RECTRON SEMICONDUCTOR
TECHNICAL SPECIFICATION

ESD05LDV

Ultra Low Capacitance ESD Protection Diodes Array

DESCRIPTION

ESD05LD provides a typical line to line capacitance of 0.6pF and low insertion loss up to 3GHz providing greater signal integrity making it ideally suited for USB 2.0 applications, such as Digital TVs, DVD players, Computing, set-top boxes and MDDI applications in mobile computing devices.

This device has been specifically designed to protect sensitive components which are connected to high-speed data and transmission lines from overvoltage caused by ESD (electrostatic discharge), CDE (Cable Discharge Events), and EFT (electrical fast transients).

FEATURES

- ✧Protects two I/O lines and one Vcc line
- ✧Low capacitance
- ✧Low leakage current
- ✧No insertion to 3.0 GHz
- ✧5V operating voltage
- ✧Response time < 1ns
- ✧Solid-state silicon avalanche technology
- ✧Device meets MSL 1 requirements
- ✧RoHS compliant
- ✧ P/N suffix V means AEC-Q101 qualified, e.g:ESD05LDV

MACHANICAL DATA

- ✧SOT-143 package
- ✧Flammability Rating: UL 94V-0
- ✧Terminal: Matte tin plated.
- ✧Packaging: Tape and Reel
- ✧High temperature soldering guaranted:260℃/10s
- ✧Reel size: 7 inch

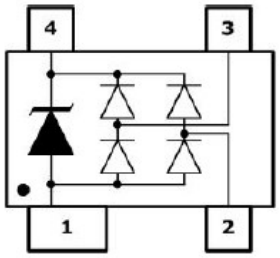
ORDERING INFORMATION

- ✧ Device: ESD05LD
- ✧Package: SOT-143
- ✧Marking: SL3 or R05
- ✧Material: Halogen free
- ✧Packing: Tape & Reel
- ✧Quantity per reel: 3,000pcs

APPLICATIONS

- ✧xDSLI
- ✧USB 1.1/2.0/OTG
- ✧IEEE 1394 Firewire Ports
- ✧Notebooks & Handhelds
- ✧Projection TV & Monitors
- ✧Set-top box
- ✧Flat Panel Displays

PIN CONFIGURATION



PACKAGE OUTLINE

2020-11/01
REV:O

ABSOLUTE MAXIMUM RATING (Tamb=25°C, unless otherwise specified)

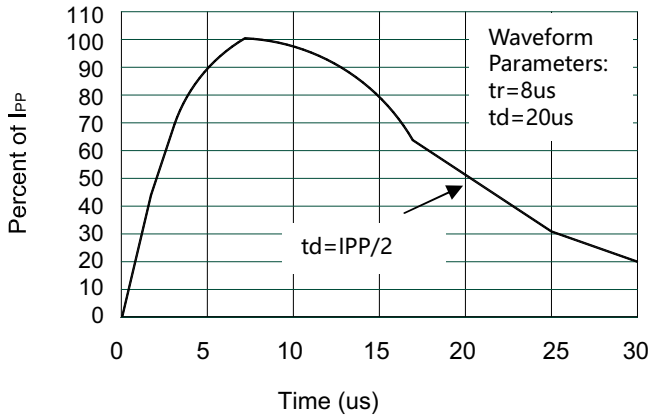
Symbol	Parameter	Value	Units
P_{PP}	Peak Pulse Power (8/20μs)	125	W
I_{PP}	Peak Pulse Current (8/20μs)	5	A
V_{ESD}	ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	±15 ±8	kV
T_{OPT}	Operating Temperature	-55/+150	°C
T_{STG}	Storage Temperature	-55/+150	°C

ELECTRICAL CHARACTERISTICS (Tamb=25°C,unless otherwise specified)

