Features

- Low Leakage
- Low Clamping Voltage
- Moisture Sensitivity Level 1
- Halogen Free. “Green” Device (Note 1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

ESD Protection Device

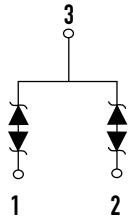
Maximum Ratings

IEC61000-4-2 (ESD)	Air	±30KV
	Contact	±30KV
Peak Pulse Power (8/20μs)(Note2)	P_{PK}	250W
Operating Junction Temperature Range	T_J	-55°C to +150°C
Storage Temperature Range	T_{STG}	-55°C to +150°C

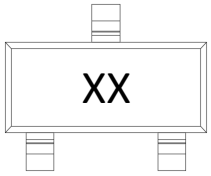
Note :

1. Halogen free "Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5.

Internal Structure



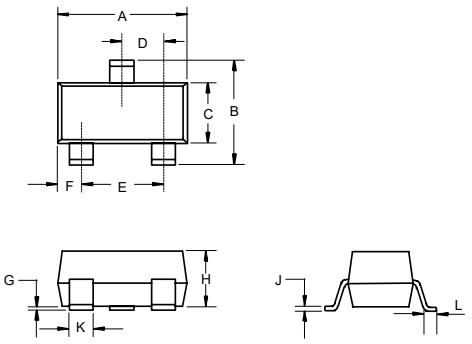
Marking Code



XX:Device code

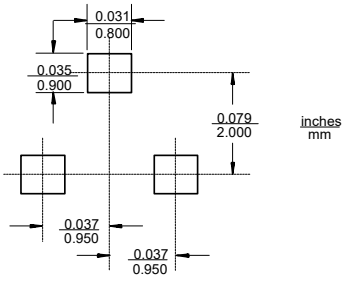
MCC Part No.	Device Code
ESD3V3T2B	3B.
ESD7V0T2B	7B.
ESD12VT2B	12B.
ESD15VT2B	15B.
ESD24VT2B	6RS.
ESD27VT2B	27B.
ESD36VT2B	36B.

SOT-23

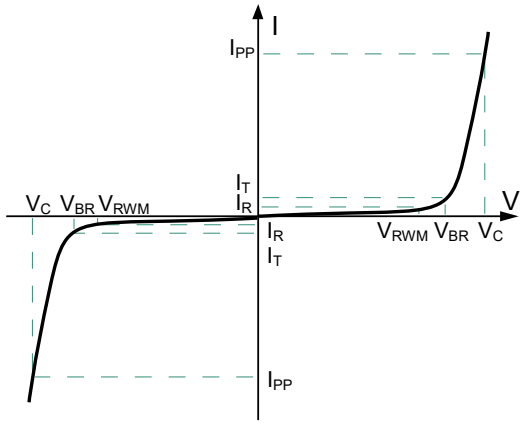


DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.110	0.120	2.80	3.04	
B	0.083	0.104	2.10	2.64	
C	0.047	0.055	1.20	1.40	
D	0.034	0.041	0.85	1.05	
E	0.067	0.083	1.70	2.10	
F	0.018	0.024	0.45	0.60	
G	0.0004	0.006	0.01	0.15	
H	0.035	0.043	0.90	1.10	
J	0.003	0.007	0.08	0.18	
K	0.012	0.020	0.30	0.51	
L	0.007	0.020	0.20	0.50	

Suggested Solder Pad Layout



Symbol	Parameter
V_{RWM}	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ VRWM
V_{BR}	Breakdown Voltage @ IT
IT	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ IPP
P_{PK}	Peak Pulse Power
C_J	Junction Capacitance



Electrical Characteristics @ 25°C (Unless Otherwise Specified)

