

### FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Available in uni-directional and bi-directional
- 600 W peak pulse power capability with a 10/1000  $\mu$ s waveform, repetitive rate (duty cycle): 0.01 %
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
  - Automotive ordering code: base P/NHE3 or P/NHM3

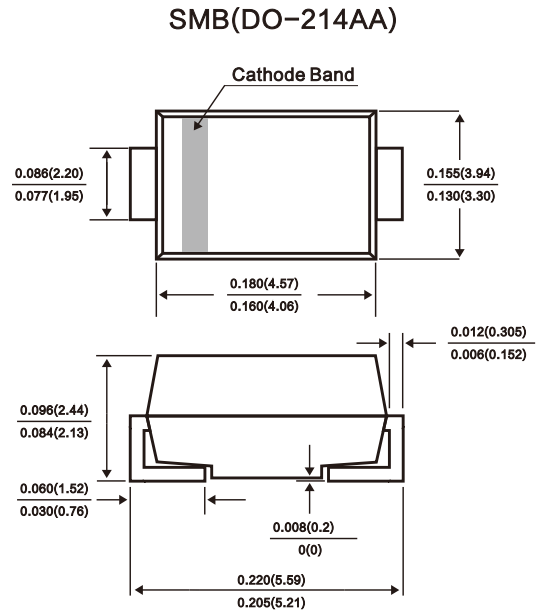
### MECHANICAL DATA

#### Case: SMB (DO-214AA)

Molding compound meets UL 94 V-0 flammability rating  
 Base P/N-E3 - RoHS-compliant, commercial grade  
 Base P/N-M3 - halogen-free, RoHS-compliant, commercial grade  
 Base P/NHE3\_X - RoHS-compliant and AEC-Q101 qualified  
 Base P/NHM3\_X - halogen-free, RoHS-compliant, and AEC-Q101 qualified  
 (“\_X” denotes revision code e.g. A, B, ..... and only available for 250 V to 540 V type)

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102  
 E3, M3, HE3, and HM3 suffix meets JESD 201 class 2 whisker test

**Polarity:** for uni-directional types the band denotes cathode end, no marking on bi-directional types



Dimensions in inches and (millimeters)

MAXIMUM RATINGS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Peak power dissipation with a 10/1000 $\mu$ s waveform <sup>(1)(2)</sup> (fig. 1)	$P_{PPM}$	600	W
Maximum Instantaneous Forward Voltage at 50.0A for Unidirectional Only (Note 4)	$V_F$	3.5	Volts
Power dissipation on infinite heatsink at $T_A = 50\text{ }^\circ\text{C}$	$P_D$	5.0	W
Peak forward surge current 8.3 ms single half sine-wave uni-directional only <sup>(2)</sup>	$I_{FSM}$	100	A
Operating junction and storage temperature range	$T_J, T_{STG}$	-65 to +150	$^\circ\text{C}$

#### Notes

- (1) Non-repetitive current pulse, per fig. 3 and derated above  $T_A = 25\text{ }^\circ\text{C}$  per fig. 2
- (2) Mounted on 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pads to each terminal

