SuperTVS – 5000W Transient Voltage Suppressor

1. Features

- IEC 61000-4-2(ESD)±30kV(air),±30kV(contact)
- 5000Watts peak pulse power (tp=10/1000uS)
- Quick response to surge voltage
- Low clamping voltage
- Moisture sensitivity level: Level 1
- Molding compound meets UL 94 V-0 flammability rating
- EFT protection of data lines in accordance with IEC 61000-4 4(IEC801-4)
- Lead free in comply with EU RoHS
- 2011/65/EU directives

2. Application information

- DC Port
- RS485/232/422
- I/O Port

3. Mechanical Data

- Package: DO-214AB (SMC) Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant
- Terminals: Tin plated leads, solderable per J-STD-002 and JESD22-B102
- Polarity: For uni-directional types the band denotes cathode end, no marking on bi-directional types

4. Marking Information

BI- directional	UNI-directional	Marking
		XXXX= Product type marking code (See Electrical Characteristics Table)
		

5. Maximum Ratings and Characteristics

Ratings at 25℃ ambient temperature unless otherwise specified

Rating	Symbol	Value	Units
Peak pulse power dissipation at 10/1000us waveform (Note1,2)	P_{PPM}	5000	W
Peak pulse current of at 10/1000 us waveform (Note1)	I_{PPM}	See Table	A
Power dissipation on infinite heatsink at TL=75℃(Note2)	P_D	6.5	W
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load (JEDEC Method) (Note3)	I_{FSM}	300	A
Maximum instantaneous forward voltage at 100 A for unidirectional only (Note4)	V_F	3.5/5.0	V
Operating junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	℃

Thermal Characteristics

Ratings at 25℃ ambient temperature unless otherwise specified

Parameter	Symbol	Conditions	Value	Units
Thermal Resistance(Typical)	$R_{\theta J-A}$(Note5)	junction to ambient	75	℃/W
	$R_{\theta J-L}$(Note5)	junction to lead	15	
	$R_{\theta J-C}$(Note5)	junction to case	13	

Notes:

1: Non-repetitive current pulse, per Fig. 3 and derated above TA= 25℃ per Fig.2.

2: Mounted on 0.31 x 0.31" (8.0 x 8.0 mm) copper pads to each terminal.

3: Measured on 8.3ms single half sine-wave or equivalent square wave,duty cycle=4 pulses per minute maximum.

4: VF=3.5V Max for devices of VBR≤85V， and VF=5.0V Max for devices of VBR＞85V.

5: Mounted on minimum recommended pad layout.

