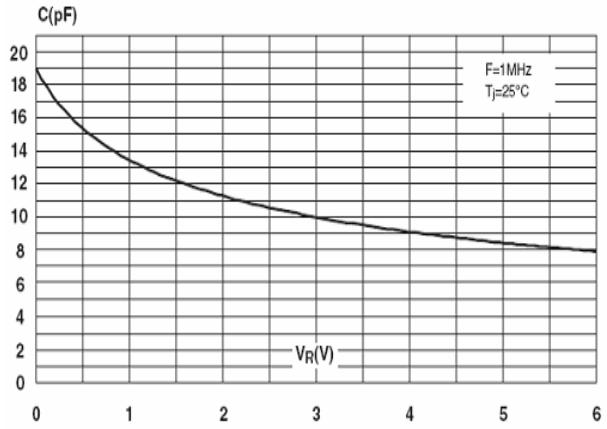


Fig 1 : Junction Capacitance V.S Reverse Voltage Applied

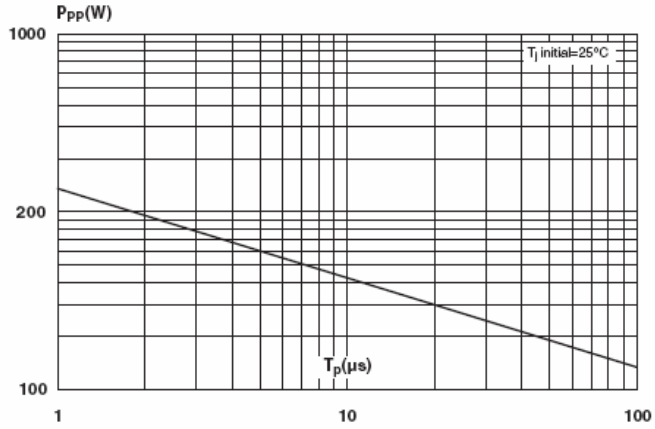


Fig 2 : Peak Plus Power V.S Exponential Plus Duration

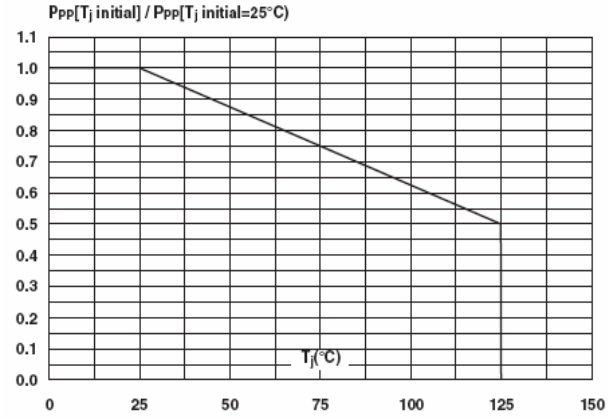


Fig 3 : Relative Variation of Peal Plus Power V.S Initial Junction Temperature

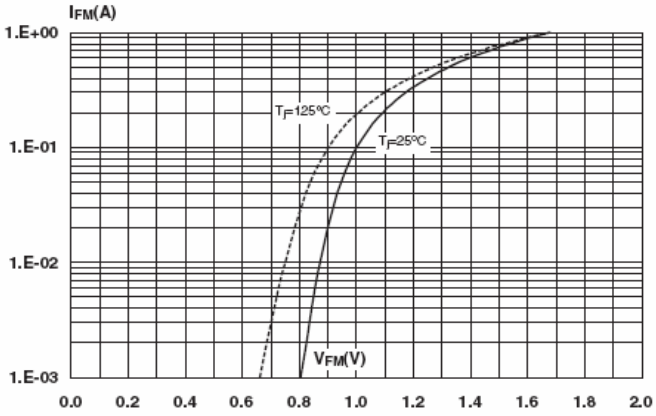
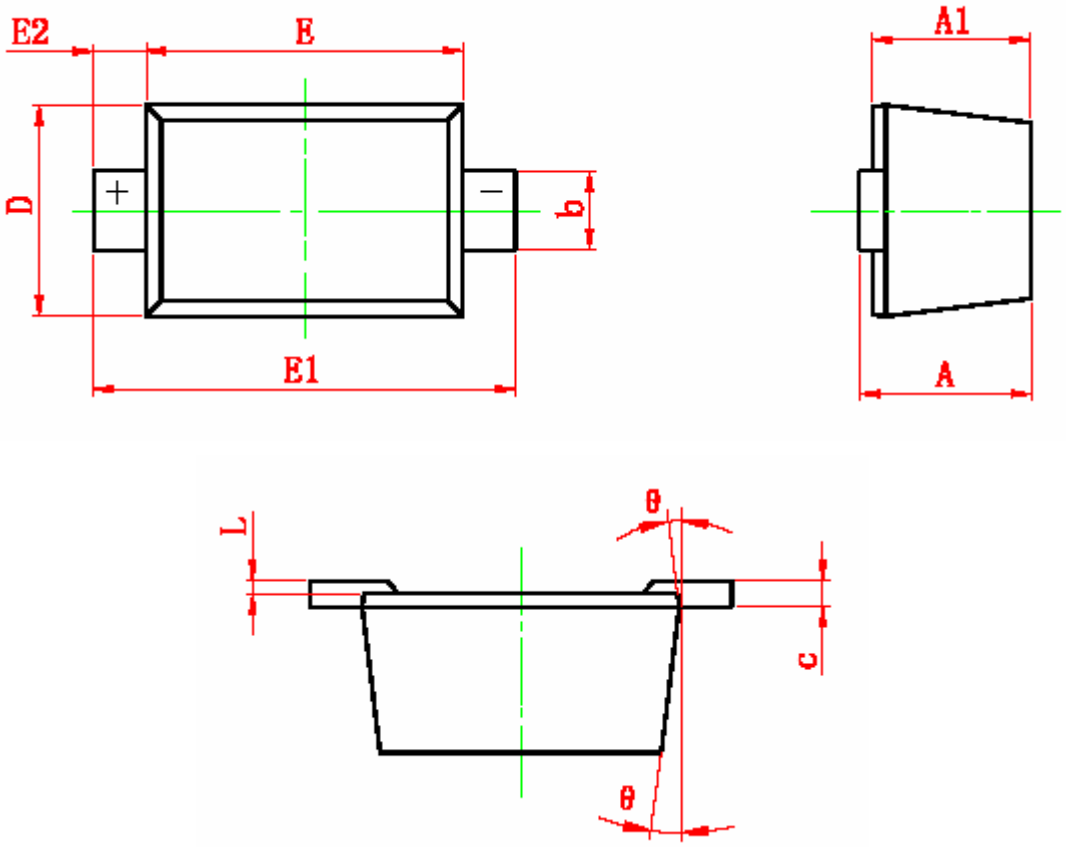


Fig 4 : Forward Voltage Drop V.S Peak Forward Current

SOD-523 PACKAGE OUTLINE



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.510	0.770	0.020	0.031
A1	0.500	0.700	0.020	0.028
b	0.250	0.350	0.010	0.014
c	0.080	0.150	0.003	0.006
D	0.750	0.850	0.030	0.033
E	1.100	1.300	0.043	0.051
E1	1.500	1.700	0.059	0.067
E2	0.200 REF		0.008 REF	
L	0.010	0.070	0.001	0.003
θ	7° REF		7° REF	

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