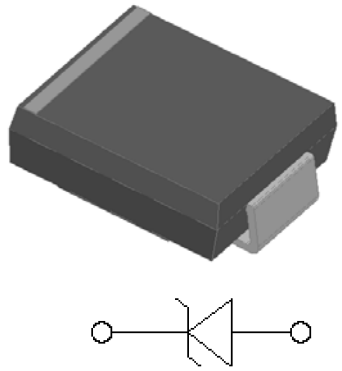
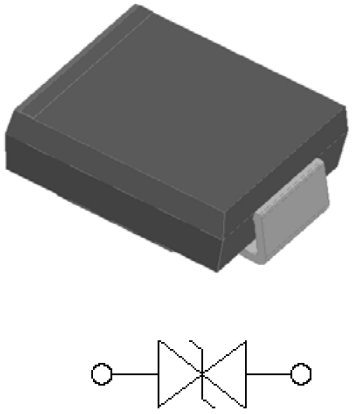
Surface Mount Transient Voltage Suppressor Diodes

Uni-directional



Bi-directional



Features

- For surface mounted applications
- Low-profile package
- Ideal for automated placement
- Available in Unidirectional and Bidirectional
- 1500W peak pulse power capability with a 10/1000 μs waveform
- Low incremental surge resistance, excellent clamping capability
- Very fast response time
- High temperature soldering guaranteed: 260 °C/10 s at terminals
- Meets MSL level 1
- Component in accordance to RoHS

Typical Applications

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, telecommunication.

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

■Maximum Ratings (Ta=25℃ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	Conditions	Max
Peak power dissipation(1)(2)	P_{PPM}	W	with a 10/1000us waveform	1500
Peak pulse current(1)	I_{PPM}	A	with a 10/1000us waveform	See Next Table
Power dissipation(2)	P_D	W	on infinite heat sink at T_L=75℃	6.5
Peak forward surge current(3)	I_{FSM}	A	8.3 ms single half sine-wave unidirectional only	200
Operating junction and storage temperature range	T_J,T_{STG}	℃		-55 to +150

■Electrical Characteristics (Ta=25℃ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Maximum instantaneous forward voltage at 100A for unidirectional only(4)	V_{FM}	V	3.5/5.0

■Thermal Characteristics （Ta=25℃ Unless otherwise specified）

PARAMETER	SYMBOL	UNIT	Conditions	VALUE
Thermal Resistance(Typical)	$R_{\theta J-A}$ (5)	℃/W	junction to ambient	75
	$R_{\theta J-L}$	℃/W	junction to lead	15

Notes:

(1) Non-repetitive current pulse, per Fig. 3 and derated above T_A= 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) V_F=3.5V Max for devices of V_{BR}≤220V，and V_F=5.0V Max for devices of V_{BR}＞220V.
(5) Mounted on minimum recommended pad layout.

■Electrical Characteristics (TA=25℃ unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Breakdown Voltage V_{BR}@I_T			Maximum Reverse Leakage I_R (3) @ V_{RWM} (μA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP} (2) (A)	Maximum Clamping Voltage Vc @ I_{PP} (V)
		Min(V)	Max (V)	I_T (1)(mA)				
1.5SMC6.8A	1.5SMC6.8CA	6.46	7.14	10	1000	5.8	142.86	10.5
1.5SMC7.5A	1.5SMC7.5CA	7.13	7.88	10	500	6.4	132.74	11.3
1.5SMC8.2A	1.5SMC8.2CA	7.79	8.61	10	200	7.0	123.97	12.1
1.5SMC9.1A	1.5SMC9.1CA	8.65	9.56	1	50	7.8	111.94	13.4
1.5SMC10A	1.5SMC10CA	9.50	10.50	1	10	8.6	103.45	14.5
1.5SMC11A	1.5SMC11CA	10.45	11.55	1	5	9.4	96.15	15.6
1.5SMC12A	1.5SMC12CA	11.40	12.60	1	5	10.2	89.82	16.7
1.5SMC13A	1.5SMC13CA	12.35	13.65	1	5	11.1	82.42	18.2
1.5SMC15A	1.5SMC15CA	14.25	15.75	1	5	12.8	70.75	21.2
1.5SMC16A	1.5SMC16CA	15.20	16.80	1	5	13.6	66.67	22.5
1.5SMC18A	1.5SMC18CA	17.10	18.90	1	5	15.3	59.52	25.2
1.5SMC20A	1.5SMC20CA	19.00	21.00	1	5	17.1	54.15	27.7
1.5SMC22A	1.5SMC22CA	20.90	23.10	1	5	18.8	49.02	30.6
1.5SMC24A	1.5SMC24CA	22.80	25.20	1	5	20.5	45.18	33.2
1.5SMC27A	1.5SMC27CA	25.65	28.35	1	5	23.1	40.00	37.5
1.5SMC30A	1.5SMC30CA	28.50	31.50	1	5	25.6	36.23	41.4
1.5SMC33A	1.5SMC33CA	31.35	34.65	1	5	28.2	32.82	45.7
1.5SMC36A	1.5SMC36CA	34.20	37.80	1	5	30.8	30.06	50.0
1.5SMC39A	1.5SMC39CA	37.05	40.95	1	5	33.3	27.83	53.9
1.5SMC43A	1.5SMC43CA	40.85	45.15	1	5	36.8	25.30	59.3
1.5SMC47A	1.5SMC47CA	44.65	49.35	1	5	40.2	23.15	64.8
1.5SMC51A	1.5SMC51CA	48.45	53.55	1	5	43.6	21.40	70.1
1.5SMC56A	1.5SMC56CA	53.20	58.80	1	5	47.8	19.48	77.0
1.5SMC62A	1.5SMC62CA	58.90	65.10	1	5	53.0	17.65	85.0
1.5SMC68A	1.5SMC68CA	64.60	71.40	1	5	58.1	16.30	92.0
1.5SMC75A	1.5SMC75CA	71.25	78.75	1	5	64.1	14.56	103.0
1.5SMC82A	1.5SMC82CA	77.90	86.10	1	5	70.1	13.27	113.0
1.5SMC91A	1.5SMC91CA	86.45	95.35	1	5	77.8	12.00	125.0
1.5SMC100A	1.5SMC100CA	95.00	105.00	1	5	85.5	10.95	137.0
1.5SMC110A	1.5SMC110CA	104.50	115.50	1	5	94.0	9.87	152.0
1.5SMC120A	1.5SMC120CA	114.00	126.00	1	5	102.0	9.09	165.0