**ELECTRICAL CHARACTERISTICS** ( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)

PART NUMBER	DEVICE MARKING CODE		BREAKDOWN VOLTAGE $V_{BR}$ AT $I_T$ (1)		TEST CURRENT $I_T$ (mA)	STAND-OFF VOLTAGE $V_{WM}$ (V)	MAXIMUM REVERSE LEAKAGE AT $V_{WM}$ $I_D$ (3) ( $\mu\text{A}$ )	MAXIMUM PEAK PULSE CURRENT $I_{PPM}$ (2) (A)	MAXIMUM CLAMPING VOLTAGE AT $I_{PPM}$ $V_C$ (V)	MAXIMUM TEMPERATURE OF $V_{BR}$ (%/ $^\circ\text{C}$ )
	UNI	BI	MIN.	MAX.						
P6SMB6.8A(CA)	6V8A	6V8C	6.45	7.14	10	5.8	1000	57.1	10.5	0.057
P6SMB7.5A(CA)	7V5A	7V5C	7.13	7.88	10	6.4	500	53.1	11.3	0.061
P6SMB8.2A(CA)	8V2A	8V2C	7.79	8.61	10	7.02	200	49.6	12.1	0.065
P6SMB9.1A(CA)	9V1A	9V1C	8.65	9.55	1	7.78	50	44.8	13.4	0.068
P6SMB10A(CA)	10A	10C	9.5	10.5	1	8.55	10	41.4	14.5	0.073
P6SMB11A(CA)	11A	11C	10.5	11.6	1	9.4	5	38.5	15.6	0.075
P6SMB12A(CA)	12A	12C	11.4	12.6	1	10.2	5	35.9	16.7	0.078
P6SMB13A(CA)	13A	13C	12.4	13.7	1	11.1	5	33	18.2	0.081
P6SMB15A(CA)	15A	15C	14.3	15.8	1	12.8	1	28.3	21.2	0.084
P6SMB16A(CA)	16A	16C	15.2	16.8	1	13.6	1	26.7	22.5	0.086
P6SMB18A(CA)	18A	18C	17.1	18.9	1	15.3	1	23.8	25.2	0.088
P6SMB20A(CA)	20A	20C	19	21	1	17.1	1	21.7	27.7	0.09
P6SMB22A(CA)	22A	22C	20.9	23.1	1	18.8	1	19.6	30.6	0.092
P6SMB24A(CA)	24A	24C	22.8	25.2	1	20.5	1	18.1	33.2	0.094
P6SMB27A(CA)	27A	27C	25.7	28.4	1	23.1	1	16	37.5	0.096
P6SMB30A(CA)	30A	30C	28.5	31.5	1	25.6	1	14.5	41.4	0.097
P6SMB33A(CA)	33A	33C	31.4	34.7	1	28.2	1	13.1	45.7	0.098
P6SMB36A(CA)	36A	36C	34.2	37.8	1	30.8	1	12	49.9	0.099
P6SMB39A(CA)	39A	39C	37.1	41	1	33.3	1	11.1	53.9	0.1
P6SMB43A(CA)	43A	43C	40.9	45.2	1	36.8	1	10.1	59.3	0.101
P6SMB47A(CA)	47A	47C	44.7	49.4	1	40.2	1	9.3	64.8	0.101
P6SMB51A(CA)	51A	51C	48.5	53.6	1	43.6	1	8.6	70.1	0.102
P6SMB56A(CA)	56A	56C	53.2	58.8	1	47.8	1	7.8	77	0.103
P6SMB62A(CA)	62A	62C	58.9	65.1	1	53	1	7.1	85	0.104
P6SMB68A(CA)	68A	68C	64.6	71.4	1	58.1	1	6.5	92	0.104
P6SMB75A(CA)	75A	75C	71.3	78.8	1	64.1	1	5.8	103	0.105
P6SMB82A(CA)	82A	82C	77.9	86.1	1	70.1	1	5.3	113	0.105
P6SMB91A(CA)	91A	91C	86.5	95.5	1	77.8	1	4.8	125	0.106
P6SMB100A(CA)	100A	100C	95	105	1	85.5	1	4.4	137	0.106
P6SMB110A(CA)	110A	110C	105	116	1	94	1	3.9	152	0.107
P6SMB120A(CA)	120A	120C	114	126	1	102	1	3.6	165	0.107
P6SMB130A(CA)	130A	130C	124	137	1	111	1	3.4	179	0.107
P6SMB150A(CA)	150A	150C	143	158	1	128	1	2.9	207	0.108
P6SMB160A(CA)	160A	160C	152	168	1	136	1	2.7	219	0.108
P6SMB170A(CA)	170A	170C	162	179	1	145	1	2.6	234	0.108
P6SMB180A(CA)	180A	180C	171	189	1	154	1	2.4	246	0.108
P6SMB200A(CA)	200A	200C	190	210	1	171	1	2.2	274	0.108
P6SMB220A(CA)	220A	220C	209	231	1	185	1	1.8	328	0.108
P6SMB250A(CA)	250A	-	237	263	1	214	1	1.74	344	0.11
P6SMB300A(CA)	300A	-	285	315	1	256	1	1.45	414	0.11
P6SMB350A(CA)	350A	-	333	368	1	300	1	1.24	482	0.11
P6SMB400A(CA)	400A	-	380	420	1	342	1	1.1	548	0.11
P6SMB440A(CA)	440A	-	418	462	1	376	1	1	602	0.11
P6SMB480A(CA)	480A	-	456	504	1	408	1	0.91	658	0.11
P6SMB510A(CA)	510A	-	485	535	1	434	1	0.86	698	0.11
P6SMB540A(CA)	540A	-	513	567	1	459	1	0.81	740	0.11

**Notes**

- (1) Pulse test:  $t_p \leq 50\text{ ms}$
- (2) Surge current waveform per fig. 3 and derate per fig. 2
- (3) For bi-directional types with  $V_{WM}$  of 10 V and less, the  $I_D$  limit is doubled
- (4) All terms and symbols are consistent with ANSI/IEEE CA62.35
- (5)  $V \neq 3.5\text{ V}$  at  $I \neq 50\text{ A}$  (uni-directional only)