ESD3V3T2B

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Working Voltage	V_{RWM}				3.3	V
Reverse Breakdown Voltage	V_{BR}	I_T=1mA	5			V
Reverse Leakage Current	I_R	V_{RWM}=3.3V			0.5	μA
Clamping Voltage[Note1]	V_C	I_{PP}=1A, t_P=8/20μs			9	V
Clamping Voltage[Note1]	V_C	I_{PP}=25A, t_P=8/20μs			16	V
Junction Capacitance	C_J	V_R=0V, f=1MHz		100		pF
Dynamic Resistance [Note2]	R_{DYN}	TLP, t_P=100ns		0.18		Ω

ESD7V0T2B

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Working Voltage	V_{RWM}				7	V
Reverse Breakdown Voltage	V_{BR}	I_T=1mA	7			V
Reverse Leakage Current	I_R	V_{RWM}=7V			0.5	μA
Clamping Voltage[Note1]	V_C	I_{PP}=1A, t_P=8/20μs			13	V
Clamping Voltage[Note1]	V_C	I_{PP}=17A, t_P=8/20μs			15	V
Junction Capacitance	C_J	V_R=0V, f=1MHz		65		pF
Dynamic Resistance [Note2]	R_{DYN}	TLP, t_P=100ns		0.37		Ω

ESD12VT2B

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Working Voltage	V_{RWM}				12	V
Reverse Breakdown Voltage	V_{BR}	I_T=1mA	13			V
Reverse Leakage Current	I_R	V_{RWM}=12V			0.5	μA
Clamping Voltage Note1	V_C	I_{PP}=1A, t_P=8/20μs			20	V
Clamping Voltage Note1	V_C	I_{PP}=10A, t_P=8/20μs			30	V
Junction Capacitance	C_J	V_R=0V, f=1MHz		35		pF
Dynamic Resistance Note2	R_{DYN}	TLP, t_P=100ns		0.28		Ω

ESD15VT2B

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Working Voltage	V_{RWM}				15	V
Reverse Breakdown Voltage	V_{BR}	I_T=1mA	16			V
Reverse Leakage Current	I_R	V_{RWM}=15V			0.5	μA
Clamping Voltage Note1	V_C	I_{PP}=1A, t_P=8/20μs			20	V
Clamping Voltage Note1	V_C	I_{PP}=9A, t_P=8/20μs			30	V
Junction Capacitance	C_J	V_R=0V, f=1MHz		30		pF
Dynamic Resistance Note2	R_{DYN}	TLP, t_P=100ns		0.4		Ω

ESD24VT2B

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Working Voltage	V_{RWM}				24	V
Reverse Breakdown Voltage	V_{BR}	I_T=1mA	26			V
Reverse Leakage Current	I_R	V_{RWM}=24V			0.5	μA
Clamping Voltage Note1	V_C	I_{PP}=1A, t_P=8/20μs			34	V
Clamping Voltage Note1	V_C	I_{PP}=7A, t_P=8/20μs			44	V
Junction Capacitance	C_J	V_R=0V, f=1MHz		20		pF
Dynamic Resistance Note2	R_{DYN}	TLP, t_P=100ns		0.83		Ω

ESD27VT2B

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Working Voltage	V_{RWM}				27	V
Reverse Breakdown Voltage	V_{BR}	I_T=1mA	31			V
Reverse Leakage Current	I_R	V_{RWM}=27V			0.5	μA
Clamping Voltage Note1	V_C	I_{PP}=1A, t_P=8/20μs			50	V
Clamping Voltage Note1	V_C	I_{PP}=6A, t_P=8/20μs			70	V
Junction Capacitance	C_J	V_R=0V, f=1MHz		15		pF
Dynamic Resistance Note2	R_{DYN}	TLP, t_P=100ns		1.1		Ω

ESD36VT2B

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Working Voltage	V_{RWM}				36	V
Reverse Breakdown Voltage	V_{BR}	I_T=1mA	38			V
Reverse Leakage Current	I_R	V_{RWM}=36V			0.5	μA
Clamping Voltage Note1	V_C	I_{PP}=1A, t_P=8/20μs			55	V
Clamping Voltage Note1	V_C	I_{PP}=5A, t_P=8/20μs			90	V
Junction Capacitance	C_J	V_R=0V, f=1MHz		13		pF
Dynamic Resistance Note2	R_{DYN}	TLP, t_P=100ns		0.9		Ω

Note :

1.Non-repetitive current pulse 8/20μs exponential decay waveform according to IEC61000-4-5.

