

FEATURES

- * For surface mount application
- * Built-in strain relief
- * Excellent clamping capability
- * Low profile package
- * Fast response time: Typically less than 1.0ps from 0 volt to BV min.
- * Typical I_R less than 1 μ A above 10V
- * High temperature soldering guaranteed: 260°C / 10 seconds at terminals

MECHANICAL DATA

- * Case: Molded plastic
- * Epoxy: UL 94V-0 rate flame retardant
- * Lead: Solderable per MIL-STD-202, method 208 guaranteed
- * Polarity: Color band denotes cathode end except Bidirectional
- * Mounting position: Any
- * Weight: 0.21 grams

VOLTAGE RANGE

5.0 to 440Volts
3000 Watts Peak Power



- "GK" represents the brand name
- "XXX" represents the periodic code
- "YYY" represents the product type marking

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Rating 25°C ambient temperature unless otherwise specified.
Single phase half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

RATINGS	SYMBOL	VALUE	UNITS
Peak Power Dissipation at $T_A=25^\circ\text{C}$, $T_P=1\text{ms}$ (NOTE 1)	P_{PK}	Minimum 3000	Watts
Peak Forward Surge Current at 8.3ms Single Half Sine-Wave superimposed on rated load (JEDEC method) (NOTE 3)	I_{FSM}	300	Amps
Maximum Instantaneous Forward Voltage at 35.0A for Unidirectional only	V_F	3.5	Volts
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

NOTES:

1. Non-repetitive current pulse per Fig. 3 and derated above $T_A=25^\circ\text{C}$ per Fig. 2.
2. Mounted on Copper Pad area of 8.0mm²(.013mm Thick) to each terminal.
3. 8.3ms single half sine-wave, duty cycle = 4 pulses per minute maximum.

DEVICES FOR BIDIRECTIONAL APPLICATIONS

- 1. For bi-directional use C suffix for Types .
- 2. Electrical characteristics apply in both directions.