6. Electrical Characteristics (TA=25℃,unless otherwise noted)

Part Number		Marking		Reverse Stand off Voltage VR	Breakdown Voltage VBR (Volts) @ IT		Test Current IT	Maximum Clamping Voltage VC @ Ipp (10/1000 us)	Maximum Peak Pulse Current Ipp (10/1000 us)	Maximum Reverse Leakage IR @ VR
BI	UNI	BI	UNI	(V)	MIN	MAX	(mA)	(V)	(A)	(μA)
5.0SMDJ11CA	5.0SMDJ11A	5D11C	5D11	11	12.2	13.5	1	18.2	274.7	800
5.0SMDJ12CA	5.0SMDJ12A	5D12C	5D12	12	13.3	14.7	1	19.9	251.3	800
5.0SMDJ13CA	5.0SMDJ13A	5D13C	5D13	13	14.4	15.9	1	21.5	232.6	500
5.0SMDJ14CA	5.0SMDJ14A	5D14C	5D14	14	15.6	17.2	1	23.2	215.5	200
5.0SMDJ15CA	5.0SMDJ15A	5D15C	5D15	15	16.7	18.5	1	24.4	204.9	100
5.0SMDJ16CA	5.0SMDJ16A	5D16C	5D16	16	17.8	19.7	1	26	192.3	50
5.0SMDJ17CA	5.0SMDJ17A	5D17C	5D17	17	18.9	20.9	1	27.6	181.2	20
5.0SMDJ18CA	5.0SMDJ18A	5D18C	5D18	18	20	22.1	1	29.2	171.2	10
5.0SMDJ19CA	5.0SMDJ19A	5D19C	5D19	19	21.1	23.3	1	30.8	162.3	10
5.0SMDJ20CA	5.0SMDJ20A	5D20C	5D20	20	22.2	24.5	1	32.4	154.3	5
5.0SMDJ22CA	5.0SMDJ22A	5D22C	5D22	22	24.4	26.9	1	35.5	140.8	5
5.0SMDJ24CA	5.0SMDJ24A	5D24C	5D24	24	26.7	29.5	1	38.9	128.5	5
5.0SMDJ26CA	5.0SMDJ26A	5D26C	5D26	26	28.9	31.9	1	42.1	118.8	5
5.0SMDJ28CA	5.0SMDJ28A	5D28C	5D28	28	31.1	34.4	1	45.4	110.1	5
5.0SMDJ30CA	5.0SMDJ30A	5D30C	5D30	30	33.3	36.8	1	48.4	103.3	5
5.0SMDJ33CA	5.0SMDJ33A	5D33C	5D33	33	36.7	40.6	1	53.3	93.8	5
5.0SMDJ36CA	5.0SMDJ36A	5D36C	5D36	36	40	44.2	1	58.1	86.1	5
5.0SMDJ40CA	5.0SMDJ40A	5D40C	5D40	40	44.4	49.1	1	64.5	77.5	5
5.0SMDJ43CA	5.0SMDJ43A	5D43C	5D43	43	47.8	52.8	1	69.4	72	5
5.0SMDJ45CA	5.0SMDJ45A	5D45C	5D45	45	50	55.3	1	72.7	68.8	5
5.0SMDJ48CA	5.0SMDJ48A	5D48C	5D48	48	53.3	58.9	1	77.4	64.6	5
5.0SMDJ51CA	5.0SMDJ51A	5D51C	5D51	51	56.7	62.7	1	82.4	60.7	5
5.0SMDJ54CA	5.0SMDJ54A	5D54C	5D54	54	60	66.3	1	87.1	57.4	5
5.0SMDJ58CA	5.0SMDJ58A	5D58C	5D58	58	64.4	71.2	1	93.6	53.4	5
