Working Voltage: 5.0 to 440 V
Peak Pulse Power: 400 W

Features

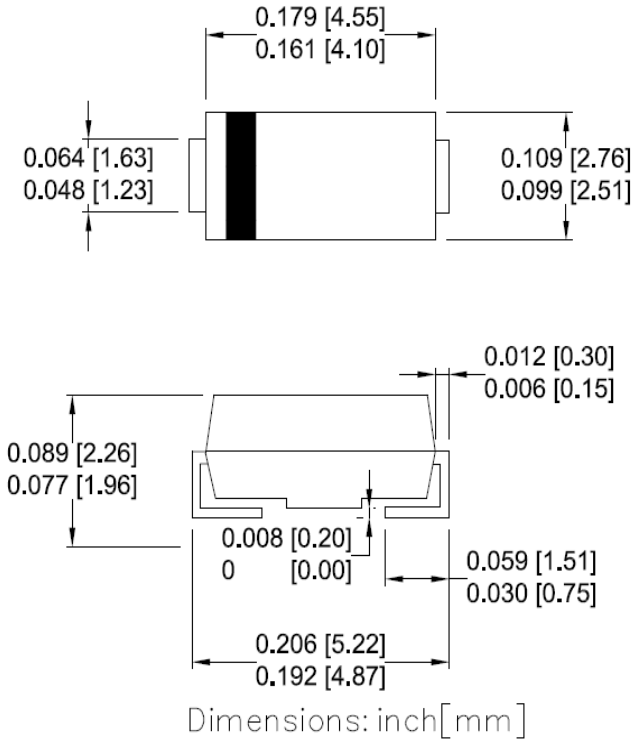
- Glass passivated chip
- 400 W peak pulse power capability with a 10/1000 μs waveform, repetitive rate (duty cycle):0.01 %
- Low leakage
- Uni and Bidirectional unit
- Excellent clamping capability
- Very fast response time
- RoHS compliant

Mechanical Data

- Case: Molded plastic
- Epoxy: UL 94V-0 rate flame retardant
- Lead: Solderable per MIL-STD-750, method 2026
- Polarity: Color band denotes cathode end except Bipolar
- Mounting position: Any

Surface Mount

SMA/ DO-214AC



Maximum Ratings(T_A=25℃ unless otherwise noted)

Parameter	Symbol	Value	UNIT
Peak power dissipation with a 10/1000μs waveform(1)	P_{PP}	400	W
Peak pulse current wih a 10/1000μs waveform(1)	I_{PP}	See Next Table	A
Power dissipation on infinite heatsink at T_L = 75 °C	P_D	1.0	W
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only(2)	I_{FSM}	40	A
Maximum instantaneous forward voltage at 25 A for unidirectional only(3)	V_F	3.5/5.0	V
Operating junction and storage temperature range	T_J, T_{STG}	–55 to +150	°C

Note:

(1)Non-repetitive current pulse per Fig.5 and derated above T_A= 25 °C per Fig.1

(2)Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

(3)V_F<3.5V for devices of V_{BR}<200V and V_F<5.0V for devices of V_{BR}>201V

Ratings and Characteristics Curves (T_A=25℃ unless otherwise noted)

