

## SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSORS

### 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<sub>r</sub> less than 1μA above 10V
- \* High temperature soldering guaranteed: 260°C / 10 seconds at terminals

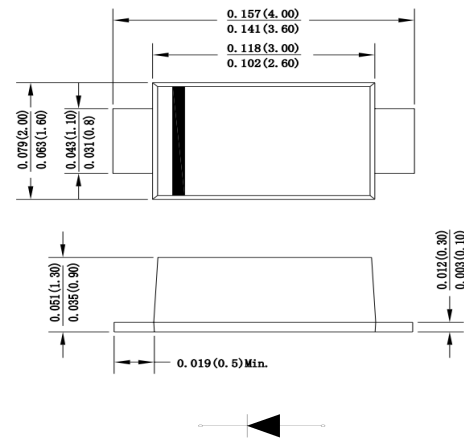
### MECHANICAL DATA

- \* 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

### VOLTAGE RANGE

5.0 to 220 Volts

400 Watts Peak Power



Dimensions in inches and (millimeters)

### 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 <sub>A</sub> =25°C, T <sub>P</sub> =1ms(NOTE 1)	P <sub>PK</sub>	Minimum 400	Watts
Power Dissipation on infinite heatsink at T <sub>L</sub> =75°C	P <sub>D</sub>	1.0	Watt
Peak Forward Surge Current at 8.3ms Single Half Sine-Wave superimposed on rated load (JEDEC method) (NOTE 3)	I <sub>FSM</sub>	40	Amps
Maximum Instantaneous Forward Voltage at 25.0A for Unidirectional only	V <sub>F</sub>	3.5/5.0	Volts
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

#### NOTES:

1. Non-repetitive current pulse per Fig. 3 and derated above T<sub>A</sub>=25°C per Fig. 2.
2. 8.3ms single half sine-wave, duty cycle = 4 pulses per minute maximum.
3. V<sub>F</sub><3.5V for devices of V<sub>BR</sub><200V and V<sub>F</sub><5.0V for devices of V<sub>BR</sub>>201V.

