

## DESCRIPTION

The TPSMCJ High Reliability series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

## FEATURES

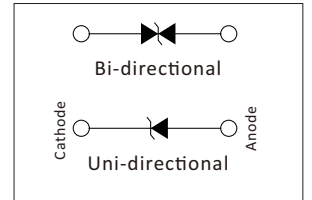
- > Glass passivated chip
- > 1500 W peak pulse power capability with a 10/1000  $\mu$ s waveform, repetitive rate (duty cycle):0.01 %
- > High reliability application and automotive grade
- > AEC Q101 qualified
- > Low leakage
- > Uni and Bidirectional unit
- > Excellent clamping capability
- > Very fast response time
- > RoHS compliant

## MECHANICAL DATA

- > Case: Molded plastic
- > Epoxy: UL 94V-0 rate flame retardant
- > Lead: Solderable per MIL-STD-750, method 2026
- > Polarity: Color band denotes cathode end except Bipolar
- > Mounting position: Any



DO-214AB PACKAGE



SCHEMATIC SYMBOL

## MAXIMUM RATINGS( $T_A=25^\circ\text{C}$ HERWISE NOTED)

PARAMETER	SYMBOL	VALUE	UNIT
Peak power dissipation with a 10/1000 $\mu$ s waveform <sup>(1)</sup>	$P_{PP}$	1500	W
Peak pulse current with a 10/1000 $\mu$ s waveform <sup>(1)</sup>	$I_{PP}$	See Next Table	A
Power dissipation on infinite heatsink at $T_l = 75^\circ\text{C}$	$P_D$	6.5	W
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only <sup>(2)</sup>	$I_{FSM}$	200	A
Maximum instantaneous forward voltage at 50 A for unidirectional only <sup>(3)</sup>	$V_F$	3.5/5.0	V
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 ~ +150	$^\circ\text{C}$

**Note:**

- (1) Non-repetitive current pulse per Fig.5 and derated above  $T_A = 25^\circ\text{C}$  per Fig.1  
 (2) Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum  
 (3)  $V_F < 3.5\text{V}$  for devices of  $V_{BR} < 200\text{V}$  and  $V_F < 5.0\text{V}$  for devices of  $V_{BR} > 201\text{V}$



**ELECTRICAL CHARACTERISTICS**

PART NUMBER		DEVICE MARKING CODE		BREAKDOWN VOLTAGE $V_{BR}@I_T$			MAXIMUM REVERSE LEAKAGE	WORKING PEAK REVERSE VOLTAGE	MAXIMUM REVERSE SURGE CURRENT	MAXIMUM CLAMPING VOLTAGE
UNI	BI	UNI	BI	Min.(V)	Max.(V)	$I_T$ (mA)	$I_R@V_{RWM}$ ( $\mu$ A)	$V_{RWM}$ (V)	$I_{PP}$ (A)	$V_C@I_{PP}$ (V)
TPSMCJ11A	TPSMCJ11CA	GDZA	BDZA	12.20	13.50	1	1	11.0	82.42	18.20
TPSMCJ12A	TPSMCJ12CA	GEEA	BEEA	13.30	14.70	1	1	12.0	75.38	19.90
TPSMCJ13A	TPSMCJ13CA	GEGA	BEGA	14.40	15.90	1	1	13.0	69.77	21.50
TPSMCJ14A	TPSMCJ14CA	GEKA	BEKA	15.60	17.20	1	1	14.0	64.66	23.20
TPSMCJ15A	TPSMCJ15CA	GEMA	BEMA	16.70	18.50	1	1	15.0	61.48	24.40
TPSMCJ16A	TPSMCJ16CA	GEPA	BEPA	17.80	19.70	1	1	16.0	57.69	26.00
TPSMCJ18A	TPSMCJ18CA	GETA	BETA	20.00	22.10	1	1	18.0	51.37	29.20
TPSMCJ20A	TPSMCJ20CA	GEVA	BEVA	22.20	24.50	1	1	20.0	46.30	32.40
TPSMCJ22A	TPSMCJ22CA	GEXA	BEXA	24.40	26.90	1	1	22.0	42.25	35.50
TPSMCJ24A	TPSMCJ24CA	GEZA	BEZA	26.70	29.50	1	1	24.0	38.56	38.90
TPSMCJ26A	TPSMCJ26CA	GFEA	BFEA	28.90	31.90	1	1	26.0	35.63	42.10
TPSMCJ28A	TPSMCJ28CA	GFGA	BFGA	31.10	34.40	1	1	28.0	33.04	45.40
TPSMCJ30A	TPSMCJ30CA	GFKA	BFKA	33.30	36.80	1	1	30.0	30.99	48.40
TPSMCJ33A	TPSMCJ33CA	GFMA	BFMA	36.70	40.60	1	1	33.0	28.14	53.30
TPSMCJ36A	TPSMCJ36CA	GFPA	BFPA	40.00	44.20	1	1	36.0	25.82	58.10
TPSMCJ40A	TPSMCJ40CA	GFRA	BFRA	44.40	49.10	1	1	40.0	23.26	64.50
TPSMCJ43A	TPSMCJ43CA	GFTA	BFTA	47.80	52.80	1	1	43.0	21.61	69.40
TPSMCJ45A	TPSMCJ45CA	GFVA	BFVA	50.00	55.30	1	1	45.0	20.63	72.70
TPSMCJ48A	TPSMCJ48CA	GFXA	BFXA	53.30	58.90	1	1	48.0	19.38	77.40
TPSMCJ51A	TPSMCJ51CA	GFZA	BFZA	56.70	62.70	1	1	51.0	18.20	82.40
TPSMCJ54A	TPSMCJ54CA	GGEA	BGEA	60.00	66.30	1	1	54.0	17.22	87.10
TPSMCJ58A	TPSMCJ58CA	GGGA	BGGA	64.40	71.20	1	1	58.0	16.03	93.60
TPSMCJ60A	TPSMCJ60CA	GGKA	BGKA	66.70	73.70	1	1	60.0	15.50	96.80
TPSMCJ64A	TPSMCJ64CA	GGMA	BGMA	71.10	78.60	1	1	64.0	14.56	103.0
TPSMCJ70A	TPSMCJ70CA	GGPA	BGPA	77.80	86.00	1	1	70.0	13.27	113.0
TPSMCJ75A	TPSMCJ75CA	GGRA	BGRA	83.30	92.10	1	1	75.0	12.40	121.0
TPSMCJ78A	TPSMCJ78CA	GGTA	BGTA	86.70	95.80	1	1	78.0	11.90	126.0

