



SPE0589

Single-Line ESD Protection Array

DESCRIPTION

The SPE0589 is an one direction TVS 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. SPE0589 will protect single line, and may be used on line where the signal polarities swing above and below ground.

SPE0589 offer desirable characteristics for board level protection including fast response time, low operating and clamping voltage, and no device degradation.

SPE0589 may be used to meet the immunity requirements of IEC 61000-4-2, level 4. The small DFN1.0x0.6-2L package makes them ideal for use in portable electronics such as cell phones, PDA's, notebook computers, and digital cameras.

FEATURES

- ◆ Transient protection for data lines to IEC 61000-4-2 (ESD) $\pm 15\text{kV}$ (air), $\pm 8\text{kV}$ (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

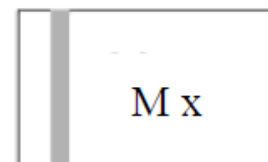
APPLICATIONS

- ◆ Near Field Communications
- ◆ Cordless Phone
- ◆ RF Signal ESD Protection
- ◆ RF Switching, PA and Antenna ESD Protection
- ◆ HDMI 1.2~2.1
- ◆ USB2.0/USB3.0 and Type C

PIN CONFIGURATION (DFN1.0x0.6-2L)



PART MARKING



M: Month Code
X: Device Code



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ORDERING INFORMATION

Part Number	Package	Part Marking
SPE0589DN2RGB	DFN1.0x0.6-2L	Mx

※ SPE0589DN2RGB : Tape Reel ; Pb – Free, Halogen Free

ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit
Peak Pulse Power (tp = 8/20 μs)	Ppk	60	W
Maximum Peak Pulse Current (tp = 8/20 μs)	Ipp	4	A
ESD per IEC 61000 – 4 – 2 (Air)	Vpp	±15	KV
ESD per IEC 61000 – 4 – 2 (Contact)	Vpp	±8	KV
Operating Junction Temperature	TJ	-55 ~ 125	°C
Storage Temperature Range	TSTG	-55 ~ 150	°C
Lead Soldering Temperature	TL	260 (10sec)	°C

ELECTRICAL CHARACTERISTICS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Reverse Stand – Off Voltage	VRWM				5	V
Reverse Breakdown Voltage	VBR	It = 1mA	6			V
Reverse Leakage Current	IR	VRWM = 5V , T=25°C		0.04	0.5	μA
Reverse Leakage Current	IR	VRWM = 3.3V , T=25°C		0.03	0.2	μA
Clamping Voltage	VC	Ipp = 1A , tp = 8/20 μs			11	V
Clamping Voltage, TLP(Note 1)	VC	Ipp = 8A		19		V
Junction Capacitance	Cj	VR = 0V , f = 1MHz		0.5	0.7	pF
Dynamic Resistance	RDYN	TLP Pulse		1.25		Ω

Notes:

1) TLP parameter: Zo = 50Ω, tp = 100ns, tr = 10ns, averaging window from 70ns to 90ns.



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TYPICAL CHARACTERISTICS

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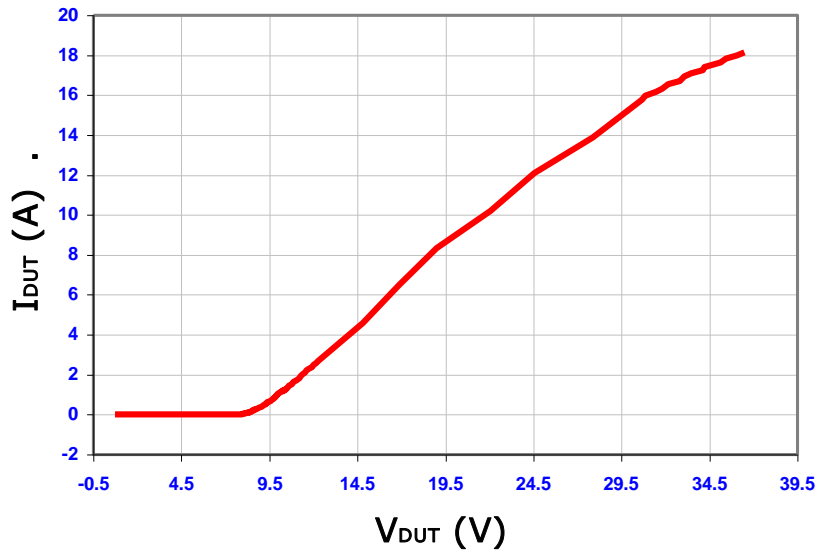


Fig. 1 Typical TLP IV Curve



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SYNC Power Corporation

7F-2, No.3-1, Park Street

NanKang District (NKSP), Taipei, Taiwan, 115, R.O.C

Phone: 886-2-2655-8178

Fax: 886-2-2655-8468

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