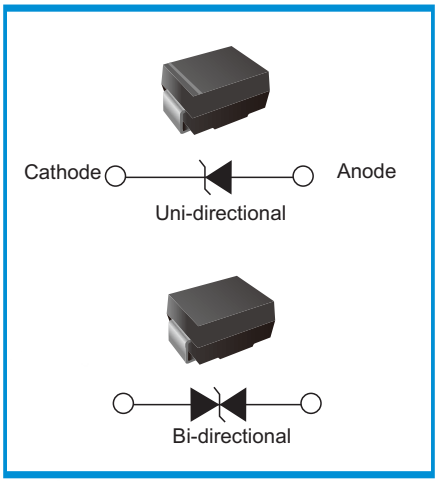
LTVBxxA(C)M Series

Transient Voltage Suppressors (TVS) Data Sheet

Features

- For surface mounted applications in order to optimize board space
- 1000W peak pulse power capability at 10/1000μs waveform, repetition rate (duty cycle): 0.01%
- Typical I_R less than 1μA above 10V
- Low profile package
- Built-in strain relief
- Glass passivated junction
- Low inductance
- Excellent clamping capability
- High Temperature soldering: 260℃/10 seconds at terminals
- Fast response time
- Plastic package has underwriters laboratory flammability 94V-0
- Meets MSL level 1, per J-STD-020
- Safety certification: UL: E244458

Functional Diagram



Mechanical Data

- Case: JEDEC DO-214AA. Molded plastic over glass passivated junction
- Terminal: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: For uni-directional types the band denotes cathode end, no marking on bi-directional types
- Standard Packaging: 12mm tape (EIA STD RS-481)
- Weight: 0.10g

Applications

- I/O interface
- Vcc bus
- AC/DC power supply
- Low frequency signal transmission line (RS232, RS485, etc.)

Maximum Ratings and Characteristics

Ratings at 25℃ ambient temperature unless otherwise specified.

Rating	Symbol	Value	Units
Peak pulse power dissipation at 10/1000μs waveform (Note1, Note2, Fig.1)	P_{PPM}	Minimum 1000	Watts
Peak pulse current of at 10/1000μs waveform (Note 1, Fig.3)	I_{PPM}	See Table	Amps
Steady state power dissipation at T_A=50℃ (Fig.5)	$P_{M(AV)}$	6.0	Watts
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, (JEDEC Method) (Note3, Fig.6)	I_{FSM}	150	Amps
Operating junction and Storage Temperature Range.	T_J,T_{STG}	-65 to +150	℃
Typical thermal resistance junction to lead	$R_{\theta JL}$	20	℃/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	100	℃/W

Notes: 1. Non-repetitive current pulse, per Fig.3 and derated above T_A=25℃ per Fig.2.
2. Mounted on 5.0mm×5.0mm (0.03mm thick) copper pads to each terminal.
3. 8.3ms single half sine-wave, or equivalent square wave, duty cycle=4 pulses per minutes maximum.

Electrical Characteristics (T_A=25℃)