5.0SMDJ60CA	5.0SMDJ60A	5D60C	5D60	60	66.7	73.7	1	96.8	51.7	5

Part Number		Marking		Reverse Stand off Voltage VR	Breakdown Voltage VBR (Volts) @ IT		Test Current IT	Maximum Clamping Voltage VC @ Ipp (10/1000 us)	Maximum Peak Pulse Current Ipp (10/1000 us)	Maximum Reverse Leakage IR @ VR
BI	UNI	BI	UNI	(V)	MIN	MAX	(mA)	(V)	(A)	(μA)
5.0SMDJ64CA	5.0SMDJ64A	5D64C	5D64	64	71.1	78.6	1	103	48.5	5
5.0SMDJ70CA	5.0SMDJ70A	5D70C	5D70	70	77.8	86	1	113	44.2	5
5.0SMDJ75CA	5.0SMDJ75A	5D75C	5D75	75	83.3	92.1	1	121	41.3	5
5.0SMDJ78CA	5.0SMDJ78A	5D78C	5D78	78	86.7	95.8	1	126	39.7	5
5.0SMDJ80CA	5.0SMDJ80A	5D80C	5D80	80	88.96	97.6	1	129.6	38.6	5
5.0SMDJ85CA	5.0SMDJ85A	5D85C	5D85	85	94.4	104	1	137	36.5	5
5.0SMDJ90CA	5.0SMDJ90A	5D90C	5D90	90	100	111	1	146	34.2	5
5.0SMDJ100CA	5.0SMDJ100A	5D100C	5D100	100	111	123	1	162	30.9	5
5.0SMDJ110CA	5.0SMDJ110A	5D110C	5D110	110	122	135	1	177	28.2	5
5.0SMDJ120CA	5.0SMDJ120A	5D120C	5D120	120	133	147	1	193	25.9	5
5.0SMDJ130CA	5.0SMDJ130A	5D130C	5D130	130	144	159	1	209	23.9	5
5.0SMDJ140CA	5.0SMDJ140A	5D140C	5D140	140	155	171	1	226.8	22	5
5.0SMDJ150CA	5.0SMDJ150A	5D150C	5D150	150	167	185	1	243	20.6	5
5.0SMDJ160CA	5.0SMDJ160A	5D160C	5D160	160	178	197	1	259	19.3	5
5.0SMDJ170CA	5.0SMDJ170A	5D170C	5D170	170	189	209	1	275	18.2	5
5.0SMDJ180CA	5.0SMDJ180A	5D180C	5D180	180	200.2	220	1	291.6	17.1	5
5.0SMDJ190CA	5.0SMDJ190A	5D190C	5D190	190	211	232	1	307.8	16.2	5
5.0SMDJ200CA	5.0SMDJ200A	5D200C	5D200	200	224	247	1	324	15.4	5
5.0SMDJ220CA	5.0SMDJ220A	5D220C	5D220	220	246	272	1	356	14	5
5.0SMDJ250CA	5.0SMDJ250A	5D250C	5D250	250	279	309	1	405	12.3	5
5.0SMDJ300CA	5.0SMDJ300A	5D300C	5D300	300	335	371	1	486	10.3	5
5.0SMDJ350CA	5.0SMDJ350A	5D350C	5D350	350	391	432	1	567	8.8	5
5.0SMDJ400CA	5.0SMDJ400A	5D400C	5D400	400	447	494	1	648	7.7	5
5.0SMDJ440CA	5.0SMDJ440A	5D440C	5D440	440	492	543	1	713	7	5