**Note:**

1. Add suffix 'C' or 'CA' after part number to specify Bi-directional devices
2. For Bi-Directional devices having  $V_R$  of 10 volts and under, the  $I_R$  limit is double



RATINGS AND CHARACTERISTICS CURVES ( $T_A=25^{\circ}\text{C}$  UNLESS OTHERWISE NOTED)

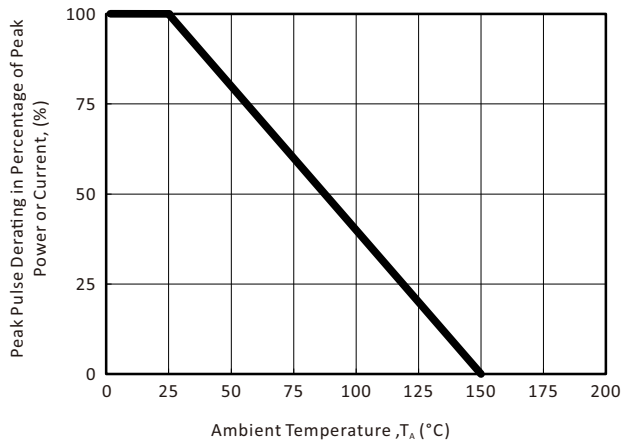


Fig. 1 - Pulse Derating Curve

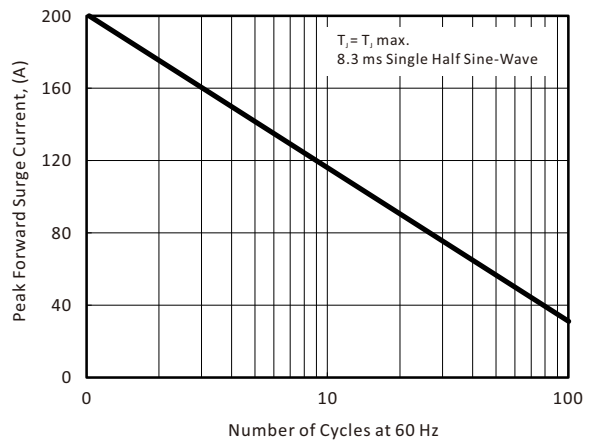


Fig. 2 - Maximum Non-Repetitive Surge Current

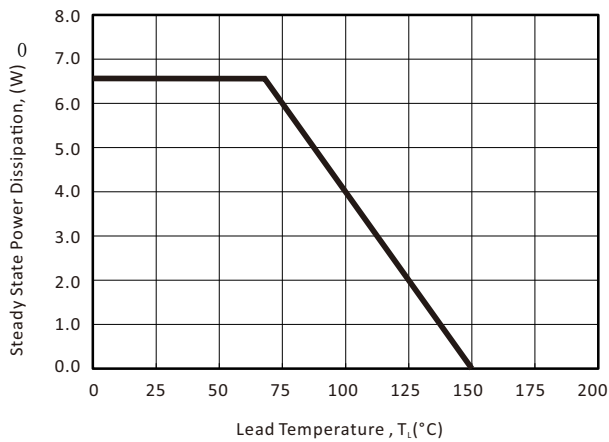


Fig. 3 - Steady State Power Derating Curve

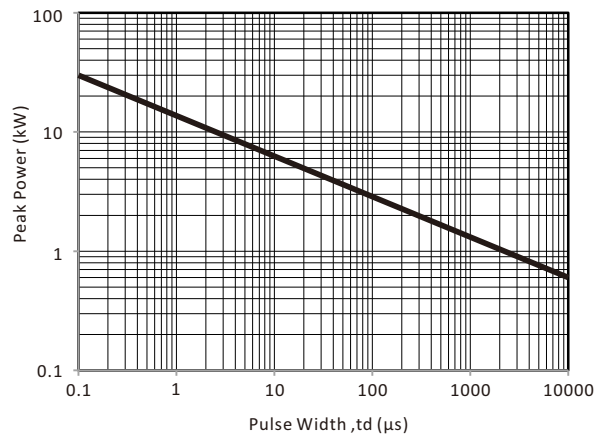


Fig. 4 - Peak Pulse Power Rating Curve

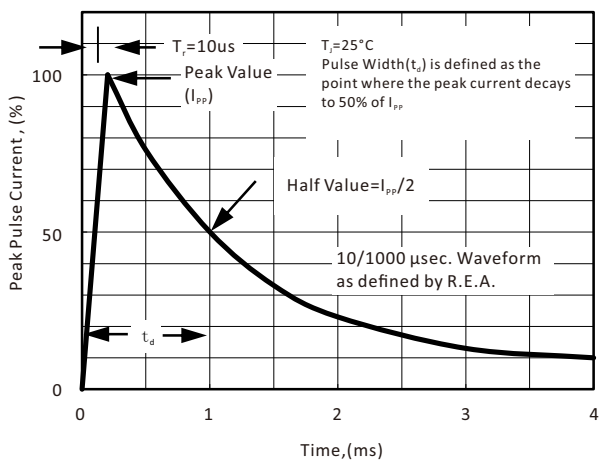


Fig. 5 - Pulse Waveform

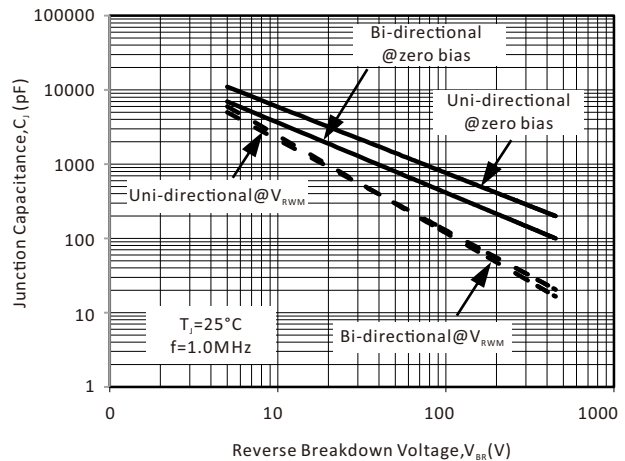
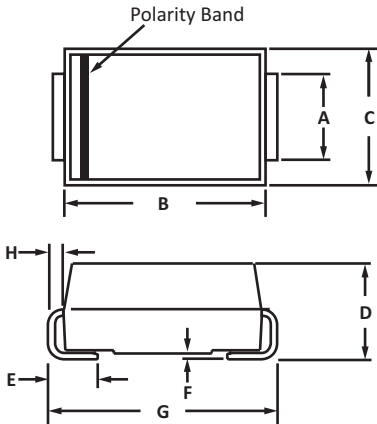


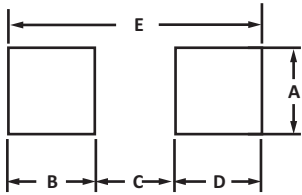
Fig. 6 - Typical Junction Capacitance



### DO-214AB(SMC) PACKAGE DIMENSIONS

 <p>The diagram shows two views of the DO-214AB(SMC) package. The top view is a rectangle with dimensions A (height), B (width), and C (total height including leads). A 'Polarity