

Features

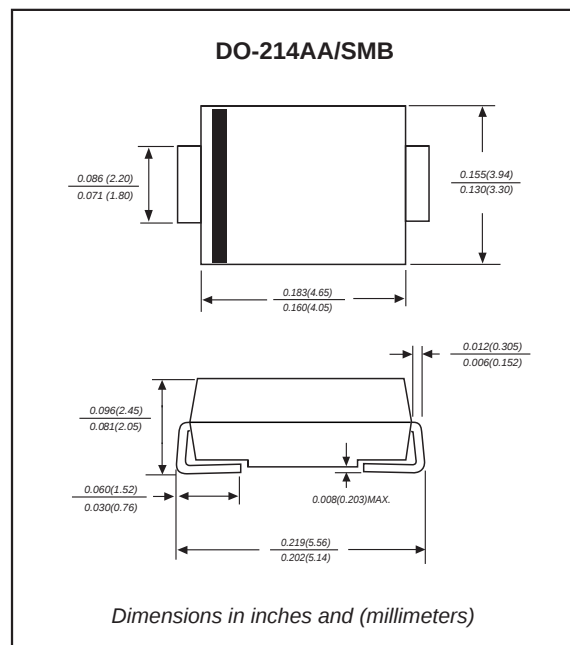


- 600W peak pulse power capability with a 10/1000 μ s waveform, repetition rate (duty cycle): 0.01%.
- Low profile surface mounted application in order to optimize board space.
- Excellent clamping capability.
- Low incremental surge resistance.
- Fast response time from 0V to VBR, typically less than 1 ps for uni-directional & 5 ns for bi-directional types.
- Glass passivated chip junction.
- Lead-free parts meet RoHS requirements.
- Compliant to Halogen-free

Mechanical data

- Epoxy: UL94-V0 rated flame retardant
- Case : Molded plastic, DO-214AA / SMB
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any

Package outline



Maximum ratings (AT $T_A=25^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	CONDITIONS	Symbol	Value	UNIT
Peak Power Dissipation	with a 10/1000 μ s waveform, Note 1, 2 & Fig. 1	P_{PPM}	600	W
Peak Pulse current	with a 10/1000 μ s waveform	I_{PPM}	75	A
Steady State Power Dissipation	at $T_L=75^{\circ}\text{C}$, Note 2	$P_{M(AV)}$	5.0	W
Peak Forward Surge Current	8.3ms Single Half Sine-Wave, Note 3	I_{FSM}	100	A
Maximum Instantaneous Forward Voltage	at 10A For Uni-Directional Types Only	V_F	3.5	V
Typical Thermal resistance	Junction to case Junction to ambient	$R_{\theta JC}$ $R_{\theta JA}$	30 50	$^{\circ}\text{C/W}$
Operating junction temperature range		T_J	-55 ~ +150	$^{\circ}\text{C}$
Storage temperature range		T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

Note 1. Non-repetitive current pulse, per Fig. 3 and derated above $T_A=25^{\circ}\text{C}$ per Fig. 2

2. Mounted on copper pad area of 0.2"x0.2" (5.0x5.0 mm) per Fig 5

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

Electrical characteristics (at $T_A=25^{\circ}\text{C}$)

Part No. (Uni)	Part No. (Bi)	Reverse Stand-off Voltage	Breakdown Voltage @I _T		Test Current	Maximum Clamping Voltage @I _{PP}		Maximum Reverse Leakage Current	Marking Code	
		V _{RWM}	V _{BR} Min	V _{BR} Max	I _T	V _C	I _{PP}	I _R @V _{RWM}		
		Volts	Volts	Volts	mA	Volts	A	μA	UNI	BI
SMBJ3V3	SMBJ3V3CA	3.3	5.00	6.50	10	8.0	75	600	KC	3V3C