RATING AND CHARACTERISTIC CURVES

FIG.1-PEAK PULSE POWER DERATING CURVE

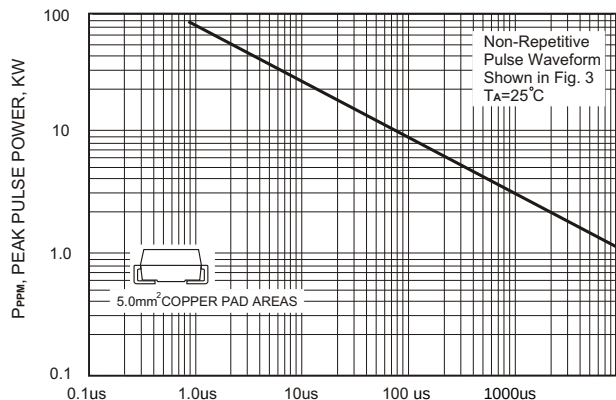


FIG.2-PULSE DERATING CURVE

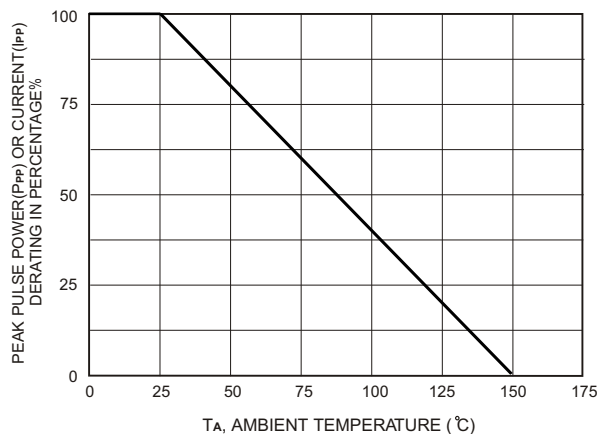


FIG.3-PULSE WAVE FORM

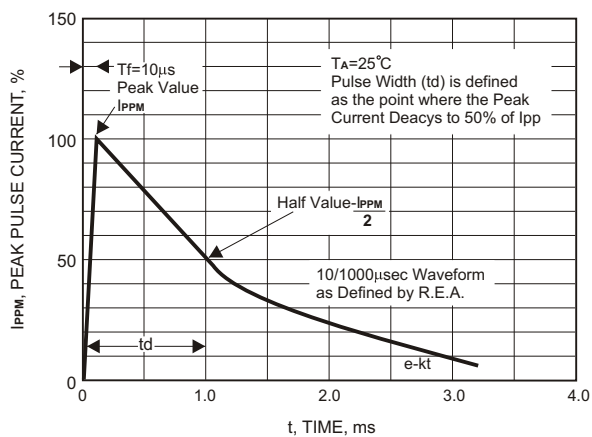


FIG.4 MAXIMUM NON REPETITIVE PEAK FORWARD SURGE CURRENT

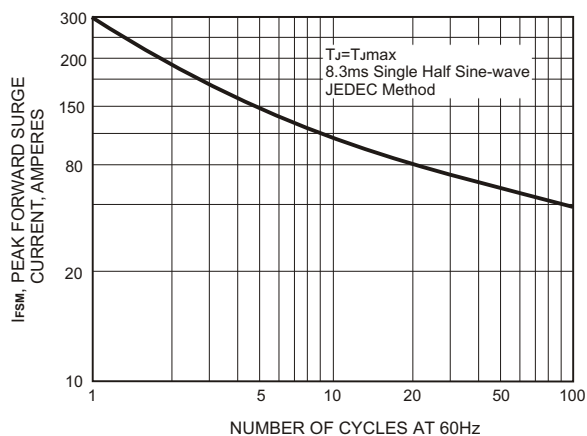
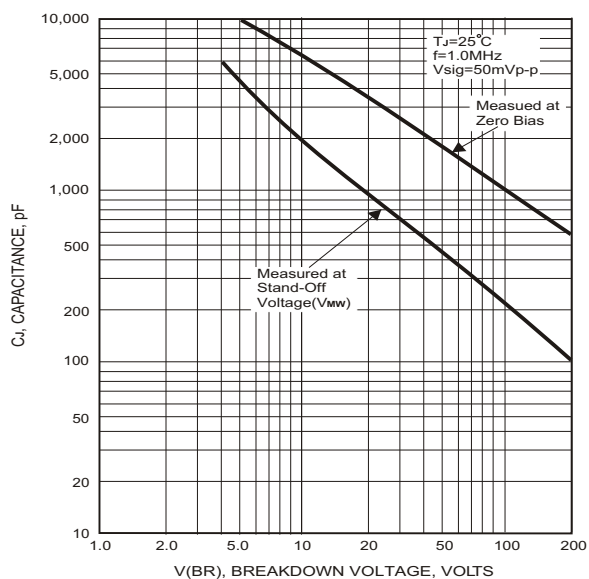


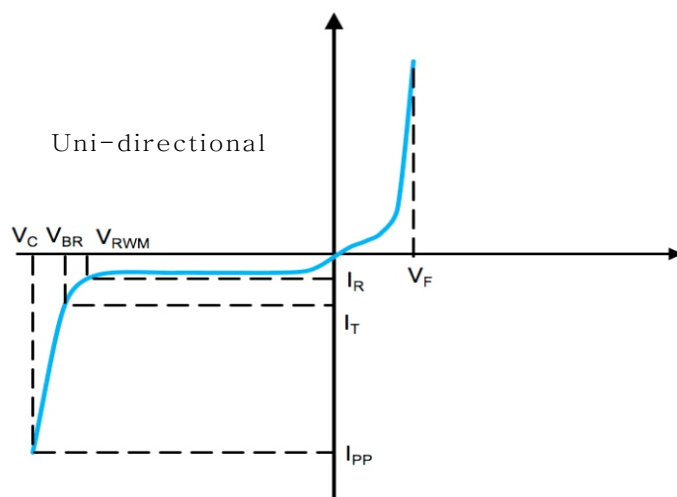
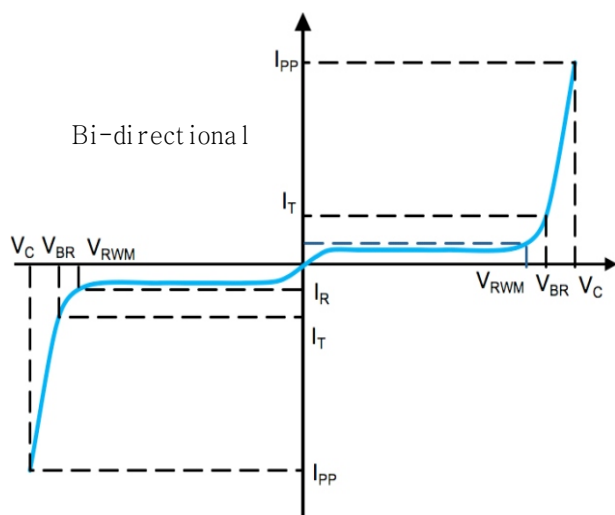
FIG.5-TYPICAL JUNCTION CAPACITANCE



