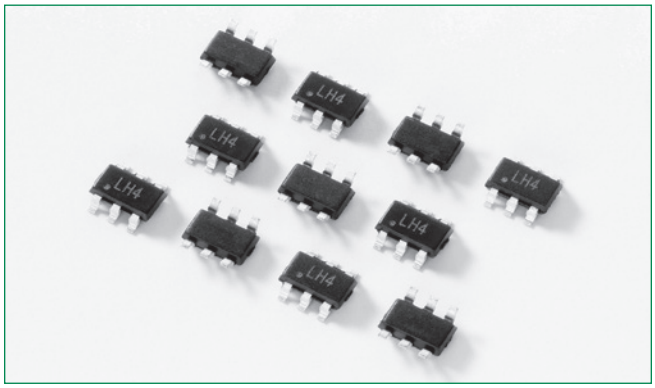
Littelfuse
Expertise Applied | Answers Delivered

TVS Diode Arrays (SPA® Diodes)

Low Capacitance ESD Protection - SRV05

SRV05 Series 6V 10A Diode Array

RoHS Pb GREEN



Description

The SRV05 integrates low capacitance rail-to-rail diodes with an additional zener diode to protect each I/O pin against ESD and high surge events. This robust device can safely absorb surge current per IEC61000-4-5 (t_P=8/20µs) without performance degradation and a minimum ±20kV ESD per IEC61000-4-2. Their very low loading capacitance also makes them ideal for protecting high speed signal pins.

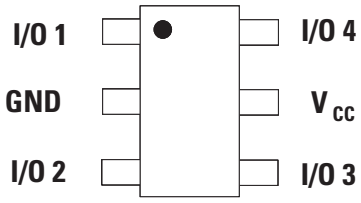
Features

- AEC-Q101 qualified
- ESD, IEC 61000-4-2, ±20kV contact, ±30kV air
- EFT, IEC 61000-4-4, 40A (5/50ns)
- Lightning, IEC 61000-4-5 (2nd Edition), 10A (8/20µs)
- Low capacitance of 2pF (TYP) per I/O
- Low leakage current of 0.5µA (MAX) at 5V
- Small SOT23-6 (JEDEC MO-178) packaging

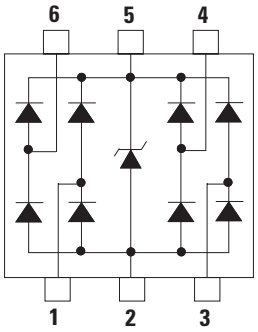
Applications

- LCD/PDP TVs
- Monitors
- Notebooks
- 10/100/1000 Ethernet
- Firewire
- Set Top Boxes
- Flat Panel Displays
- Portable Medical

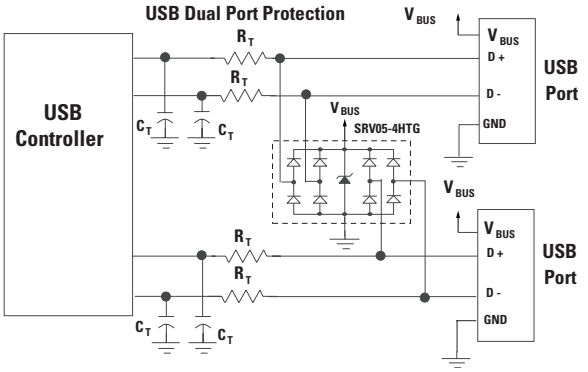
Pinout

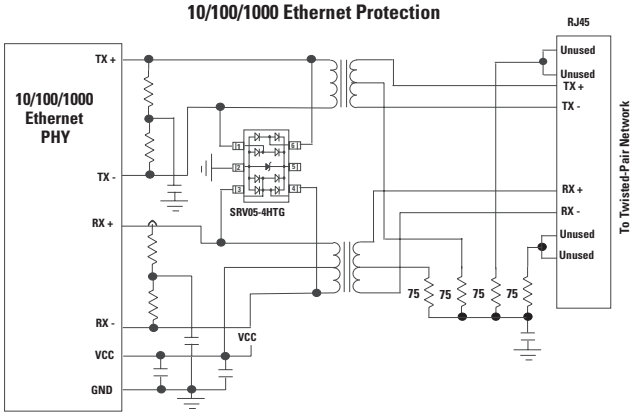


Functional Block Diagram



Application Examples





Additional Information

Datasheet | Resources | Samples

Life Support Note:

Not Intended for Use in Life Support or Life Saving Applications

The products shown herein are not designed for use in life sustaining or life saving applications unless otherwise expressly indicated.