2.TLP parameter: Z0=50Ω, tp=100ns, tr=2ns, averaging window from 60ns to 80ns. RDYN is calculated from 4A to 16A.

Curve Characteristics

Fig. 1 - 8 X 20μs Pulse Waveform

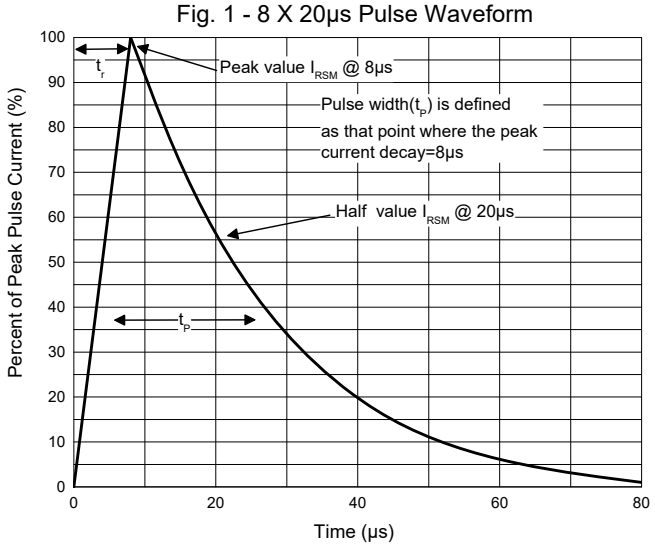


Fig. 2 - Non-Repetitive Peak Pulse Power

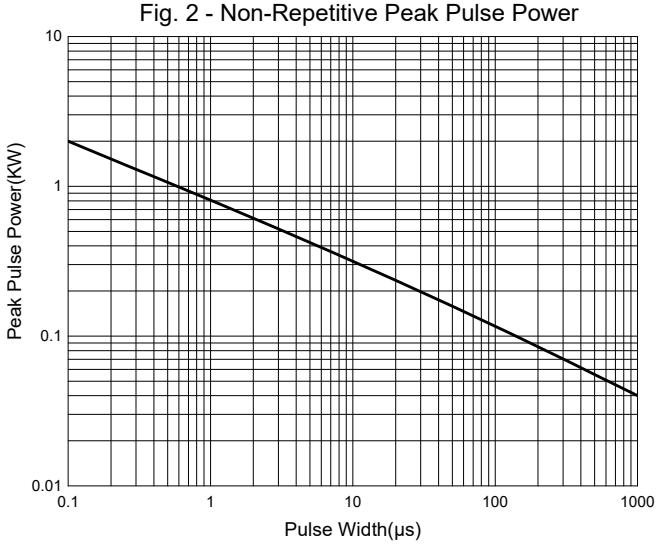


Fig. 3 - Capacitance Characteristics

