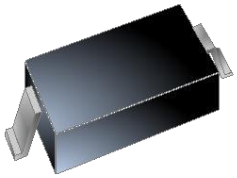
JEB03C thru JEB24C Bidirectional TVS Diode for ESD Protection

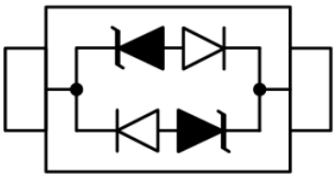
Features and benefits

- ✧ 350 Watts Peak Pulse Power per Line (tp=8/20μs)
- ✧ Protects one bi-directional I/O line or power line
- ✧ Low clamping voltage
- ✧ Working voltages ： 3.3V，5V，12V，15V，24V
- ✧ Low leakage current
- ✧ ROHS compliant

Pin Information and Graphic symbol



SOD-323



symbol

Application information

- ✧ Super speed I/O signal line
- ✧ RJ45 port, PHY signal line
- ✧ Consumer electronics DC power supply
- ✧ Low frequency signal transmission line (RS232, RS485, etc.)

Protection solution to meet

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

Mechanical Characteristics

- ✧ SOD-323 Package
- ✧ Molding Compound Flammability Rating : UL 94V-O
- ✧ Weight 5 Milligrams (Approximate)
- ✧ Quantity Per Reel : 3,000pcs
- ✧ Lead Finish : Lead Free
- ✧ Marking Code：See next table

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}	350	W
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD}	+/- 15 +/- 8	kV

Electrical Characteristics (TA=25℃)

Part Number	Marking	V_R	I_R@ V_R	V_{BR}@ I_T=1mA	V_C@1A	V_C@I_{PP}	I_{PP}①	Cj@ 0V,1MHZ
		V	μA	min(V)	max(V)	max(V)	A	typ（pF）
JEB03C	CC	3.3	1	4.0	7.0	19	20	1.3
JEB05C	5B	5	1	6.0	9.8	20	19	1.3
JEB08C	8B	8	1	8.5	13.5	27	20	1.3
JEB12C	AB	12	1	13.3	19.0	30	12	1.3
JEB15C	BB	15	1	16.7	25.0	40	10	1.3
JEB24C	CB	24	1	26.7	33.0	54	9	1.3

① Surge waveform: 8/20μs

V_R ： Stand-off Voltage -- Maximum voltage that can be applied

V_{BR}： Breakdown Voltage

V_C：Clamping Voltage -- Peak voltage measured across the suppressor at a specified Ipp