### DEVICES FOR BIPOLAR APPLICATIONS

1. For Bidirectional use C or CA Suffix for types SMF40-
2. Electrical characteristics apply in both directions.

Part Number (Uni)	Part Number (Bi)	Reverse Standoff Voltage	Breakdown Voltage $V_{BR}$ @ $I_T$			Maximum Reverse Leakage @ VR	Maximum Peak Pulse Current	Maximum Clamping Voltage @ $I_{pp}$
			VR (V)	Min (V)	Max (V)			
SMF40-5.0	SMF40-5.0C	5.0	6.40	7.30	10	800	41.67	9.6
SMF40-5.0A	SMF40-5.0CA	5.0	6.40	7.00	10	800	43.48	9.2
SMF40-6.0	SMF40-6.0C	6.0	6.67	8.15	10	800	35.09	11.4
SMF40-6.0A	SMF40-6.0CA	6.0	6.67	7.37	10	800	38.83	10.3
SMF40-6.5	SMF40-6.5C	6.5	7.22	8.82	10	500	32.52	12.3
SMF40-6.5A	SMF40-6.5CA	6.5	7.22	7.98	10	500	35.71	11.2
SMF40-7.0	SMF40-7.0C	7.0	7.78	9.51	10	200	30.08	13.3
SMF40-7.0A	SMF40-7.0CA	7.0	7.78	8.60	10	200	33.33	12.0
SMF40-7.5	SMF40-7.5C	7.5	8.33	10.20	1	100	27.97	14.3
SMF40-7.5A	SMF40-7.5CA	7.5	8.33	9.21	1	100	31.01	12.9
SMF40-8.0	SMF40-8.0C	8.0	8.89	10.90	1	50	26.67	15.0
SMF40-8.0A	SMF40-8.0CA	8.0	8.89	9.83	1	50	29.41	13.6
SMF40-8.5	SMF40-8.5C	8.5	9.44	11.50	1	10	25.16	15.9
SMF40-8.5A	SMF40-8.5CA	8.5	9.44	10.40	1	10	27.78	14.4
SMF40-9.0	SMF40-9.0C	9.0	10.00	12.20	1	5	23.67	16.9
SMF40-9.0A	SMF40-9.0CA	9.0	10.00	11.10	1	5	25.97	15.4
SMF40-10	SMF40-10C	10.0	11.10	13.60	1	5	21.28	18.8
SMF40-10A	SMF40-10CA	10.0	11.10	12.30	1	5	23.53	17.0
SMF40-11	SMF40-11C	11.0	12.20	14.90	1	5	19.90	20.1
SMF40-11A	SMF40-11CA	11.0	12.20	13.50	1	5	21.98	18.2
SMF40-12	SMF40-12C	12.0	13.30	16.30	1	5	18.18	22.0
SMF40-12A	SMF40-12CA	12.0	13.30	14.70	1	5	20.10	19.9
SMF40-13	SMF40-13C	13.0	14.40	17.60	1	5	16.81	23.8
SMF40-13A	SMF40-13CA	13.0	14.40	15.90	1	5	18.60	21.5
SMF40-14	SMF40-14C	14.0	15.60	19.10	1	5	15.50	25.8
SMF40-14A	SMF40-14CA	14.0	15.60	17.20	1	5	17.24	23.2
SMF40-15	SMF40-15C	15.0	16.70	20.40	1	5	14.87	26.9
SMF40-15A	SMF40-15CA	15.0	16.70	18.50	1	5	16.39	24.4
SMF40-16	SMF40-16C	16.0	17.80	21.80	1	5	13.89	28.8
SMF40-16A	SMF40-16CA	16.0	17.80	19.70	1	5	15.38	26.0
SMF40-17	SMF40-17C	17.0	18.90	23.10	1	5	13.11	30.5
SMF40-17A	SMF40-17CA	17.0	18.90	20.90	1	5	14.49	27.6
SMF40-18	SMF40-18C	18.0	20.00	24.40	1	5	12.42	32.2
SMF40-18A	SMF40-18CA	18.0	20.00	22.10	1	5	13.70	29.2
SMF40-20	SMF40-20C	20.0	22.20	27.10	1	5	11.76	35.8
SMF40-20A	SMF40-20CA	20.0	22.20	24.50	1	5	13.00	32.4
SMF40-22	SMF40-22C	22.0	24.40	29.80	1	5	10.15	39.4
SMF40-22A	SMF40-22CA	22.0	24.40	26.90	1	5	11.27	35.5
SMF40-24	SMF40-24C	24.0	26.70	32.60	1	5	9.30	43.0
SMF40-24A	SMF40-24CA	24.0	26.70	29.50	1	5	10.28	38.9
SMF40-26	SMF40-26C	26.0	28.90	35.30	1	5	8.58	46.6
SMF40-26A	SMF40-26CA	26.0	28.90	31.90	1	5	9.50	42.1
SMF40-28	SMF40-28C	28.0	31.10	38.00	1	5	8.00	50.0
SMF40-28A	SMF40-28CA	28.0	31.10	34.40	1	5	8.81	45.4
SMF40-30	SMF40-30C	30.0	33.30	40.70	1	5	7.48	53.5
SMF40-30A	SMF40-30CA	30.0	33.30	36.80	1	5	8.26	48.4
SMF40-33	SMF40-33C	33.0	36.70	44.90	1	5	6.78	59.0
SMF40-33A	SMF40-33CA	33.0	36.70	40.60	1	5	7.50	53.3
SMF40-36	SMF40-36C	36.0	40.00	48.90	1	5	6.22	64.3
SMF40-36A	SMF40-36CA	36.0	40.00	44.20	1	5	6.88	58.1
SMF40-40	SMF40-40C	40.0	44.40	54.30	1	5	5.60	71.4
SMF40-40A	SMF40-40CA	40.0	44.40	49.10	1	5	6.20	64.5