Band' is indicated on the left side. The bottom view is a perspective view showing the leads with dimensions D (height), E (lead width), F (lead length), and G (total length including leads).</p>	MILLIMETERS		INCHES	
	DIM	Min.	Max.	Min.
A	2.90	3.20	0.114	0.126
B	6.60	7.15	0.260	0.281
C	5.55	6.04	0.219	0.238
D	1.98	2.53	0.078	0.100
E	0.75	1.51	0.030	0.059
F	0.00	0.20	0.000	0.008
G	7.75	7.95	0.305	0.313
H	0.15	0.30	0.006	0.012
<b>NOTES:</b> 1. Dimensions are exclusive of mold flash and metal burrs 2. Polarity Band is only applicable to the unidirectional package				

### RECOMMENDED PAD LAYOUT DIMENSIONS

 <p>The diagram shows two square pads. Dimension E is the total width between the inner edges of the pads. Dimension A is the height of the pads. Dimension B is the width of the left pad, C is the gap between pads, and D is the width of the right pad.</p>	MILLIMETERS		INCHES	
	DIM	Min.	Max.	Min.
A	3.30	-	0.129	-
B	2.40	-	0.094	-
C	-	4.20	-	0.165
D	2.40	-	0.094	-
E	8.13 REF		0.320 REF	



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