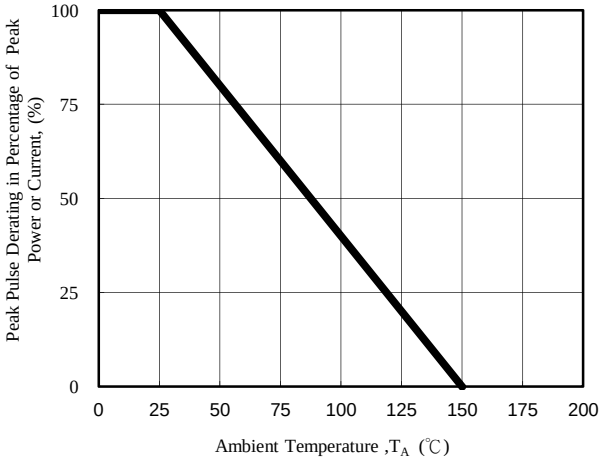


Fig. 1 - Pulse Derating Curve

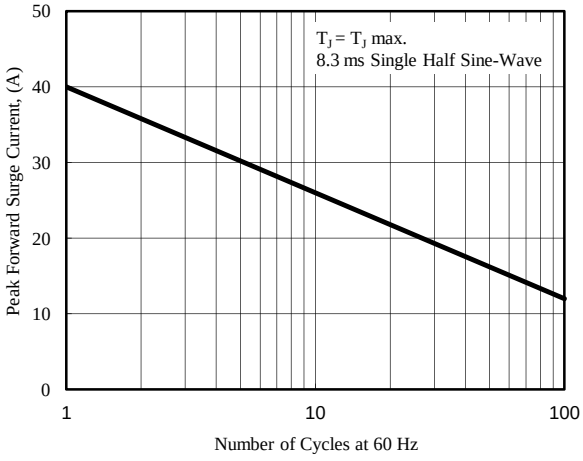


Fig. 2 - Maximum Non-Repetitive Surge Current

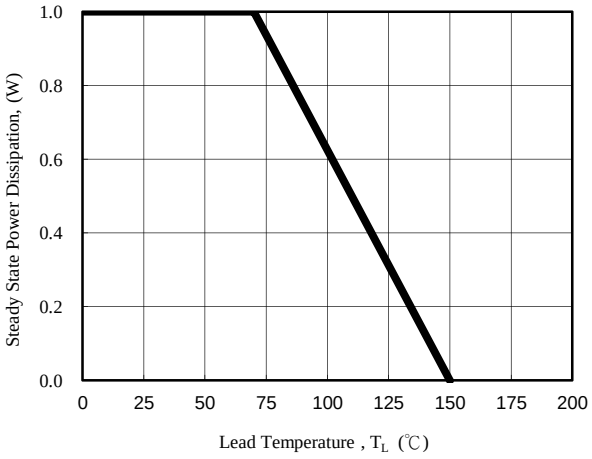


Fig. 3 - Steady State Power Derating Curve

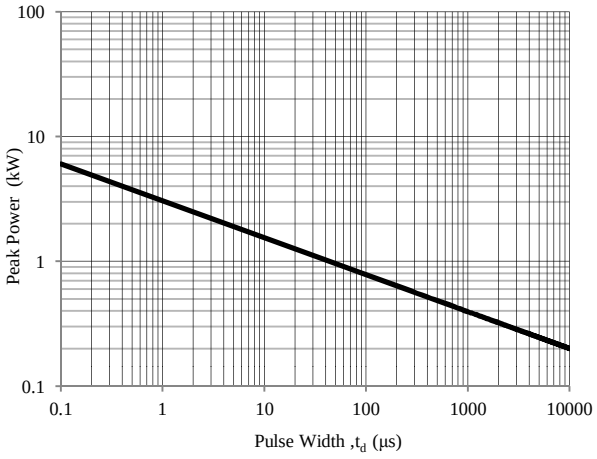


Fig. 4 - Peak Pulse Power Rating Curve

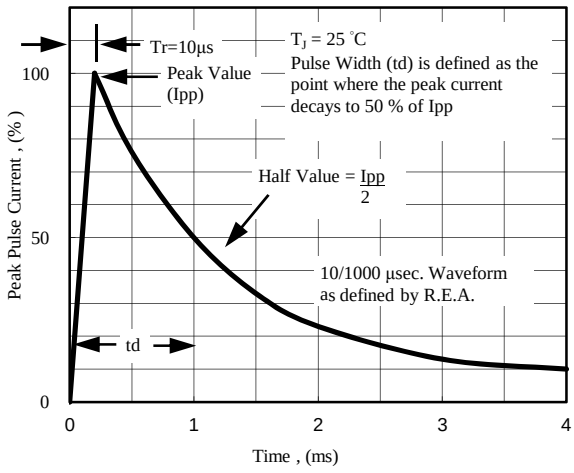


Fig. 5 - Pulse Waveform

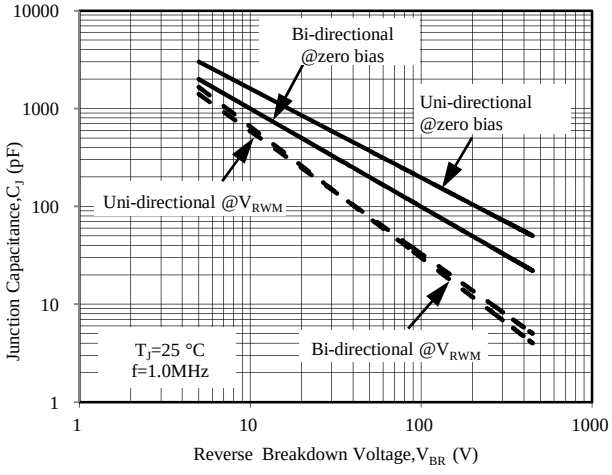


Fig. 6 - Typical Junction Capacitance

Electrical Characteristics(T_A=25℃ unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Device Marking Code		Breakdown Voltage V_{BR} @I_T			Maximum Reverse Leakage I_R @V_{RWM} (uA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP} (A)	Maximum Clamping Voltage V_C @I_{PP} (V)
		Uni	Bi	Min (V)	Max (V)	I_T (mA)				
TSMAJ5.0	TSMAJ5.0C	AD	WD	6.40	7.30	10	800	5.0	41.67	9.6
TSMAJ5.0A	TSMAJ5.0CA	AE	WE	6.40	7.00	10	800	5.0	43.48	9.2
TSMAJ6.0	TSMAJ6.0C	AF	WF	6.67	8.15	10	800	6.0	35.09	11.4
TSMAJ6.0A	TSMAJ6.0CA	AG	WG	6.67	7.37	10	800	6.0	38.83	10.3
TSMAJ6.5	TSMAJ6.5C	AH	WH	7.22	8.82	10	500	6.5	32.52	12.3
TSMAJ6.5A	TSMAJ6.5CA	AK	WK	7.22	7.98	10	500	6.5	35.71	11.2
TSMAJ7.0	TSMAJ7.0C	AL	WL	7.78	9.51	10	200	7.0	30.08	13.3
TSMAJ7.0A	TSMAJ7.0CA	AM	WM	7.78	8.60	10	200	7.0	33.33	12.0
