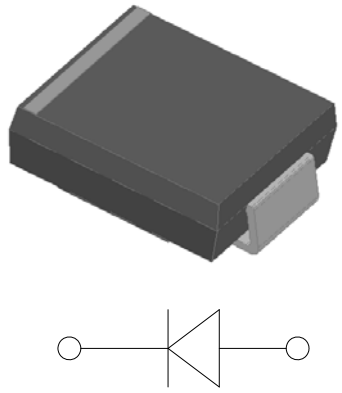
Surface Mount Transient Voltage Suppressor Diodes

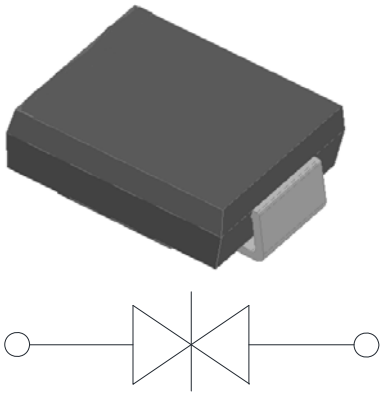
Uni-directional



Features

- Low profile package
- Ideal for automated placement
- Available in Uni-directional and Bi-directional
- 3000W peak pulse power capability with a 10/1000 μs waveform
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Meets MSL level 1, per J-STD-020C, LF maximum peak of 260 °C
- ESD protection of data lines in accordance with IEC 61000-4-2, 30kV(Air),30kV (Contact)
- Part no. with suffix “Q” means AEC-Q101 qualified

Bi-directional



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, automotive,telecommunication.

Mechanical Data

- **Package**: DO-214AB (SMC)
  Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant, halogen-free
- **Terminals**: Matte 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) (Fig.1)	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 T_L=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	T_J	℃	-55 to +175
Storage temperature range	T_{STG}	℃	-55 to +175

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

PARAMETER	SYMBOL	UNIT	VALUE
Maximum instantaneous forward voltage @at 100A for unidirectional only	V_F	V	3.5

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

PARAMETER	SYMBOL	UNIT	Conditions	VALUE
Thermal Resistance(Typical)	$R_{\theta JA}$	℃/W	junction to ambient	75
	$R_{\theta JL}$	℃/W	junction to lead	15

Notes:

(1) Non-repetitive current pulse, per Fig.3 and derated above T_J= 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.

■Ordering Information (Example)

