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SMBJ Series

600W Surface Mount Transient Voltage Suppressors

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Features

- Peak power disspation
  600W@10 x 1000 us Pluse
- Low incremental surge resistance
- Excellent clamping capability
- Fast response time
- Low leakage current
- Halogen free and RoHS compliant

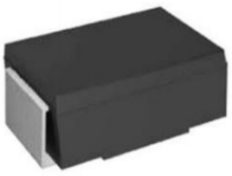
Applications

- Personal digital assistants (PDA)
- Cellular handsets & Accessories
- Handhelds and notebooks
- Portable instrumentation

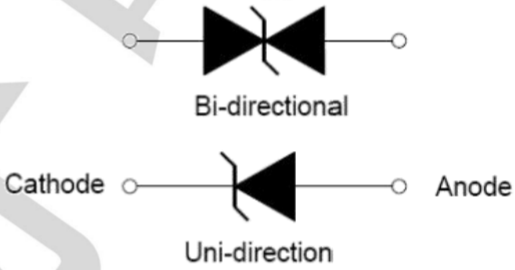
Mechanical Characteristics

- DO-214AA(SMB) surface mount package

Dimensions and Pin Configuration



DO-214AA(SMB)



Pin Configuration

Maximum Ratings& Thermal Characteristics

(Tamb=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak pulse power (tp=10/1000μs waveform)	P_{PPM}	600	W
Steady state power dissipation at T_A=50℃	$P_{M(AV)}$	5.0	W
Peak Pulse Current of on 10/1000us Waveform	IPPM	See Table	A
Typical thermal resistance junction to ambient	$R_{\theta JA}$	100	℃/W
Storage & operating temperature range	T_{STG} ,T_J	-55~+150	℃

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Electrical Characteristics (TA=25°C unless otherwise specified)

Part Number		V_R	I_R@V_R	V_{BR}@I_T		I_T	V_C@I_{PP}	IPP
Uni-Polar	Bi-Polar	V	μA	min(V)	max(V)	mA	max(V)	A
SMBJ5.0A	SMBJ5.0CA	5.0	120	6.40	7.00	10	9.2	65.2
SMBJ6.0A	SMBJ6.0CA	6.0	120	6.67	7.37	10	10.3	58.3
SMBJ6.5A	SMBJ6.5CA	6.5	120	7.22	7.98	10	11.2	53.6
SMBJ7.0A	SMBJ7.0CA	7.0	50	7.78	8.60	10	12.0	50.0
SMBJ7.5A	SMBJ7.5CA	7.5	50	8.33	9.21	1	12.9	46.5
SMBJ8.0A	SMBJ8.0CA	8.0	20	8.89	9.83	1	13.6	44.1
SMBJ8.5A	SMBJ8.5CA	8.5	10	9.44	10.40	1	14.4	41.7
SMBJ9.0A	SMBJ9.0CA	9.0	5	10.00	11.10	1	15.4	39.0
SMBJ10A	SMBJ10CA	10	2	11.10	12.30	1	17.0	35.3
SMBJ11A	SMBJ11CA	11	1	12.20	13.50	1	18.2	33.0
SMBJ12A	SMBJ12CA	12	1	13.30	14.70	1	19.9	30.2
SMBJ13A	SMBJ13CA	13	1	14.40	15.90	1	21.5	27.9
SMBJ14A	SMBJ14CA	14	1	15.60	17.20	1	23.2	25.9
SMBJ15A	SMBJ15CA	15	1	16.70	18.50	1	24.4	24.6
SMBJ16A	SMBJ16CA	16	1	17.80	19.70	1	26.0	23.1
SMBJ17A	SMBJ17CA	17	1	18.90	20.90	1	27.6	21.8
SMBJ18A	SMBJ18CA	18	1	20.00	22.10	1	29.2	20.6
SMBJ20A	SMBJ20CA	20	1	22.20	24.50	1	32.4	18.6
SMBJ22A	SMBJ22CA	22	1	24.40	26.90	1	35.5	16.9
SMBJ24A	SMBJ24CA	24	1	26.70	29.50	1	38.9	15.4
SMBJ26A	SMBJ26CA	26	1	28.90	31.90	1	42.1	14.3
SMBJ28A	SMBJ28CA	28	1	31.10	34.40	1	45.4	13.2
SMBJ30A	SMBJ30CA	30	1	33.30	36.80	1	48.4	12.4
SMBJ33A	SMBJ33CA	33	1	36.70	40.60	1	53.3	11.3
SMBJ36A	SMBJ36CA	36	1	40.00	44.20	1	58.1	10.4
SMBJ40A	SMBJ40CA	40	1	44.40	49.10	1	64.5	9.3
SMBJ43A	SMBJ43CA	43	1	47.80	52.80	1	69.4	8.7
SMBJ45A	SMBJ45CA	45	1	50.00	55.30	1	72.7	8.3
SMBJ48A	SMBJ48CA	48	1	53.30	58.90	1	77.4	7.8