Part Number (Uni)	Part Number (Bi)	Marking	Reverse Stand off Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts)@ I_T		Test Current I_T (MA)	Maximum Clamping Voltage V_C @I_{PP} (V)	Maximum Peak Pulse Current I_{PP} (A)	Maximum Reverse Leakage I_R @V_R (μA)
				MIN	MAX				
LTVB5.0AM	LTVB5.0CM	5M	5.0	6.40	7.00	10	9.2	108.70	500
LTVB6.0AM	LTVB6.0CM	6M	6.0	6.67	7.37	10	10.3	97.09	500
LTVB6.5AM	LTVB6.5CM	6M5	6.5	7.22	7.98	10	11.2	89.29	300
LTVB7.0AM	LTVB7.0CM	7M	7.0	7.78	8.60	10	12.0	83.33	200
LTVB7.5AM	LTVB7.5CM	7M5	7.5	8.33	9.21	1	12.9	77.52	100
LTVB8.0AM	LTVB8.0CM	8M	8.0	8.89	9.83	1	13.6	73.53	50
LTVB8.5AM	LTVB8.5CM	8M5	8.5	9.44	10.40	1	14.4	69.44	20
LTVB9.0AM	LTVB9.0CM	9M	9.0	10.00	11.10	1	15.4	64.94	10
LTVB10AM	LTVB10CM	10M	10.0	11.10	12.30	1	17.0	58.82	5
LTVB11AM	LTVB11CM	11M	11.0	12.20	13.50	1	18.2	54.95	1
LTVB12AM	LTVB12CM	12M	12.0	13.30	14.70	1	19.9	50.25	1
LTVB13AM	LTVB13CM	13M	13.0	14.40	15.90	1	21.5	46.51	1
LTVB14AM	LTVB14CM	14M	14.0	15.60	17.20	1	23.2	43.10	1
LTVB15AM	LTVB15CM	15M	15.0	16.70	18.50	1	24.4	40.98	1
LTVB16AM	LTVB16CM	16M	16.0	17.80	19.70	1	26.0	38.46	1
LTVB17AM	LTVB17CM	17M	17.0	18.90	20.90	1	27.6	36.23	1
LTVB18AM	LTVB18CM	18M	18.0	20.00	22.10	1	29.2	34.25	1
LTVB20AM	LTVB20CM	20M	20.0	22.20	24.50	1	32.4	30.86	1
LTVB22AM	LTVB22CM	22M	22.0	24.40	26.90	1	35.5	28.17	1
LTVB24AM	LTVB24CM	24M	24.0	26.70	29.50	1	38.9	25.71	1
LTVB26AM	LTVB26CM	26M	26.0	28.90	31.90	1	42.1	23.75	1
LTVB28AM	LTVB28CM	28M	28.0	31.10	34.40	1	45.4	22.03	1
LTVB30AM	LTVB30CM	30M	30.0	33.30	36.80	1	48.4	20.66	1
LTVB33AM	LTVB33CM	33M	33.0	36.70	40.60	1	53.3	18.76	1
LTVB36AM	LTVB36CM	36M	36.0	40.00	44.20	1	58.1	17.21	1
LTVB40AM	LTVB40CM	40M	40.0	44.40	49.10	1	64.5	15.50	1
LTVB43AM	LTVB43CM	43M	43.0	47.80	52.80	1	69.4	14.41	1
LTVB45AM	LTVB45CM	45M	45.0	50.00	55.30	1	72.7	13.76	1
LTVB48AM	LTVB48CM	48M	48.0	53.30	58.90	1	77.4	12.92	1
LTVB51AM	LTVB51CM	51M	51.0	56.70	62.70	1	82.4	12.14	1
LTVB54AM	LTVB54CM	54M	54.0	60.00	66.30	1	87.1	11.48	1
LTVB58AM	LTVB58CM	58M	58.0	64.40	71.20	1	93.6	10.68	1
LTVB60AM	LTVB60CM	60M	60.0	66.70	73.70	1	96.8	10.33	1
LTVB64AM	LTVB64CM	64M	64.0	71.10	78.60	1	103.0	9.71	1
LTVB70AM	LTVB70CM	70M	70.0	77.80	86.00	1	113.0	8.85	1
LTVB75AM	LTVB75CM	75M	75.0	83.30	92.10	1	121.0	8.26	1
LTVB78AM	LTVB78CM	78M	78.0	86.70	95.80	1	126.0	7.94	1
LTVB85AM	LTVB85CM	85M	85.0	94.40	104.00	1	137.0	7.30	1
LTVB90AM	LTVB90CM	90M	90.0	100.00	111.00	1	146.0	6.85	1
LTVB100AM	LTVB100CM	100M	100.0	111.00	123.00	1	162.0	6.17	1
LTVB110AM	LTVB110CM	110M	110.0	122.00	135.00	1	177.0	5.65	1
LTVB120AM	LTVB120CM	120M	120.0	133.00	147.00	1	193.0	5.18	1
LTVB130AM	LTVB130CM	130M	130.0	144.00	159.00	1	209.0	4.78	1
LTVB150AM	LTVB150CM	150M	150.0	167.00	185.00	1	243.0	4.12	1

Notes: For bidirectional type having V_R of 10V and less, the I_R limit is double.

