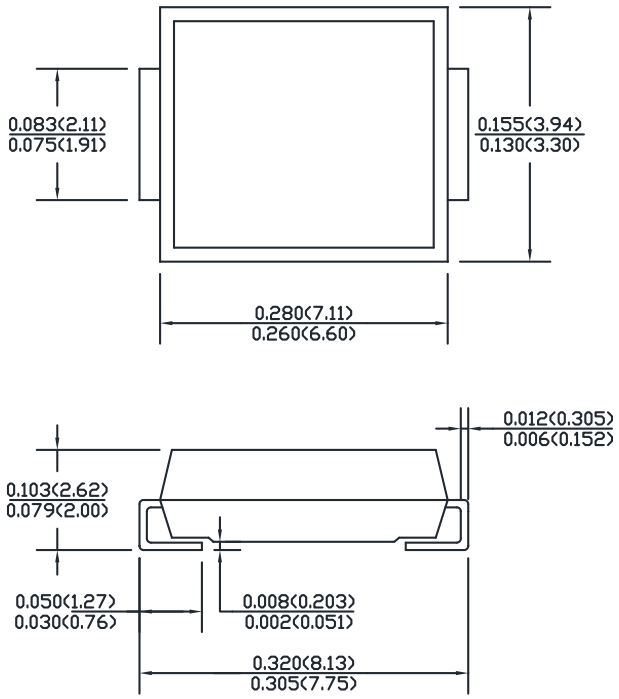
SMLJ5.0 thru SMLJ170CA



Transient Voltage Suppressor

Breakdown Voltage 5.0 to 170 Volts
Peak Pulse Power 3000 Watts

CASE: SMC (DO214AB)



Dimensions in inches and (millimeters)

Features

- Breakdown Voltages (V_{BR}) from 5.0 to 170V
- 3000W peak pulse power capability with a 10/1000μs waveform, repetitive rate (duty cycle):0.01%
- Fast Response Time
- Low incremental surge resistance
- Excellent clamping capability
- Available in uni-directional and bi-directional
- High temperature soldering guaranteed: 265℃ /10 seconds, 0.375" (9.5mm) lead length, 5lbs. (2.3kg) tension

Application

- Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on IC_S, MOSFE, signal lines of sensor units for consumer, computer, industrial, automotive and telecommunication

Mechanical Data

- **Case:** Void-free transfer molded thermosetting epoxy body meeting UL94V-O
- **Terminals:** Tin-Lead or ROHS Compliant annealed matte-Tin plating readily solderable per MIL-STD-750, Method 2026
- **Marking:** Body marked with part number
- **Polarity:** Cathode indicated by band
- **Weight:** 0.21g（Approximately）

Maximum Ratings and Electrical Characteristics @ 25°C unless otherwise specified

Symbol	Conditions	Value	Unit
P_{PPM}	Peak pulse power capability with a 10/1000μs	3000	W
I_{PPM}	Peak pulse current with a 10/1000μs	SEE TABLE1	A
$P_{M(AV)}$	Steady state power at T_L =45℃ 0.375"(10mm) from body	6.0	W
	Steady state power at T_A=25℃ when mounted on FR4 PC board with recommended footprint	1.61	W
I_{FSM}	Peak forward surge current,8.3ms single half sine-wave unidirectional only	200	A
V_F	Maximum instantaneous forward voltage at 100A for unidirectional only	3.5	V
$R_{\theta JL}$	Thermal resistance junction to lead	17.5	℃/W
$R_{\theta JA}$	Thermal resistance junction to ambient	77.5	℃/W
T_J, T_{STG}	Operating and Storage Temperature	-65 to +150	℃

