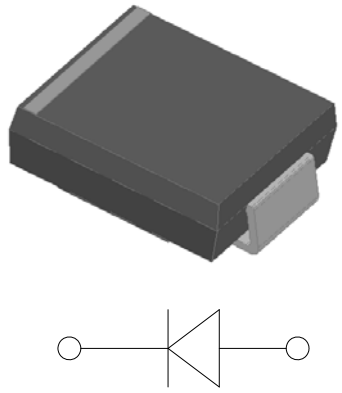
Surface Mount Transient Voltage Suppressor Diodes

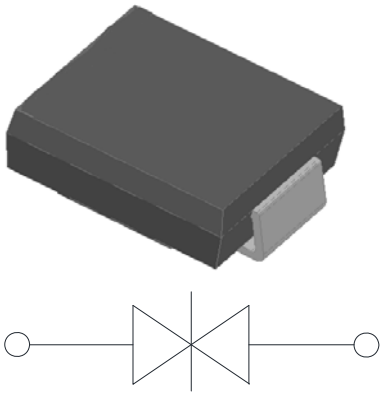
Uni-directional



Features

- Low profile package
- Ideal for automated placement
- Available in Uni-directional and Bi-directional
- 5000W 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	5000
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)	$R_{\theta J-A}$(4)	℃/W	junction to ambient	75
	$R_{\theta J-L}$(4)	℃/W	junction to lead	15
	$R_{\theta J-C}$(4)	℃/W	junction to case	13

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) Mounted on minimum recommended pad layout.

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

Part Number (Uni)	Part Number (Bi)	Breakdown Voltage V_{BR}@I_T			Maximum Reverse Leakage I_R @ 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)				
5.0SMDJ5.0AQ	5.0SMDJ5.0CAQ	6.4	7	10.0	1000.0	5.0	543.6	9.2
5.0SMDJ6.0AQ	5.0SMDJ6.0CAQ	6.67	7.37	10.0	1000.0	6.0	485.5	10.3
5.0SMDJ6.5AQ	5.0SMDJ6.5CAQ	7.22	7.98	10.0	800.0	6.5	446.5	11.2
5.0SMDJ7.0AQ	5.0SMDJ7.0CAQ	7.78	8.6	10.0	800.0	7.0	416.8	12.0
5.0SMDJ7.5AQ	5.0SMDJ7.5CAQ	8.33	9.21	5.0	800.0	7.5	387.7	12.9
5.0SMDJ8.0AQ	5.0SMDJ8.0CAQ	8.89	9.83	5.0	800.0	8.0	367.7	13.6
5.0SMDJ8.5AQ	5.0SMDJ8.5CAQ	9.44	10.4	5.0	800.0	8.5	347.3	14.4
5.0SMDJ9.0AQ	5.0SMDJ9.0CAQ	10.0	11.1	5.0	800.0	9.0	324.8	15.4
5.0SMDJ10AQ	5.0SMDJ10CAQ	11.1	12.3	5.0	800.0	10.0	294.2	17.0
5.0SMDJ11AQ	5.0SMDJ11CAQ	12.2	13.5	1.0	800.0	11.0	274.7	18.2
5.0SMDJ12AQ	5.0SMDJ12CAQ	13.3	14.7	1.0	800.0	12.0	251.3	19.9
5.0SMDJ13AQ	5.0SMDJ13CAQ	14.4	15.9	1.0	500.0	13.0	232.6	21.5
5.0SMDJ14AQ	5.0SMDJ14CAQ	15.6	17.2	1.0	200.0	14.0	215.5	23.2
5.0SMDJ15AQ	5.0SMDJ15CAQ	16.7	18.5	1.0	100.0	15.0	204.9	24.4
5.0SMDJ16AQ	5.0SMDJ16CAQ	17.8	19.7	1.0	50.0	16.0	192.3	26
5.0SMDJ17AQ	5.0SMDJ17CAQ	18.9	20.9	1.0	20.0	17.0	181.2	27.6
5.0SMDJ18AQ	5.0SMDJ18CAQ	20.0	22.1	1.0	10.0	18.0	171.2	29.2
5.0SMDJ19AQ	5.0SMDJ19CAQ	21.1	23.3	1.0	10.0	19.0	162.3	30.8
5.0SMDJ20AQ	5.0SMDJ20CAQ	22.2	24.5	1.0	5.0	20.0	154.3	32.4
5.0SMDJ22AQ	5.0SMDJ22CAQ	24.4	26.9	1.0	5.0	22.0	140.8	35.5
5.0SMDJ24AQ	5.0SMDJ24CAQ	26.7	29.5	1.0	5.0	24.0	128.5	38.9
5.0SMDJ26AQ	5.0SMDJ26CAQ	28.9	31.9	1.0	5.0	26.0	118.8	42.1
5.0SMDJ28AQ	5.0SMDJ28CAQ	31.1	34.4	1.0	5.0	28.0	110.1	45.4
5.0SMDJ30AQ	5.0SMDJ30CAQ	33.3	36.8	1.0	5.0	30.0	103.3	48.4
5.0SMDJ33AQ	5.0SMDJ33CAQ	36.7	40.6	1.0	5.0	33.0	93.8	53.3
5.0SMDJ36AQ	5.0SMDJ36CAQ	40.0	44.2	1.0	5.0	36.0	86.1	58.1
5.0SMDJ40AQ	5.0SMDJ40CAQ	44.4	49.1	1.0	5.0	40.0	77.5	64.5
5.0SMDJ43AQ	5.0SMDJ43CAQ	47.8	52.8	1.0	5.0	43.0	72.0	69.4
5.0SMDJ45AQ	5.0SMDJ45CAQ	50.0	55.3	1.0	5.0	45.0	68.8	72.7
5.0SMDJ48AQ	5.0SMDJ48CAQ	53.3	58.9	1.0	5.0	48.0	64.6	77.4
5.0SMDJ51AQ	5.0SMDJ51CAQ	56.7	62.7	1.0	5.0	51.0	60.7	82.4
5.0SMDJ54AQ	5.0SMDJ54CAQ	60.0	66.3	1.0	5.0	54.0	57.4	87.1
5.0SMDJ58AQ	5.0SMDJ58CAQ	64.4	71.2	1.0	5.0	58.0	53.4	93.6
5.0SMDJ60AQ	5.0SMDJ60CAQ	66.7	73.7	1.0	5.0	60.0	51.7	96.8
5.0SMDJ64AQ	5.0SMDJ64CAQ	71.1	78.6	1.0	5.0	64.0	48.5	103
5.0SMDJ70AQ	5.0SMDJ70CAQ	77.8	86.0	1.0	5.0	70.0	44.2	113
5.0SMDJ75AQ	5.0SMDJ75CAQ	83.3	92.1	1.0	5.0	75.0	41.3	121
5.0SMDJ78AQ	5.0SMDJ78CAQ	86.7	95.8	1.0	5.0	78.0	39.7	126
5.0SMDJ80AQ	5.0SMDJ80CAQ	88.96	97.6	1.0	5.0	80.0	38.6	129.6
5.0SMDJ85AQ	5.0SMDJ85CAQ	94.4	104.0	1.0	5.0	85.0	36.5	137