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

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

Part Number (Uni)	Part Number (Bi)	Breakdown Voltage V_{BR}@I_T			Maximum Reverse Leakage I_R (5) @ V_{RWM} (μA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP}(6) (A)	Maximum Clamping Voltage Vc @ I_{PP} (V)
		Min(V)	Max (V)	I_T(4)(mA)				
SMDJ5.0AQ	SMDJ5.0CA(7)	6.4	7.07	10	1000	5	326.09	9.2
SMDJ6.0AQ	SMDJ6.0CAQ	6.67	7.37	10	1000	6	291.26	10.3
SMDJ6.5AQ	SMDJ6.5CAQ	7.22	7.98	10	500	6.5	267.86	11.2
SMDJ7.0AQ	SMDJ7.0CAQ	7.78	8.6	10	200	7	250	12
SMDJ7.5AQ	SMDJ7.5CAQ	8.33	9.21	1	100	7.5	232.56	12.9
SMDJ8.0AQ	SMDJ8.0CAQ	8.89	9.83	1	50	8	220.59	13.6
SMDJ8.5AQ	SMDJ8.5CAQ	9.44	10.4	1	25	8.5	208.33	14.4
SMDJ9.0AQ	SMDJ9.0CAQ	10	11.1	1	10	9	194.81	15.4
SMDJ10AQ	SMDJ10CAQ	11.1	12.3	1	5	10	176.47	17
SMDJ11AQ	SMDJ11CAQ	12.20	13.50	1	5	11.0	164.84	18.2
SMDJ12AQ	SMDJ12CAQ	13.30	14.70	1	2	12.0	150.75	19.9
SMDJ13AQ	SMDJ13CAQ	14.40	15.90	1	2	13.0	139.53	21.5
SMDJ14AQ	SMDJ14CAQ	15.60	17.20	1	1	14.0	129.31	23.2
SMDJ15AQ	SMDJ15CAQ	16.70	18.50	1	1	15.0	122.95	24.4
SMDJ16AQ	SMDJ16CAQ	17.80	19.70	1	1	16.0	115.38	26.0
SMDJ17AQ	SMDJ17CAQ	18.90	20.90	1	1	17.0	108.70	27.6
SMDJ18AQ	SMDJ18CAQ	20.00	22.10	1	1	18.0	102.74	29.2
SMDJ19AQ	SMDJ19CAQ	21.10	23.30	1	1	19.0	97.47	30.8
SMDJ20AQ	SMDJ20CAQ	22.20	24.50	1	1	20.0	92.59	32.4
SMDJ22AQ	SMDJ22CAQ	24.40	26.90	1	1	22.0	84.51	35.5
SMDJ24AQ	SMDJ24CAQ	26.70	29.50	1	1	24.0	77.12	38.9
SMDJ26AQ	SMDJ26CAQ	28.90	31.90	1	1	26.0	71.26	42.1
SMDJ28AQ	SMDJ28CAQ	31.10	34.40	1	1	28.0	66.08	45.4
SMDJ30AQ	SMDJ30CAQ	33.30	36.80	1	1	30.0	61.98	48.4
SMDJ33AQ	SMDJ33CAQ	36.70	40.60	1	1	33.0	56.29	53.3
SMDJ36AQ	SMDJ36CAQ	40.00	44.20	1	1	36.0	51.64	58.1
SMDJ40AQ	SMDJ40CAQ	44.40	49.10	1	1	40.0	46.51	64.5
SMDJ43AQ	SMDJ43CAQ	47.80	52.80	1	1	43.0	43.23	69.4
SMDJ45AQ	SMDJ45CAQ	50.00	55.30	1	1	45.0	41.27	72.7
SMDJ48AQ	SMDJ48CAQ	53.30	58.90	1	1	48.0	38.76	77.4
SMDJ51AQ	SMDJ51CAQ	56.7	62.7	1	1	51	36.41	82.4
SMDJ54AQ	SMDJ54CAQ	60	66.3	1	1	54	34.44	87.1
SMDJ58AQ	SMDJ58CAQ	64.4	71.2	1	1	58	32.05	93.6
SMDJ60AQ	SMDJ60CAQ	66.7	73.7	1	1	60	30.99	96.8
SMDJ64AQ	SMDJ64CAQ	71.1	78.6	1	1	64	29.13	103
SMDJ70AQ	SMDJ70CAQ	77.8	86	1	1	70	26.55	113
SMDJ75AQ	SMDJ75CAQ	83.3	92.1	1	1	75	24.79	121
SMDJ78AQ	SMDJ78CAQ	86.7	95.8	1	1	78	23.81	126
SMDJ80AQ	SMDJ80CAQ	88.8	97.6	1	1	80	23.15	129.6
SMDJ85AQ	SMDJ85CAQ	94.4	104	1	1	85	21.9	137

Notes：

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

■ **Characteristics**(Typical)