Electrical Characteristics @ 25°C (Unless Otherwise Noted) TABLE1

Microsemi Part Number	Breakdown Voltage V_{BR} @ I_{BR}			Reverse Stand Off Voltage	Maximum Standby current I_D @ V_{WM}	Maximum Peak Pulse Current	Maximum Clamping Voltage V_C @ I_{PP}
	MIN	MAX					
	V_{BR}(V)		I_{BR}(mA)	V_{WM}(V)	I_D(μA)	I_{PP} (A)	V_C(V)
SMLJ5.0	6.40	7.30	10	5.0	1000	312.5	9.6
SMLJ5.0A	6.40	7.00	10	5.0	1000	326.0	9.2
SMLJ6.0	6.67	8.15	10	6.0	1000	263.2	11.4
SMLJ6.0A	6.67	7.37	10	6.0	1000	291.3	10.3
SMLJ6.5	7.22	8.82	10	6.5	500	243.9	12.3
SMLJ6.5A	7.22	7.98	10	6.5	500	267.9	11.2
SMLJ7.0	7.78	9.51	10	7.0	200	225.6	13.3
SMLJ7.0A	7.78	8.60	10	7.0	200	250.0	12.0
SMLJ7.5	8.33	10.2	1	7.5	100	209.8	14.3
SMLJ7.5A	8.33	9.21	1	7.5	100	232.6	12.9
SMLJ8.0	8.89	10.9	1	8.0	50	200.0	15.0
SMLJ8.0A	8.89	9.83	1	8.0	50	220.6	13.6
SMLJ8.5	9.44	11.5	1	8.5	25	188.6	15.9
SMLJ8.5A	9.44	10.4	1	8.5	25	208.4	14.4
SMLJ9.0	10.0	12.2	1	9.0	10	177.4	16.9
SMLJ9.0A	10.0	11.1	1	9.0	10	194.8	15.4
SMLJ10	11.1	13.6	1	10.0	5	159.6	18.8
SMLJ10A	11.1	12.3	1	10.0	5	176.4	17.0
SMLJ11	12.2	14.9	1	11.0	5	149.2	20.1
SMLJ11A	12.2	13.5	1	11.0	5	164.8	18.2
SMLJ12	13.3	16.3	1	12.0	5	136.4	22.0
SMLJ12A	13.3	14.7	1	12.0	5	150.6	19.9
SMLJ13	14.4	17.6	1	13.0	5	126.0	23.8
SMLJ13A	14.4	15.9	1	13.0	5	139.4	21.5
SMLJ14	15.6	19.1	1	14.0	2	116.2	25.8
SMLJ14A	15.6	17.2	1	14.0	2	129.4	23.2
SMLJ15	16.7	20.4	1	15.0	2	111.6	26.9
SMLJ15A	16.7	18.5	1	15.0	2	123.0	24.4
SMLJ16	17.8	21.8	1	16.0	2	104.2	28.8
SMLJ16A	17.8	19.7	1	16.0	2	115.4	26.0
SMLJ17	18.9	23.1	1	17.0	2	98.4	30.5
SMLJ17A	18.9	20.9	1	17.0	2	106.6	27.6
SMLJ18	20.0	24.4	1	18.0	2	93.2	32.2
SMLJ18A	20.0	22.1	1	18.0	2	102.8	29.2
SMLJ20	22.2	27.1	1	20.0	2	83.8	35.8
SMLJ20A	22.2	24.5	1	20.0	2	92.6	32.4
SMLJ22	24.4	29.8	1	22.0	2	76.2	39.4
SMLJ22A	24.4	26.9	1	22.0	2	84.4	35.5
SMLJ24	26.7	32.6	1	24.0	2	69.8	43.0
SMLJ24A	26.7	29.5	1	24.0	2	77.2	38.9
SMLJ26	28.9	35.3	1	26.0	2	64.4	46.6
SMLJ26A	28.9	31.9	1	26.0	2	71.2	42.1
SMLJ28	31.1	38.0	1	28.0	2	60.0	50.0
SMLJ28A	31.1	34.4	1	28.0	2	66.0	45.4
SMLJ30	33.3	40.7	1	30.0	2	56.0	53.5
SMLJ30A	33.3	36.8	1	30.0	2	62.0	48.4
SMLJ33	36.7	44.9	1	33.0	2	50.4	59.0
SMLJ33A	36.7	40.6	1	33.0	2	56.2	53.3
SMLJ36	40.0	48.9	1	36.0	2	46.6	64.3
SMLJ36A	40.0	44.2	1	36.0	2	51.6	58.1
SMLJ40	44.4	54.3	1	40.0	2	42.0	71.4
SMLJ40A	44.4	49.1	1	40.0	2	46.4	64.5