TSMAJ7.5	TSMAJ7.5C	AN	WN	8.33	10.20	1	100	7.5	27.97	14.3
TSMAJ7.5A	TSMAJ7.5CA	AP	WP	8.33	9.21	1	100	7.5	31.01	12.9
TSMAJ8.0	TSMAJ8.0C	AQ	WQ	8.89	10.90	1	50	8.0	26.67	15.0
TSMAJ8.0A	TSMAJ8.0CA	AR	WR	8.89	9.83	1	50	8.0	29.41	13.6
TSMAJ8.5	TSMAJ8.5C	AS	WS	9.44	11.50	1	10	8.5	25.16	15.9
TSMAJ8.5A	TSMAJ8.5CA	AT	WT	9.44	10.40	1	10	8.5	27.78	14.4
TSMAJ9.0	TSMAJ9.0C	AU	WU	10.00	12.20	1	5	9.0	23.67	16.9
TSMAJ9.0A	TSMAJ9.0CA	AV	WV	10.00	11.10	1	5	9.0	25.97	15.4
TSMAJ10	TSMAJ10C	AW	WW	11.10	13.60	1	5	10.0	21.28	18.8
TSMAJ10A	TSMAJ10CA	AX	WX	11.10	12.30	1	5	10.0	23.53	17.0
TSMAJ11	TSMAJ11C	AY	WY	12.20	14.90	1	1	11.0	19.90	20.1
TSMAJ11A	TSMAJ11CA	AZ	WZ	12.20	13.50	1	1	11.0	21.98	18.2
TSMAJ12	TSMAJ12C	BD	XD	13.30	16.30	1	1	12.0	18.18	22.0
TSMAJ12A	TSMAJ12CA	BE	XE	13.30	14.70	1	1	12.0	20.10	19.9
TSMAJ13	TSMAJ13C	BF	XF	14.40	17.60	1	1	13.0	16.81	23.8
TSMAJ13A	TSMAJ13CA	BG	XG	14.40	15.90	1	1	13.0	18.60	21.5
TSMAJ14	TSMAJ14C	BH	XH	15.60	19.10	1	1	14.0	15.50	25.8
TSMAJ14A	TSMAJ14CA	BK	XK	15.60	17.20	1	1	14.0	17.24	23.2
TSMAJ15	TSMAJ15C	BL	XL	16.70	20.40	1	1	15.0	14.87	26.9
TSMAJ15A	TSMAJ15CA	BM	XM	16.70	18.50	1	1	15.0	16.39	24.4
TSMAJ16	TSMAJ16C	BN	XN	17.80	21.80	1	1	16.0	13.89	28.8
TSMAJ16A	TSMAJ16CA	BP	XP	17.80	19.70	1	1	16.0	15.38	26.0