Ratings and Characteristics Curves(T_A =25℃unless otherwise noted)

Figure 1. Peak Pulse Power Rating Curve

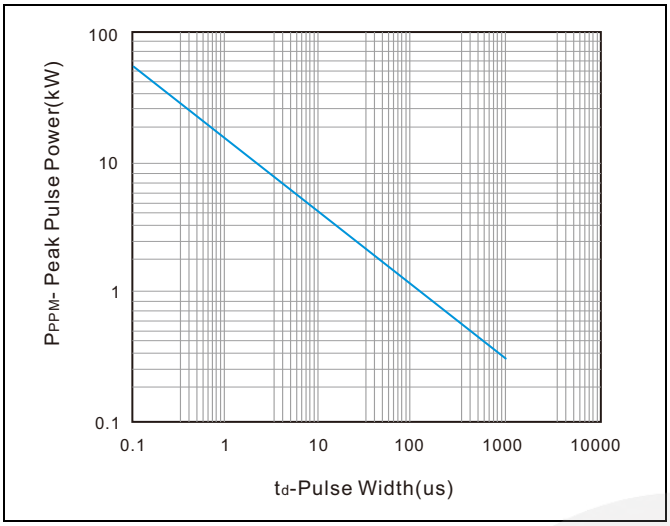


Figure 2. Pulse Derating Curve

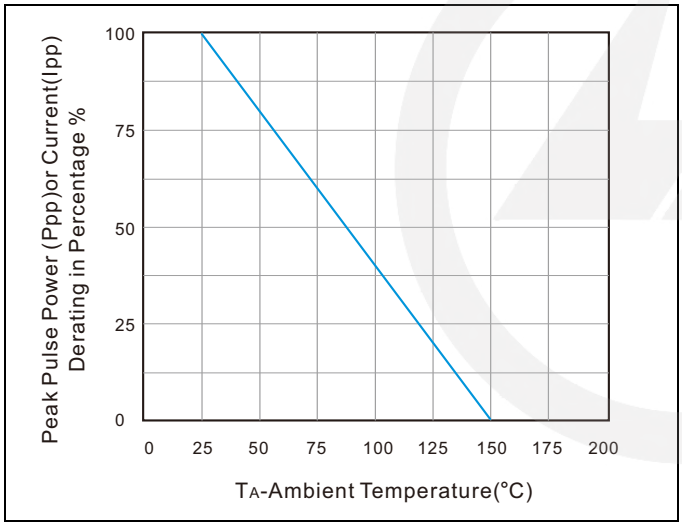


Figure 3. Pulse Waveform

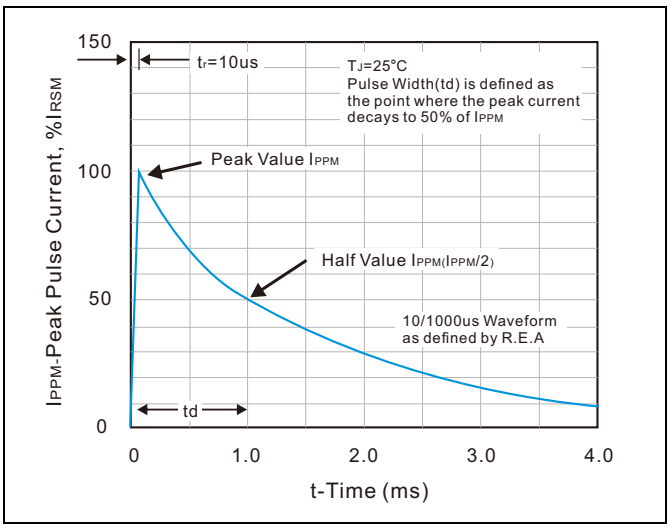


