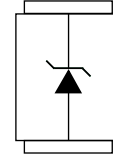


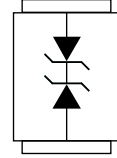
Description

The SMDJ Series are designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

Unidirectional



Bidirectional

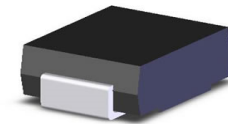


Feature

- For surface mounted application to optimize board space
- Low profile package
- Built-in strain relief
- Typical maximum temperature coefficient
 $\Delta V_{BR} = 0.1\% \times V_{BR@25^\circ C} \times \Delta T$
- Glass passivated chip junction
- 3000W peak pulse power capability at 10×1000μs waveform, repetition rate(duty cycles):0.01%
- Fast response time: typically less than 1.0ps from 0V to V_R min
- Excellent clamping capability
- Low incremental surge resistance
- High temperature soldering guaranteed:260°C/40 seconds at terminals

Applications

TVS device are ideal for the protection of I/O interfaces, V_{CC} bus and other vulnerable circuits used in telecom, computer industrial and consumer electronic application



SMDJ/DO-214AB

Maximum Ratings and Thermal Characteristics($T_A=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at $T_A=25^\circ C$ by 10*1000μs waveform(Fig.1) (Note 1),(Note 2)	P_{PPM}	3000	W
Power Dissipation on infinite heat sink at $T_A=50^\circ C$	$P_{M(AV)}$	6.5	W
Peak Forward Surge Current,8.3ms Single Half Sine Wave (Note 3)	I_{FSM}	300	A
Maximum Instantaneous Forward Voltage at 100A for Unidirectional only (Note 4)	V_F	3.5	V
Operation Junction and Storage Temperature Range	T_J, T_{STG}	-65 to 150	°C
Typical Thermal Resistance Junction to Lead	R_{uJL}	15	°C/W
Typical Thermal Resistance Junction to Ambient	R_{uJA}	75	°C/W

Notes:

1. Non-repetitive current pulse , per Fig. 3 and derated above $T_A=50^\circ C$ per Fig. 2.
2. Mounted on copper pad area of 0.31*0.33" (8.0*8.0mm) to each terminal.
3. Measured on 8.3ms single half sine wace or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.
4. $V_F < 3.5V$ for $V_{BR} \leq 200V$ and $V_F < 5.0V$ for $V_{BR} \geq 201V$.

Electrical characteristics

Part Number (Uni)	Part Number (Bi)	Reverse Stand off Voltage V_R (V)	Breakdown Voltage $V_{BR} @ I_T$ (V)		Test Current I_T (mA)	Maximum Clamping Voltage $V_C @ I_{PP}$	Maximum Peak Pulse Current I_{PP} (A)	Maximum Reverse Leakage $I_R @ V_R$ (μ A)
			MIN	MAX				
SMDJ5.0	SMDJ5.0C	5.0	6.4	7.6	10	9.6	312.5	800
SMDJ5.0A	SMDJ5.0CA	5.0	6.4	7.3	10	9.2	326.1	800
SMDJ6.0	SMDJ6.0C	6.0	6.7	8.5	10	11.4	263.2	800
SMDJ6.0A	SMDJ6.0CA	6.0	6.7	7.7	10	10.3	291.3	800
SMDJ6.5	SMDJ6.5C	6.5	7.2	9.1	10	12.3	243.9	500
SMDJ6.5A	SMDJ6.5CA	6.5	7.2	8.3	10	11.2	267.9	500
SMDJ7.0	SMDJ7.0C	7.0	7.8	9.9	10	13.3	225.6	200
SMDJ7.0A	SMDJ7.0CA	7.0	7.8	9.0	10	12.0	250.0	200
SMDJ7.5	SMDJ7.5C	7.5	8.3	10.7	1.0	14.3	209.8	100
SMDJ7.5A	SMDJ7.5CA	7.5	8.3	9.6	1.0	12.9	232.6	100
SMDJ8.0	SMDJ8.0C	8.0	8.9	11.3	1.0	15.0	200.0	50
SMDJ8.0A	SMDJ8.0CA	8.0	8.9	10.2	1.0	13.6	220.6	50
SMDJ8.5	SMDJ8.5C	8.5	9.4	11.9	1.0	15.9	188.7	20
SMDJ8.5A	SMDJ8.5CA	8.5	9.4	10.8	1.0	14.4	208.3	20
SMDJ9.0	SMDJ9.0C	9.0	10.0	12.6	1.0	16.9	177.5	10
SMDJ9.0A	SMDJ9.0CA	9.0	10.0	11.5	1.0	15.4	194.8	10
SMDJ10	SMDJ10C	10	11.1	14.1	1.0	18.8	159.6	5
SMDJ10A	SMDJ10CA	10	11.1	12.8	1.0	17.0	176.5	2
SMDJ11	SMDJ11C	11	12.2	15.4	1.0	20.1	149.3	2
SMDJ11A	SMDJ11CA	11	12.2	14.0	1.0	18.2	164.8	2
SMDJ12	SMDJ12C	12	13.3	16.9	1.0	22.0	136.4	2
SMDJ12A	SMDJ12CA	12	13.3	15.3	1.0	19.9	150.8	2
SMDJ13	SMDJ13C	13	14.4	18.2	1.0	23.8	126.1	2
SMDJ13A	SMDJ13CA	13	14.4	16.5	1.0	21.5	139.5	2
SMDJ14	SMDJ14C	14	15.6	19.8	1.0	25.8	116.3	2
SMDJ14A	SMDJ14CA	14	15.6	17.9	1.0	23.2	129.3	2
SMDJ15	SMDJ15C	15	16.7	21.1	1.0	26.9	111.5	2
SMDJ15A	SMDJ15CA	15	16.7	19.2	1.0	24.4	123.0	2