TSMAJ17	TSMAJ17C	BQ	XQ	18.90	23.10	1	1	17.0	13.11	30.5
TSMAJ17A	TSMAJ17CA	BR	XR	18.90	20.90	1	1	17.0	14.49	27.6
TSMAJ18	TSMAJ18C	BS	XS	20.00	24.40	1	1	18.0	12.42	32.2
TSMAJ18A	TSMAJ18CA	BT	XT	20.00	22.10	1	1	18.0	13.70	29.2
TSMAJ19	TSMAJ19C	BA	XA	21.13	25.76	1	1	19.0	11.76	34.0
TSMAJ19A	TSMAJ19CA	BB	XB	21.10	23.30	1	1	19.0	13.00	30.8
TSMAJ20	TSMAJ20C	BU	XU	22.20	27.10	1	1	20.0	11.17	35.8
TSMAJ20A	TSMAJ20CA	BV	XV	22.20	24.50	1	1	20.0	12.35	32.4
TSMAJ22	TSMAJ22C	BW	XW	24.40	29.80	1	1	22.0	10.15	39.4
TSMAJ22A	TSMAJ22CA	BX	XX	24.40	26.90	1	1	22.0	11.27	35.5
TSMAJ24	TSMAJ24C	BY	XY	26.70	32.60	1	1	24.0	9.30	43.0
TSMAJ24A	TSMAJ24CA	BZ	XZ	26.70	29.50	1	1	24.0	10.28	38.9
TSMAJ26	TSMAJ26C	CD	YD	28.90	35.30	1	1	26.0	8.58	46.6
TSMAJ26A	TSMAJ26CA	CE	YE	28.90	31.90	1	1	26.0	9.50	42.1
TSMAJ28	TSMAJ28C	CF	YF	31.10	38.00	1	1	28.0	8.00	50.0
TSMAJ28A	TSMAJ28CA	CG	YG	31.10	34.40	1	1	28.0	8.81	45.4
TSMAJ30	TSMAJ30C	CH	YH	33.30	40.70	1	1	30.0	7.48	53.5
TSMAJ30A	TSMAJ30CA	CK	YK	33.30	36.80	1	1	30.0	8.26	48.4
TSMAJ33	TSMAJ33C	CL	YL	36.70	44.90	1	1	33.0	6.78	59.0
TSMAJ33A	TSMAJ33CA	CM	YM	36.70	40.60	1	1	33.0	7.50	53.3
TSMAJ36	TSMAJ36C	CN	YN	40.00	48.90	1	1	36.0	6.22	64.3
TSMAJ36A	TSMAJ36CA	CP	YP	40.00	44.20	1	1	36.0	6.88	58.1