Part Number (Uni)	Part Number (Bi)	Reverse Standoff Voltage	Breakdown Voltage $V_{BR}$ @ $I_T$			Maximum Reverse Leakage @ $V_R$	Maximum Peak Pulse Current @ $I_{pp}$	Maximum Clamping Voltage @ $I_{pp}$
			$V_R$ (V)	Min (V)	Max (V)			
SMF40-43	SMF40-43C	43.0	47.80	58.40	1	5	5.22	76.7
SMF40-43A	SMF40-43CA	43.0	47.80	52.80	1	5	5.76	69.4
SMF40-45	SMF40-45C	45.0	50.00	61.10	1	5	4.98	80.3
SMF40-45A	SMF40-45CA	45.0	50.00	55.30	1	5	5.50	72.7
SMF40-48	SMF40-48C	48.0	53.30	65.10	1	5	4.68	85.5
SMF40-48A	SMF40-48CA	48.0	53.30	58.90	1	5	5.17	77.4
SMF40-51	SMF40-51C	51.0	56.70	69.30	1	5	4.39	91.1
SMF40-51A	SMF40-51CA	51.0	56.70	62.70	1	5	4.85	82.4
SMF40-54	SMF40-54C	54.0	60.00	73.30	1	5	4.15	96.3
SMF40-54A	SMF40-54CA	54.0	60.00	66.30	1	5	4.59	87.1
SMF40-58	SMF40-58C	58.0	64.40	78.70	1	5	3.88	103.0
SMF40-58A	SMF40-58CA	58.0	64.40	71.20	1	5	4.27	93.6
SMF40-60	SMF40-60C	60.0	66.70	81.50	1	5	3.74	107.0
SMF40-60A	SMF40-60CA	60.0	66.70	73.70	1	5	4.13	96.8
SMF40-64	SMF40-64C	64.0	71.10	86.40	1	5	3.51	114.0
SMF40-64A	SMF40-64CA	64.0	71.10	78.60	1	5	3.88	103.0
SMF40-70	SMF40-70C	70.0	77.80	95.10	1	5	3.20	125.0
SMF40-70A	SMF40-70CA	70.0	77.80	86.00	1	5	3.54	113.0
SMF40-75	SMF40-75C	75.0	83.30	102.00	1	5	2.99	134.0
SMF40-75A	SMF40-75CA	75.0	83.30	92.10	1	5	3.31	121.0
SMF40-78	SMF40-78C	78.0	86.70	106.00	1	5	2.88	139.0
SMF40-78A	SMF40-78CA	78.0	86.70	95.80	1	5	3.17	126.0
SMF40-85	SMF40-85C	85.0	94.40	115.00	1	5	2.65	151.0
SMF40-85A	SMF40-85CA	85.0	94.40	104.00	1	5	2.92	137.0
SMF40-90	SMF40-90C	90.0	100.00	122.00	1	5	2.50	160.0
SMF40-90A	SMF40-90CA	90.0	100.00	111.00	1	5	2.74	146.0
SMF40-100	SMF40-100C	100.0	111.00	136.00	1	5	2.23	179.0
SMF40-100A	SMF40-100CA	100.0	111.00	123.00	1	5	2.47	162.0
SMF40-110	SMF40-110C	110.0	122.00	149.00	1	5	2.04	196.0
SMF40-110A	SMF40-110CA	110.0	122.00	135.00	1	5	2.26	177.0
SMF40-120	SMF40-120C	120.0	133.00	163.00	1	5	1.87	214.0
SMF40-120A	SMF40-120CA	120.0	133.00	147.00	1	5	2.07	193.0
SMF40-130	SMF40-130C	130.0	144.00	176.00	1	5	1.73	231.0
SMF40-130A	SMF40-130CA	130.0	144.00	159.00	1	5	1.91	209.0
SMF40-150	SMF40-150C	150.0	167.00	204.00	1	5	1.49	268.0
SMF40-150A	SMF40-150CA	150.0	167.00	185.00	1	5	1.65	243.0
SMF40-160	SMF40-160C	160.0	178.00	218.00	1	5	1.39	287.0
SMF40-160A	SMF40-160CA	160.0	178.00	197.00	1	5	1.54	259.0
SMF40-170	SMF40-170C	170.0	189.00	231.00	1	5	1.32	304.0
SMF40-170A	SMF40-170CA	170.0	189.00	209.00	1	5	1.45	275.0
SMF40-180	SMF40-180C	180.0	200.00	244.00	1	5	1.24	322.2
SMF40-180A	SMF40-180CA	180.0	200.00	220.00	1	5	1.37	291.6
SMF40-190	SMF40-190C	190.0	211.00	258.00	1	5	1.18	340.1
SMF40-190A	SMF40-190CA	190.0	211.00	232.00	1	5	1.30	307.8
SMF40-200A	SMF40-200CA	200.0	224.00	247.00	1	5	1.23	324.0
SMF40-220A	SMF40-220CA	220.0	246.00	272.00	1	5	1.12	356.0