Revised: JC.12/10/20

TVS Diode Arrays (SPA® Diodes)
Low Capacitance ESD Protection - SRV05

Absolute Maximum Ratings

Symbol	Parameter	Value	Units
I_{PP}	Peak Current (t_p=8/20µs)[1]	10	A
P_{PK}	Peak Pulse Power (t_p=8/20µs)	150	W
T_{OP}	Operating Temperature	–40 to 125	°C
T_{STOR}	Storage Temperature	–55 to 150	°C

CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.
1. Non-repetitive pulse per waveform on page 3

Thermal Information

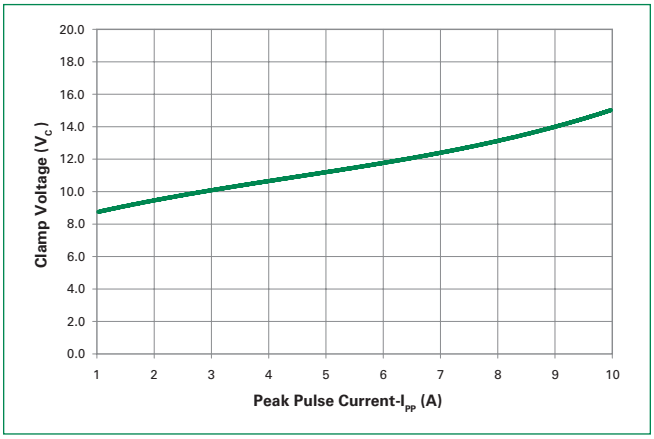
Parameter	Rating	Units
Storage Temperature Range	–55 to 150	°C
Maximum Junction Temperature	150	°C
Maximum Lead Temperature (Soldering 20-40s)	260	°C

Electrical Characteristics (T_{OP}=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Reverse Standoff Voltage	V_{RWM}	$I_R \leq 1\mu A$			6.0	V
Reverse Voltage Drop	V_R	I_R = 1mA		8.0		V
Reverse Leakage Current	I_{LEAK}	V_R=5V		0.1	0.5	µA
Clamp Voltage[1]	V_C	I_{PP}=1A, t_p=8/20µs, I/O to GND[2]		8.8	10.0	V
		I_{PP}=5A, t_p=8/20µs, I/O to GND[2]		11.5	13.0	V
		I_{PP}=8A, t_p=8/20µs, I/O to GND[2]		13.2	15.0	V
Dynamic Resistance	R_{DYN}	$(V_{C2} - V_{C1}) / (I_{PP2} - I_{PP1})$		0.7		Ω
ESD Withstand Voltage[1]	V_{ESD}	IEC61000-4-2 (Contact)	±20			kV
		IEC61000-4-2 (Air)	±30			kV
Diode Capacitance[1]	$C_{I/O-GND}$	Reverse Bias=0V		2.4	3.0	pF
		Reverse Bias=1.65V		2.0		pF
Diode Capacitance[1]	$C_{I/O-I/O}$	Reverse Bias=0V		1.2		pF

Notes: 1. Parameter is guaranteed by design and/or device characterization.
2. Repetitive pulse per waveform on page 3.

Clamping Voltage vs. I_{PP}



Product Characteristics

Lead Plating	Matte Tin
Lead Material	Copper Alloy
Lead Coplanarity	0.0004 inches (0.102mm)
Substitute Material	Silicon
Body Material	Molded Epoxy
Flammability	UL 94 V-0

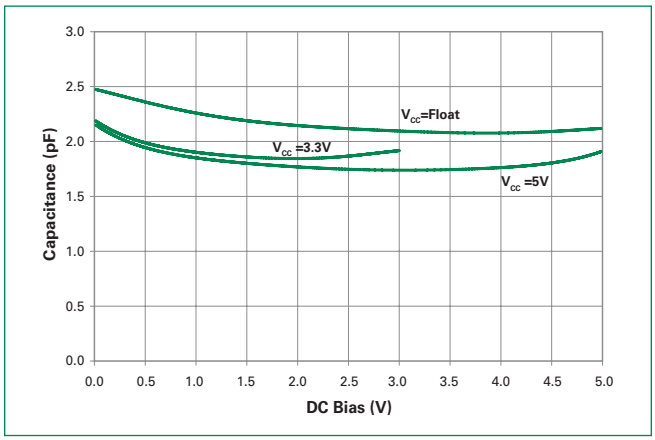
Notes :
1. All dimensions are in millimeters
2. Dimensions include solder plating.
3. Dimensions are exclusive of mold flash & metal burr.
4. Blo is facing up for mold and facing down for trim/form, i.e. reverse trim/form.
5. Package surface matte finish VDI 11-13.