Note:
1. Suffix 'A ' denotes 5% tolerance device. Without 'A' denotes 10% tolerance device
2. Add suffix 'C 'or ' CA ' after part number to specify Bi-directional devices
3. For Bi-Directional devices having V_R of 10 volts and under, the I_R limit is double

Electrical Characteristics(T_A=25℃ unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Device Marking Code		Breakdown Voltage V_{BR} @I_T			Maximum Reverse Leakage I_R @V_{RWM} (uA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP} (A)	Maximum Clamping Voltage V_C @I_{PP} (V)
		Uni	Bi	Min (V)	Max (V)	I_T (mA)				
TSMAJ40	TSMAJ40C	CQ	YQ	44.40	54.30	1	1	40.0	5.60	71.4
TSMAJ40A	TSMAJ40CA	CR	YR	44.40	49.10	1	1	40.0	6.20	64.5
TSMAJ43	TSMAJ43C	CS	YS	47.80	58.40	1	1	43.0	5.22	76.7
TSMAJ43A	TSMAJ43CA	CT	YT	47.80	52.80	1	1	43.0	5.76	69.4
TSMAJ45	TSMAJ45C	CU	YU	50.00	61.10	1	1	45.0	4.98	80.3
TSMAJ45A	TSMAJ45CA	CV	YV	50.00	55.30	1	1	45.0	5.50	72.7
TSMAJ48	TSMAJ48C	CW	YW	53.30	65.10	1	1	48.0	4.68	85.5
TSMAJ48A	TSMAJ48CA	CX	YX	53.30	58.90	1	1	48.0	5.17	77.4
TSMAJ51	TSMAJ51C	CY	YY	56.70	69.30	1	1	51.0	4.39	91.1
TSMAJ51A	TSMAJ51CA	CZ	YZ	56.70	62.70	1	1	51.0	4.85	82.4
TSMAJ54	TSMAJ54C	RD	ZD	60.00	73.30	1	1	54.0	4.15	96.3
TSMAJ54A	TSMAJ54CA	RE	ZE	60.00	66.30	1	1	54.0	4.59	87.1
TSMAJ58	TSMAJ58C	RF	ZF	64.40	78.70	1	1	58.0	3.88	103.0
TSMAJ58A	TSMAJ58CA	RG	ZG	64.40	71.20	1	1	58.0	4.27	93.6
TSMAJ60	TSMAJ60C	RH	ZH	66.70	81.50	1	1	60.0	3.74	107.0
TSMAJ60A	TSMAJ60CA	RK	ZK	66.70	73.70	1	1	60.0	4.13	96.8
TSMAJ64	TSMAJ64C	RL	ZL	71.10	86.90	1	1	64.0	3.51	114.0
TSMAJ64A	TSMAJ64CA	RM	ZM	71.10	78.60	1	1	64.0	3.88	103.0
TSMAJ70	TSMAJ70C	RN	ZN	77.80	95.10	1	1	70.0	3.20	125.0
TSMAJ70A	TSMAJ70CA	RP	ZP	77.80	86.00	1	1	70.0	3.54	113.0
TSMAJ75	TSMAJ75C	RQ	ZQ	83.30	102.00	1	1	75.0	2.99	134.0
TSMAJ75A	TSMAJ75CA	RR	ZR	83.30	92.10	1	1	75.0	3.31	121.0
TSMAJ78	TSMAJ78C	RS	ZS	86.70	106.00	1	1	78.0	2.88	139.0
TSMAJ78A	TSMAJ78CA	RT	ZT	86.70	95.80	1	1	78.0	3.17	126.0
TSMAJ80	TSMAJ80C	RA	ZA	88.96	108.80	1	1	80.0	2.79	143.2
