



Halogens free devices

Features

- Transient Protection for High-Speed Data Lines-to-GND and Lines-to-Lines.
- Provide Transient Protection for the Protected Lines to
IEC 61000-4-2 (ESD) $\pm 25\text{kV}$ (air), $\pm 15\text{kV}$ (contact)
IEC 61000-4-4 (EFT) 40A (5/50ns)
IEC 61000-4-5 (Lightning) 25A (8/20 μs)
Cable Discharge Event (CDE)
- DFN2525P10E (2.5x2.5mm) Package.
- Specific Pin Out For Easy Board Layout.
- Fast Turn-On and Low Clamping Voltage.
- Low Capacitance (<5pF) for High Speed Interfaces.
- Low Operating Voltage: 3.3V.
- Low Leakage Current
- Solid-State Silicon-Avalanche and Active Circuit Triggering Technology.
- **Green Part**

Applications

- WAN/LAN Device
- 10/100/1000 Ethernet
- Switching Systems
- Computers
- Instruments

Description

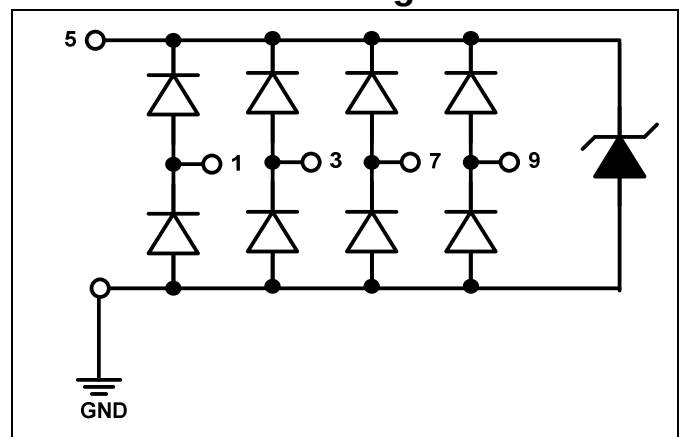
LTVSQC3.3VESGP is a design which includes surge rated diode arrays to protect high speed data interfaces in an electronic systems. The LTVSQC3.3VESGP has been specifically designed to protect sensitive components which are connected to data and transmission lines from over-voltage damage and latch-up caused by Electrostatic Discharging (ESD), Electrical Fast Transients (EFT), Lightning, and Cable Discharge Event (CDE).

LTVSQC3.3VESGP is a unique design which includes

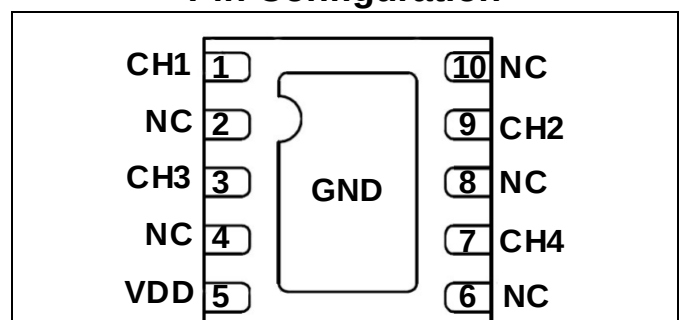
surge rated, low capacitance steering diodes and a unique design of clamping cell which is an equivalent TVS diode in a single package. During transient conditions, the steering diodes direct the transient to either the power line or to the ground line. The internal unique design of clamping cell prevents over-voltage on the power line, protecting any downstream components.

LTVSQC3.3VESGP may be used to meet the ESD immunity requirements of IEC 61000-4-2, Level 4 ($\pm 15\text{kV}$ air, $\pm 8\text{kV}$ contact discharge).