Electrical Characteristics @ 25°C (Unless Otherwise Noted) TABLE1

Microsemi Part Number	Breakdown Voltage V_{BR} @ I_{BR}			Rated Stand Off Voltage	Maximum Standby current I_D @ V_{WM}	Maximum Peak Pulse Current	Maximum Clamping Voltage V_C @ I_{PP}
	MIN	MAX					
	V_{BR}(V)		I_{BR}(mA)	V_{WM}(V)	I_D(μA)	I_{PP} (A)	V_C(V)
SMLJ43	47.8	58.4	1	43.0	2	39.2	76.7
SMLJ43A	47.8	52.8	1	43.0	2	43.2	69.4
SMLJ45	50.0	61.1	1	45.0	2	37.4	80.3
SMLJ45A	50.0	55.3	1	45.0	2	41.2	72.7
SMLJ48	53.3	65.1	1	48.0	2	35.0	85.5
SMLJ48A	53.3	58.9	1	48.0	2	38.8	77.4
SMLJ51	56.7	69.3	1	51.0	2	37.0	91.1
SMLJ51A	56.7	62.7	1	51.0	2	36.4	82.4
SMLJ54	60.0	73.3	1	54.0	2	31.2	96.3
SMLJ54A	60.0	66.3	1	54.0	2	34.4	87.1
SMLJ58	64.4	78.7	1	58.0	2	29.2	103.0
SMLJ58A	64.4	71.2	1	58.0	2	32.0	93.6
SMLJ60	66.7	81.5	1	60.0	2	28.0	107.0
SMLJ60A	66.7	73.7	1	60.0	2	31.0	96.8
SMLJ64	71.1	86.9	1	64.0	2	26.4	114.0
SMLJ64A	71.1	78.6	1	64.0	2	29.2	103.0
SMLJ70	77.8	95.1	1	70.0	2	24.0	125.0
SMLJ70A	77.8	86.0	1	70.0	2	26.6	113.0
SMLJ75	83.3	102.0	1	75.0	2	22.4	134.0
SMLJ75A	83.3	92.1	1	75.0	2	24.8	121.0
SMLJ78	86.7	106.0	1	78.0	2	21.6	139.0
SMLJ78A	86.7	95.8	1	78.0	2	22.8	126.0
SMLJ85	94.4	115.0	1	85.0	2	19.8	151.0
SMLJ85A	94.4	104.0	1	85.0	2	20.8	137.0
SMLJ90	100.0	122.0	1	90.0	2	18.8	160.0
SMLJ90A	100.0	111.0	1	90.0	2	20.6	146.0
SMLJ100	111.0	136.0	1	100.0	2	16.8	179.0
SMLJ100A	111.0	123.0	1	100.0	2	18.6	162.0
SMLJ110	122.0	149.0	1	110.0	2	15.4	196.0
SMLJ110A	122.0	135.0	1	110.0	2	16.8	177.0
SMLJ120	133.0	163.0	1	120.0	2	14.0	214.0
SMLJ120A	133.0	147.0	1	120.0	2	15.6	193.0
SMLJ130	144.0	176.0	1	130.0	2	13.0	231.0
SMLJ130A	144.0	159.0	1	130.0	2	14.4	209.0
SMLJ150	167.0	204.0	1	150.0	2	11.2	268.0
SMLJ150A	167.0	185.0	1	150.0	2	12.4	243.0
SMLJ160	178.0	218.0	1	160.0	2	10.4	287.0
SMLJ160A	178.0	197.0	1	160.0	2	11.6	259.0
SMLJ170	189.0	231.0	1	170.0	2	9.8	304.0
SMLJ170A	189.0	209.0	1	170.0	2	11.0	275.0