PART NUMBER ADD C FOR BI-DIRECTIONAL	Reverse Stand-off Voltage	Breakdown Voltage		Test Current	Max.Clamp Voltage	Max. Peak Pulse Current	Max. Reverse Leakage	Package	
		V _{BR} @ I _T		I _T	V _C @ I _{PP}	I _{PP}	IR@VR	SMC	
		Min	Max					Device Marking Ccode	
	See Note 1	V	V	V	mA	V	A	uA	UNI
SMDJ5.0(C)A	5.0	6.4	7	10	9.2	326.1	800	RDE	DDE
SMDJ6.0(C)A	6.0	6.67	7.37	10	10.3	291.3	800	RDG	DDG
SMDJ6.5(C)A	6.5	7.22	7.98	10	11.2	267.9	500	RDK	DDK
SMDJ7.0(C)A	7.0	7.78	8.6	10	12	250	200	PDM	DDM
SMDJ7.5(C)A	7.5	8.33	9.21	1	12.9	232.6	100	PDP	DDP
SMDJ8.0(C)A	8.0	8.89	9.83	1	13.6	220.6	50	PDR	DDR
SMDJ8.5(C)A	8.5	9.44	10.4	1	14.4	208.3	20	PDT	DDT
SMDJ9.0(C)A	9.0	10	11.1	1	15.4	194.8	10	PDV	DDV
SMDJ10 (C)A	10.0	11.1	12.3	1	17	176.5	5	PDX	DDX
SMDJ11 (C)A	11.0	12.2	13.5	1	18.2	164.8	2	PDZ	DDZ
SMDJ12 (C)A	12.0	13.3	14.7	1	19.9	150.8	2	PEE	DEE
SMDJ13 (C)A	13.0	14.4	15.9	1	21.5	139.5	2	PEG	DEG
SMDJ14 (C)A	14.0	15.6	17.2	1	23.2	129.3	2	PEK	DEK
SMDJ15 (C)A	15.0	16.7	18.5	1	24.4	123	2	PEM	DEM
SMDJ16 (C)A	16.0	17.8	19.7	1	26	115.4	2	PEP	DEP
SMDJ17 (C)A	17.0	18.9	20.9	1	27.6	108.7	2	PER	DER
SMDJ18 (C)A	18.0	20	22.1	1	29.2	102.7	2	PET	DET
SMDJ20 (C)A	20.0	22.2	24.5	1	32.4	92.6	2	PEV	DEV
SMDJ22 (C)A	22.0	24.4	26.9	1	35.5	84.5	2	PEX	DEX
SMDJ24 (C)A	24.0	26.7	29.5	1	38.9	77.1	2	PEZ	DEZ
SMDJ26 (C)A	26.0	28.9	31.9	1	42.1	71.3	2	PFE	DFE
SMDJ28 (C)A	28.0	31.1	34.4	1	45.4	66.1	2	PFG	DFG
SMDJ30 (C)A	30.0	33.3	36.8	1	48.4	62	2	PFK	DFK
SMDJ33 (C)A	33.0	36.7	40.6	1	53.3	56.3	2	PFM	DFM
SMDJ36 (C)A	36.0	40	44.2	1	58.1	51.6	2	PFP	DFP
SMDJ40 (C)A	40.0	44.4	49.1	1	64.5	46.5	2	PFR	DFR
SMDJ43 (C)A	43.0	47.8	52.8	1	69.4	43.2	2	PFT	DFT
SMDJ45 (C)A	45.0	50	55.3	1	72.7	41.3	2	PFV	DFV
SMDJ48 (C)A	48.0	53.3	58.9	1	77.4	38.8	2	PFX	DFX
SMDJ51 (C)A	51.0	56.7	62.7	1	82.4	36.4	2	PFZ	DFZ
SMDJ54 (C)A	54.0	60	66.3	1	87.1	34.4	2	RGE	DGE
SMDJ58 (C)A	58.0	64.4	71.2	1	93.6	32.1	2	PGG	DGG
SMDJ60 (C)A	60.0	66.7	73.7	1	96.8	31	2	PGK	DGK
SMDJ64 (C)A	64.0	71.1	78.6	1	103	29.1	2	PGM	DGM
SMDJ70 (C)A	70.0	77.8	86	1	113	26.5	2	PGP	DGP
SMDJ75 (C)A	75.0	83.3	92.1	1	121	24.8	2	PGR	DGR
SMDJ78 (C)A	78.0	86.7	95.8	1	126	23.8	2	PGT	DGT
SMDJ85 (C)A	85.0	94.4	104	1	137	21.9	2	PGV	DGV
SMDJ90 (C)A	90.0	100	111	1	146	20.5	2	PGX	DGX
SMDJ100(C)A	100.0	111	123	1	162	18.5	2	PGZ	DGZ
SMDJ110(C)A	110.0	122	135	1	177	16.9	2	PHE	DHE
SMDJ120(C)A	120.0	133	147	1	193	15.5	2	PHG	DHG
SMDJ130(C)A	130.0	144	159	1	209	14.4	2	PHK	DHK
SMDJ150(C)A	150.0	167	185	1	243	12.3	2	PHM	DHM
SMDJ160(C)A	160.0	178	197	1	259	11.6	2	PHP	DHP
SMDJ170(C)A	170.0	189	209	1	275	10.9	2	PHR	DHR