I_R： Reverse Leakage Current

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

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

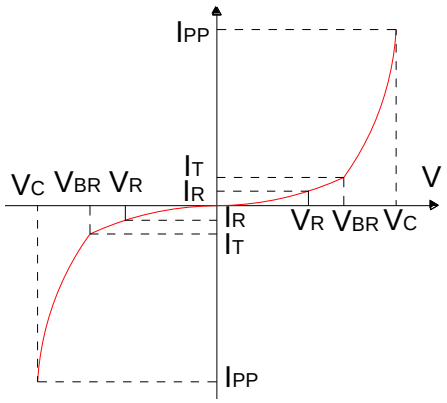


FIG.2: Pulse waveform

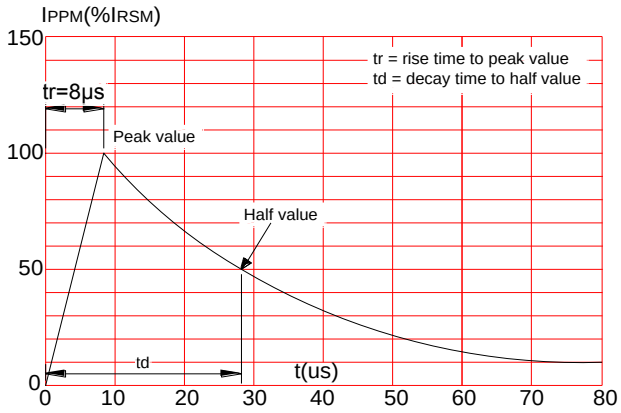


FIG.3: Pulse derating curve

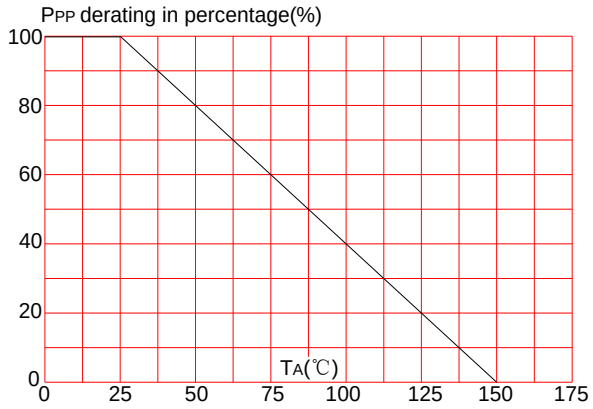
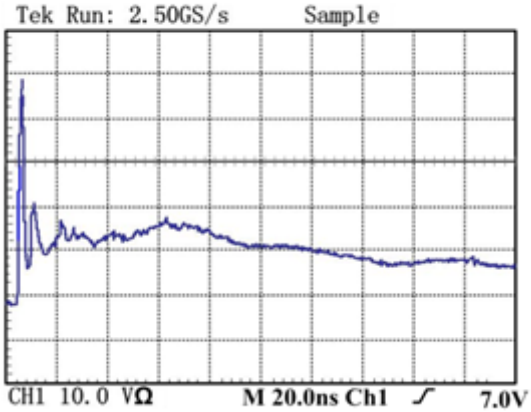


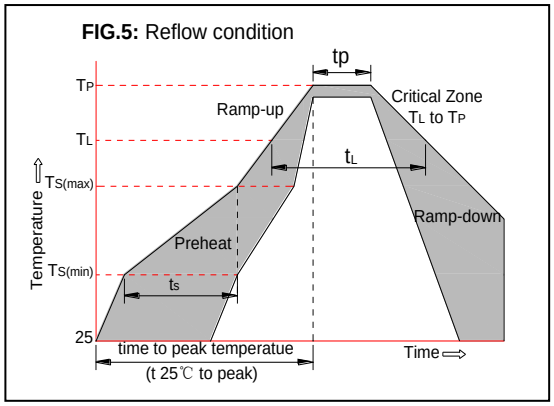
FIG.4:ESD Clamping(8KV Contact)



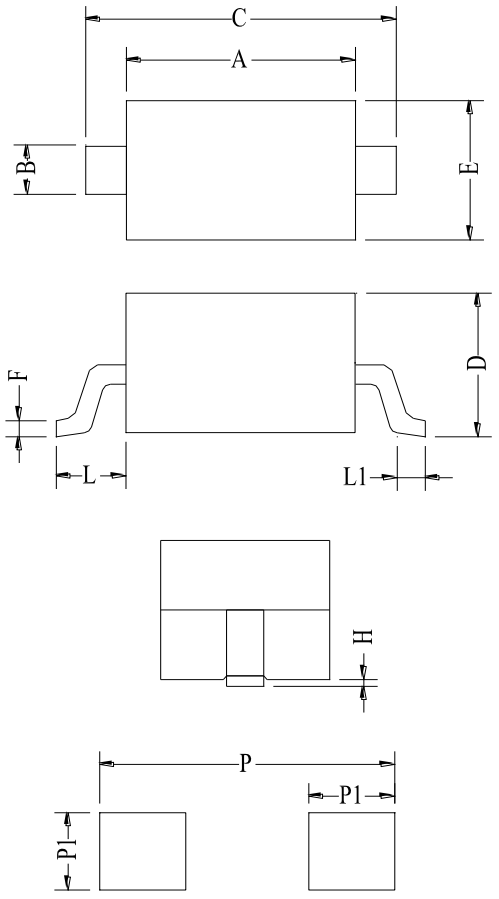
SOLDERING PARAMETERS

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



Symbol	Millimeter		Inches	
	Min	Max	Min	Max
A	1.60	1.80	0.063	0.071
B	0.25	0.35	0.010	0.014
C	2.50	2.70	0.098	0.106
D	0.00	1.00	0.000	0.039
E	1.20	1.40	0.047	0.055
F	0.08	0.15	0.003	0.006
L	0.475REF		0.019REF	
L1	0.25	0.40	0.010	0.016
H	0.00	0.10	0.000	0.004
P1	0.8		0.031	
P	3.0		0.118	