1. For bi-directional construction, indicate a C or CA suffix after part number, i.e. SMLJ170C or SMLJ170CA

Characteristic Curve

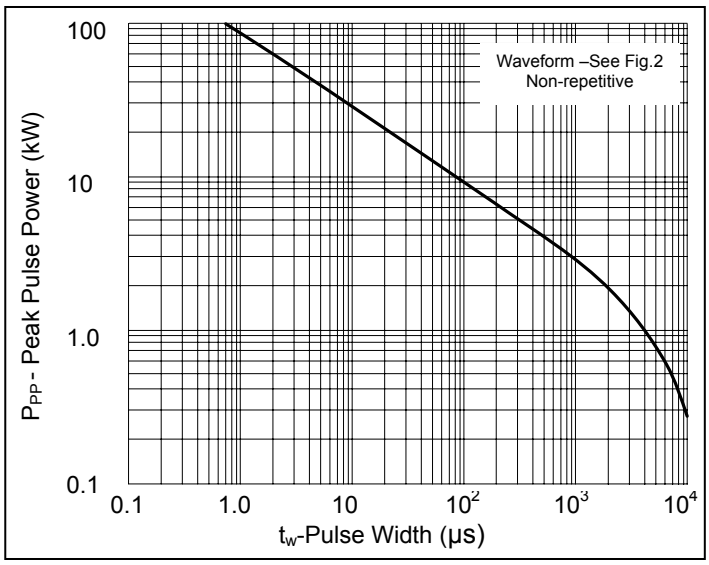


Fig. 1 Peak Pulse Power vs. Pulse Time

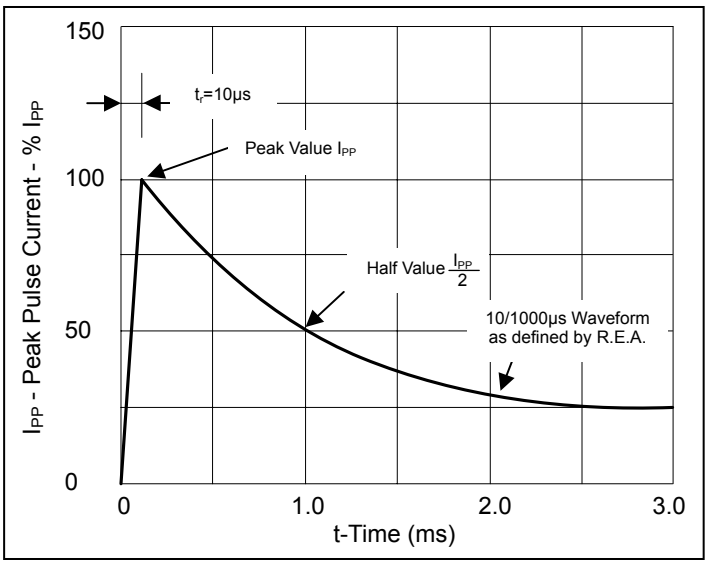


Fig.2 Pulse Waveform for Exponential Surge