Part Number (Uni)	Part Number (Bi)	Reverse Stand off Voltage V_R (V)	Breakdown Voltage $V_{BR} @ I_T$ (V)		Test Current I_T (mA)	Maximum Clamping Voltage $V_C @ I_{PP}$	Maximum Peak Pulse Current I_{PP} (A)	Maximum Reverse Leakage $I_R @ V_R$ (μ A)
			MIN	MAX				
SMDJ18	SMDJ18C	18	20.0	25.3	1.0	32.2	93.2	2
SMDJ18A	SMDJ18CA	18	20.0	23.3	1.0	29.2	102.7	2
SMDJ20	SMDJ20C	20	22.2	28.1	1.0	35.8	83.8	2
SMDJ20A	SMDJ20CA	20	22.2	25.5	1.0	32.4	92.6	2
SMDJ22	SMDJ22C	22	24.4	30.9	1.0	39.4	76.1	2
SMDJ22A	SMDJ22CA	22	24.4	28.0	1.0	35.5	84.5	2
SMDJ24	SMDJ24C	24	26.7	33.8	1.0	43.0	69.8	2
SMDJ24A	SMDJ24CA	24	26.7	30.7	1.0	38.9	77.1	2
SMDJ26	SMDJ26C	26	28.9	36.6	1.0	46.6	64.4	2
SMDJ26A	SMDJ26CA	26	28.9	33.2	1.0	42.1	71.3	2
SMDJ28	SMDJ28C	28	31.1	39.4	1.0	50.0	60.0	2
SMDJ28A	SMDJ28CA	28	31.1	35.8	1.0	45.4	66.1	2
SMDJ30	SMDJ30C	30	33.3	42.2	1.0	53.5	56.1	2
SMDJ30A	SMDJ30CA	30	33.3	38.3	1.0	48.4	62.0	2
SMDJ33	SMDJ33C	33	36.7	46.5	1.0	59.0	50.8	2
SMDJ33A	SMDJ33CA	33	36.7	42.2	1.0	53.3	56.3	2
SMDJ36	SMDJ36C	36	40.0	50.7	1.0	64.3	46.7	2
SMDJ36A	SMDJ36CA	36	40.0	46.0	1.0	58.1	51.6	2
SMDJ40	SMDJ40C	40	44.4	56.3	1.0	71.4	42.0	2
SMDJ40A	SMDJ40CA	40	44.4	51.1	1.0	64.5	46.5	2
SMDJ43	SMDJ43C	43	47.8	60.5	1.0	76.7	39.1	2
SMDJ43A	SMDJ43CA	43	47.8	54.9	1.0	69.4	43.2	2
SMDJ45	SMDJ45C	45	50.0	63.3	1.0	80.3	37.4	2
SMDJ45A	SMDJ45CA	45	50.0	57.5	1.0	72.7	41.3	2
SMDJ48	SMDJ48C	48	53.3	67.5	1.0	85.5	35.1	2
SMDJ48A	SMDJ48CA	48	53.3	61.3	1.0	77.4	38.8	2
SMDJ51	SMDJ51C	51	56.7	71.8	1.0	91.1	32.9	2
SMDJ51A	SMDJ51CA	51	56.7	65.2	1.0	82.4	36.4	2