Figure 4. Typical Junction Capacitance

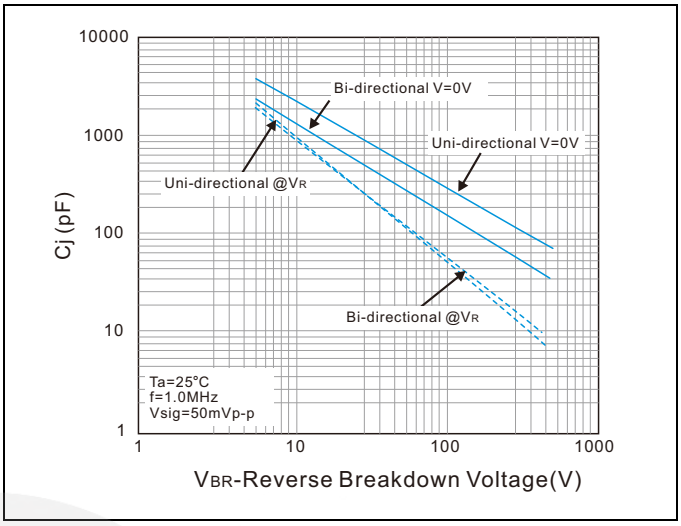


Figure 5. Steady State Power Dissipation Derating Curve

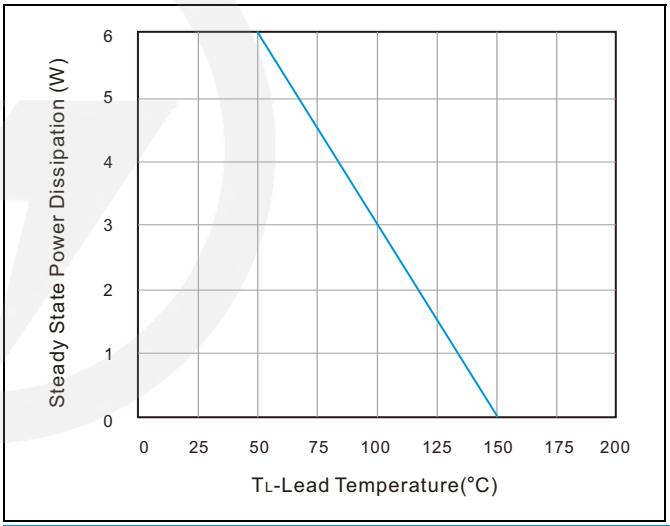
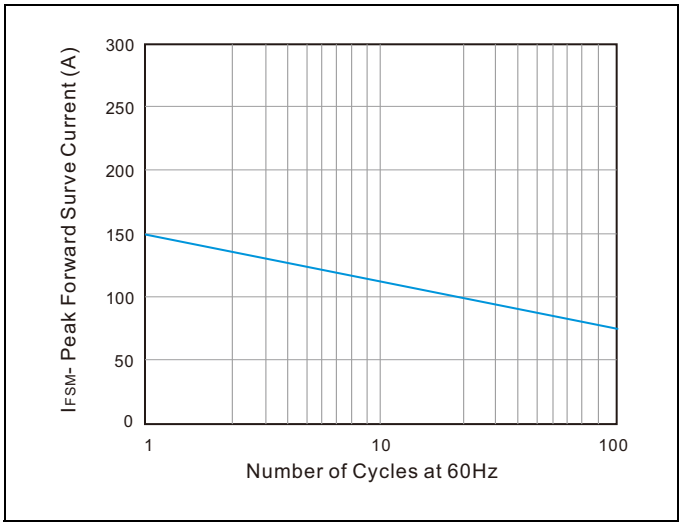
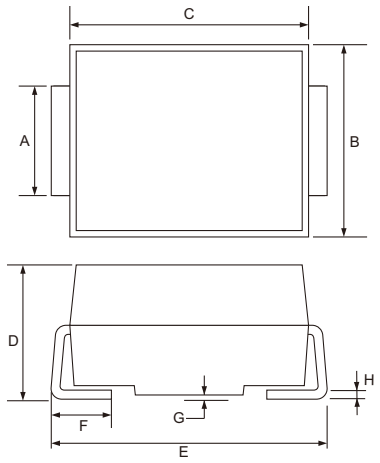


Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



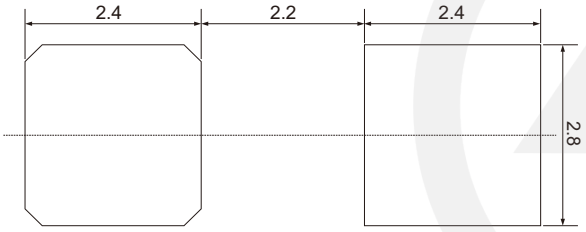
SMB Package Outline



Unit: mm

SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	1.90	2.20
B	3.30	3.94
C	4.05	4.75
D	2.13	2.65
E	5.08	5.59
F	0.76	1.52
G	0.203 TYP.	
H	0.15	0.31

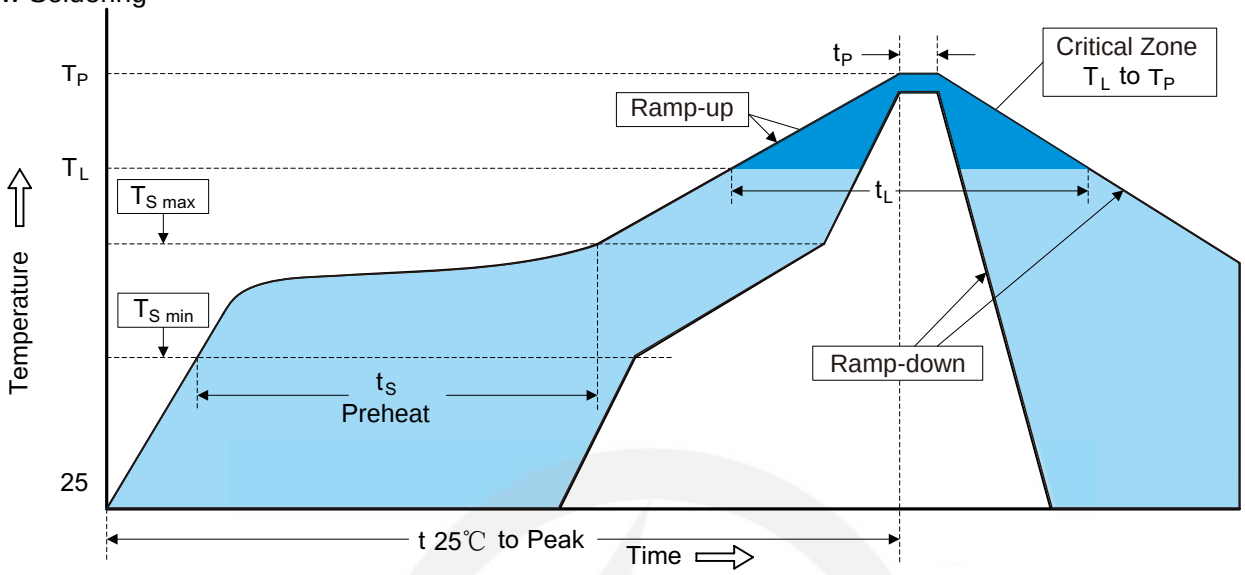
SMB Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm
3.The pad layout is for reference purpose only.

Recommended Soldering Conditions

Reflow Soldering

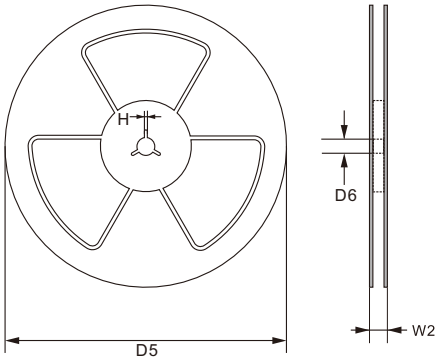


Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3℃/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max) (t_S)	 150℃ 200℃ 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	 3℃/second max.
Time maintained above: -Temperature (T_L) -Time (t_L)	 217℃ 60-150 seconds
Peak Temperature (T_P)	260℃
Time within 5℃ of actual Peak Temperature (t_P)	20-40 seconds
Ramp-down Rate	6℃/second max.
Time 25℃ to Peak Temperature	8 minutes max.

Packaging

13” Reel



D5	Φ330.0±2.0
D6	Φ13.5±0.5
H	2.5±1.0
W2	16.0±2.0
Quantity: 3000PCS	