TSMAJ80A	TSMAJ80CA	RB	ZB	88.80	97.60	1	1	80.0	3.09	129.6
TSMAJ85	TSMAJ85C	RU	ZU	94.40	115.00	1	1	85.0	2.65	151.0
TSMAJ85A	TSMAJ85CA	RV	ZV	94.40	104.00	1	1	85.0	2.92	137.0
TSMAJ90	TSMAJ90C	RW	ZW	100.00	122.00	1	1	90.0	2.50	160.0
TSMAJ90A	TSMAJ90CA	RX	ZX	100.00	111.00	1	1	90.0	2.74	146.0
TSMAJ100	TSMAJ100C	RY	ZY	111.00	136.00	1	1	100.0	2.23	179.0
TSMAJ100A	TSMAJ100CA	RZ	ZZ	111.00	123.00	1	1	100.0	2.47	162.0
TSMAJ110	TSMAJ110C	SD	VD	122.00	149.00	1	1	110.0	2.04	196.0
TSMAJ110A	TSMAJ110CA	SE	VE	122.00	135.00	1	1	110.0	2.26	177.0
TSMAJ120	TSMAJ120C	SF	VF	133.00	163.00	1	1	120.0	1.87	214.0
TSMAJ120A	TSMAJ120CA	SG	VG	133.00	147.00	1	1	120.0	2.07	193.0
TSMAJ130	TSMAJ130C	SH	VH	144.00	176.00	1	1	130.0	1.73	231.0
TSMAJ130A	TSMAJ130CA	SK	VK	144.00	159.00	1	1	130.0	1.91	209.0
TSMAJ140	TSMAJ140C	SA	VA	155.68	190.40	1	1	140.0	1.60	250.6
TSMAJ140A	TSMAJ140CA	SB	VB	155.00	171.00	1	1	140.0	1.76	226.8
TSMAJ150	TSMAJ150C	SL	VL	167.00	204.00	1	1	150.0	1.49	268.0
TSMAJ150A	TSMAJ150CA	SM	VM	167.00	185.00	1	1	150.0	1.65	243.0
TSMAJ160	TSMAJ160C	SN	VN	178.00	218.00	1	1	160.0	1.39	287.0
TSMAJ160A	TSMAJ160CA	SP	VP	178.00	197.00	1	1	160.0	1.54	259.0
TSMAJ170	TSMAJ170C	SQ	VQ	189.00	231.00	1	1	170.0	1.32	304.0
TSMAJ170A	TSMAJ170CA	SR	VR	189.00	209.00	1	1	170.0	1.45	275.0
TSMAJ180	TSMAJ180C	SS	VS	200.16	244.80	1	1	180.0	1.24	322.2
TSMAJ180A	TSMAJ180CA	ST	VT	200.00	220.00	1	1	180.0	1.37	291.6
TSMAJ190	TSMAJ190C	SU	VU	211.28	258.40	1	1	190.0	1.18	340.1
TSMAJ190A	TSMAJ190CA	SV	VV	211.00	232.00	1	1	190.0	1.30	307.8
TSMAJ200A	TSMAJ200CA	SW	VW	224.00	247.00	1	1	200.0	1.23	324.0
TSMAJ220A	TSMAJ220CA	SX	VX	246.00	272.00	1	1	220.0	1.12	356.0
TSMAJ250A	TSMAJ250CA	SZ	VZ	279.00	309.00	1	1	250.0	0.99	405.0
TSMAJ300A	TSMAJ300CA	DE	HE	335.00	371.00	1	1	300.0	0.82	486.0
TSMAJ350A	TSMAJ350CA	DG	HG	391.00	432.00	1	1	350.0	0.71	567.0
TSMAJ400A	TSMAJ400CA	DK	HK	447.00	494.00	1	1	400.0	0.62	648.0
TSMAJ440A	TSMAJ440CA	DM	HM	492.00	543.00	1	1	440.0	0.56	713.0