Part Number (Uni)	Part Number (Bi)	Reverse Stand off Voltage V_R (V)	Breakdown Voltage $V_{BR} @ I_T$ (V)		Test Current I_T (mA)	Maximum Clamping Voltage $V_C @ I_{PP}$	Maximum Peak Pulse Current I_{PP} (A)	Maximum Reverse Leakage $I_R @ V_R$ (μ A)
			MIN	MAX				
SMDJ54	SMDJ54C	54	60.0	76.0	1.0	96.3	31.2	2
SMDJ54A	SMDJ54CA	54	60.0	69.0	1.0	87.1	34.4	2
SMDJ58	SMDJ58C	58	64.4	81.6	1.0	103.0	29.1	2
SMDJ58A	SMDJ58CA	58	64.4	74.1	1.0	93.6	32.1	2
SMDJ60	SMDJ60C	60	66.7	84.5	1.0	107.0	28.0	2
SMDJ60A	SMDJ60CA	60	66.7	76.7	1.0	96.8	31.0	2
SMDJ64	SMDJ64C	64	71.1	90.1	1.0	114.0	26.3	2
SMDJ64A	SMDJ64CA	64	71.1	81.8	1.0	103.0	29.1	2
SMDJ70	SMDJ70C	70	77.8	98.6	1.0	125.0	24.0	2
SMDJ70A	SMDJ70CA	70	77.8	89.5	1.0	113.0	26.5	2
SMDJ75	SMDJ75C	75	83.0	105.7	1.0	134.0	22.4	2
SMDJ75A	SMDJ75CA	75	83.0	95.8	1.0	121.0	24.8	2
SMDJ78	SMDJ78C	78	86.0	109.8	1.0	139.0	21.6	2
SMDJ78A	SMDJ78CA	78	86.0	99.7	1.0	126.0	23.8	2
SMDJ85	SMDJ85C	85	94.0	119.2	1.0	151.0	19.9	2
SMDJ85A	SMDJ85CA	85	94.0	108.2	1.0	137.0	21.9	2
SMDJ90	SMDJ90C	90	100.0	126.5	1.0	160.0	18.8	2
SMDJ90A	SMDJ90CA	90	100.0	115.5	1.0	146.0	20.5	2
SMDJ100	SMDJ100C	100	111.0	141.0	1.0	179.0	16.8	2
SMDJ100A	SMDJ100CA	100	111.0	128.0	1.0	162.0	18.5	2
SMDJ110	SMDJ110C	110	122.0	154.5	1.0	196.0	15.3	2
SMDJ110A	SMDJ110CA	110	122.0	140.5	1.0	177.0	16.9	2
SMDJ120	SMDJ120C	120	133.0	169.0	1.0	214.0	14.0	2
SMDJ120A	SMDJ120CA	120	133.0	153.0	1.0	193.0	15.5	2
SMDJ130	SMDJ130C	130	144.0	182.5	1.0	231.0	13.0	2
SMDJ130A	SMDJ130CA	130	144.0	165.5	1.0	209.0	14.4	2
SMDJ150	SMDJ150C	150	167.0	211.5	1.0	268.0	11.2	2
SMDJ150A	SMDJ150CA	150	167.0	192.5	1.0	243.0	12.3	2

Part Number (Uni)	Part Number (Bi)	Reverse Stand off Voltage V_R (V)	Breakdown Voltage $V_{BR} @ I_T$ (V)		Test Current I_T (mA)	Maximum Clamping Voltage $V_C @ I_{PP}$	Maximum Peak Pulse Current I_{PP} (A)	Maximum Reverse Leakage $I_R @ V_R$ (μA)
			MIN	MAX				
SMDJ160	SMDJ160C	160	178.0	226.0	1.0	287.0	10.5	2
SMDJ160A	SMDJ160CA	160	178.0	205.0	1.0	259.0	11.6	2
SMDJ170	SMDJ170C	170	189.0	239.5	1.0	304.0	9.9	2
SMDJ170A	SMDJ170CA	170	189.0	217.5	1.0	275.0	10.9	2

For bidirectional type having V_R of 10 volts and less, the I_R limit is double.
 For parts without A, the V_{BR} is $\pm 10\%$ and V_C is 5% higher than with A parts.