Revised: JC.12/10/20

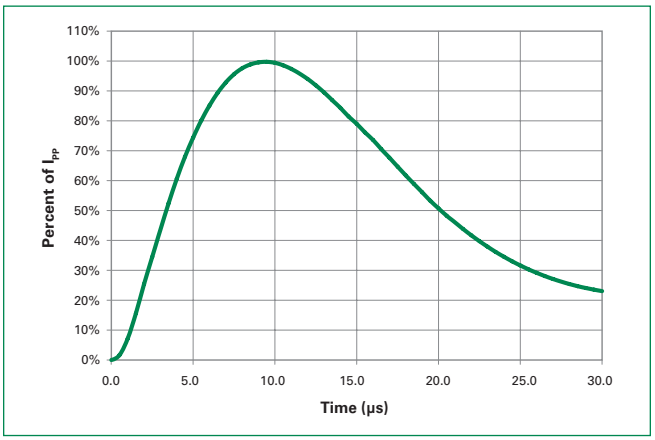
TVS Diode Arrays (SPA® Diodes)

Low Capacitance ESD Protection - SRV05

Capacitance vs. Reverse Bias

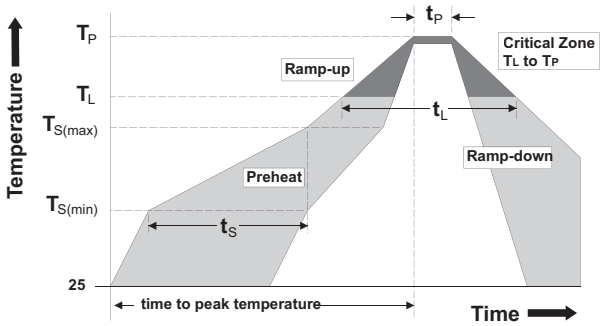


Pulse Waveform

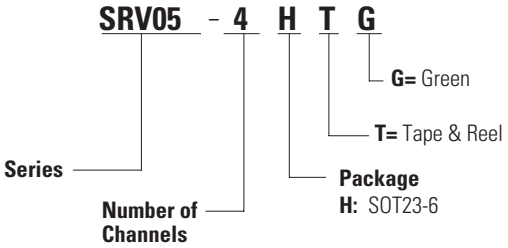


Soldering Parameters

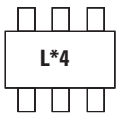
Reflow Condition		Pb – Free assembly
Pre Heat	**-Temperature Min ($T_{s(min)}$)**	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus) Temp (T_L) to peak		3°C/second max
$T_{S(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	**-Temperature (T_L) (Liquidus)**	217°C
	-Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_P)		$260^{+0/-5}$ °C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max.
Do not exceed		260°C

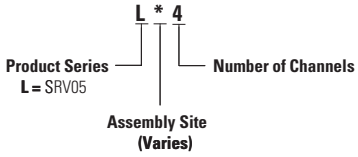


Part Numbering System



Part Marking System



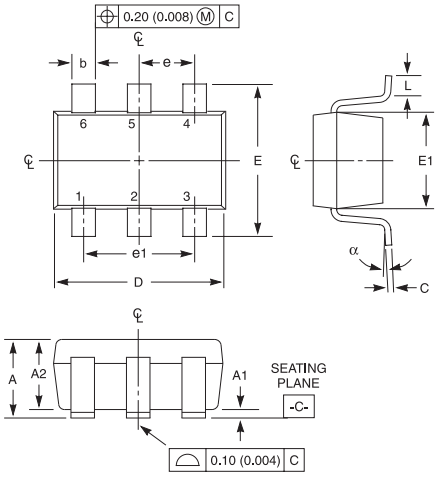


Ordering Information

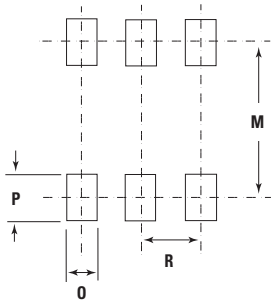
Part Number	Package	Marking	Min. Order Qty.
SRV05-4HTG	SOT23-6	L*4	3000