PART NUMBER ADD C FOR BI- DIRECTIONAL	Reverse Stand-off Voltage	Breakdown Voltage		Test Current	Max.Clamp Voltage	Max. Peak Pulse Current	Max. Reverse Leakage	Package	
		V _{BR} @ I _T						SMC	
	V _{RMW}	Min	Max	I _T	V _c @ I _{pp}	I _{pp}	IR@VR	Device Marking Ccode	
								UNI	BI
See Note 1	V	V	V	mA	V	A	uA	UNI	BI
SMDJ 180 (C)A	180.0	200.00	220.00	1	291.6	10.29	2	PHT	DHT
SMDJ 190 (C)A	190.0	211.00	232.00	1	307.8	9.75	2	PHV	DHV
SMDJ 200 (C)A	200.0	224.00	247.00	1	324.0	9.26	2	PHW	DHW
SMDJ 220 (C)A	220.0	246.00	272.00	1	356.0	8.43	2	PHX	DHX
SMDJ 250 (C)A	250.0	279.00	309.00	1	405.0	7.41	2	PHZ	DHZ
SMDJ 300 (C)A	300.0	335.00	371.00	1	486.0	6.17	2	PJE	DJE
SMDJ 350 (C)A	350.0	391.00	432.00	1	567.0	5.29	2	PJG	DJG
SMDJ 400 (C)A	400.0	447.00	494.00	1	648.0	4.63	2	PJK	DJK
SMDJ 440 (C)A	440.0	492.00	543.00	1	713.0	4.21	2	PJM	DJM

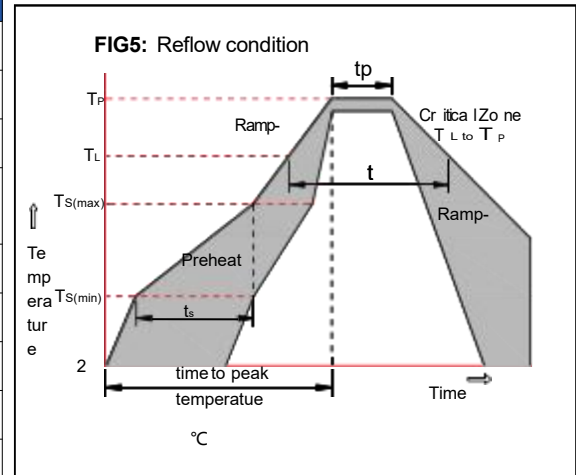
I-V Curve Characteristics



- P_{PPM} Peak Pulse Power Dissipation - Max power dissipation
- V_{RWM} Reverse Stand-off Voltage - Maximum voltage that can be applied to TVS without operation
- V_{BR} Breakdown Voltage – Maximum voltage that flows though the TVS at a specified current (I_T)
- V_C Clamping Voltage – Peak voltage measured across the TVS at a specified I_{PPM} (peak impulse current)
- I_R Reverse Leakage Current – Current measured at V_R
- V_F Forward Voltage Drop for Uni-directional

