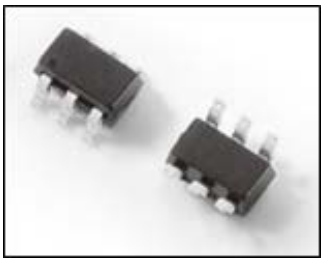
SRV03-4U TVS Diode Array Rev.1.2

FEATURES:

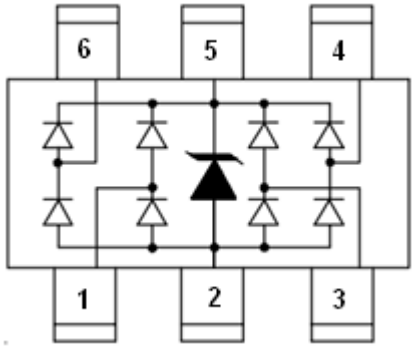
- ✧ 500 watts peak pulse power per line (t_P=8/20μs)
- ✧ Protects four I/O lines
- ✧ Low clamping voltage
- ✧ Low operating voltage
- ✧ Low capacitance: 1.5pF typical
- ✧ Low operating voltage: 3.3V
- ✧ RoHS compliant
- ✧ Meets MSL level 3



SOT23-6L

MAIN APPLICATIONS

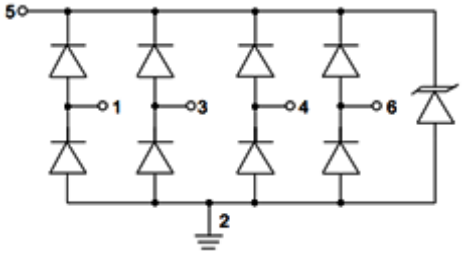
- ✧ USB 2.0 power and data line protection
- ✧ Digital video interface (DVI)
- ✧ Notebook computers
- ✧ Video graphics cards
- ✧ Monitors and flat panel displays
- ✧ 10/100/1000 ethernet
- ✧ SIM ports
- ✧ ATM interfaces



PIN Configuration

PROTECTION SOLUTION TO MEET

- ✧ IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact)
- ✧ IEC61000-4-4 (EFT) 40A (5/50ns)
- ✧ IEC61000-4-5 (Lightning) 24A (8/20μs)



Circuit Diagram

MECHANICAL CHARACTERISTICS

- ✧ JEDEC SOT23-6L package
- ✧ Molding compound flammability rating: UL 94V-0
- ✧ Quantity per reel: 3, 000pcs
- ✧ Lead finish: lead free
- ✧ Marking code: E1s

ABSOLUTE MAXIMUM RATINGS (T_A=25℃, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power dissipation on 8/20μs waveform	P_{PP}	500	W
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD}	+/- 30 +/- 30	kV
Lead soldering temperature	T_L	260 (10 sec.)	℃
Operating junction temperature range	T_J	-55 to +125	℃
Storage temperature range	T_{STG}	-55 to +150	℃

ELECTRICAL CHARACTERISTICS (T_A=25℃)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse working voltage	V_{RWM}	pin5 to pin2			3.3	V
Reverse breakdown voltage	V_{BR}	I_T=1mA pin 5 to pin2	4.0	5.6		V
Reverse leakage current	I_R	V_{RWM}=3.3V pin5 to pin2			1	μA
Forward voltage	V_F	I_T=10mA		0.8	1.2	V
Dynamic resistance①② (I/O pin to ground)	R_{DYN}	TLP=0.2/100ns		0.23		Ω
TLP clamping voltage① (I/O pin to ground)	V_C	I_{PP}=4A, t_P=0.2/100ns（TLP）		7.4		V
		I_{PP}=16A, t_P=0.2/100ns（TLP）		10.2		
Clamping voltage③ (I/O pin to ground)	V_C	I_{PP}=1A, t_P=8/20μs		7	10	V
		I_{PP}=15A, t_P=8/20μs		12	16	V
		I_{PP}=24A, t_P=8/20μs		14	18	V
Junction capacitance	C_J	V_{RWM}=0V, f=1MHz Any I/O pin to Ground		2.8	5	pF
		V_{RWM}=0V, f= 1MHz Between I/O pins		1.5	2.5	

Note:

①TLP Setting：t_P=100ns，t_r=0.2ns，I_{TLP} and V_{TLP} sample window：t1=70ns to t2=90ns.