## RATING AND CHARACTERISTIC CURVES (SMF40- SERIES)

FIG.1-PEAK PULSE POWER DERATING CURVE

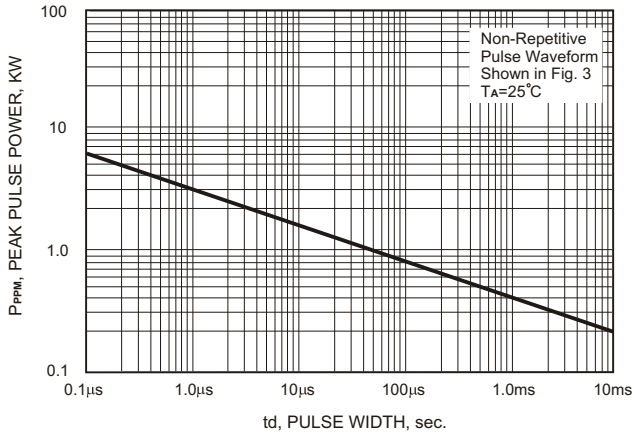


FIG.2-PULSE DERATING CURVE

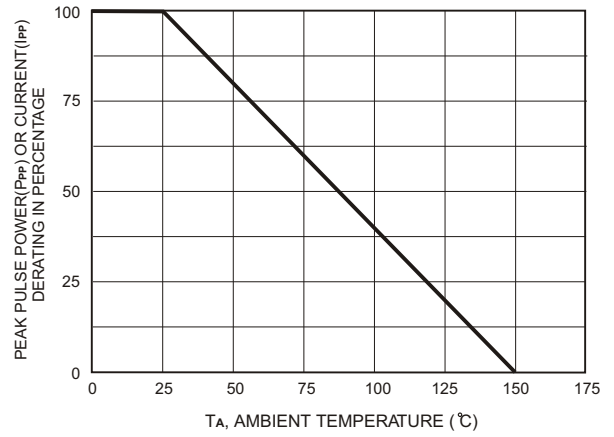


FIG.3-PULSE WAVE FORM

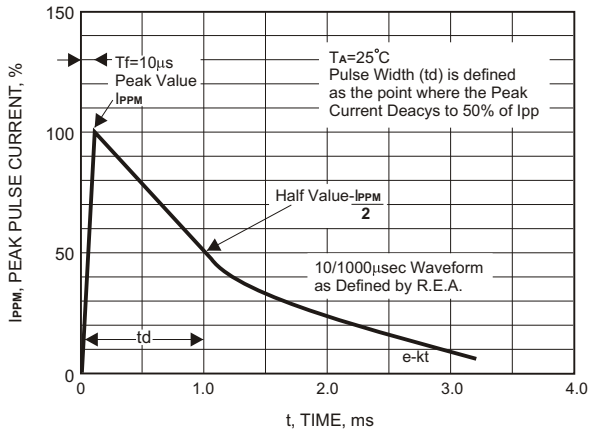


FIG.4-TYPICAL JUNCTION CAPACITANCE

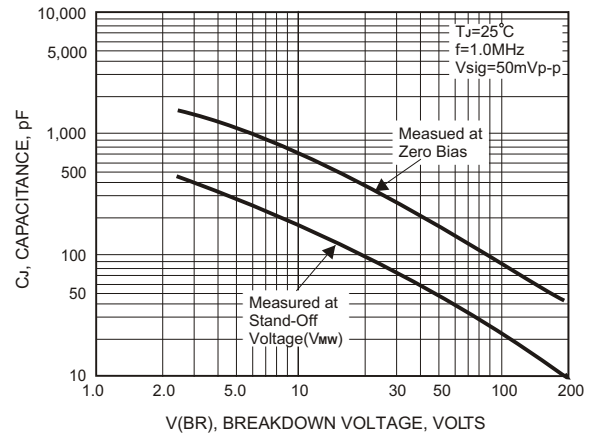


FIG.5-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

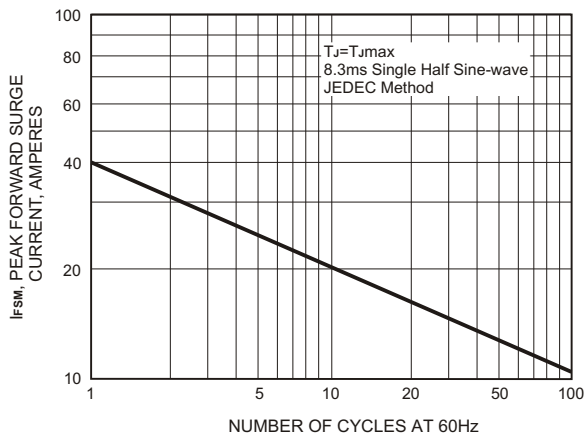


FIG.6-STEADY STATE POWER DERATING CURVE