Electrical Characteristics (TA=25°C unless otherwise specified)

Part Number		V_R	I_R@V_R	V_{BR}@I_T		I_T	V_C@I_{PP}	IPP
Uni-Polar	Bi-Polar	V	μA	min(V)	max(V)	mA	max(V)	A
SMBJ51A	SMBJ51CA	51	1	56.70	62.70	1	82.4	7.3
SMBJ54A	SMBJ54CA	54	1	60.00	66.30	1	87.1	6.9
SMBJ58A	SMBJ58CA	58	1	64.40	71.20	1	93.6	6.4
SMBJ60A	SMBJ60CA	60	1	66.70	73.70	1	96.8	6.2
SMBJ64A	SMBJ64CA	64	1	71.10	78.60	1	103.0	5.8
SMBJ70A	SMBJ70CA	70	1	77.80	86.00	1	113.0	5.3
SMBJ75A	SMBJ75CA	75	1	83.30	92.10	1	121.0	5.0
SMBJ78A	SMBJ78CA	78	1	86.70	95.80	1	126.0	4.8
SMBJ85A	SMBJ85CA	85	1	94.40	104.0	1	137.0	4.4
SMBJ90A	SMBJ90CA	90	1	100.0	111.0	1	146.0	4.1
SMBJ100A	SMBJ100CA	100	1	111.0	123.0	1	162.0	3.7
SMBJ110A	SMBJ110CA	110	1	122.0	135.0	1	177.0	3.4
SMBJ120A	SMBJ120CA	120	1	133.0	147.0	1	193.0	3.1
SMBJ130A	SMBJ130CA	130	1	144.0	159.0	1	209.0	2.9
SMBJ150A	SMBJ150CA	150	1	167.0	185.0	1	243.0	2.5
SMBJ160A	SMBJ160CA	160	1	178.0	197.0	1	259.0	2.3
SMBJ170A	SMBJ170CA	170	1	189.0	209.0	1	275.0	2.2
SMBJ180A	SMBJ180CA	180	1	201.0	222.0	1	292.0	2.1
SMBJ190A	SMBJ190CA	190	1	211.0	234.0	1	307.0	2.0
SMBJ200A	SMBJ200CA	200	1	224.0	247.0	1	324.0	1.9
SMBJ210A	SMBJ210CA	210	1	233.0	258.0	1	337.0	1.8
SMBJ220A	SMBJ220CA	220	1	246.0	272.0	1	356.0	1.7
SMBJ250A	SMBJ250CA	250	1	279.0	309.0	1	405.0	1.5
SMBJ300A	SMBJ300CA	300	1	335.0	371.0	1	486.0	1.3
SMBJ350A	SMBJ350CA	350	1	391.0	432.0	1	567.0	1.1
SMBJ400A	SMBJ400CA	400	1	447.0	494.0	1	648.0	0.9
SMBJ440A	SMBJ440CA	440	1	492.0	543.0	1	713.0	0.8

For bi-directional type having Vrwm of 10 Volts and less, the IR limit is double.

For parts without A, the VBR is +10%.