Circuit Diagram



Pin Configuration



DFN2525P10E (2.5x2.5mm) (Top View)

Pin Number	Description
1, 3, 7, 9	Input / Output Lines
2, 4, 6, 8, 10	No Connection
5	VDD
Center Tab	Ground



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LTVSQC3.3VESGP

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Ultra Low Capacitance ESD Protection Array
VOLTAGE 3.3 V

SPECIFICATIONS

ABSOLUTE MAXIMUM RATINGS						
PARAMETER		PARAMETER	RATING	UNITS		
Peak Pulse Current (tp =8/20us)		I _{PP}	25	A		
ESD per IEC 61000-4-2 (Air/Contact)		V _{ESD}	±30	kV		
Operating Temperature		T _{OP}	-55 to +125	°C		
Storage Temperature		T _{STO}	-55 to +150	°C		
ELECTRICAL CHARACTERISTICS						
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Reverse Stand-Off Voltage	V _{RWM}	Pin-5 to GND, T=125 °C.			3.3	V
Reverse Leakage Current	I _{Leak}	V _{RWM} = 3.3V, T=25 °C, Pin-5 to GND.			1	μA
Channel Leakage Current	I _{CH_Leak}	V _{RWM} = 3.3V, T=25 °C, Pin-1, -3, -7, -9 to GND.			1	μA
Reverse Breakdown Voltage	V _{BV}	I _{BV} = 1mA, T=25 °C, Pin-5 to GND.	3.9		8	V
Clamping Voltage	V _{CL}	I _{PP} =5A, tp=8/20us, T=25 °C. (Any I/O Pin to GND)		13	15	V
		I _{PP} =15A, tp=8/20us, T=25 °C. (Any I/O Pin to GND)		16	18	V
		I _{PP} =20A, tp=8/20us, T=25 °C. (Any I/O Pin to GND)		18	20	V
Channel Input Capacitance	C _{IN}	VDD = 3.3V, V _R = 0V, f = 1MHz, T=25 °C. (Any I/O Pin to GND)			5	pF
		VDD = 3.3V, V _R = 2.5zV, f = 1MHz, T=25 °C. (Any I/O Pin to GND)		3.2	4	pF
		VDD = 3.3V, V _R = 0V, f = 1MHz, T=25 °C. (Between I/O Pins)		1.5	2.5	pF

Note 1: I/O pins are pin1, pin3, pin7 and pin9.



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Ultra Low Capacitance ESD Protection Array

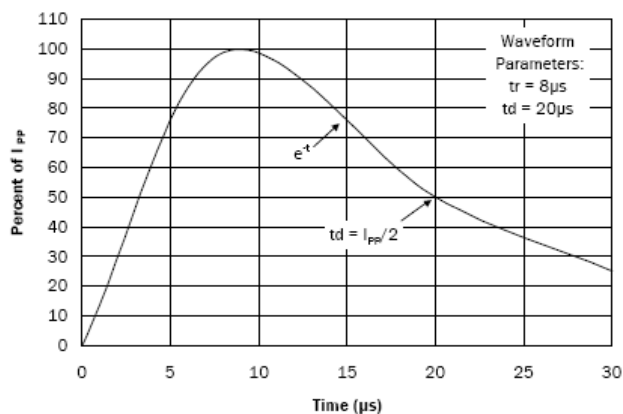
VOLTAGE 3.3 V

LTVSQC3.3VESGP

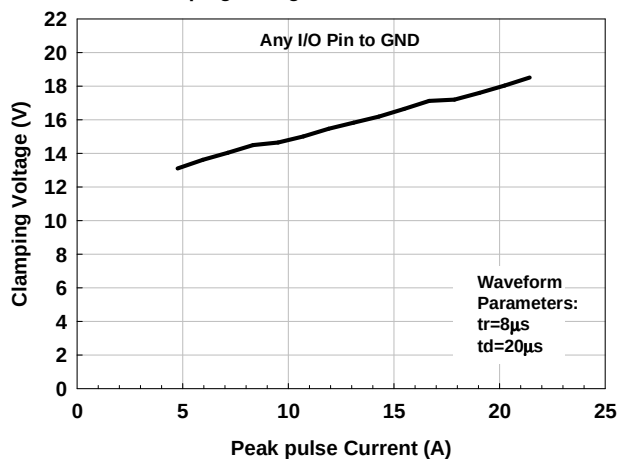
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Typical Characteristics