Notes:

(1) Pulse Test：tp≤50ms Pulse test: tp≤50ms.

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

■ **Characteristics**(Typical)

Fig.1 Peak Pulse Power Rating Curve

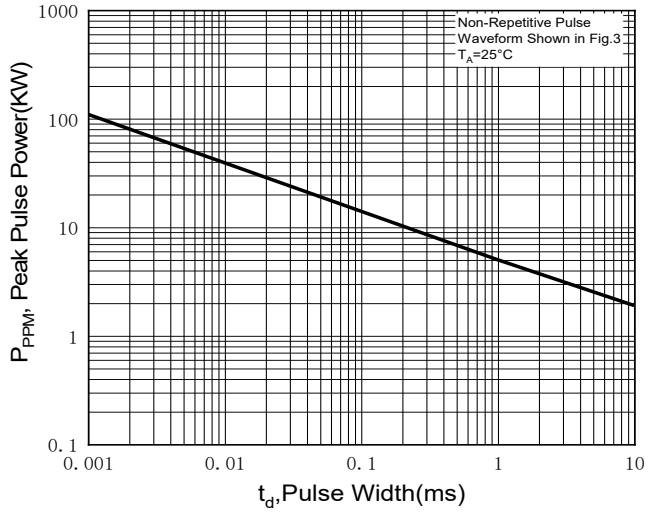


Fig.2 Pulse Power or Current vs. Initial Junction Temperature

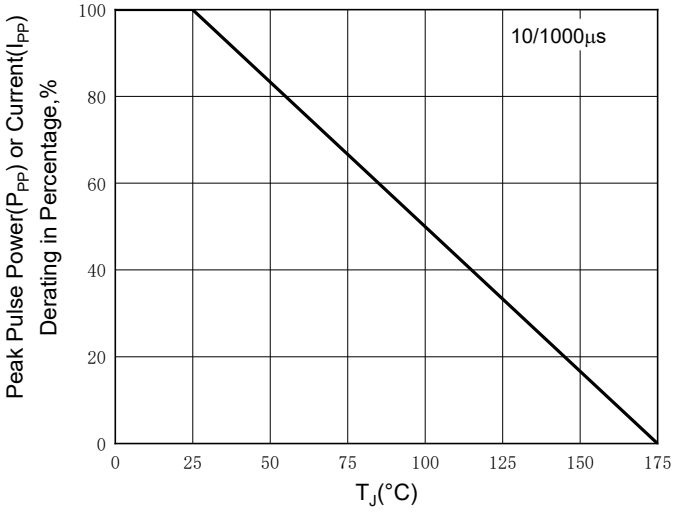


