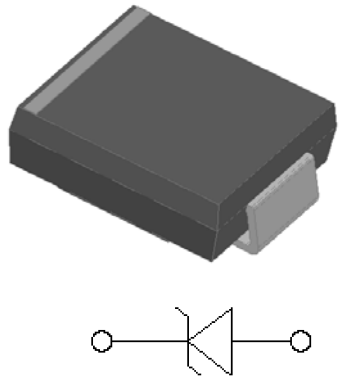
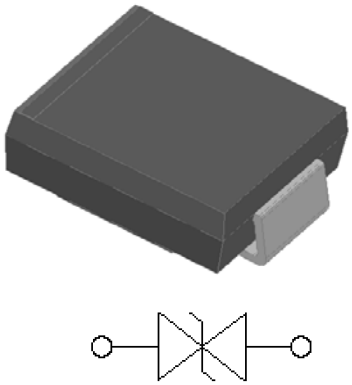
Surface Mount Transient Voltage Suppressor Diodes

Uni-directional



Bi-directional



Features

- UL recognition, file # E517074
- For surface mounted applications
- Low-profile package
- Ideal for automated placement
- Available in Unidirectional and Bidirectional
- 3000W 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	Max
Peak power dissipation, with a 10/1000us waveform (1) (2)	P_{PPM}	W	3000
Peak pulse current, with a 10/1000us waveform (1)	I_{PPM}	A	See Next Table
Power dissipation, on infinite heat sink at TL=75℃ (2)	P_D	W	6.5
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only (3)	I_{FSM}	A	300
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)				
SMDJ5.0A	SMDJ5.0CA(4)	6.4	7.07	10	1000	5	326.09	9.2
SMDJ6.0A	SMDJ6.0CA	6.67	7.37	10	1000	6	291.26	10.3
SMDJ6.5A	SMDJ6.5CA	7.22	7.98	10	500	6.5	267.86	11.2
SMDJ7.0A	SMDJ7.0CA	7.78	8.6	10	200	7	250	12
SMDJ7.5A	SMDJ7.5CA	8.33	9.21	1	100	7.5	232.56	12.9
SMDJ8.0A	SMDJ8.0CA	8.89	9.83	1	50	8	220.59	13.6
SMDJ8.5A	SMDJ8.5CA	9.44	10.4	1	25	8.5	208.33	14.4
SMDJ9.0A	SMDJ9.0CA	10	11.1	1	10	9	194.81	15.4
SMDJ10A	SMDJ10CA	11.1	12.3	1	5	10	176.47	17
SMDJ11A	SMDJ11CA	12.2	13.5	1	5	11	164.84	18.2
SMDJ12A	SMDJ12CA	13.3	14.7	1	5	12	150.75	19.9
SMDJ13A	SMDJ13CA	14.4	15.9	1	5	13	139.53	21.5
SMDJ14A	SMDJ14CA	15.6	17.2	1	5	14	129.31	23.2
SMDJ15A	SMDJ15CA	16.7	18.5	1	5	15	122.95	24.4
SMDJ16A	SMDJ16CA	17.8	19.7	1	5	16	115.38	26
SMDJ17A	SMDJ17CA	18.9	20.9	1	5	17	108.7	27.6
SMDJ18A	SMDJ18CA	20	22.1	1	5	18	102.74	29.2
SMDJ19A	SMDJ19CA	21.1	23.3	1	5	19	97.47	30.8
SMDJ20A	SMDJ20CA	22.2	24.5	1	5	20	92.59	32.4
SMDJ22A	SMDJ22CA	24.4	26.9	1	5	22	84.51	35.5
SMDJ24A	SMDJ24CA	26.7	29.5	1	5	24	77.12	38.9
SMDJ26A	SMDJ26CA	28.9	31.9	1	5	26	71.26	42.1
SMDJ28A	SMDJ28CA	31.1	34.4	1	5	28	66.08	45.4
SMDJ30A	SMDJ30CA	33.3	36.8	1	5	30	61.98	48.4
SMDJ33A	SMDJ33CA	36.7	40.6	1	5	33	56.29	53.3
SMDJ36A	SMDJ36CA	40	44.2	1	5	36	51.64	58.1
SMDJ40A	SMDJ40CA	44.4	49.1	1	5	40	46.51	64.5
SMDJ43A	SMDJ43CA	47.8	52.8	1	5	43	43.23	69.4
SMDJ45A	SMDJ45CA	50	55.3	1	5	45	41.27	72.7
SMDJ48A	SMDJ48CA	53.3	58.9	1	5	48	38.76	77.4