Typical Characteristics Curves

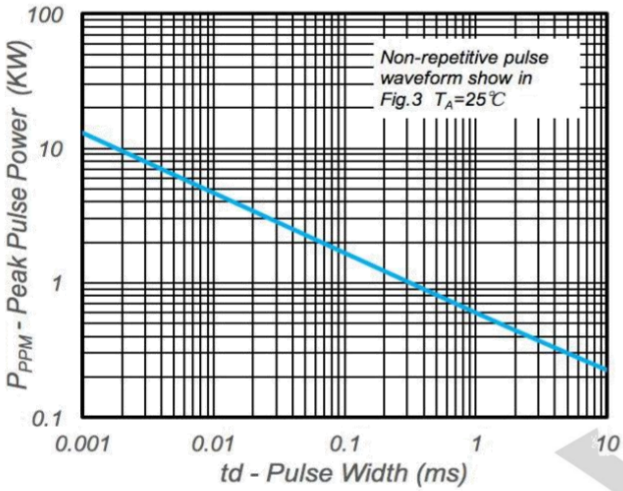


Fig.1 - Peak Pulse Power Rating

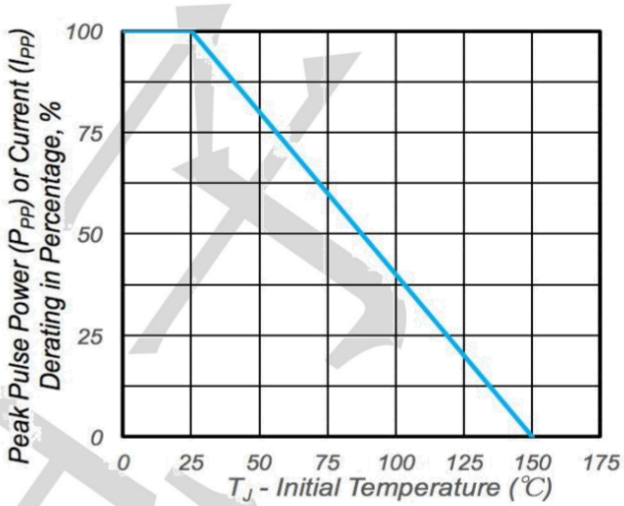


Fig.2 - Pulse Derating Cure

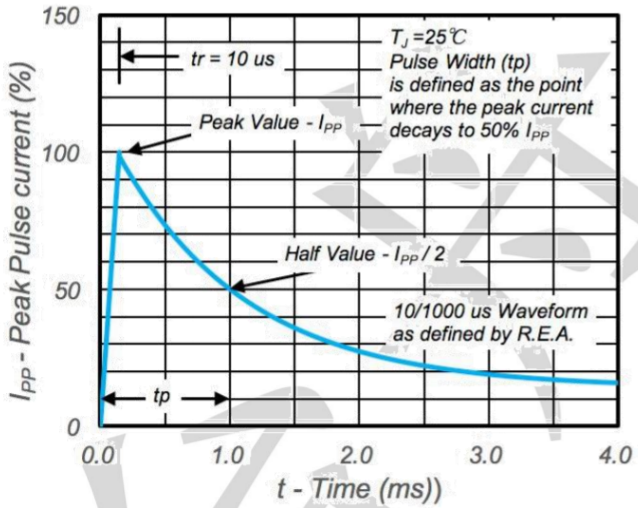


Fig.3 – Pulse Waveform

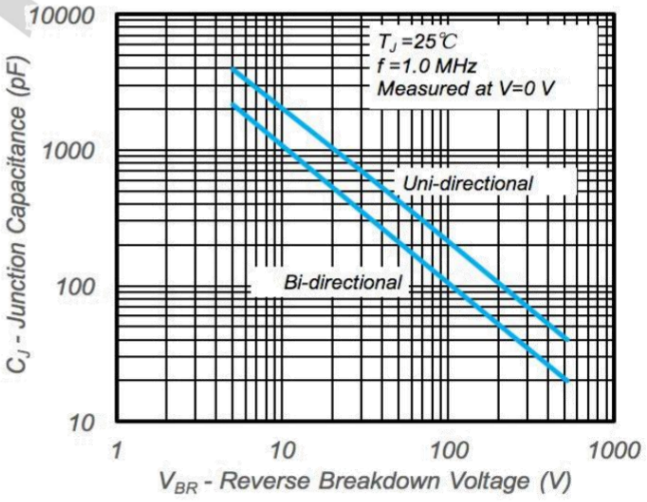
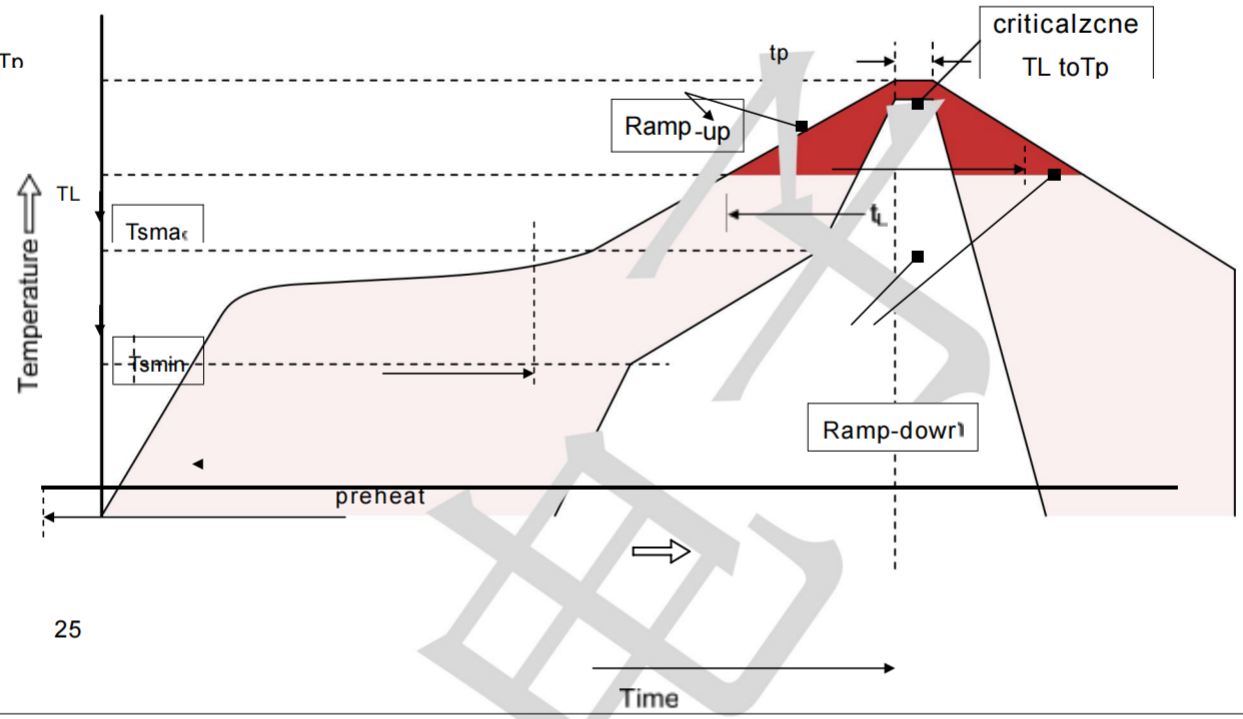