■Electrical Characteristics (TA=25℃ unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Breakdown Voltage V_{BR}@I_T			Maximum Reverse Leakage I_R (3) @ V_{RWM} (μA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP} (2) (A)	Maximum Clamping Voltage Vc @ I_{PP} (V)
		Min(V)	Max (V)	I_T (1)(mA)				
1.5SMC130A	1.5SMC130CA	123.50	136.50	1	5	111.0	8.38	179.0
1.5SMC150A	1.5SMC150CA	142.50	157.50	1	5	128.0	7.25	207.0
1.5SMC160A	1.5SMC160CA	152.00	168.00	1	5	136.0	6.85	219.0
1.5SMC170A	1.5SMC170CA	161.50	178.50	1	5	145.0	6.41	234.0
1.5SMC180A	1.5SMC180CA	171.00	189.00	1	5	154.0	6.10	246.0
1.5SMC200A	1.5SMC200CA	190.00	210.00	1	5	171.0	5.47	274.0
1.5SMC220A	1.5SMC220CA	209.00	231.00	1	5	185.0	4.57	328.0
1.5SMC250A	1.5SMC250CA	237.50	262.50	1	5	214.0	4.36	344.0
1.5SMC300A	1.5SMC300CA	285.00	315.00	1	5	256.0	3.62	414.0
1.5SMC350A	1.5SMC350CA	332.50	367.50	1	5	299.3	3.11	482.0
1.5SMC380A	1.5SMC380CA	361.00	399.00	1	5	324.9	2.86	524.4
1.5SMC400A	1.5SMC400CA	380.00	420.00	1	5	342.0	2.72	548.0
1.5SMC440A	1.5SMC440CA	418.00	462.00	1	5	376.2	2.47	602.0
1.5SMC500A	1.5SMC500CA	475.00	525.00	1	5	427.5	2.17	690.0
1.5SMC520A	1.5SMC520CA	494.00	546.00	1	5	444.6	2.09	717.6
1.5SMC550A	1.5SMC550CA	522.50	577.50	1	5	470.3	1.98	759.0
1.5SMC600A	1.5SMC600CA	570.00	630.00	1	5	513.0	1.81	828.0

Notes：

(1) Pulse Test：tp≤50ms .

(2) Surge current waveform per Fig. 3 and derated per Fig.2.

(3) For bi-directional types having VRWM of 10 V and less, the IR limit is doubled.