■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)				
SMDJ51A	SMDJ51CA	56.7	62.7	1	5	51	36.41	82.4
SMDJ54A	SMDJ54CA	60	66.3	1	5	54	34.44	87.1
SMDJ58A	SMDJ58CA	64.4	71.2	1	5	58	32.05	93.6
SMDJ60A	SMDJ60CA	66.7	73.7	1	5	60	30.99	96.8
SMDJ64A	SMDJ64CA	71.1	78.6	1	5	64	29.13	103
SMDJ70A	SMDJ70CA	77.8	86	1	5	70	26.55	113
SMDJ75A	SMDJ75CA	83.3	92.1	1	5	75	24.79	121
SMDJ78A	SMDJ78CA	86.7	95.8	1	5	78	23.81	126
SMDJ80A	SMDJ80CA	88.8	97.6	1	5	80	23.15	129.6
SMDJ85A	SMDJ85CA	94.4	104	1	5	85	21.9	137
SMDJ90A	SMDJ90CA	100	111	1	5	90	20.55	146
SMDJ100A	SMDJ100CA	111	123	1	5	100	18.52	162
SMDJ110A	SMDJ110CA	122	135	1	5	110	16.95	177
SMDJ120A	SMDJ120CA	133	147	1	5	120	15.54	193
SMDJ130A	SMDJ130CA	144	159	1	5	130	14.35	209
SMDJ140A	SMDJ140CA	155	171	1	5	140	13.23	226.8
SMDJ150A	SMDJ150CA	167	185	1	5	150	12.35	243
SMDJ160A	SMDJ160CA	178	197	1	5	160	11.58	259
SMDJ170A	SMDJ170CA	189	209	1	5	170	10.91	275
SMDJ180A	SMDJ180CA	200	220	1	5	180	10.29	291.6
SMDJ190A	SMDJ190CA	211	232	1	5	190	9.75	307.8
SMDJ200A	SMDJ200CA	224	247	1	5	200	9.26	324
SMDJ220A	SMDJ220CA	246	272	1	5	220	8.43	356
SMDJ250A	SMDJ250CA	279	309	1	5	250	7.41	405
SMDJ300A	SMDJ300CA	335	371	1	5	300	6.17	486
SMDJ350A	SMDJ350CA	391	432	1	5	350	5.29	567
SMDJ400A	SMDJ400CA	447	494	1	5	400	4.63	648
SMDJ440A	SMDJ440CA	492	543	1	5	440	4.21	713
SMDJ250A	SMDJ250CA	279	309	1	5	250	7.41	405
SMDJ300A	SMDJ300CA	335	371	1	5	300	6.17	486
SMDJ350A	SMDJ350CA	391	432	1	5	350	5.29	567
SMDJ400A	SMDJ400CA	447	494	1	5	400	4.63	648
SMDJ440A	SMDJ440CA	492	543	1	5	440	4.21	713

Notes：

(1) Pulse Test：tp≤50ms Pulse test: tp≤50ms.
(2) Surge current waveform per Fig. 3 and derated per Fig.2.
(3) For bi-directional types having V_{RWM} of 10 V and less, the IR limit is doubled.
(4) For the bi-directional SMDJ5.0CA, the maximum V_{BR} is 7.25 V.

■Ordering Information (Example)

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

■ Characteristics(Typical)