### RATINGS AND CHARACTERISTICS CURVES ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

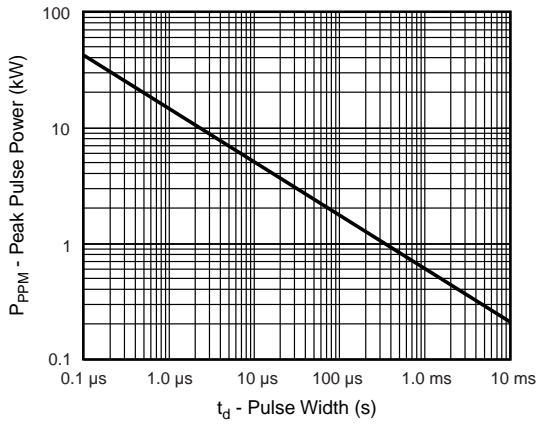


Fig. 1 - Peak Pulse Power Rating Curve

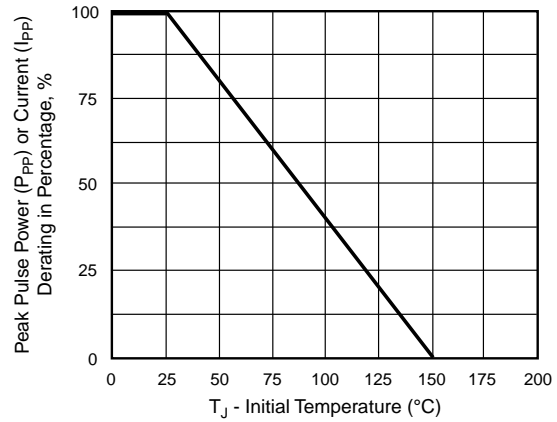


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

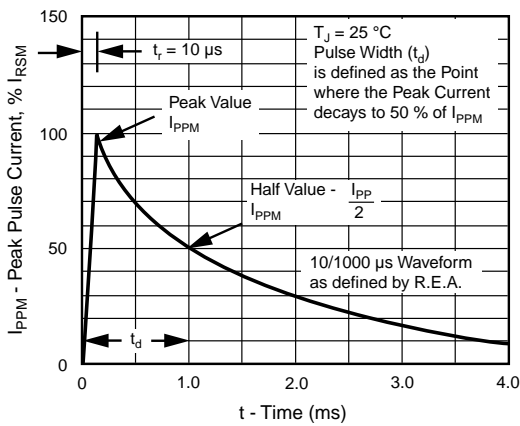


Fig. 3 - Pulse Waveform

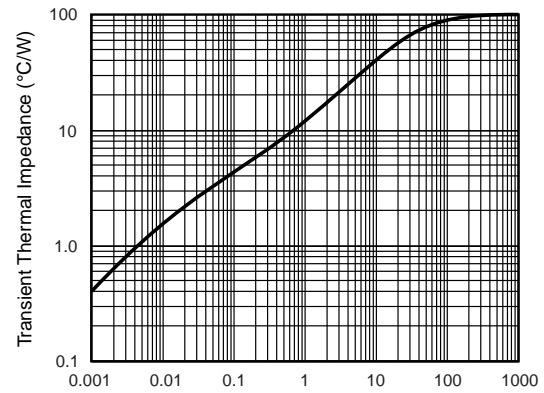


Fig. 5 - Typical Transient Thermal Impedance

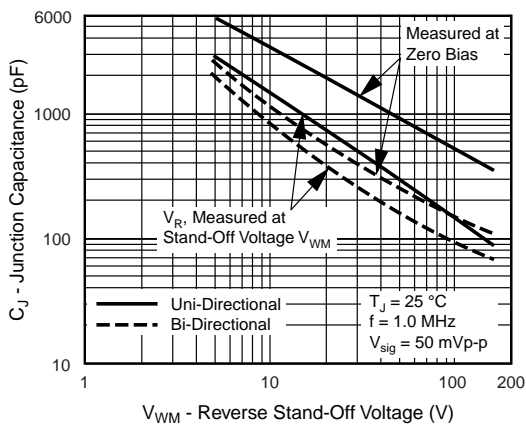


Fig. 4 - Typical Junction Capacitance

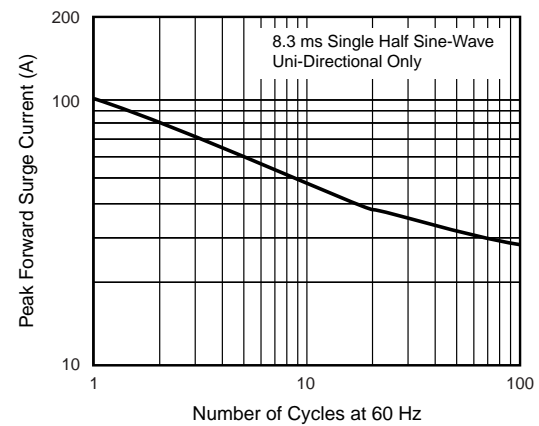


Fig. 6 - Maximum Non-Repetitive Peak Forward Surge Current

