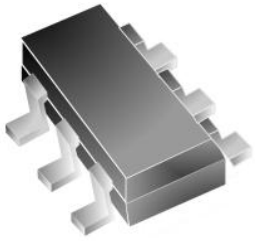
SRV05-4A TVS Diode array for ESD Protection

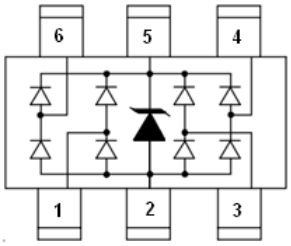
Features and benefits

- ✧ 100 Watts Peak Pulse Power per Line (tp=8/20μs)
- ✧ Protects one bi-directional I/O line or power line
- ✧ Low clamping voltage
- ✧ Low operating voltage
- ✧ Low capacitance: 0.5pf typical
- ✧ ROHS compliant

Pin Information and Graphic symbol



SOT-23-6



Pin Configuration

Application information

- ✧ USB3.0/3.1
- ✧ HDMI2.0
- ✧ 10/100/1000M Ethernet

Protection solution to meet

- ✧ IEC61000-4-2 (ESD) ±15kV (air), ±8kV (contact)
- ✧ IEC61000-4-4 (EFT) 40A (5/50ns)
- ✧ IEC61000-4-5 (Lightning) 5A (8/20μs)

Mechanical Characteristics

- ✧ SOT-23-6 Package
- ✧ Molding Compound Flammability Rating : UL 94V-O
- ✧ Quantity Per Reel : 3,000pcs
- ✧ Lead Finish : Lead Free
- ✧ Marking Code：V05

Absolute Maximum Ratings (T_A=25℃, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage temperature range	T_{stg}	-55 to +150	℃
Operating junction temperature range	T_j	-55 to +125	℃
Lead Soldering Temperature	T_L	260 (10 sec.)	℃
Peak pulse power dissipation on 8/20 μs waveform	P_{PP}	100	W
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD}	+/- 15 +/- 8	kV

Electrical Characteristics (TA=25℃)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Reverse Working Voltage	V_R	I/O to GND			5.0	V
Reverse Breakdown Voltage	V_{BR}	I/O to GND@IT = 1mA	6.0			V
Reverse Leakage Current	I_R	I/O to GND @V_R = 5V			1.0	μA
Clamping Voltage	V_C①	I_{PP} = 1A, tp =8/20μs		9.5	11	V
		I_{PP} = 3.5A, tp =8/20μs		12.5	15	V
Junction Capacitance	C_J	V_R = 0V, f = 1MHz I/O pin to GND		0.65	0.8	pF
		V_R = 0V, f = 1MHz Between I/O pins		0.3	0.5	pF

① Surge waveform: 8/20μs

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

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

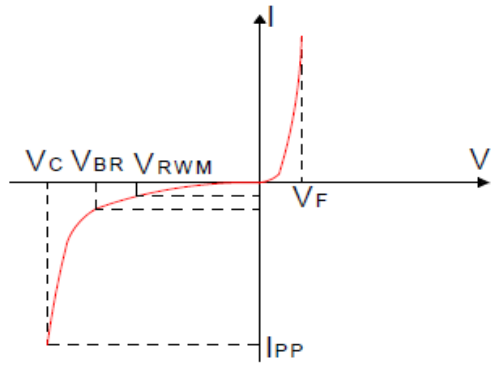


FIG.2: Pulse waveform (8/20μs)