FIG1:Peak Pulse Power Rating Curve

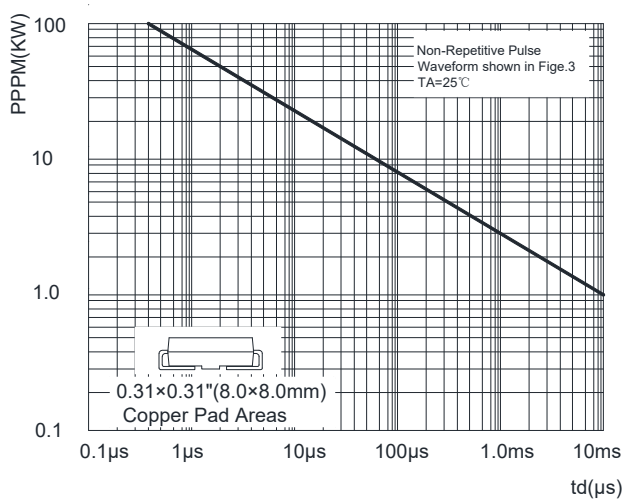


FIG2: Pulse Power or Current vs. Initial Junction Temperature

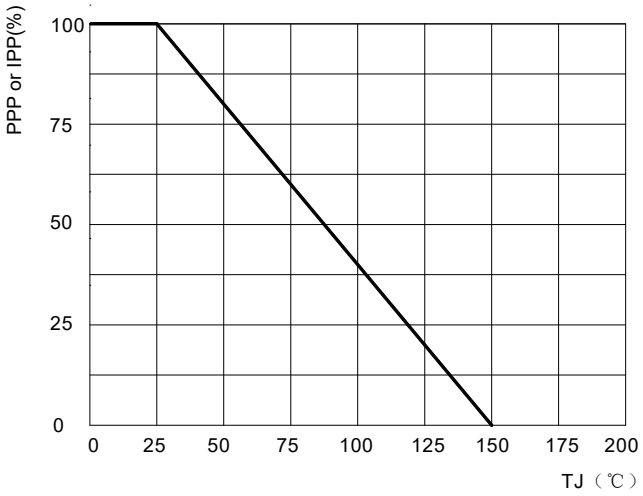


FIG3: Pulse Waveform

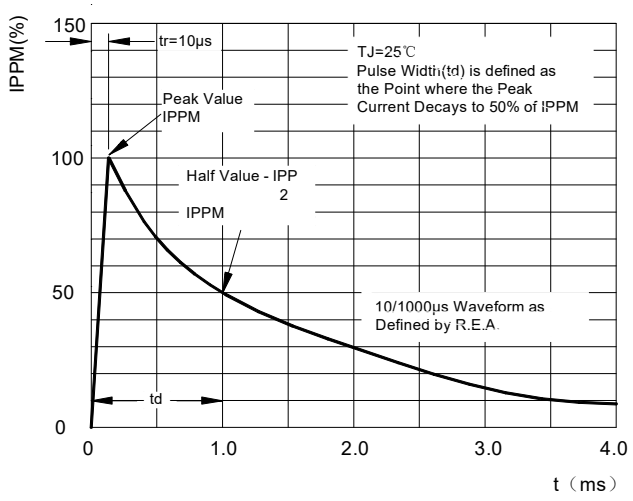


FIG4:Typical Transient Thermal Impedance

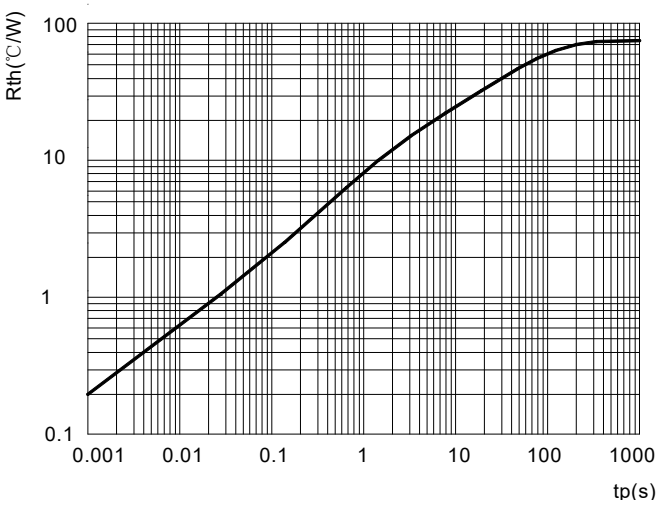