■Ordering Information (Example)

PREFERED P/N	PACKAGE CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
1.5SMC SERIES	F1	Approximate 0.257	3000	6000	42000	13” reel

■ Characteristics (Typical)

FIG1:Peak Pulse Power Rating Curve

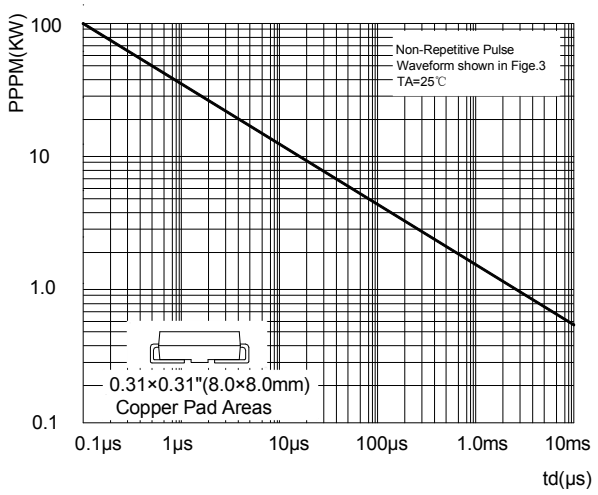
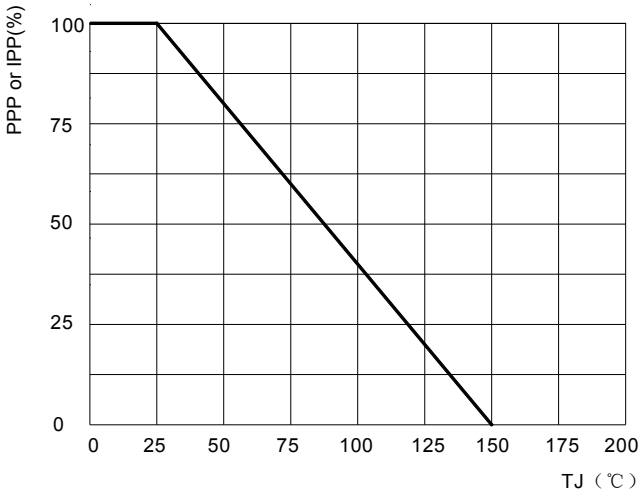


FIG2: Pulse Power or Current vs. Initial Junction Temperature



■ Characteristics (Typical)