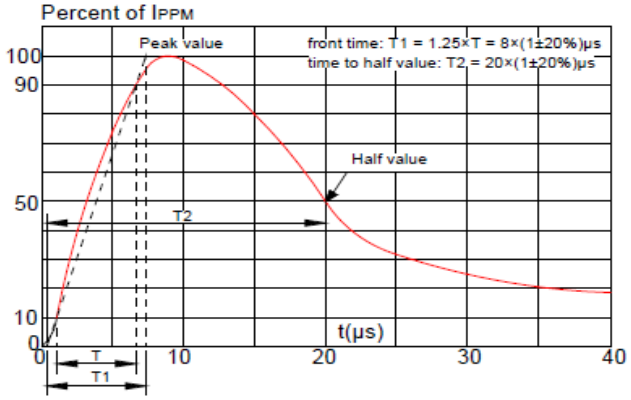


FIG.3: Pulse derating curve

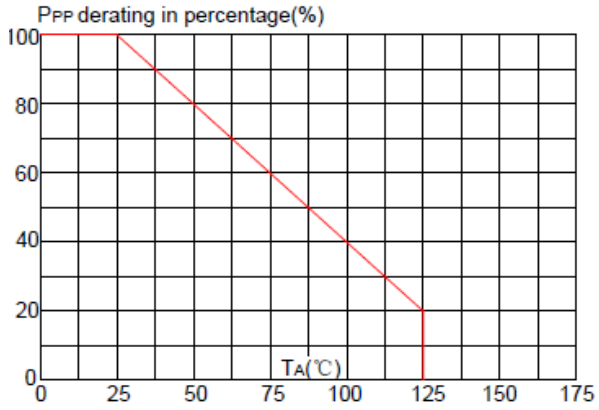
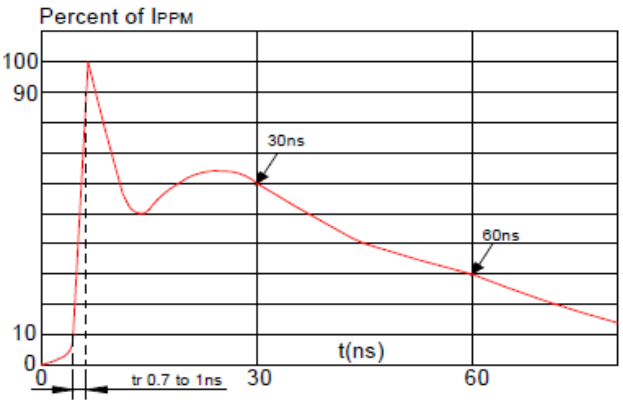


FIG.4: ESD clamping (8KV contact)



SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see FIG.5)
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 (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃ of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃

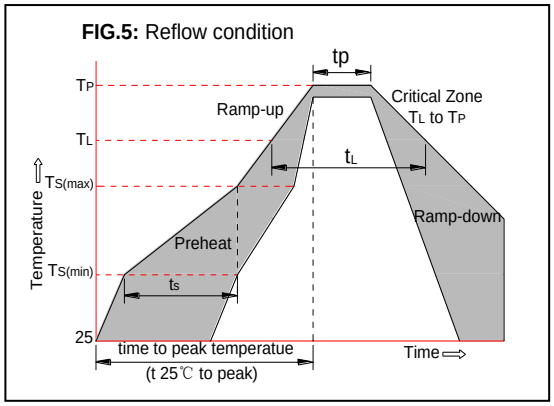
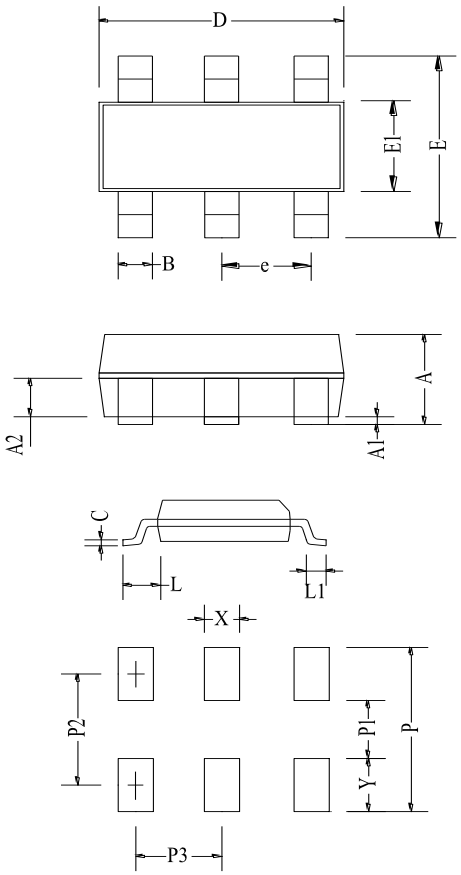


FIG.5: Reflow condition

PACKAGE MECHANICAL DATA



Land Pattern

Symbol	Millimeter		Inches	
	Min	Max	Min	Max
A	0.90	1.45	0.035	0.057
A1	0.00	0.15	0.000	0.006
A2	0.45	0.65	0.017	0.026
B	0.35	0.50	0.010	0.020
C	0.08	0.20	0.003	0.007
D	2.80	3.00	0.110	0.122
e	0.69	1.02	0.032	0.043
E1	1.50	1.75	0.060	0.069
E	2.80BSC		0.110BSC	
L1	0.35	0.60	0.013	0.024
L	0.60		0.024	
X	0.60		0.024	
Y	1.10		0.043	
P	3.60		0.141	
P1	1.40		0.055	
P2	2.50		0.098	
P3	0.95		0.037	