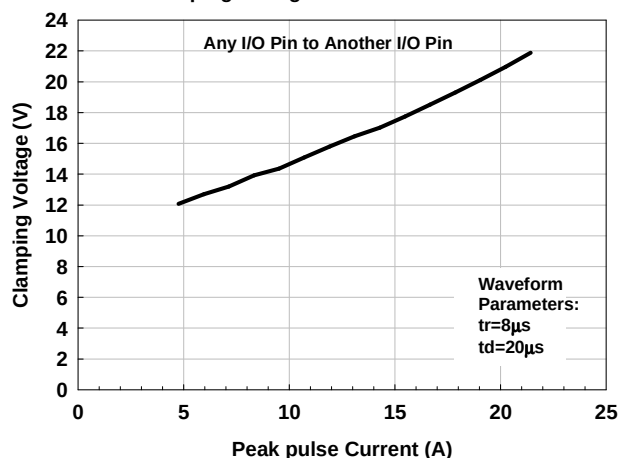
Pulse Waveform



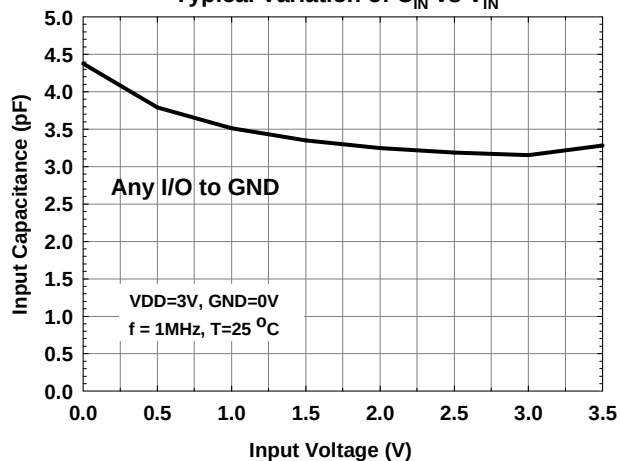
Clamping Voltage vs. Peak Pulse Current



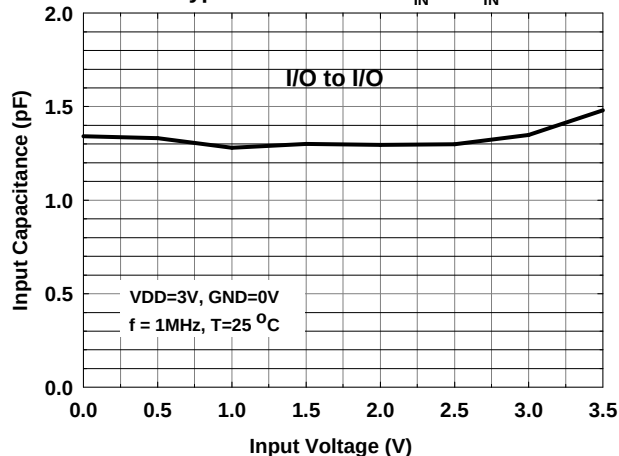
Clamping Voltage vs. Peak Pulse Current



Typical Variation of C_{IN} vs V_{IN}



Typical Variation of C_{IN} vs V_{IN}





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LTVSQC3.3VESGP

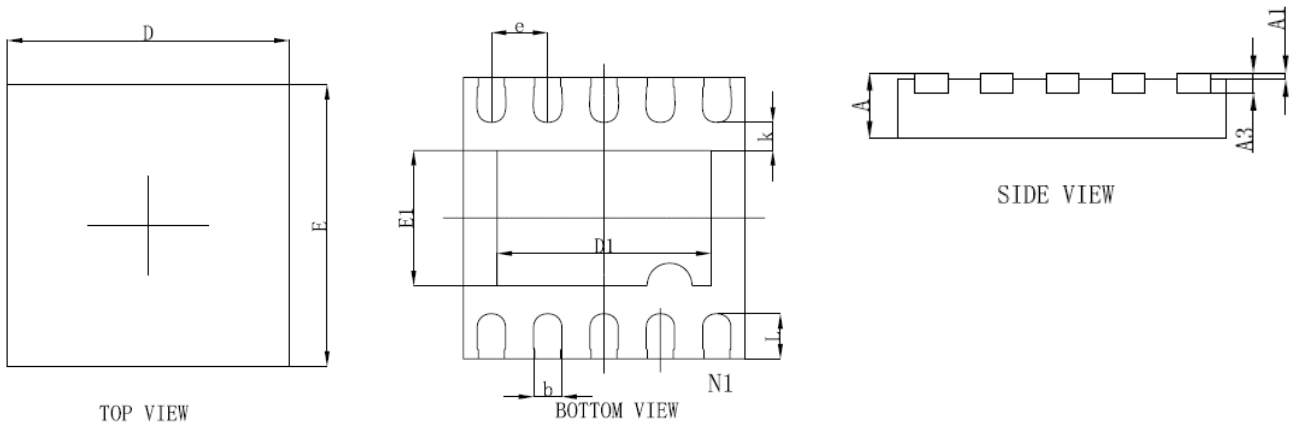
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Ultra Low Capacitance ESD Protection Array
VOLTAGE 3.3 V

Mechanical Details

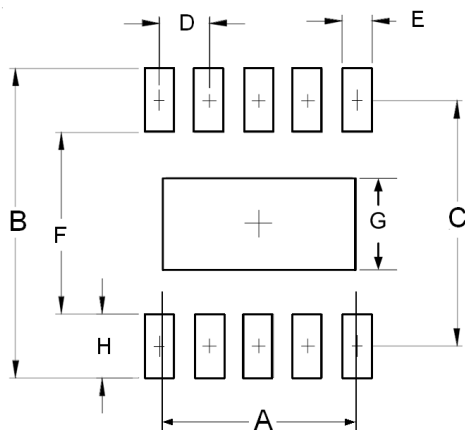
DFN2525P10E (2.5x2.5mm)

PACKAGE DIAGRAMS



Symbol	Millimeters		Inches	
	min	max	min	max
