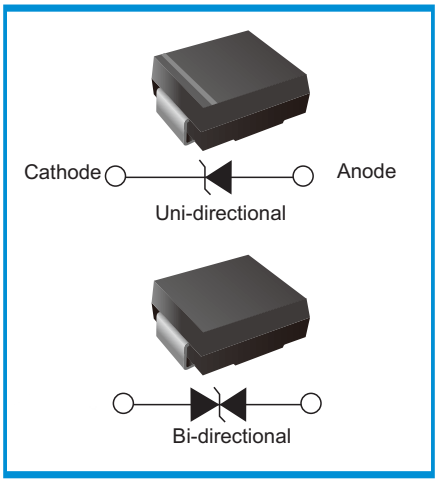
Transient Voltage Suppressors (TVS) Data Sheet

Features

- 5000W peak pulse power capability at 10/1000 μs waveform, repetition rate (duty cycle): 0.01%
- High Temperature soldering: 260℃/10 seconds at terminals
- Plastic package has underwriters laboratory flammability 94V-0
- For surface mounted applications in order to optimize board space
- Meets MSL level 1, per J-STD-020
- Typical I_R less than 5μA above 11V
- Low inductance
- Built-in strain relief
- Fast response time
- Low profile package
- Glass passivated junction
- Excellent clamping capability

Functional Diagram



Mechanical Data

- Case: JEDEC DO-214AB. 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: 16mm tape (EIA STD RS-481)
- Weight: 0.28g

Applications

- I/O interface
- AC/DC power supply
- Vcc bus
- 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 5000	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)	$P_{M(AV)}$	6.5	Watts
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, (JEDEC Method) (Note3, Fig.6)	I_{FSM}	300	Amps
Operating junction and Storage Temperature Range.	T_J,T_{STG}	-65 to +150	℃
Typical thermal resistance junction to lead	$R_{\theta JL}$	15	℃/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	75	℃/W