Fig.1 Peak Pulse Power Rating Curve

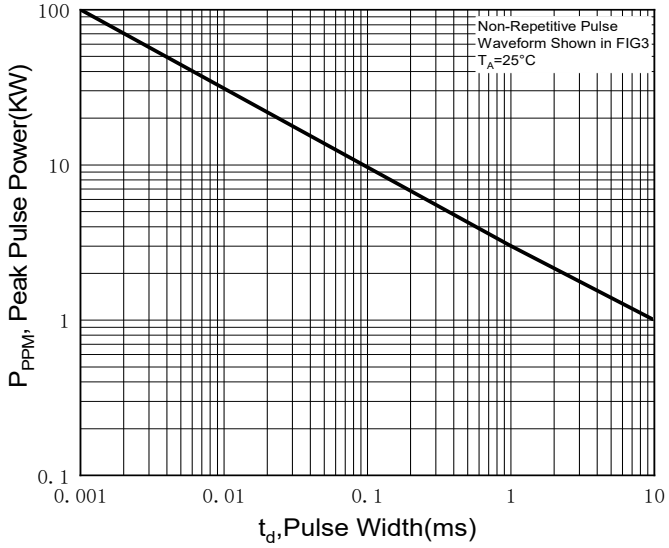


Fig.2 Pulse Power or Current vs. Initial Junction Temperature

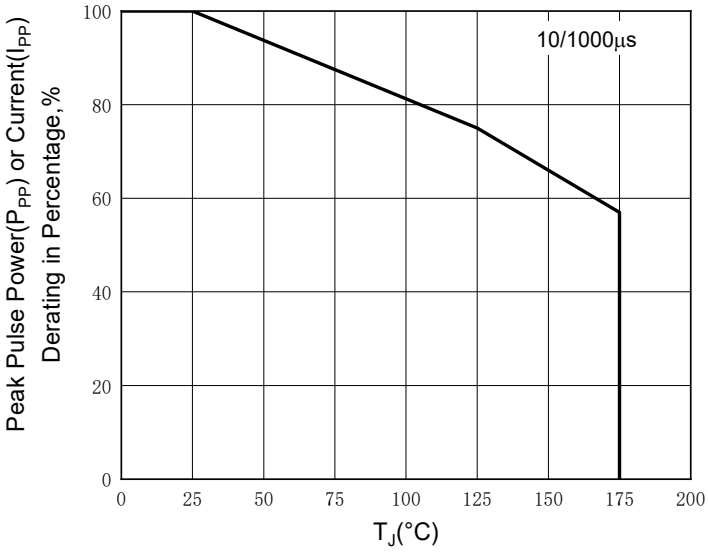


Fig.3 Pulse Waveform

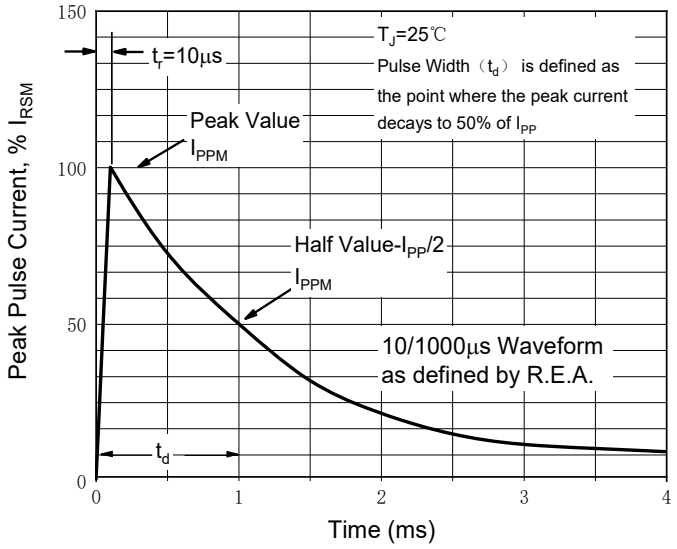


Fig.4 Typical Transient Thermal Impedance

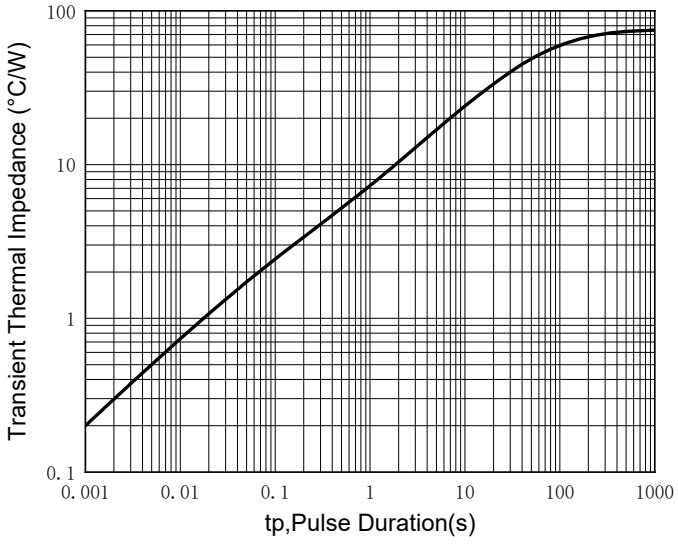


Fig.5 Maximum Non-Repetitive Forward Surge Current

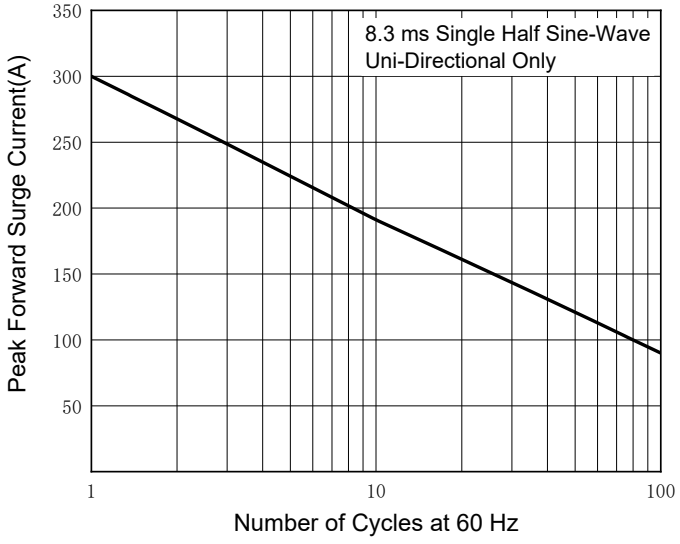
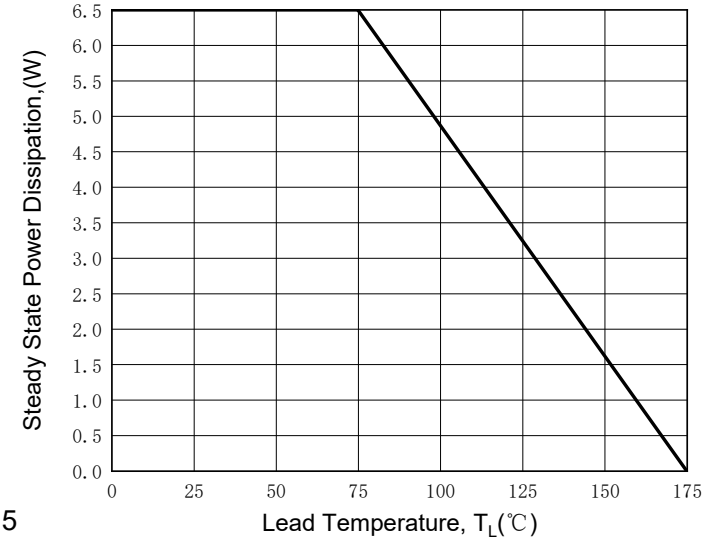
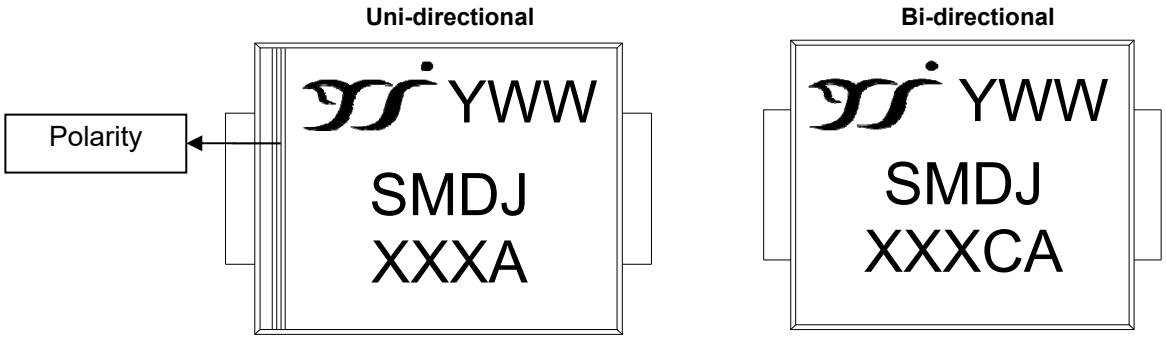


Fig.6 Steady State Power Derating Curve