A	0.45	0.60	0.018	0.024
A1	0.00	0.05	0.000	0.002
A3	0.152REF.		0.006 BSC	
D	2.45	2.55	0.096	0.100
E	2.45	2.55	0.096	0.100
D1	1.80	2.00	0.071	0.079
E1	1.10	1.30	0.043	0.051
b	0.20	0.30	0.008	0.012
e	0.5 BSC		0.019 BSC	
L	0.35	0.45	0.014	0.018

Land Layout



DIMENSIONS		
DIM	MILLIMETERS	INCHES
A	1.90	.075
B	3.10	.122
C	2.45	.096
D	0.50	.020
E	0.30	.012
F	1.80	.071
G	0.60	.024
H	0.65	.025



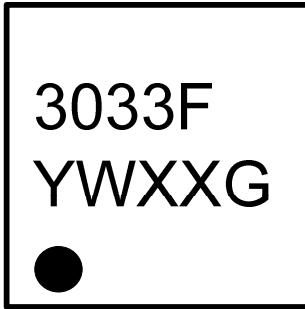
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Ultra Low Capacitance ESD Protection Array
VOLTAGE 3.3 V

LTVSQC3.3VESGP

MARKING CODE



3033F = Device Code
YWXXG = Date Code

Part Number	Marking Code
LTVSQC3.3VESGP (Green Part)	3033F YWXXG