Notes: 1. Non-repetitive current pulse, per Fig.3 and derated above T_A=25℃ per Fig.2.
2. Mounted on 8.0mm×8.0mm (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 (μ A)
		UNI	BI		MIN	MAX				
LTVC11AT	LTVC11CT	5PEN or 11T	5BEN or 11T	11.0	12.20	13.50	10	18.2	275.00	800
LTVC12AT	LTVC12CT	5PEP or 12T	5BEP or 12T	12.0	13.30	14.70	10	19.9	252.00	800
LTVC13AT	LTVC13CT	5PEQ or 13T	5BEQ or 13T	13.0	14.40	15.90	10	21.5	233.00	500
LTVC14AT	LTVC14CT	5PER or 14T	5BER or 14T	14.0	15.60	17.20	10	23.2	216.00	200
LTVC15AT	LTVC15CT	5PES or 15T	5BES or 15T	15.0	16.70	18.50	1	24.4	205.00	100
LTVC16AT	LTVC16CT	5PET or 16T	5BET or 16T	16.0	17.80	19.70	1	26.0	193.00	50
LTVC17AT	LTVC17CT	5PEU or 17T	5BEU or 17T	17.0	18.90	20.90	1	27.6	181.00	20
LTVC18AT	LTVC18CT	5PEV or 18T	5BEV or 18T	18.0	20.00	22.10	1	29.2	172.00	10
LTVC20AT	LTVC20CT	5PEW or 20T	5BEW or 20T	20.0	22.20	24.50	1	32.4	155.00	5
LTVC22AT	LTVC22CT	5PEX or 22T	5BEX or 22T	22.0	24.40	26.90	1	35.5	141.00	5
LTVC24AT	LTVC24CT	5PEZ or 24T	5BEZ or 24T	24.0	26.70	29.50	1	38.9	129.00	5
LTVC26AT	LTVC26CT	5PFE or 26T	5BFE or 26T	26.0	28.90	31.90	1	42.1	119.00	5
LTVC28AT	LTVC28CT	5PFG or 28T	5BFG or 28T	28.0	31.10	34.40	1	45.4	110.00	5
LTVC30AT	LTVC30CT	5PFK or 30T	5BFK or 30T	30.0	33.30	36.80	1	48.4	103.00	5
LTVC33AT	LTVC33CT	5PFM or 33T	5BFM or 33T	33.0	36.70	40.60	1	53.3	93.90	5
LTVC36AT	LTVC36CT	5PFP or 36T	5BFP or 36T	36.0	40.00	44.20	1	58.1	86.10	5
LTVC40AT	LTVC40CT	5PER or 40T	5BER or 40T	40.0	44.40	49.10	1	64.5	77.60	5
LTVC43AT	LTVC43CT	5PFT or 43T	5BFT or 43T	43.0	47.80	52.80	1	69.4	72.10	5
LTVC45AT	LTVC45CT	5PFV or 45T	5BFV or 45T	45.0	50.00	55.30	1	72.7	68.08	5
LTVC48AT	LTVC48CT	5PFX or 48T	5BFX or 48T	48.0	53.30	59.90	1	77.4	64.70	5
LTVC51AT	LTVC51CT	5PFZ or 51T	5BFZ or 51T	51.0	56.70	62.70	1	82.4	60.70	5
LTVC54AT	LTVC54CT	5PGE or 54T	5BGE or 54T	54.0	60.00	66.30	1	87.1	57.50	5
LTVC58AT	LTVC58CT	5PGG or 58T	5BGG or 58T	58.0	64.40	71.20	1	93.6	53.50	5
LTVC60AT	LTVC60CT	5PGK or 60T	5BGK or 60T	60.0	66.70	73.70	1	96.8	51.70	5
LTVC64AT	LTVC64CT	5PGM or 64T	5BGM or 64T	64.0	71.10	78.60	1	103.0	48.60	5
LTVC70AT	LTVC70CT	5PGP or 70T	5BGP or 70T	70.0	77.80	86.00	1	113.0	44.30	5
LTVC75AT	LTVC75CT	5PGR or 75T	5BGR or 75T	75.0	83.30	92.10	1	121.0	41.40	5
LTVC78AT	LTVC78CT	5PGT or 78T	5BGT or 78T	78.0	86.70	95.80	1	126.0	39.70	5
LTVC85AT	LTVC85CT	5PGV or 85T	5BGV or 85T	85.0	94.40	104.00	1	137.0	36.50	5
LTVC90AT	LTVC90CT	5PGX or 90T	5BGX or 90T	90.0	100.00	111.00	1	146.0	34.30	5
LTVC100AT	LTVC100CT	5PGZ or 100T	5BGZ or 100T	100.0	111.00	123.00	1	162.0	30.90	5
LTVC110AT	LTVC110CT	5PHE or 110T	5BHE or 110T	110.0	122.00	135.00	1	177.0	28.30	5
LTVC120AT	LTVC120CT	5PHG or 120T	5BHG or 120T	120.0	133.00	147.00	1	193.0	26.00	5
LTVC130AT	LTVC130CT	5PHK or 130T	5BHK or 130T	130.0	144.00	159.00	1	209.0	24.00	5
LTVC150AT	LTVC150CT	5PHM or 150T	5BHM or 150T	150.0	167.00	185.00	1	243.0	20.60	5
LTVC160AT	LTVC160CT	5PHP or 160T	5BHP or 160T	160.0	178.00	197.00	1	259.0	19.30	5
LTVC170AT	LTVC170CT	5PHR or 170T	5BHR or 170T	170.0	189.00	209.00	1	275.0	18.20	5

Notes: For bidirectional type having V_R of 11V 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