②Dynamic resistance calculated from I_{PP}=4A to I_{PP}=16A using “Best Fit”.

③Non-repetitive current pulse,according to IEC61000-4-5.

RATINGS AND V-I CHARACTERISTICS CURVES (T_A=25℃, unless otherwise noted)

FIG.1:V- I curve characteristics (Uni-directional)

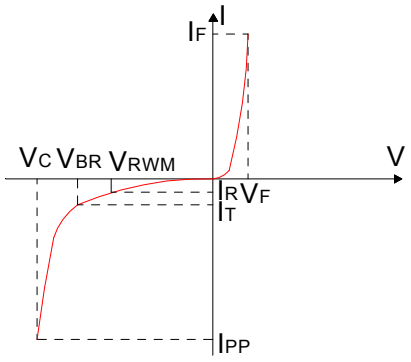


FIG.2: Pulse waveform (8/20μs)

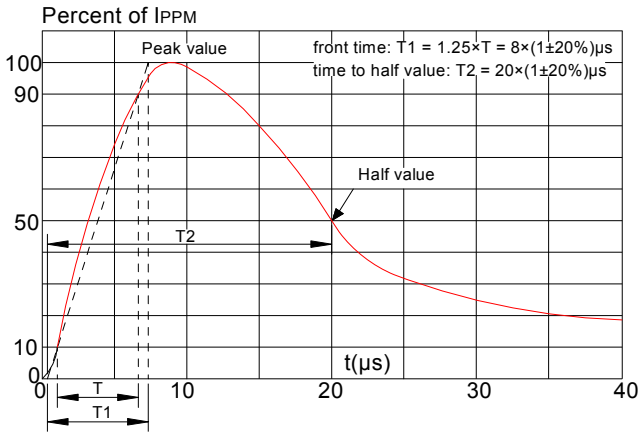


FIG.3: Pulse derating curve

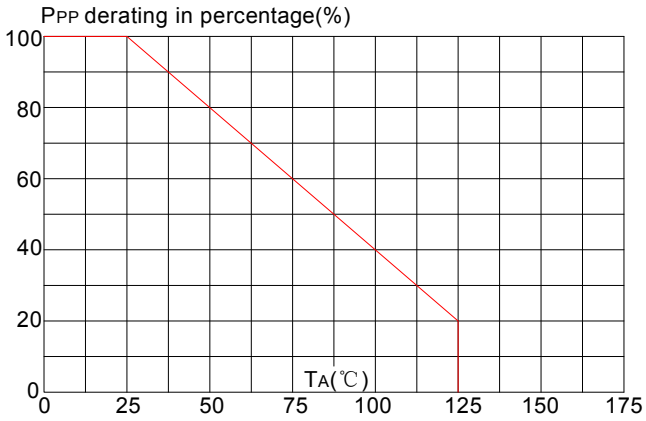


FIG.4: ESD clamping (30kV contact)