FIG5: Maximum Non-Repetitive Surge Current

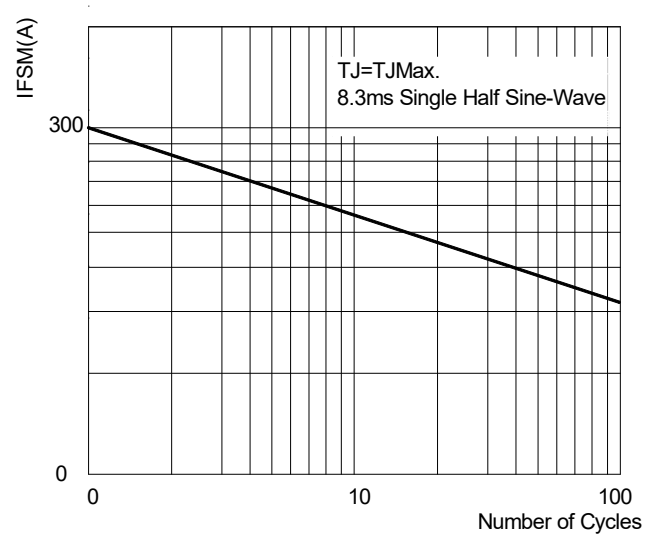
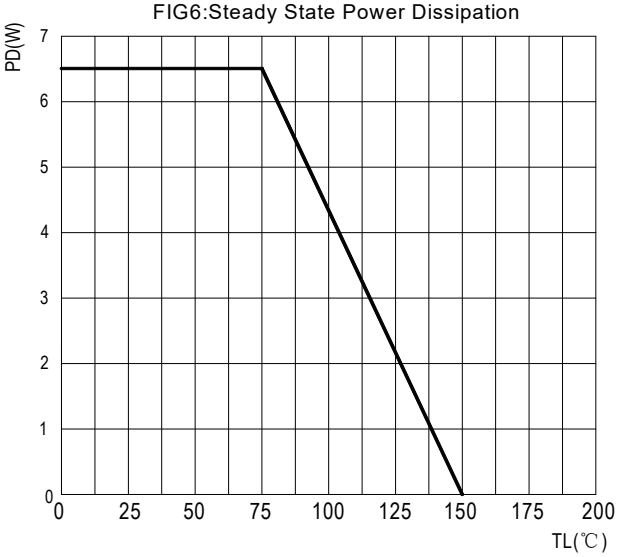
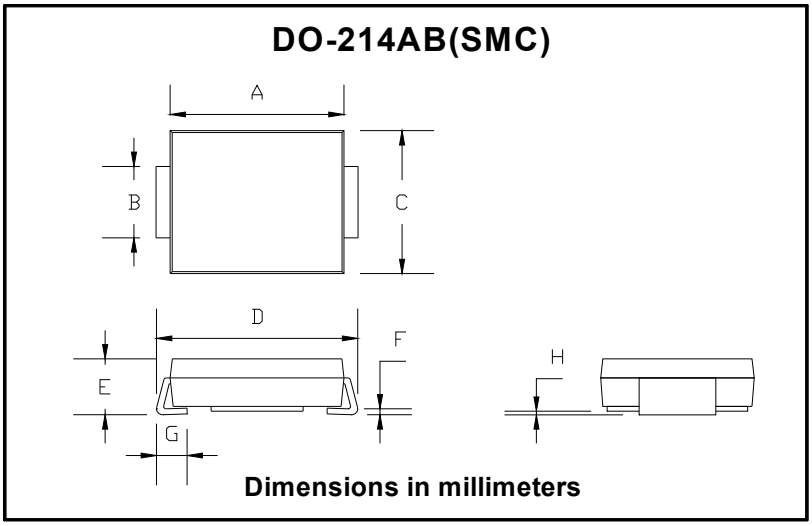


FIG6:Steady State Power Dissipation

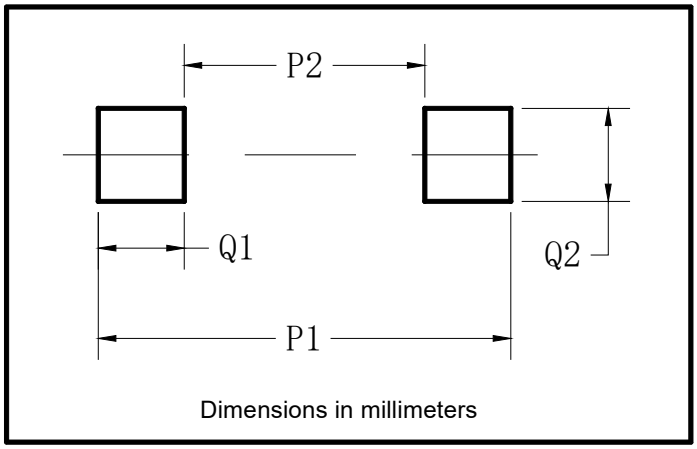


■ Outline Dimensions



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