Fig.4 - Typical Junction Capacitance

Recommended Soldering Conditions

Reflow Soldering

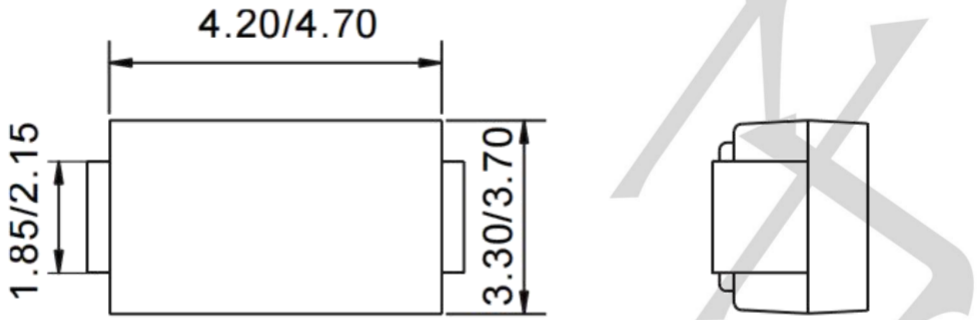


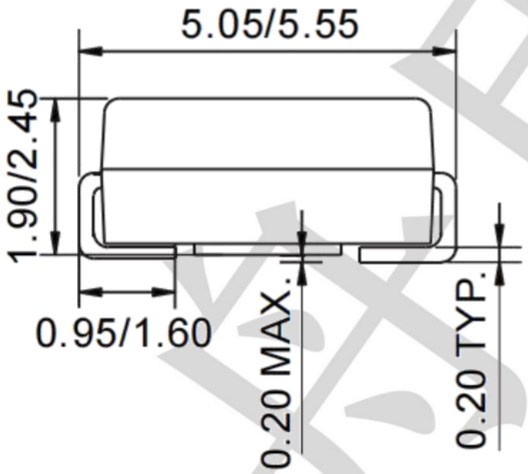
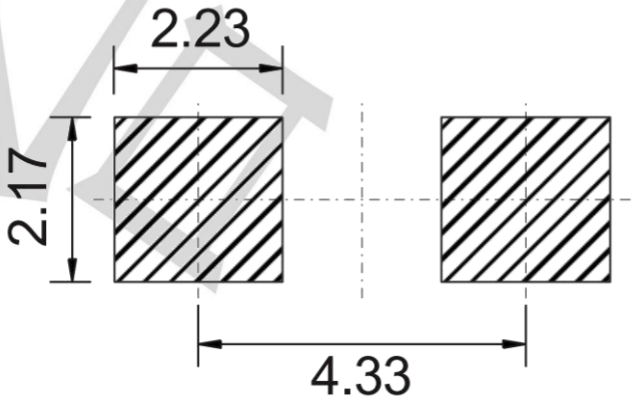
Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3℃/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (minto max) (ts)	 150℃ 200℃ 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	 3℃/second max.
Time maintained above: -Temperature (T_L) -Time (t_L)	 217℃ 60-150 seconds
Peak Temperature (T_P)	260℃
Time within 5℃ of actual Peak Temperature (t_P)	20-40 seconds
Ramp-down Rate	6℃/second max.
Time 25℃ to Peak Temperature	8 minutes max.

Package Outline Dimensions (unit: mm)

SMB





Mounting Pad Layout (unit: mm)