Revised: JC.12/10/20

Package Dimensions — SOT23-6



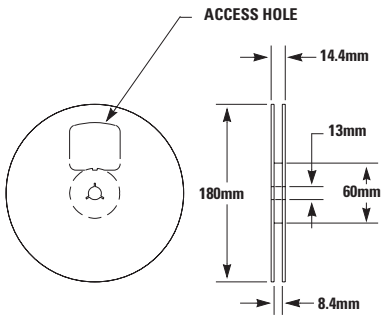
Recommended Solder Pad Layout

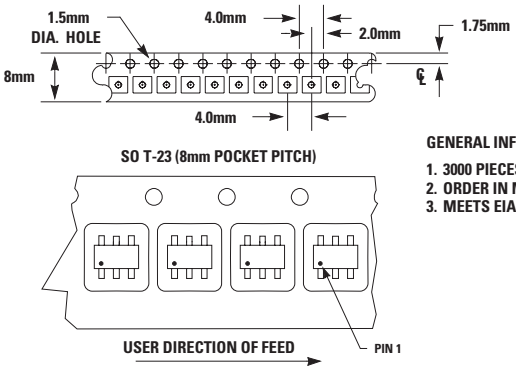


Package	SOT23-6				
Pins	6				
JEDEC	MO-178				
Symbol	Millimeters		Inches		Notes
	Min	Max	Min	Max	
A	0.900	1.450	0.035	0.057	-
A1	0.000	0.150	0.000	0.006	-
A2	0.900	1.300	0.035	0.051	-
b	0.350	0.500	0.0138	0.0196	-
C	0.080	0.220	0.0031	0.009	-
D	2.800	3.000	0.11	0.118	3
E	2.600	3.000	0.102	0.118	-
E1	1.500	1.750	0.06	0.069	3
e	0.95 Ref		0.0374 ref		-
e1	1.9 Ref		0.0748 Ref		-
L	0.100	0.600	0.004	0.023	4,5
N	6		6		6
a	0°	10°	0°	10°	-
M		2.590		0.102	-
O		0.690		.027 TYP	-
P		0.990		.039 TYP	-
R		0.950		0.038	-

Notes:
1. Dimensioning and tolerances per ANSI 14.5M-1982.
2. Package conforms to EIAJ SC-74 (1992).
3. Dimensions D and E1 are exclusive of mold flash, protrusions, or gate burrs.
4. Footlenth L measured at reference to seating plane.
5. "L" is the length of flat foot surface for soldering to substrate.
6. "N" is the number of terminal positions.
7. Controling dimension: MILLIMETER. Converted inch dimensions are not necessarily exact.

Embossed Carrier Tape & Reel Specification — SOT23-6





GENERAL INFORMA TION

1. 3000 PIECES PER REEL.
2. ORDER IN MUL TIPLES OF FULL REELS ONLY.
3. MEETS EIA-481 REVISION "A" SPECIFICATIONS.

8mm TAPE AND REEL

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for ESD Suppressors / TVS Diodes ***category:***

Click to view products by Littelfuse ***manufacturer:***

Other Similar products are found below :

60KS200C D12V0H1U2WS-7 D18V0L1B2LP-7B 82356050220 D5V0M5U6V-7 NTE4902 P4KE27CA P6KE11CA P6KE39CA-TP P6KE8.2A SA110CA SA60CA SA64CA SMBJ12CATR SMBJ8.0A SMLJ30CA-TP ESD112-B1-02EL E6327 ESD119B1W01005E6327XTSA1 ESD5V0J4-TP ESD5V0L1B02VH6327XTSA1 ESD7451N2T5G 19180-510 CPDT-5V0USP-HF 3.0SMCJ33CA-F 3.0SMCJ36A-F HSPC16701B02TP D3V3Q1B2DLP3-7 D55V0M1B2WS-7 DESD5V0U1BL-7B DRTR5V0U4SL-7 SCM1293A-04SO ESD203-B1-02EL E6327 SM12-7 SMF8.0A-TP SMLJ45CA-TP CEN955 W/DATA 82350120560 82356240030 VESD12A1A-HD1-GS08 CPDUR5V0R-HF CPDUR24V-HF CPDQC5V0U-HF CPDQC5V0USP-HF CPDQC5V0-HF D1213A-01LP4-7B D1213A-02WL-7 ESDLIN1524BJ-HQ 5KP100A 5KP15A 5KP18A