7. Ratings and Characteristic Curves (TA =25℃ unless otherwise noted)

FIG1:Peak Pulse Power Rating Curve

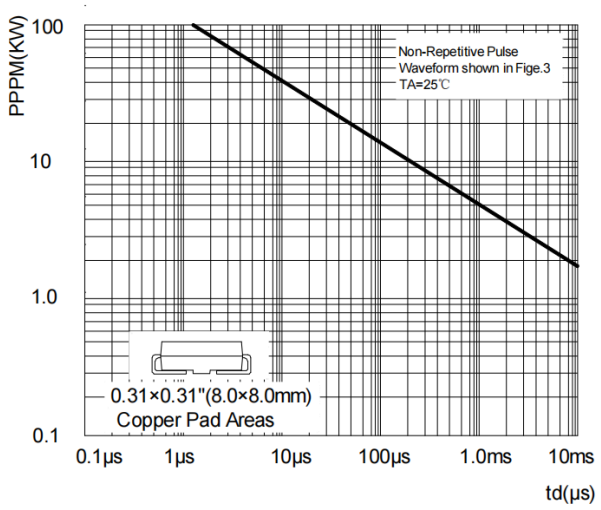


FIG2: Pulse Power or Current vs. Initial Junction Temperature

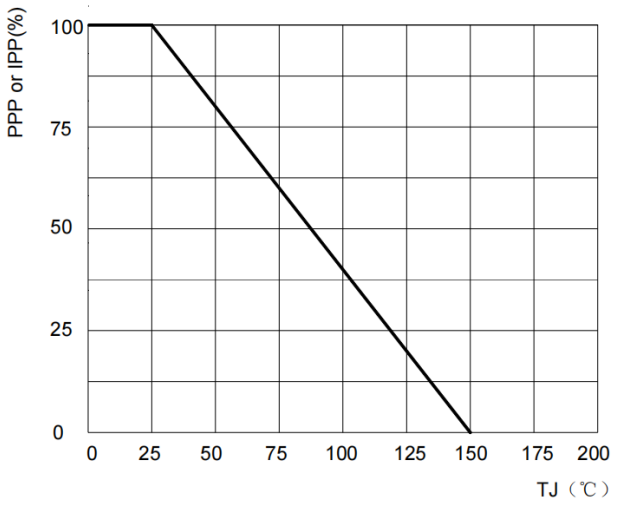


FIG3: Pulse Waveform

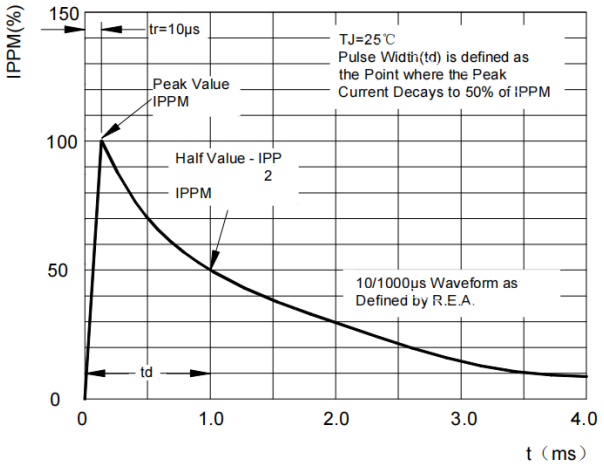


FIG4:Typical Transient Thermal Impedance

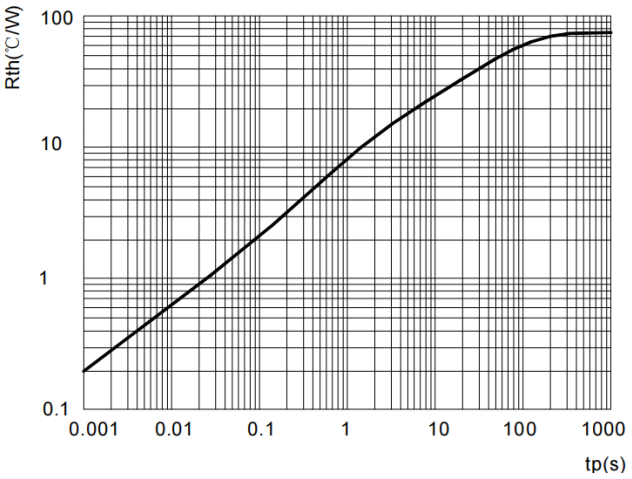


FIG5: Maximum Non-Repetitive Surge Current

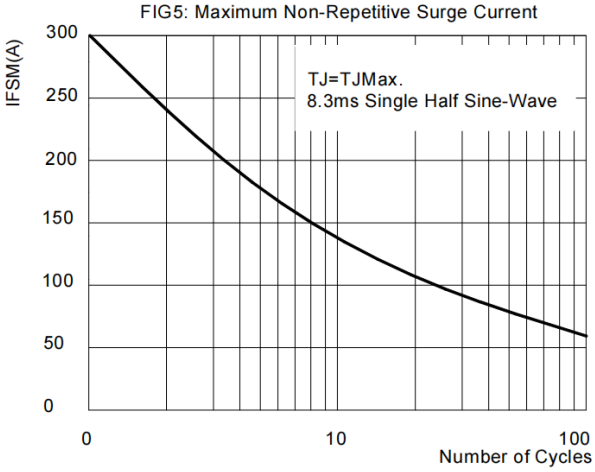
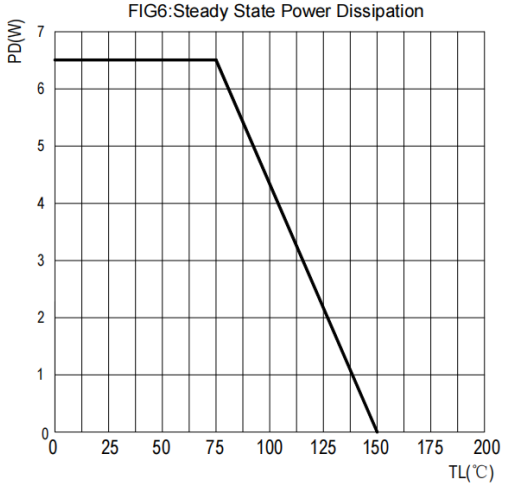
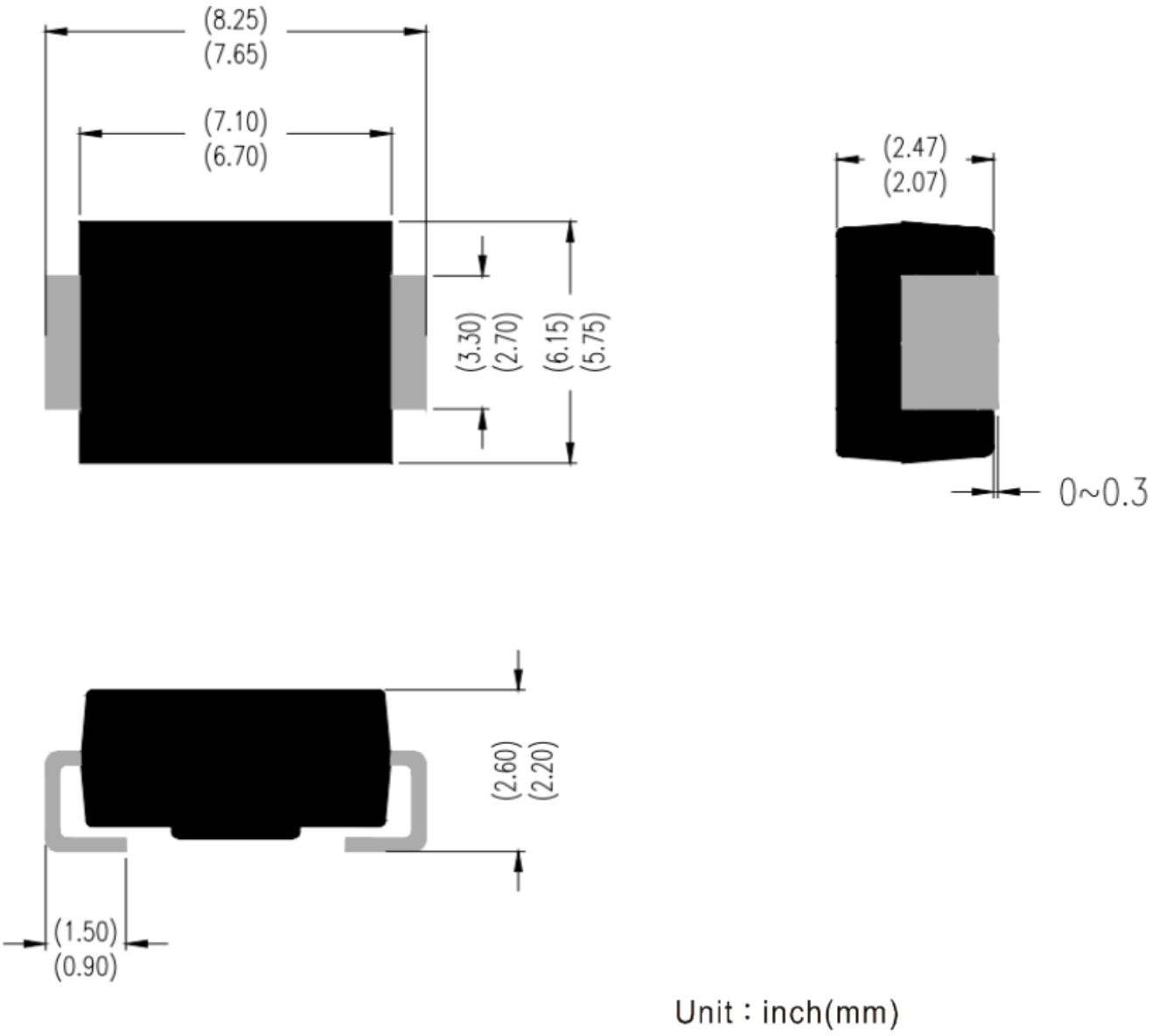


FIG6:Steady State Power Dissipation



8. Dimension (SMC/DO-214AB)



Unit : inch(mm)

DISCLAIMER

ELECSUPER PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, SAFETY INFORMATION, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with ElecSuper products. You are solely responsible for
(1) selecting the appropriate ElecSuper products for your application;
(2) designing, validating and testing your application;
(3) ensuring your application meets applicable standards, and any other safety, security, or other requirements.
These resources are subject to change without notice. ElecSuper grants you permission to use these resources only for development of an application that uses the ElecSuper products described in the resource. Other reproduction and display of these resources are prohibited. No license is granted to any other ElecSuper intellectual property right or to any third party intellectual property right. ElecSuper disclaims responsibility for, and you will fully indemnify ElecSuper and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources. ElecSuper’s products are provided subject to ElecSuper’s Terms of Sale or other applicable terms available either on ti.com or provided in conjunction with such ElecSuper products. ElecSuper’s provision of these resources does not expand or otherwise alter ElecSuper’s applicable warranties or warranty disclaimers for ElecSuper products.