Rating and characteristic curves

Fig.1 - Peak Pulse Power Rating Curve

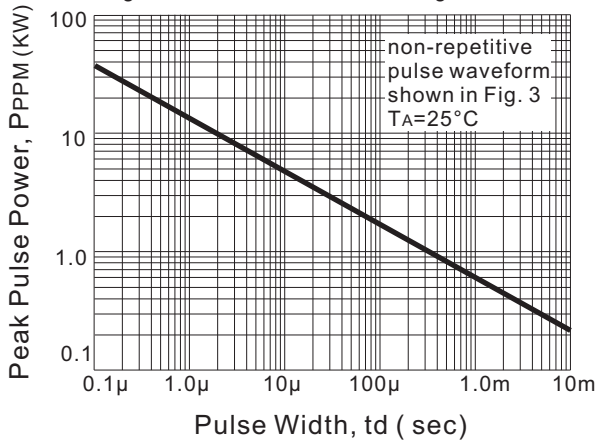


Fig.2 - Pulse Derating Curve

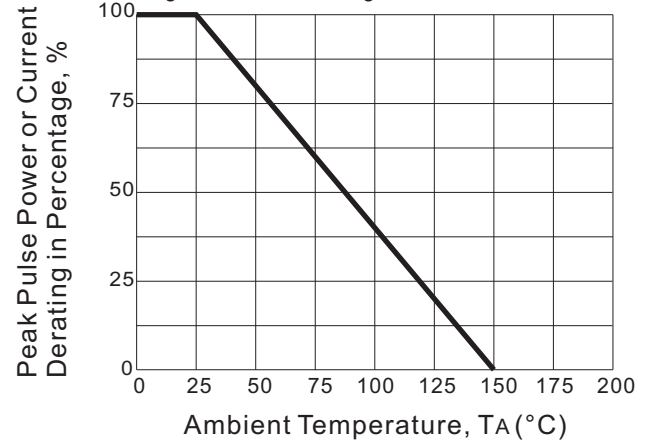


Fig.3 - Pulse Waveform

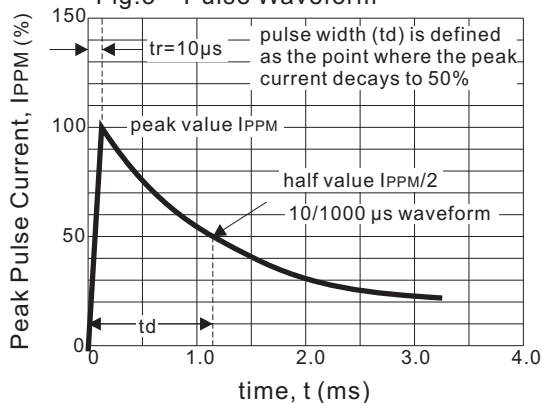


Fig.4 - Typical Junction Capacitance

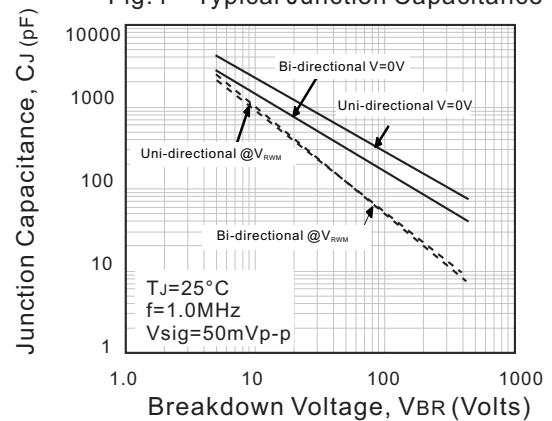


Fig.5 - Steady State Power Derating Curve

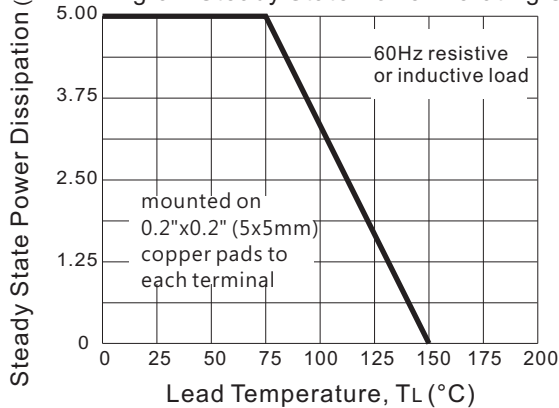
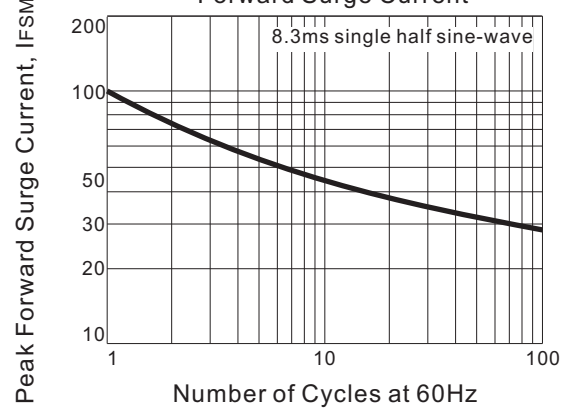
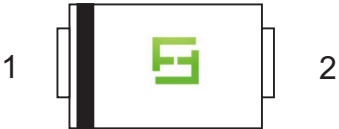