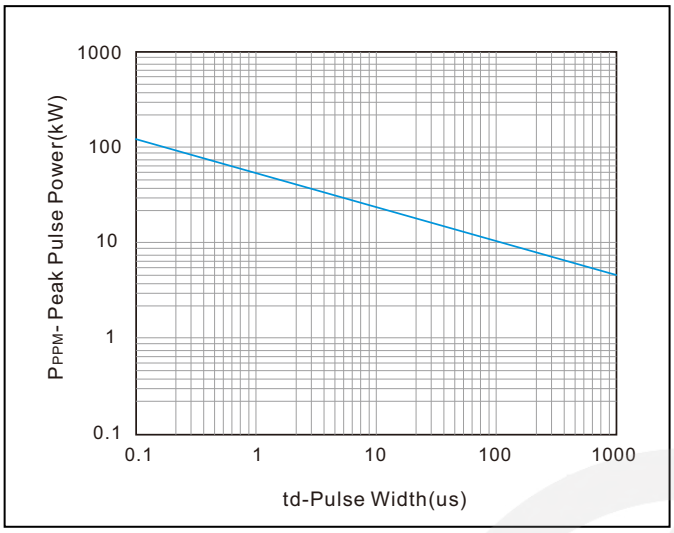


Figure 2. Pulse Derating Curve

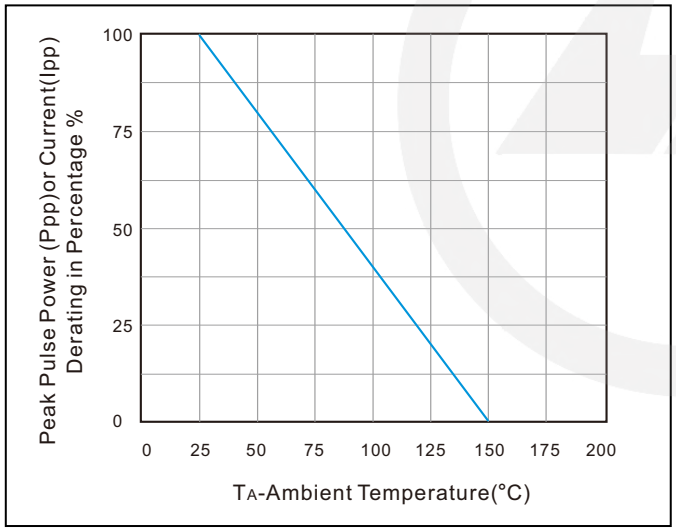


Figure 3. Pulse Waveform

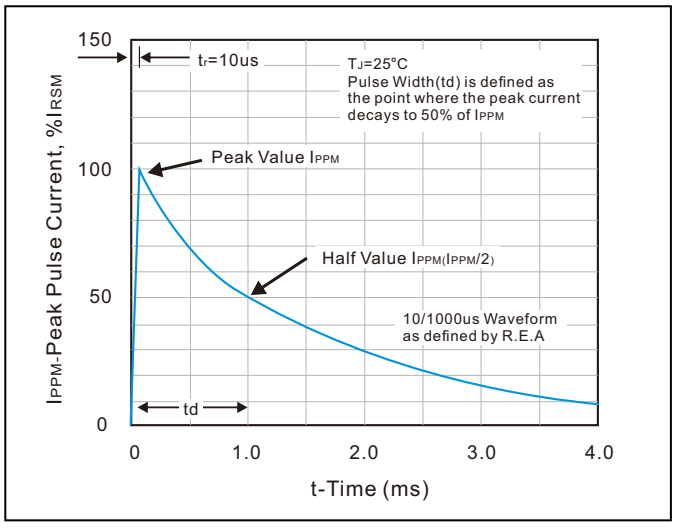


Figure 4. Typical Junction Capacitance