Fig.3 Pulse Waveform

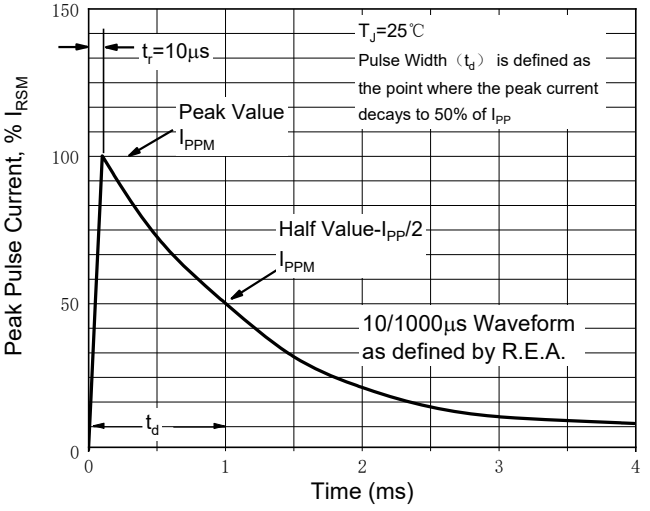


Fig.4 Typical Transient Thermal Impedance

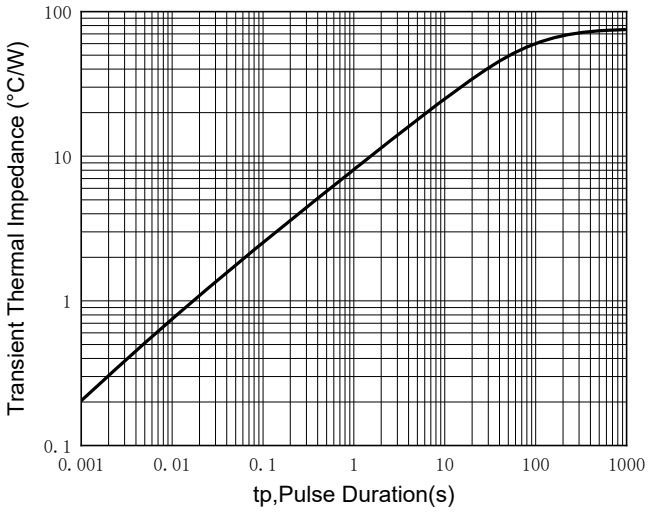


Fig.5 Maximum Non-Repetitive Forward Surge Current

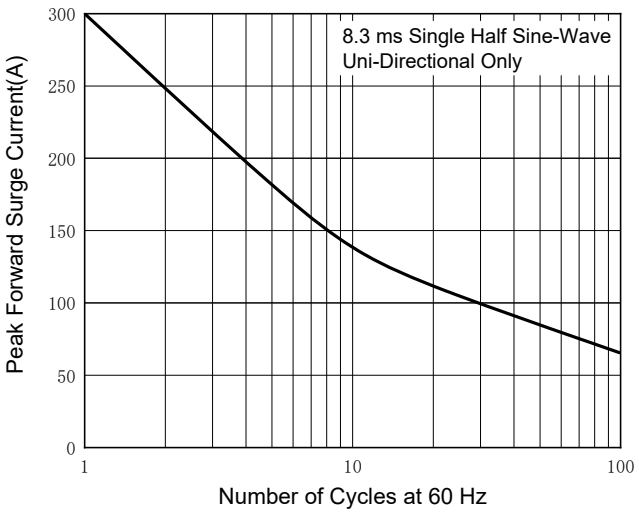
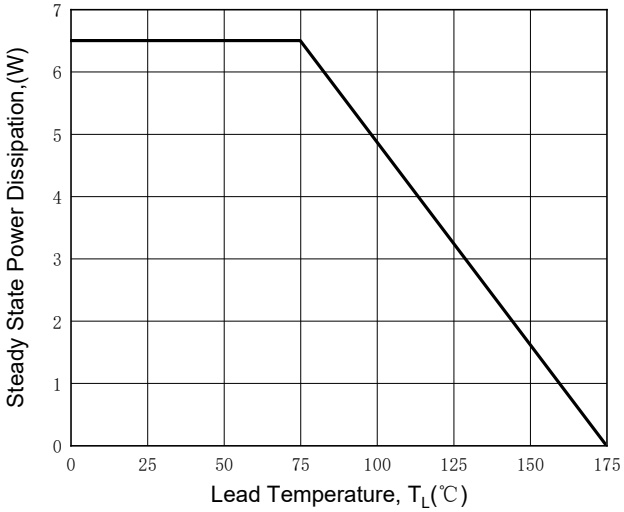