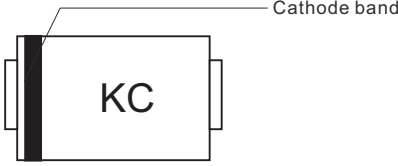
Fig.6 - Maximum Non-Repetitive Forward Surge Current



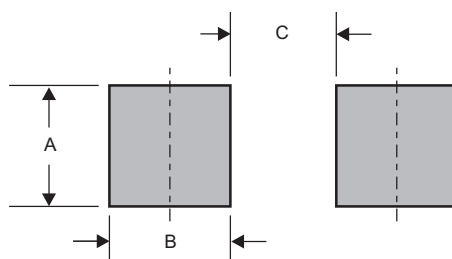
Pinning information

Pin	Simplified outline	Symbol
Uni-Directional Pin1 cathode Pin2 anode		
Bi-Directional		

Marking

Type number	Example
Uni-Directional	
Bi-Directional	

Suggested solder pad layout

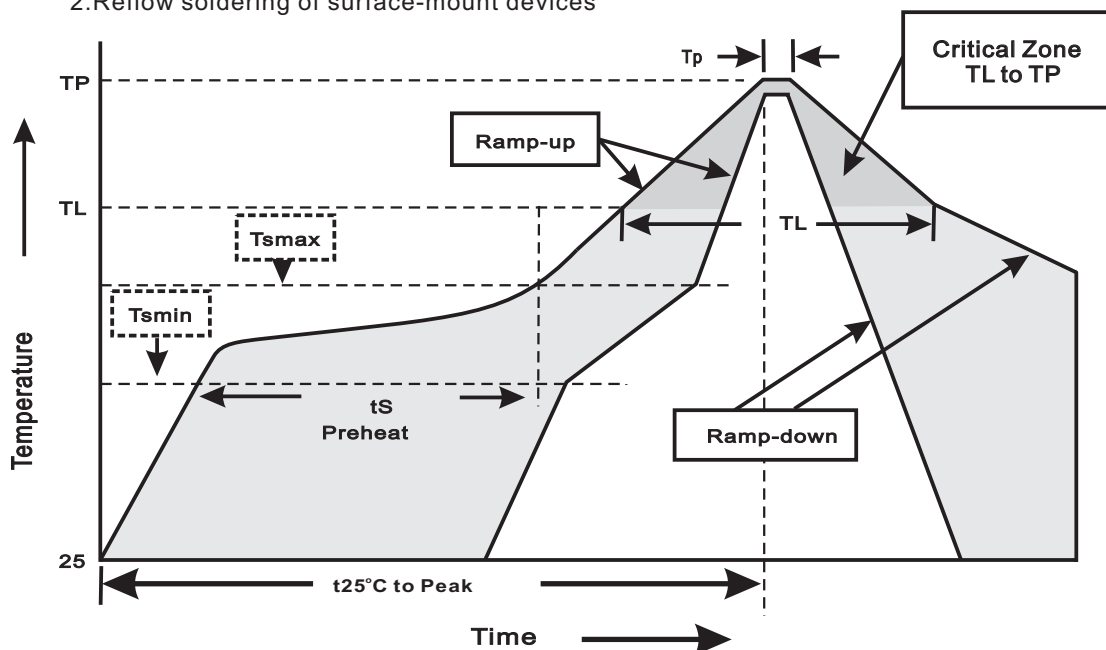


Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SMB	0.078 (2.00)	0.059 (1.50)	0.110 (2.80)

Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T_L to T_P)	$<3^{\circ}\text{C}/\text{sec}$
Preheat -Temperature Min(T_{min}) -Temperature Max(T_{max}) -Time(min to max)(t_s)	150°C 200°C $60\sim 120\text{sec}$
T_{max} to T_L -Ramp-upRate	$<3^{\circ}\text{C}/\text{sec}$
Time maintained above: -Temperature(T_L) -Time(t_L)	217°C $60\sim 260\text{sec}$
Peak Temperature(T_P)	$255^{\circ}\text{C}-0/+5^{\circ}\text{C}$
Time within 5°C of actual Peak Temperature(t_P)	$10\sim 30\text{sec}$
Ramp-down Rate	$<6^{\circ}\text{C}/\text{sec}$
Time 25°C to Peak Temperature	$<6\text{minutes}$