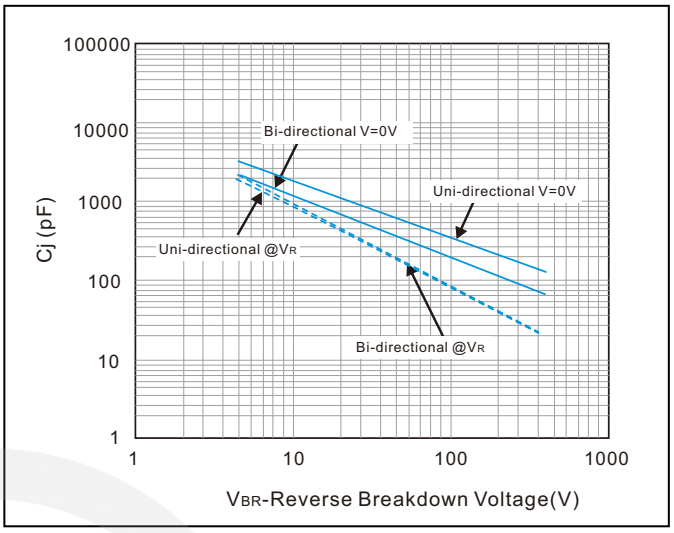


Figure 5. Steady State Power Dissipation Derating Curve

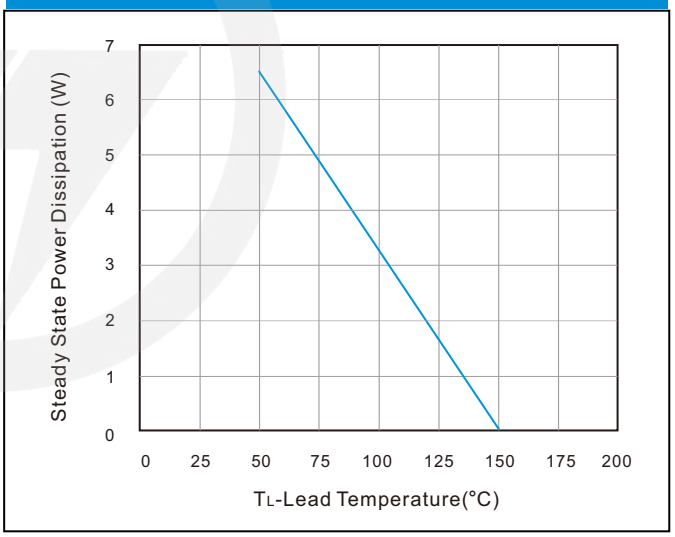
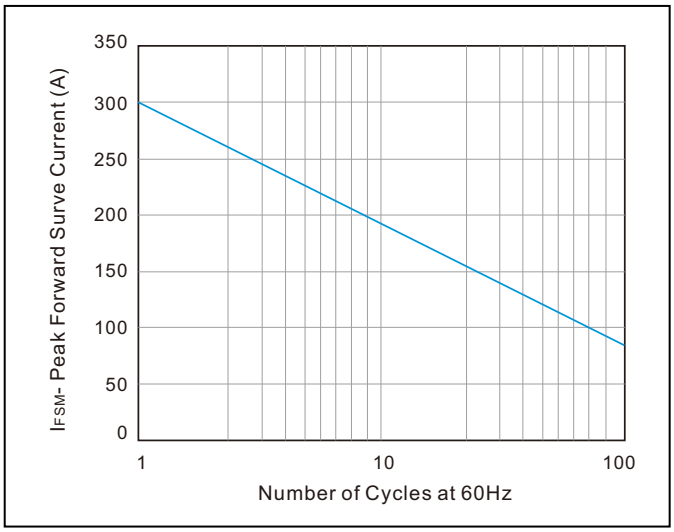
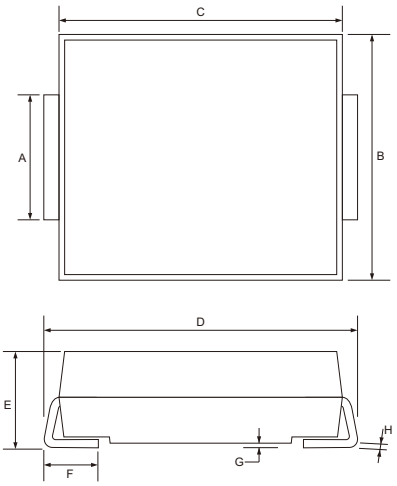


Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



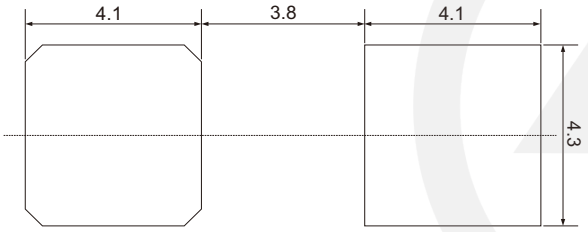
SMC Package Outline



Unit : mm

SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	2.75	3.27
B	5.59	6.22
C	6.50	7.11
D	7.60	8.13
E	1.99	2.80
F	0.76	1.60
G	0.05	0.31
H	0.10	0.31

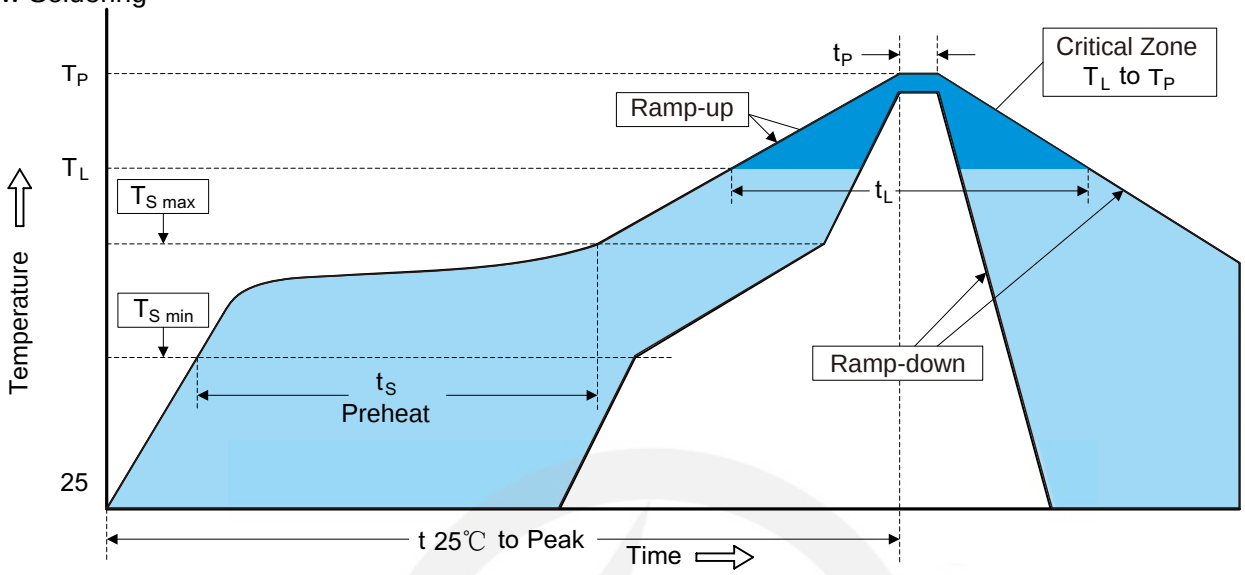
SMC Suggested Pad Layout



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

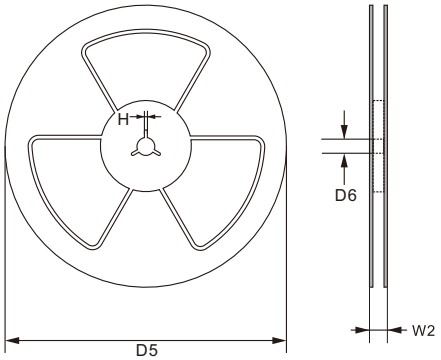


Recommended Conditions

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	