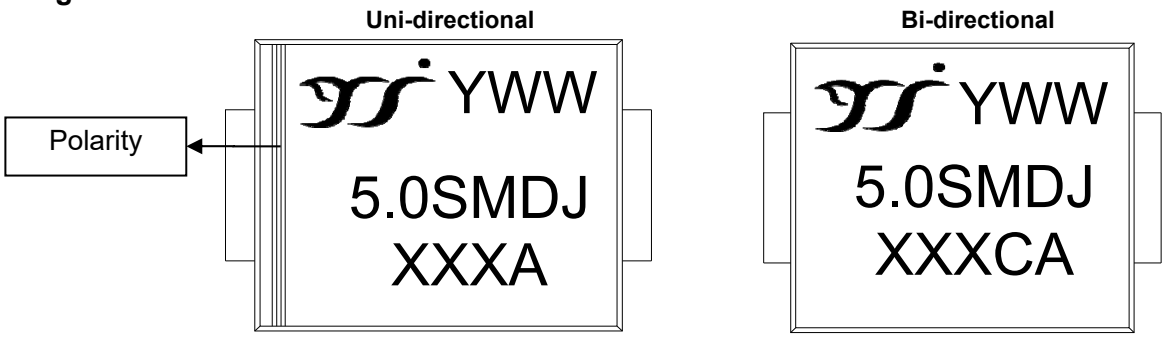
Fig.6 Steady State Power Derating Curve



■Ordering Information (Example)

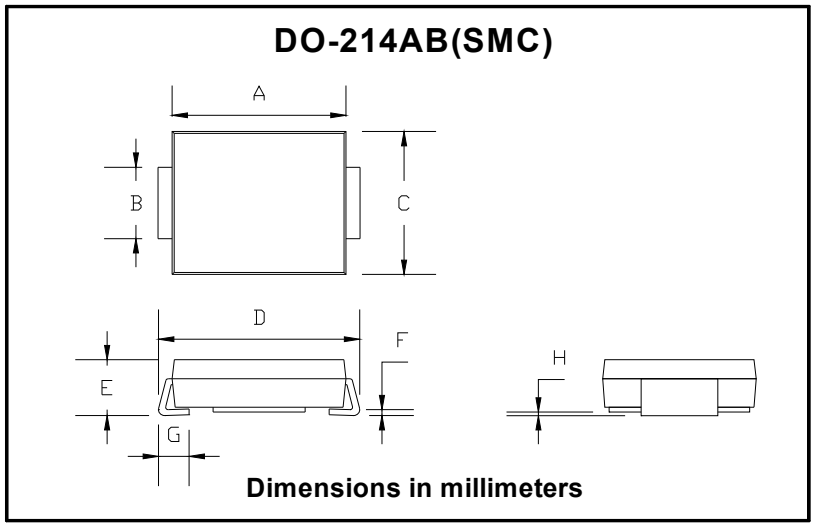
PREFERED P/N	PACKAGE CODE	UNIT WEIGHT(g)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
5.0SMDJ SERIES	F1	Approximate 0.270	42000	13” reel

■ Marking Information



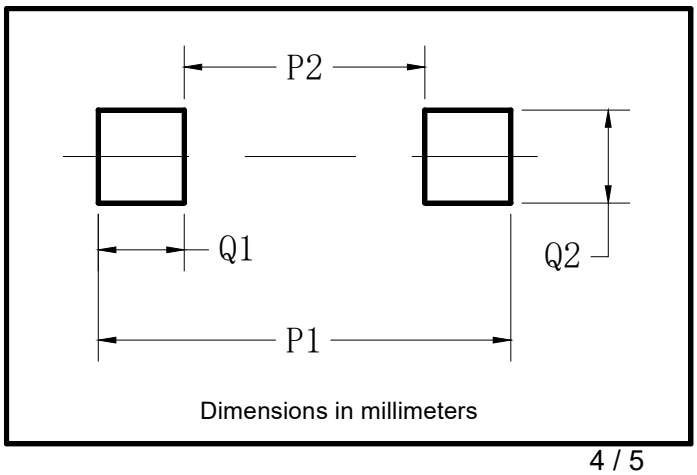
Note:
1. All marking is at middle of the product body
2. All marking is in laser printing
3.XXX is marking code, like 48A/48CAmarking code is 48
4. Body color: Black
5. YWW is date code, “Y” is year. “WW” is week.
For instance:
The 17th week of 2021, date code is 117
The 17th week of 2022, date code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