FIG3: Pulse Waveform

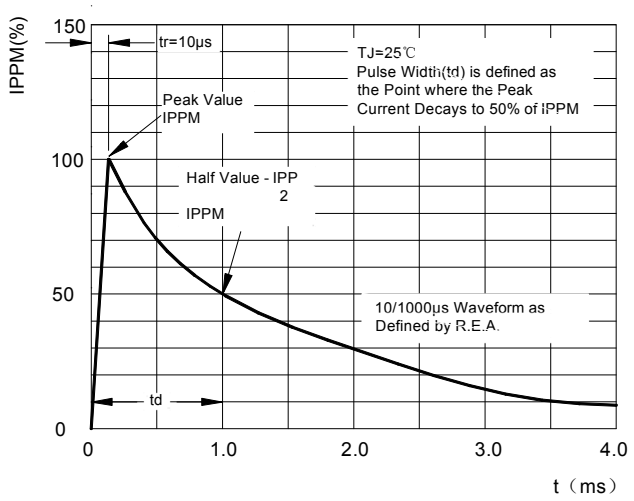


FIG4:Typical Transient Thermal Impedance

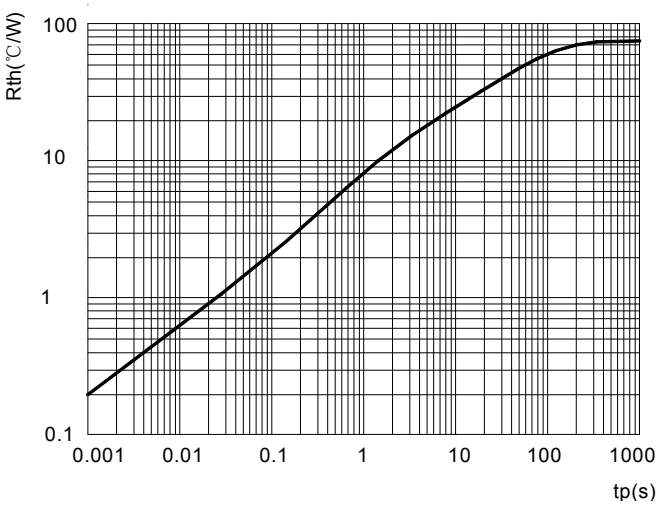


FIG5: Maximum Non-Repetitive Surge Current

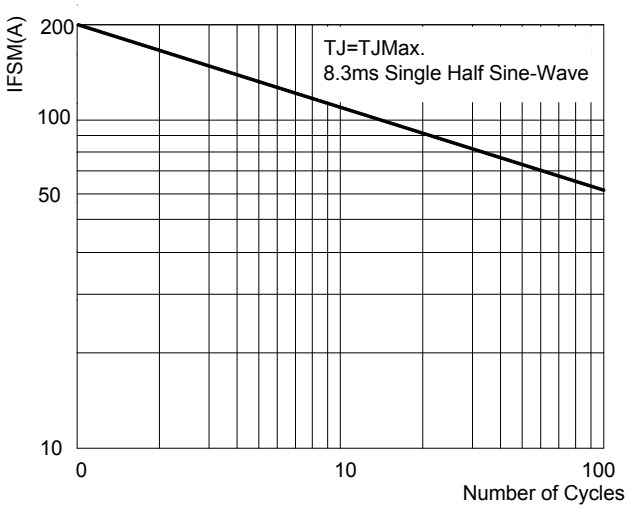
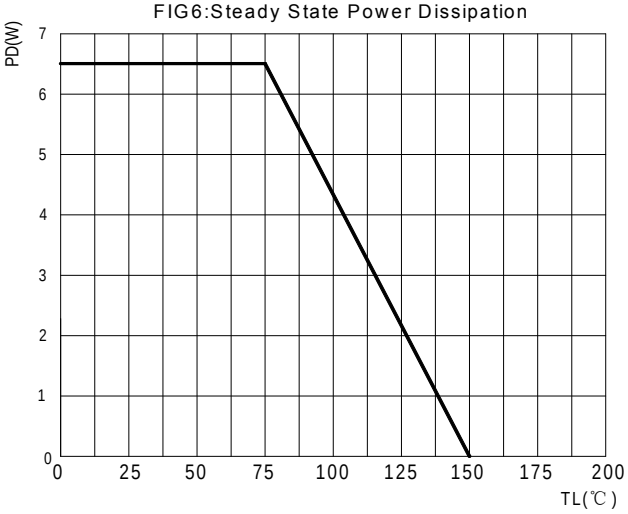
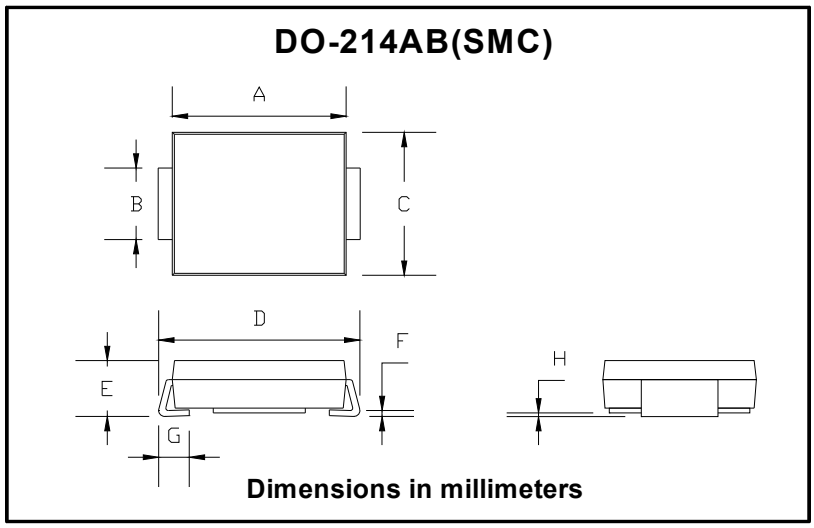


FIG6:Steady State Power Dissipation

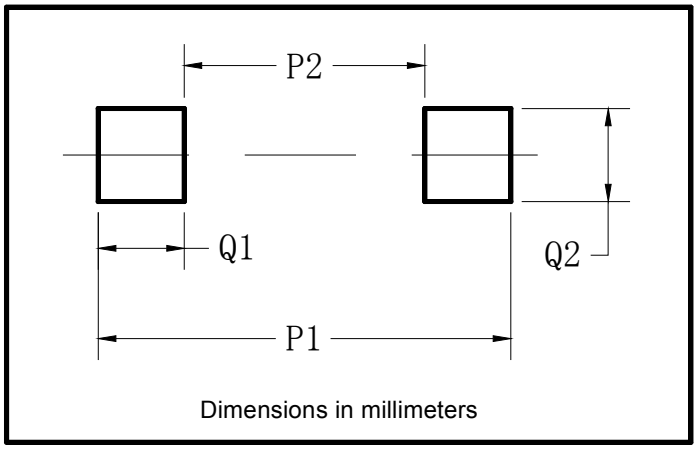


■ Outline Dimensions



DO-214AB (SMC)		
Dim	Min	Max
A	6.60	7.11
B	2.85	3.27
C	5.59	6.22
D	7.75	8.13
E	1.99	2.61
F	0.15	0.31
G	0.76	1.52
H	0.05	0.20

■ Suggested pad layout



Dim	Typ
P1	9.9
P2	3.84
Q1	3.03
Q2	3.82

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