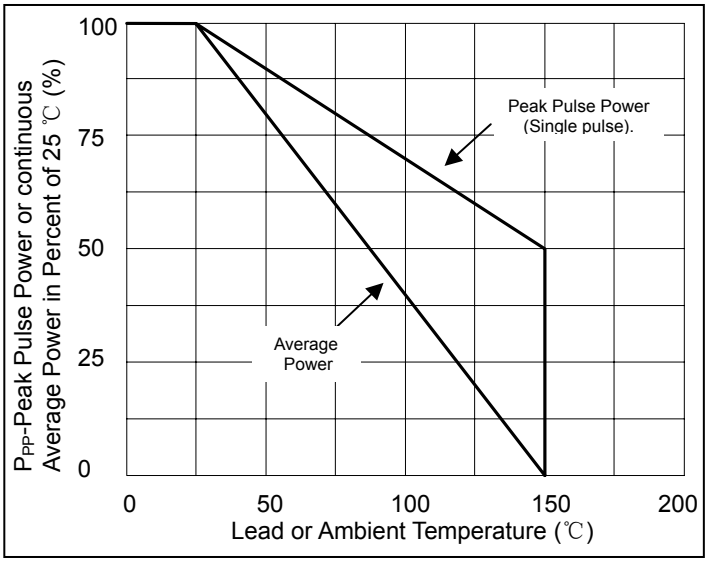


Fig.3 Derating Curve

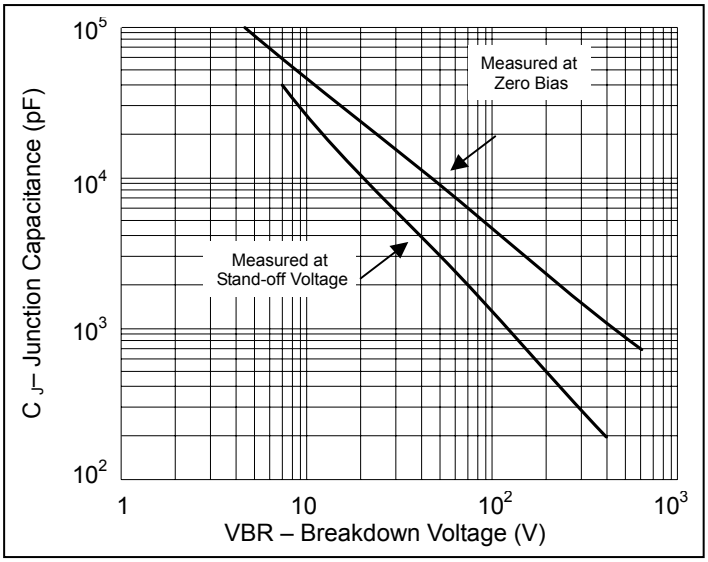


Fig.4 Typical Capacitance vs. Breakdown Voltage (Unipolar)

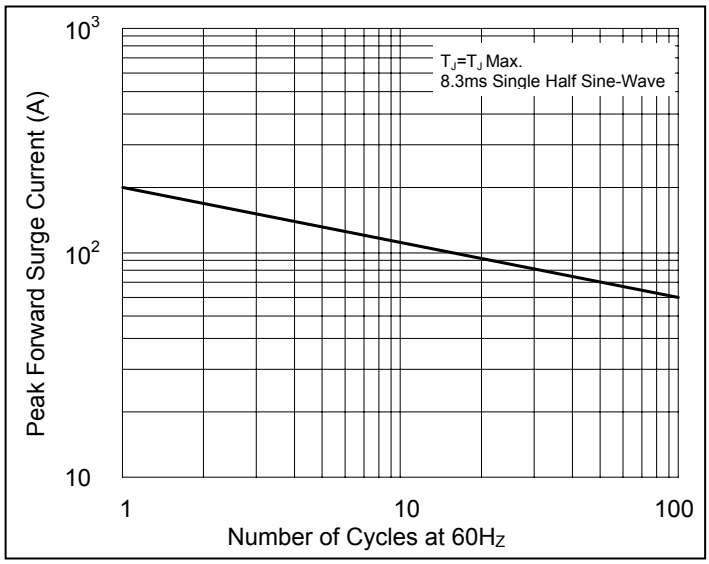


Fig.5 Max. Non-Repetitive Forward Surge Current Uni-Directional Only