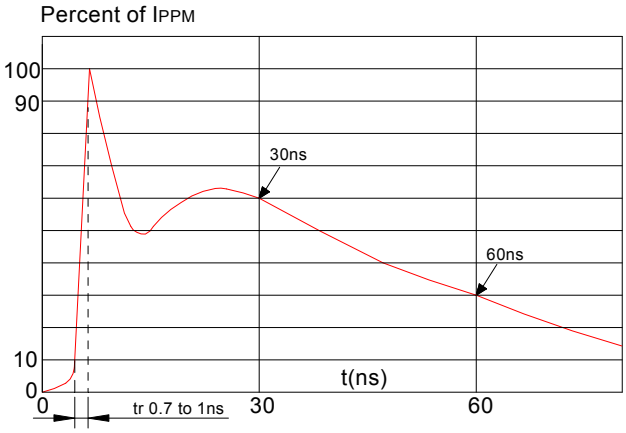
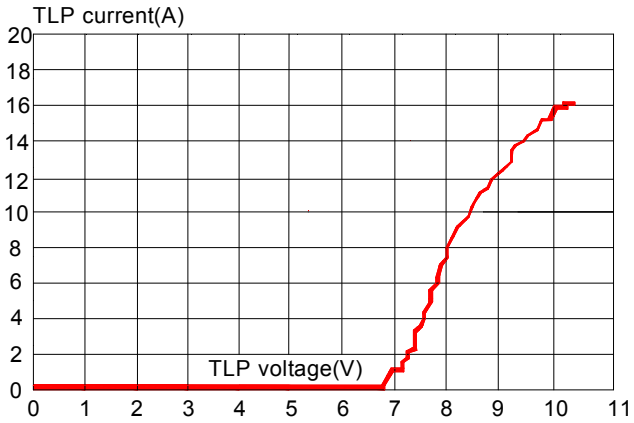
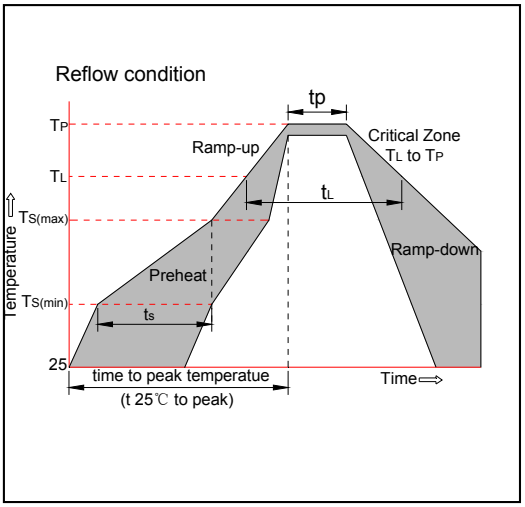


FIG.5: TLP Measurement

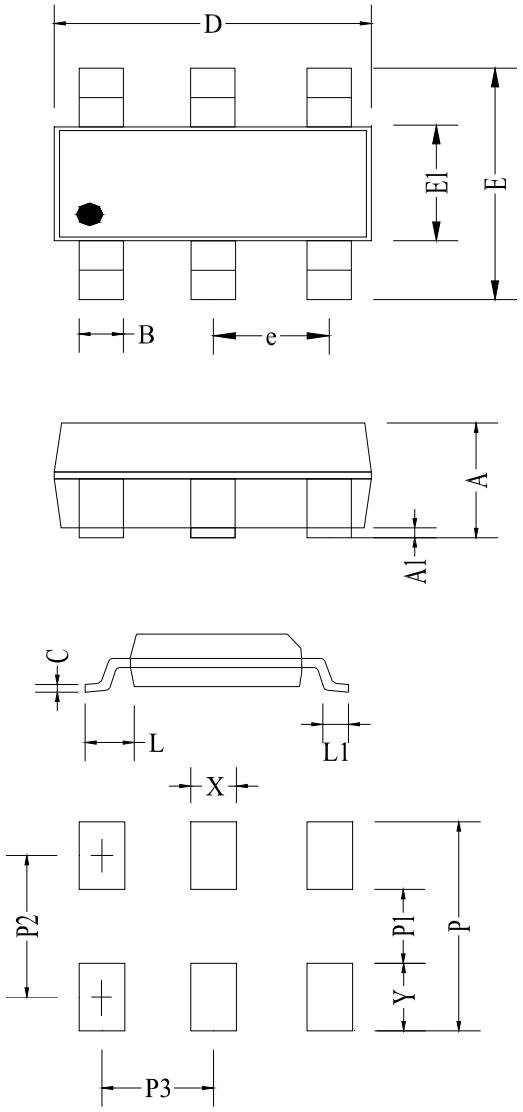


SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquidus Temp (T_L)to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquidus)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃of actual Peak Temp (t_p)		20-40secs.
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃



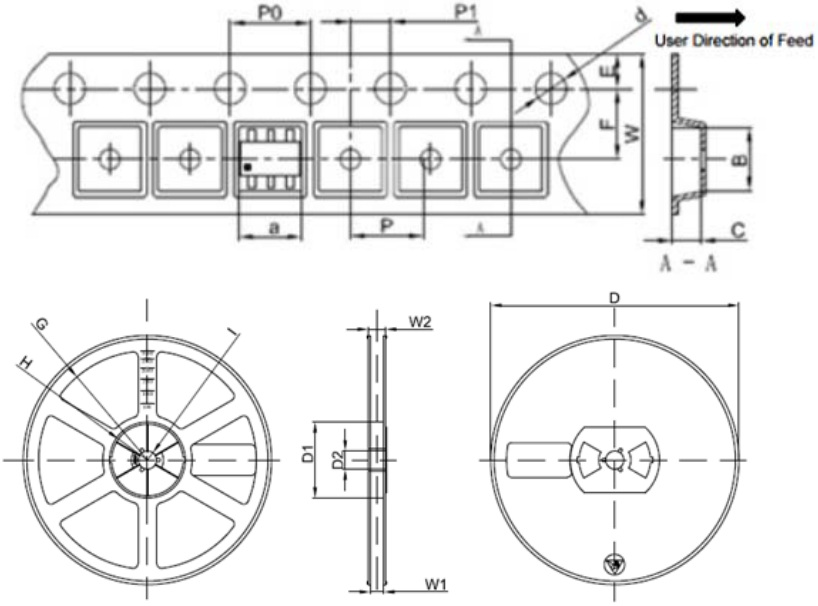
PACKAGE MECHANICAL DATA



Land Pattern

Symbol	Millimeter			Inches		
	Min	Typ	Max	Min	Typ	Max
A	0.90	1.18	1.45	0.035	0.046	0.057
A1	0.02	0.08	0.14	0.001	0.003	0.006
B	0.35	0.40	0.50	0.014	0.016	0.020
C	0.08	0.15	0.20	0.003	0.006	0.008
D	2.92	3.00	3.02	0.115	0.118	0.119
e	0.69	0.95	1.02	0.027	0.037	0.040
E1	1.50	1.60	1.75	0.059	0.063	0.069
E	2.80BSC			0.110BSC		
L1	0.35	0.45	0.55	0.014	0.018	0.022
L	0.6			0.024		
X	0.6			0.024		
Y	1.1			0.043		
P	3.6			0.142		
P1	1.4			0.055		
P2	2.5			0.098		
P3	0.95			0.037		

TAPE AND REEL SPECIFICATION-SOT23-6L



Symbol	Millimeter	Inches
	Typ.	Typ.
a	3.17	0.125
B	3.23	0.127
C	1.37	0.054
d	Φ1.55	Φ0.061
E	1.75	0.069
F	3.50	0.138
P0	4.00	0.157
P	4.00	0.157
P1	2.00	0.079
W	8.00	0.315
D	Φ180	Φ7.087
D1	60.00	2.632
D2	13.00	0.512
G	R78.00	R3.071
H	R25.60	R1.008
I	R6.50	R0.256
W1	9.50	0.374
W2	13.10	0.516

Packaging Description:

SOT23-6L parts are shipped in tape. The carrier tape is made from a dissipative(carbon filled) polycarbonate resin. The cover tape is a multilayer film(heat activated adhesive in nature)primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000units per 7" or 17.8cm diameter reel. The reels are clear in color and made of polystyrene plastic(anti-static coated).

ORDERING INFORMATION

OUTLINE	PACKAGE TYPE	QUANTITY REEL	DESCIPTION
TAPING	SOT23-6L	3,000	7 inch reel pack

MARKING CODE

Part Number	Marking Code
SRV03-4U