

**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

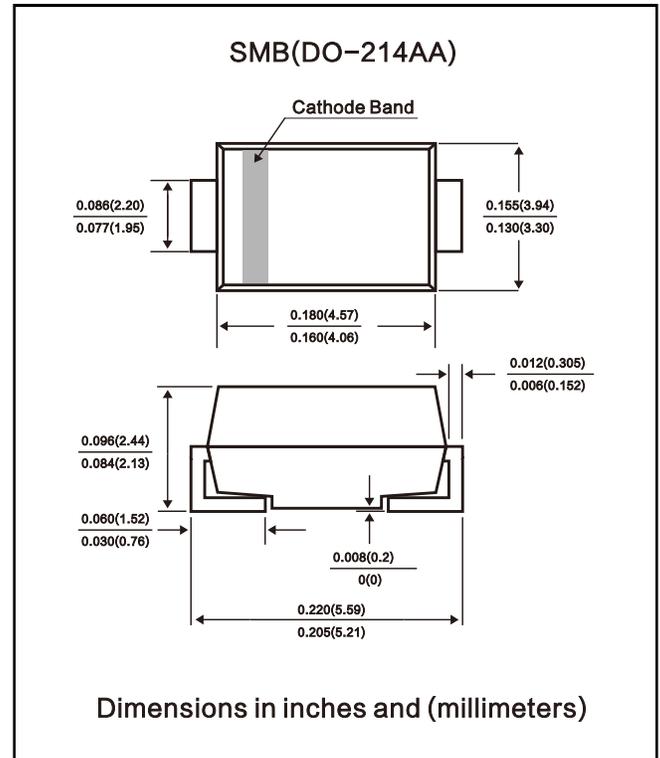
Base P/NHM3\_X - halogen-free, RoHS-compliant, and AEC-Q101 qualified

("\_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



<b>MAXIMUM RATINGS</b> ( $T_A = 25\text{ }^\circ\text{C}$ 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**

<sup>(1)</sup> Non-repetitive current pulse, per fig. 3 and derated above  $T_A = 25\text{ }^\circ\text{C}$  per fig. 2

<sup>(2)</sup> Mounted on 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pads to each terminal