Ratings and Characteristic Curves $T_A=25^\circ C$ unless otherwise noted

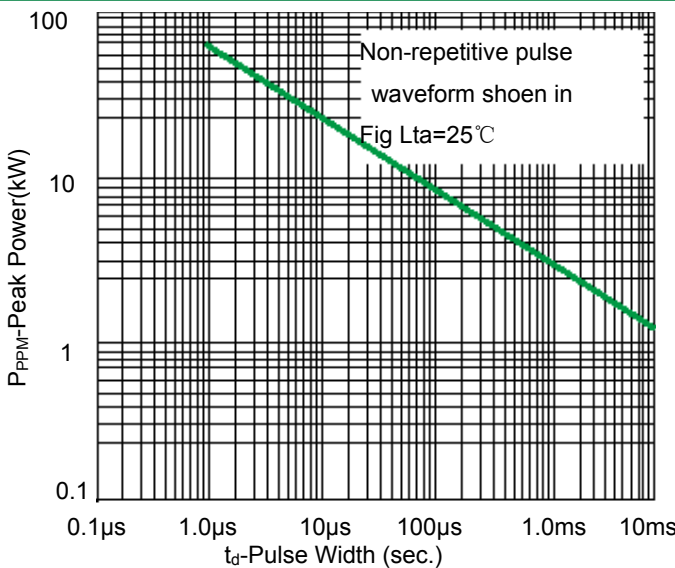


Figure 1-Peak Pulse Power Rating

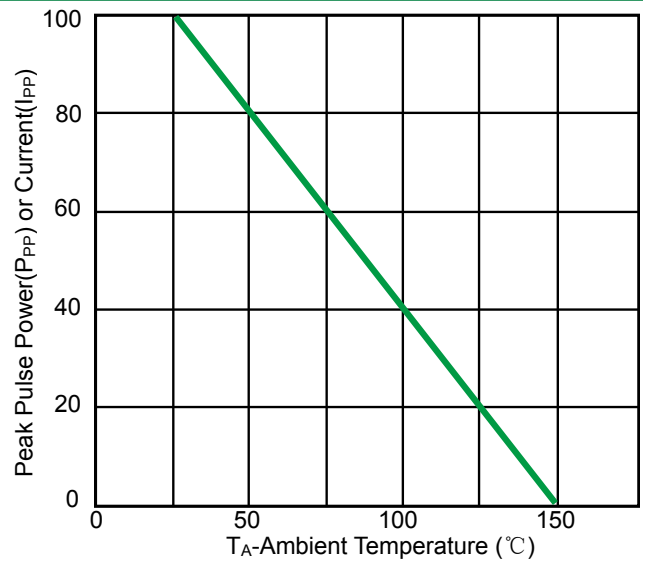


Figure 2-Pulse Derating Curve

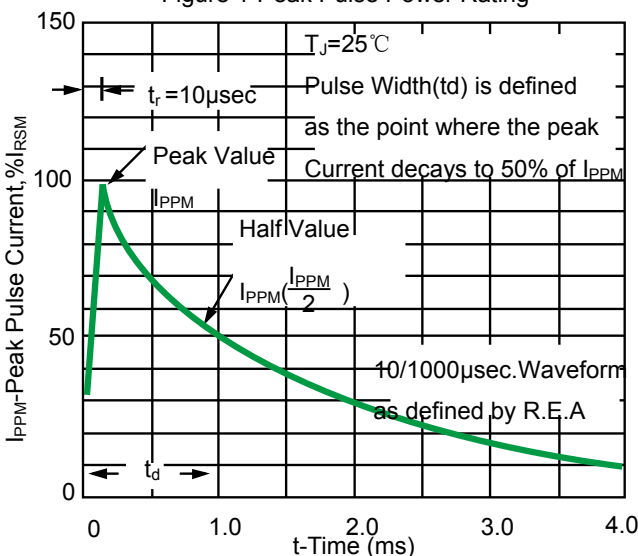


Figure 3-Pulse Waveform

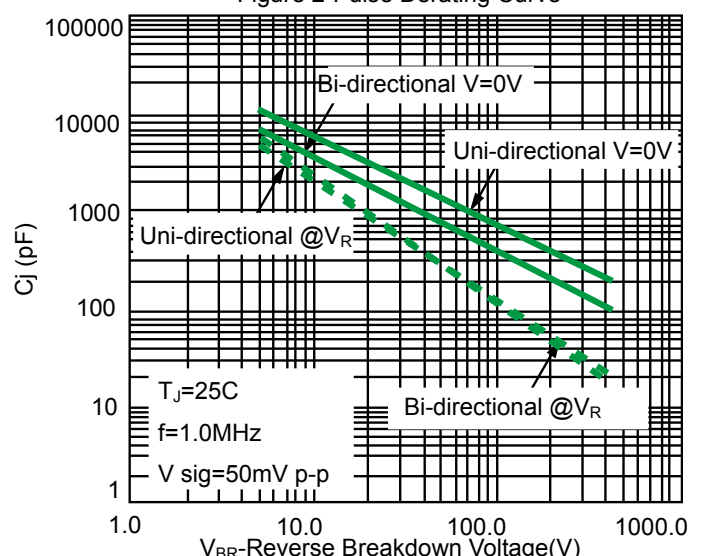


Figure 4-Typical Junction Capacitance

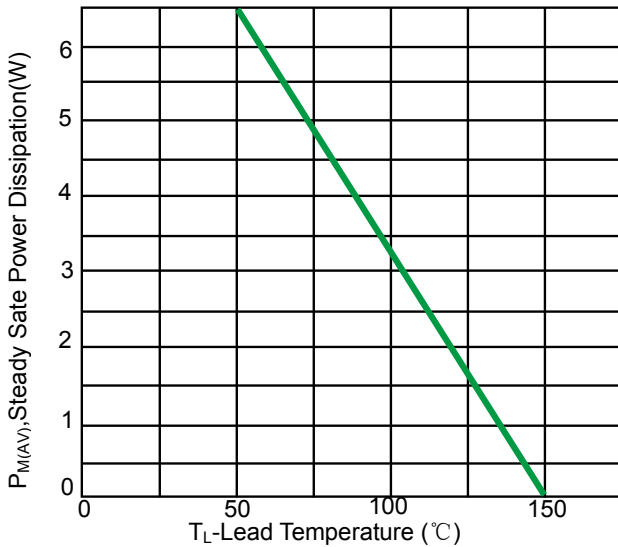