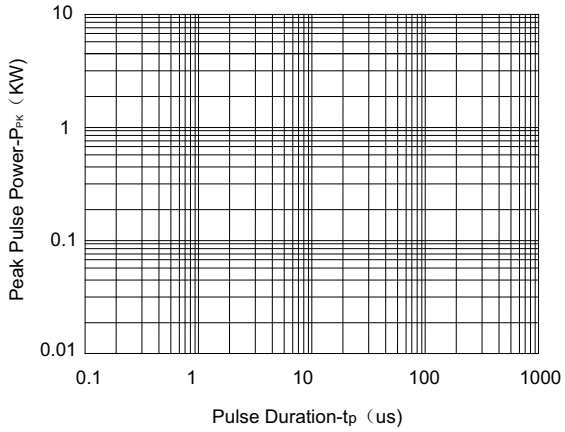
Symbol	Parameter	Test Condition	Min	Typ	Max	Units
V_{RWM}	Reverse Working Voltage	Any I/O pin to GND			5.0	V
V_{BR}	Reverse Breakdown Voltage	I_T = 1mA Any I/O pin to GND	6.0			V
I_R	Reverse Leakage Current	V_{RWM} = 5V Any I/O pin to GND			1	μA
V_F	Diode Forward Voltage	I_F = 15mA		0.85	1.2	V
V_{C1}	Clamping Voltage 1	I_{PP} = 1A, t_p = 8/20μs Any I/O pin to GND			15.5	V
V_{C2}	Clamping Voltage 2	I_{PP} = 5A, t_p = 8/20μs Any I/O pin to GND			25	V
I_{PP}	Peak Pulse Current	t_p = 8/20μs Any I/O pin to GND			5	A
C_{J1}	Junction Capacitance 1	V_R = 0V, f = 1MHz Between I/O pins		0.45	0.6	pF
C_{J2}	Junction Capacitance 2	V_R = 0V, f = 1MHz Any I/O pin to GND		0.9	1.2	pF

Note: I/O pins are pin2,3.

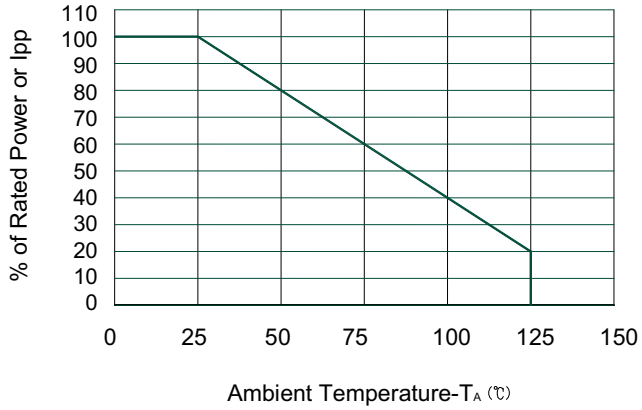
RATING AND CHARACTERISTICS CURVES (ESD05LDV)



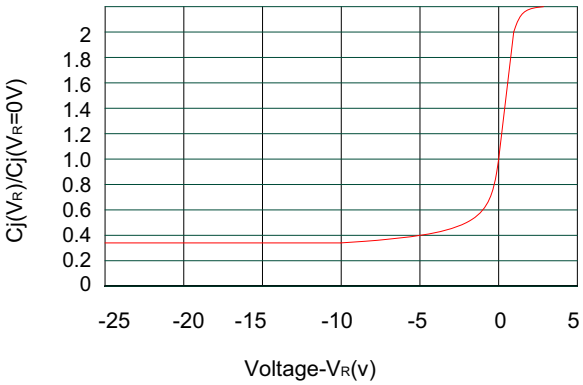
Pulse Waveform



Non-Repetitive Peak Pulse Power vs. Pulse Time

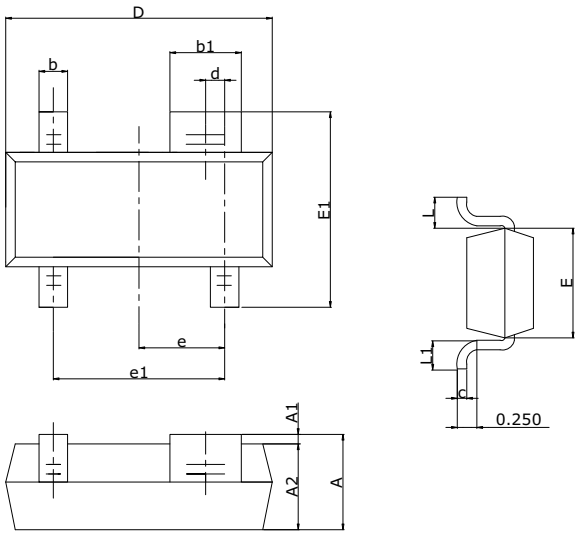


Power Derating Curve



Junction Capacitance vs. Reverse Voltage

SOT-143 PACKAGE OUTLINE DIMENSIONS



SOT-143

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	MIN	MAX
A	0.90	1.15	0.035	0.045
A1	0.00	0.10	0.000	0.004
A2	0.90	1.05	0.035	0.041
b	0.30	0.50	0.012	0.020
b1	0.75	0.90	0.030	0.035
c	0.08	0.15	0.003	0.006
D	2.80	3.00	0.110	0.118
d	0.20TYP		0.008TYP	
E	1.20	1.40	0.047	0.055
E1	2.25	2.55	0.089	0.10
e	0.95TYP		0.037TYP	
e1	1.80	2.00	0.071	0.079
L	0.55REF		0.022REF	
L1	0.30	0.50	0.012	0.020

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