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)										
PART NUMBER	DEVICE MARKING CODE		BREAKDOWN VOLTAGE $V_{BR}$ AT $I_T$ <sup>(1)</sup> (V)		TEST CURRENT $I_T$ (mA)	STAND-OFF VOLTAGE $V_{WM}$ (V)	MAXIMUM REVERSE LEAKAGE AT $V_{WM}$ $I_D$ <sup>(3)</sup> ( $\mu\text{A}$ )	MAXIMUM PEAK PULSE CURRENT $I_{PPM}$ <sup>(2)</sup> (A)	MAXIMUM CLAMPING VOLTAGE AT $I_{PPM}$ $V_C$ (V)	MAXIMUM TEMPERATURE COEFFICIENT OF $V_{BR}$ (%/ $^\circ\text{C}$ )
	UNI	BI	MIN.	MAX.						
P6SMB6.8A(CA)	KE	KE	6.45	7.14	10	5.80	1000	57.1	10.5	0.057
P6SMB7.5A(CA)	KK	AK	7.13	7.88	10	6.40	500	53.1	11.3	0.061
P6SMB8.2A(CA)	KM	KM	7.79	8.61	10	7.02	200	49.6	12.1	0.065
P6SMB9.1A(CA)	KR	AR	8.65	9.55	1.0	7.78	50	44.8	13.4	0.068
P6SMB10A(CA)	KT	AT	9.50	10.5	1.0	8.55	10	41.4	14.5	0.073
P6SMB11A(CA)	KV	AV	10.5	11.6	1.0	9.40	5.0	38.5	15.6	0.075
P6SMB12A(CA)	KX	AX	11.4	12.6	1.0	10.2	5.0	35.9	16.7	0.078
P6SMB13A(CA)	KZ	KZ	12.4	13.7	1.0	11.1	5.0	33.0	18.2	0.081
P6SMB15A(CA)	LG	LG	14.3	15.8	1.0	12.8	1.0	28.3	21.2	0.084
P6SMB16A(CA)	LK	BK	15.2	16.8	1.0	13.6	1.0	26.7	22.5	0.086
P6SMB18A(CA)	LM	BM	17.1	18.9	1.0	15.3	1.0	23.8	25.2	0.088
P6SMB20A(CA)	LR	LR	19.0	21.0	1.0	17.1	1.0	21.7	27.7	0.090
P6SMB22A(CA)	LT	BT	20.9	23.1	1.0	18.8	1.0	19.6	30.6	0.092
P6SMB24A(CA)	LV	LV	22.8	25.2	1.0	20.5	1.0	18.1	33.2	0.094
P6SMB27A(CA)	LZ	BZ	25.7	28.4	1.0	23.1	1.0	16.0	37.5	0.096
P6SMB30A(CA)	ME	CE	28.5	31.5	1.0	25.6	1.0	14.5	41.4	0.097
P6SMB33A(CA)	MG	MG	31.4	34.7	1.0	28.2	1.0	13.1	45.7	0.098
P6SMB36A(CA)	MK	CK	34.2	37.8	1.0	30.8	1.0	12.0	49.9	0.099
P6SMB39A(CA)	MM	CM	37.1	41.0	1.0	33.3	1.0	11.1	53.9	0.100
P6SMB43A(CA)	MP	CP	40.9	45.2	1.0	36.8	1.0	10.1	59.3	0.101
P6SMB47A(CA)	MT	CT	44.7	49.4	1.0	40.2	1.0	9.3	64.8	0.101
P6SMB51A(CA)	MV	MV	48.5	53.6	1.0	43.6	1.0	8.6	70.1	0.102
P6SMB56A(CA)	MX	MX	53.2	58.8	1.0	47.8	1.0	7.8	77.0	0.103
P6SMB62A(CA)	NE	NE	58.9	65.1	1.0	53.0	1.0	7.1	85.0	0.104
P6SMB68A(CA)	NG	NG	64.6	71.4	1.0	58.1	1.0	6.5	92.0	0.104
P6SMB75A(CA)	NM	NM	71.3	78.8	1.0	64.1	1.0	5.8	103	0.105
P6SMB82A(CA)	MT	MT	77.9	86.1	1.0	70.1	1.0	5.3	113	0.105
P6SMB91A(CA)	NP	NP	86.5	95.5	1.0	77.8	1.0	4.8	125	0.106
P6SMB100A(CA)	NV	NV	95.0	105	1.0	85.5	1.0	4.4	137	0.106
P6SMB110A(CA)	NX	NX	105	116	1.0	94.0	1.0	3.9	152	0.107
P6SMB120A(CA)	NZ	NZ	114	126	1.0	102	1.0	3.6	165	0.107
P6SMB130A(CA)	PE	PE	124	137	1.0	111	1.0	3.4	179	0.107
P6SMB150A(CA)	PK	PK	143	158	1.0	128	1.0	2.9	207	0.108
P6SMB160A(CA)	PM	PM	152	168	1.0	136	1.0	2.7	219	0.108
P6SMB170A(CA)	PP	PP	162	179	1.0	145	1.0	2.6	234	0.108
P6SMB180A(CA)	PR	PR	171	189	1.0	154	1.0	2.4	246	0.108
P6SMB200A(CA)	PS	PS	190	210	1.0	171	1.0	2.2	274	0.108
P6SMB220A(CA)	-	-	209	231	1.0	185	1.0	1.8	328	0.108
P6SMB250A(CA)	-	-	237	263	1.0	214	1.0	1.74	344	0.110
P6SMB300A(CA)	-	-	285	315	1.0	256	1.0	1.45	414	0.110
P6SMB350A(CA)	-	-	333	368	1.0	300	1.0	1.24	482	0.110
P6SMB400A(CA)	-	-	380	420	1.0	342	1.0	1.10	548	0.110
P6SMB440A(CA)	-	-	418	462	1.0	376	1.0	1.00	602	0.110
P6SMB480A(CA)	-	-	456	504	1.0	408	1.0	0.91	658	0.110
P6SMB510A(CA)	-	-	485	535	1.0	434	1.0	0.86	698	0.110
P6SMB540A(CA)	-	-	513	567	1.0	459	1.0	0.81	740	0.110

**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)  $V_F = 3.5\text{ V}$  at  $I_F = 50\text{ A}$  (uni-directional only)