Figure 5-Steady State Power Dissipation Derating Curve

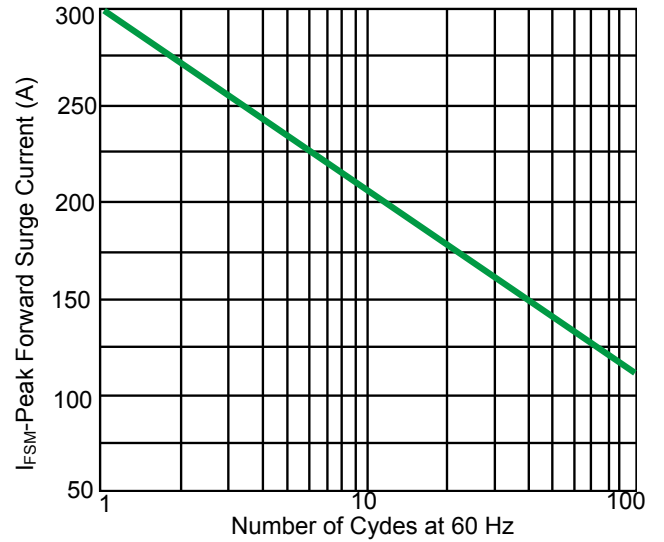
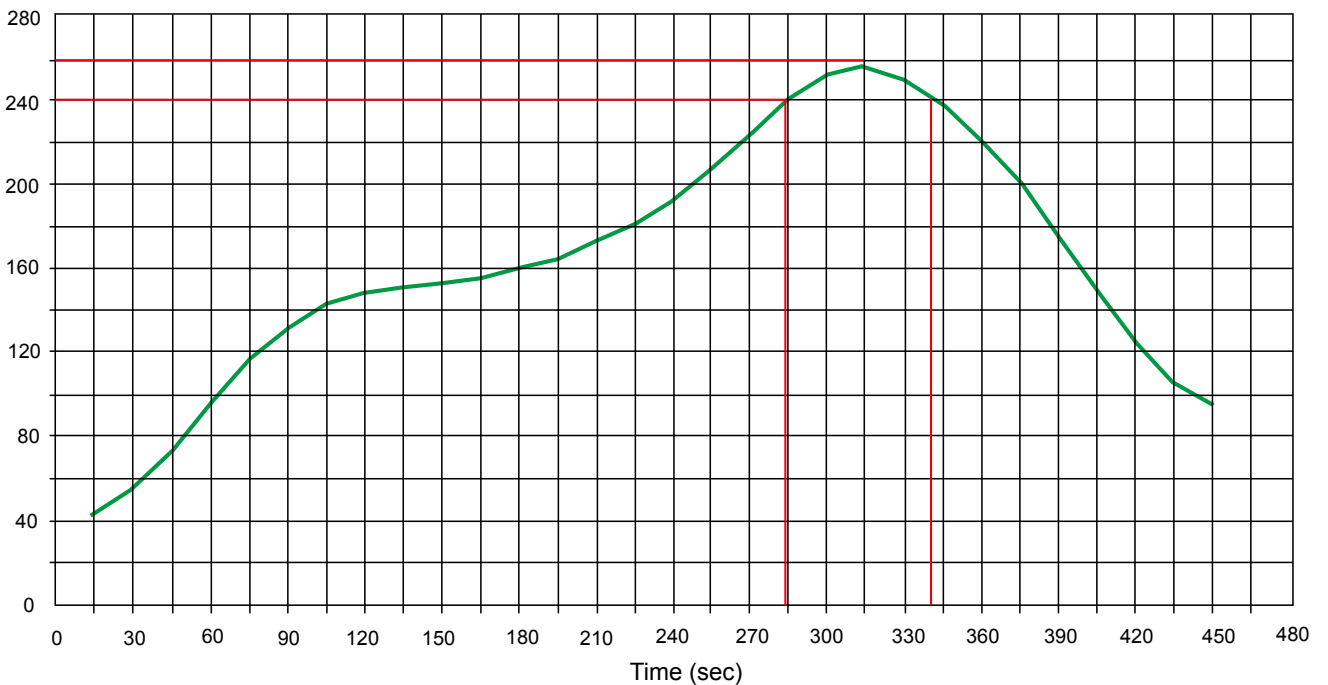
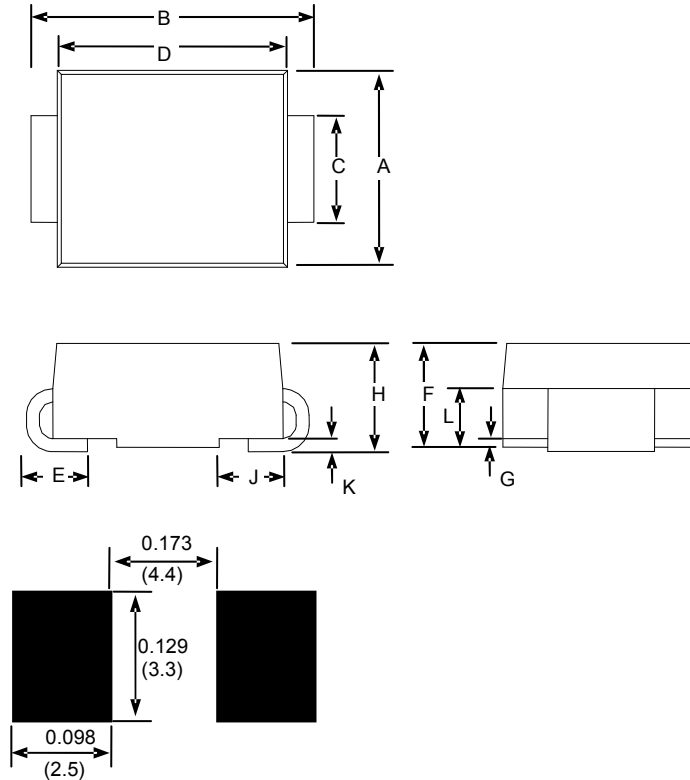


Figure 6-Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Only

Solder Reflow Recommendation

Peak Temp=257°C, Ramp Rate=0.802deg. °C/sec



Product dimension(SMD)



DIMENSIONS ARE : $\frac{\text{INCHES}}{\text{(Millimeters)}}$

Dimension	Inches		Millimeters	
	MIN	MAX	MIN	MAX
A	0.220	0.245	5.590	6.220
B	0.305	0.320	7.750	8.130
C	0.114	0.126	2.900	3.200
D	0.260	0.280	6.600	7.110
E	0.030	0.060	0.760	1.520
F	0.079	0.103	2.060	2.620
G	-	0.008	-	0.203
H	0.079	0.103	2.060	2.620
J	0.030	0.060	0.760	1.520
K	-	0.008	-	0.203

Ordering information

Device	Package	Shipping
SMDJ Series	DO-214AB(Pb-Free)	500 / Tape & Reel

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