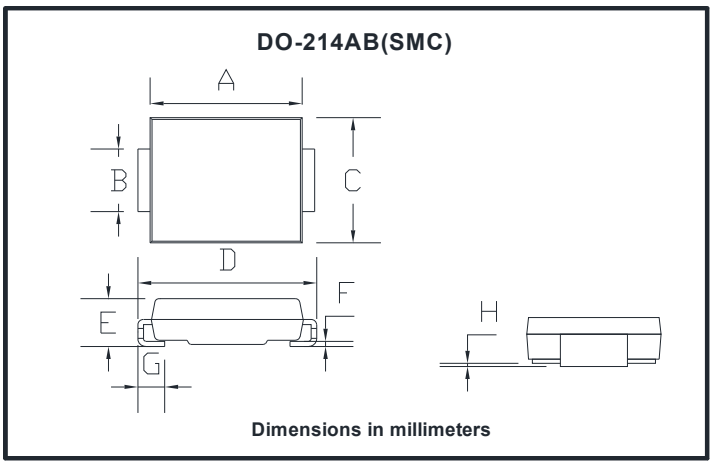


■ Marking Information



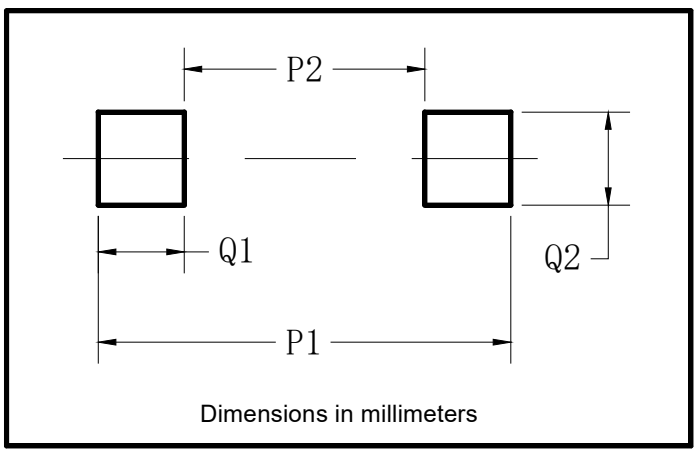
Note:
1. All marking is at middle of the product body
2. All marking is in laser printing
3.XXX is marking code, like 48A/48CAmarking code is 48
4. Body color: Black
5. YWW is date code, “Y” is year. “WW” is week.
For instance:
The 17th week of 2021, date code is 117
The 17th week of 2022, date code is 217

■ 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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