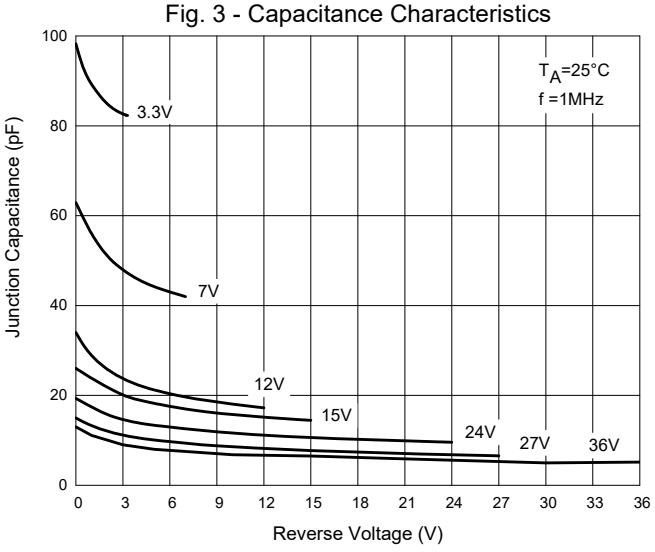


Fig. 4 - Clamping Voltage Characteristics

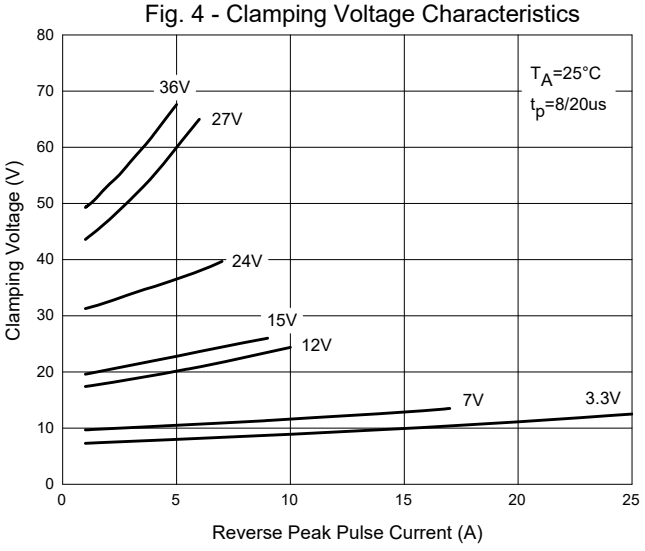


Fig. 5 - TLP Curve

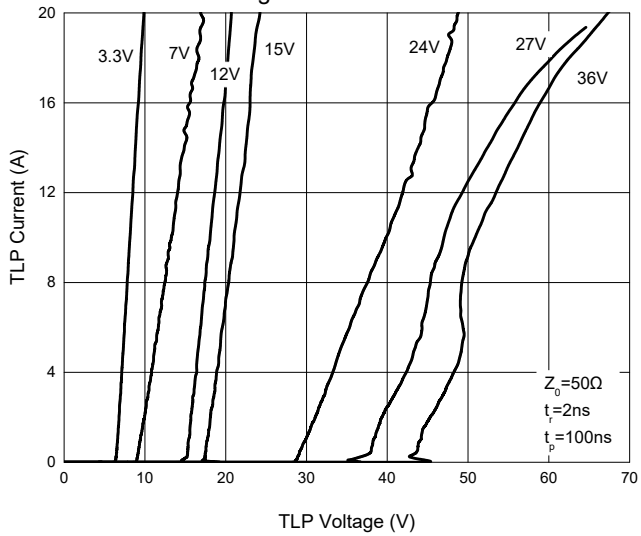
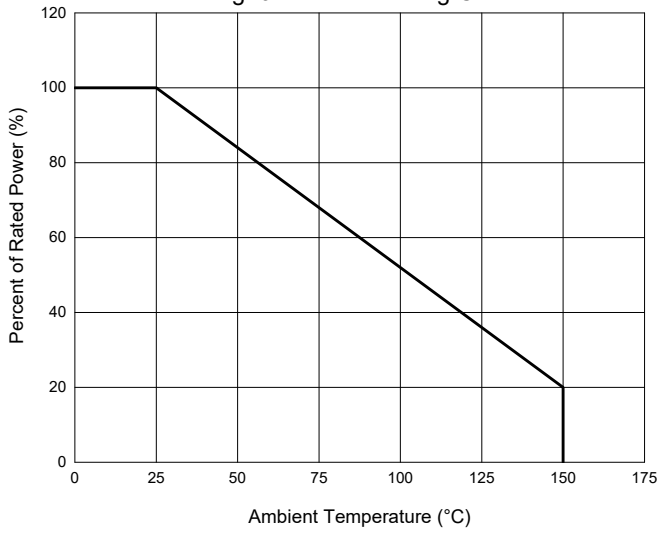


Fig. 6 - Pulse Derating Curve



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel

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