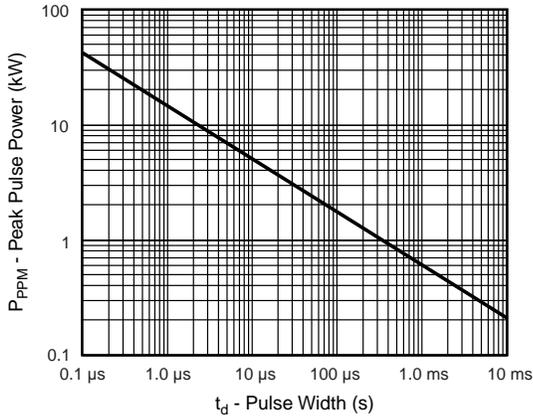
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)


Fig. 1 - Peak Pulse Power Rating Curve

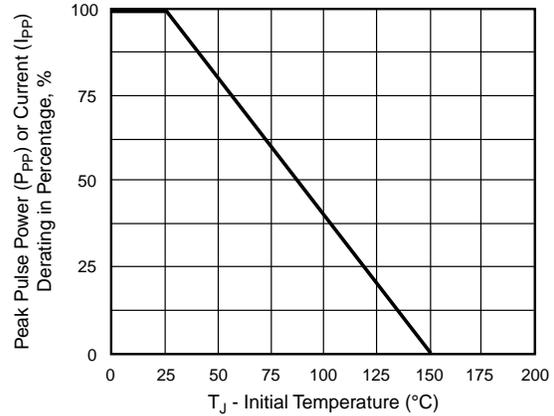


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

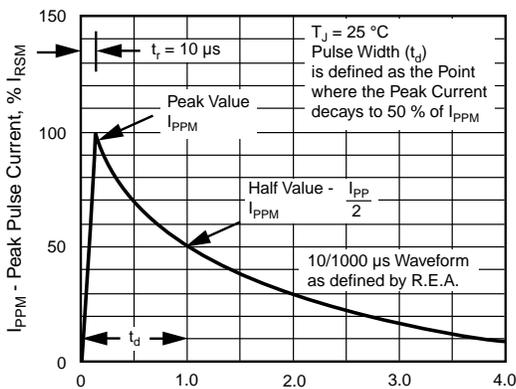


Fig. 3 - Pulse Waveform

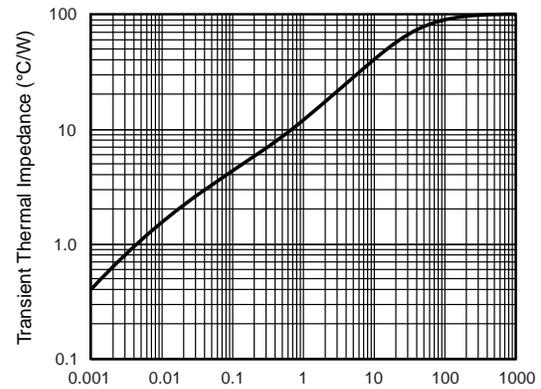


Fig. 5 - Typical Transient Thermal Impedance

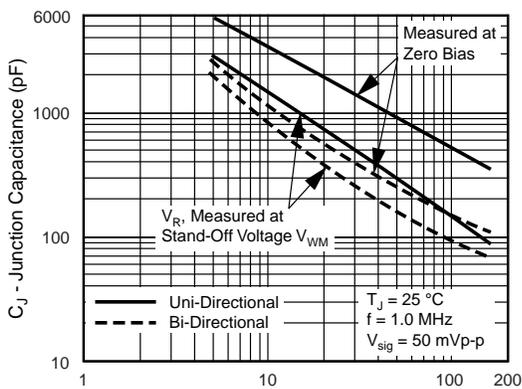


Fig. 4 - Typical Junction Capacitance

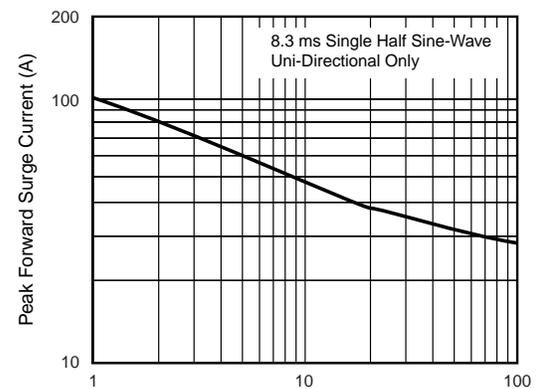


Fig. 6 - Maximum Non-Repetitive Peak Forward Surge Current