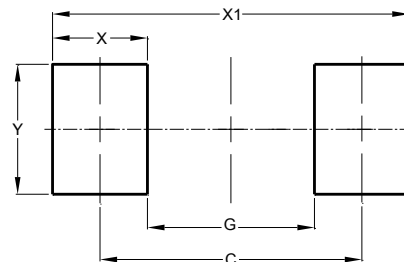
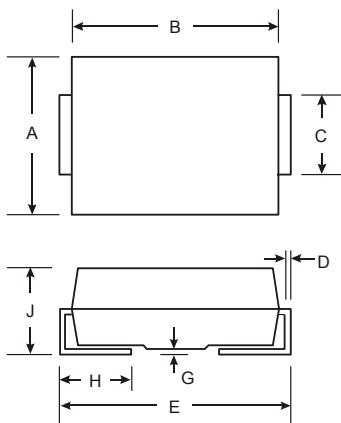
Soldering parameters

Reflow Condition		Pb-Free assembly (see as below)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150 °C
	-Temperature Max($T_{s(max)}$)	+200 °C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3 °C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3 °C/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217 °C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_P)		+260(+0/-5) °C
Time within 5 °C of actual Peak Temp (t_P)		30 secs. Max
Ramp-down Rate		6 °C/sec. Max
Time 25 °C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260 °C



Package Dimensions & Suggested Pad Layout

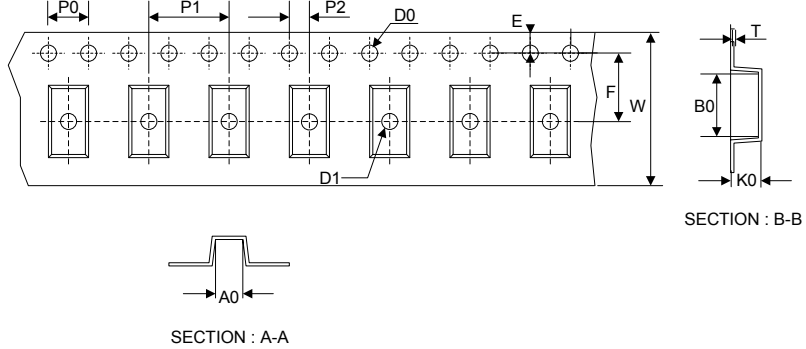
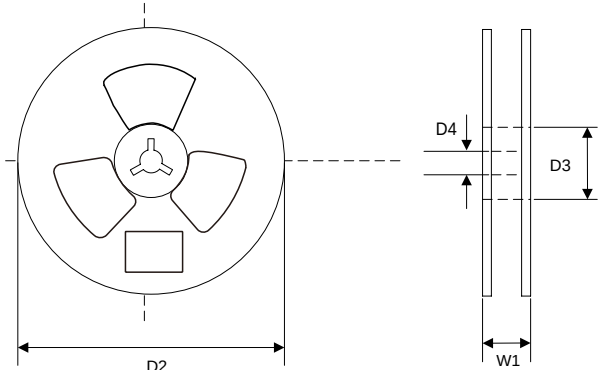
SMC



SMC		
Dim	Min	Max
A	5.59	6.22
B	6.60	7.11
C	2.75	3.15
D	0.15	0.31
E	7.75	8.13
G		0.20
H	0.76	1.52
J	2.00	2.62
All Dimensions in mm		

Dimensions	Value (in mm)
C	7.60
G	4.10
X	3.50
X1	11.10
Y	4.50

Tape & reel specification

Tape		Symbol	Dimension (mm)
		P0	4.00±0.20
		P1	8.00±0.20
		P2	2.00±0.20
		D0	1.60±0.20
		D1	1.60±0.20
		E	1.75±0.20
		F	7.50±0.20
		W	16.00±0.20
		A0	6.30±0.20
		B0	8.20±0.20
		K0	2.60±0.20
		T	0.23±0.10
13" Reel		Symbol	Dimension (mm)
		D2	330.0±5.0
		D3	73Min.
		D4	16.0±2.5
		W1	20.0±2.0
		Quantity: 3000PCS	