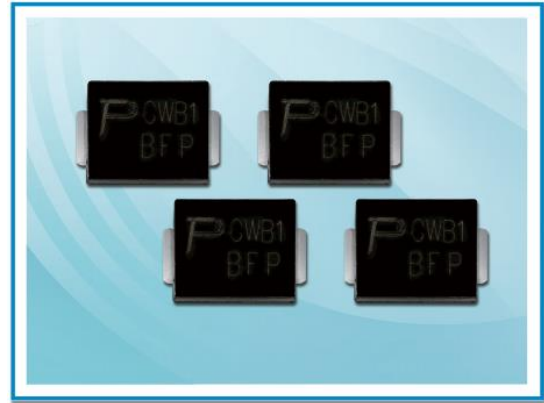


TVS Diode – SMCJ Series

Features

- Plastic package, excellent insulation strength.
- Glass passivated chip junction in SMC package.
- Excellent voltage clamping capability.
- Low Zener impedance.
- 1500W peak pulse power capability on 10/1000µs waveform.
- Typical leakage current less than 1µA above 13V.
- Very fast response time, typically less than 1.0ps from 0 volt to V_{BR} minimum.
- High temperature soldering guaranteed: 265°C/10 sec.
- MSL: JEDEC-J-STD-020, Level 1

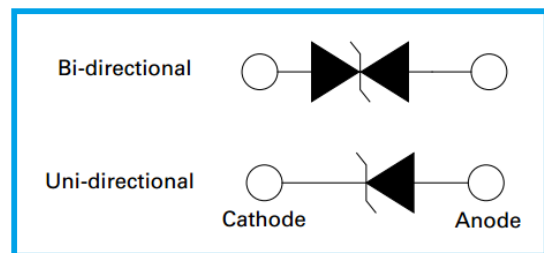


Applications

- I/O interface, V_{CC} bus
- Telecom
- Industrial and consumer electronic applications.
- Relay and electromagnetic valve surge absorption.

Agency Approval

- UL file no.: E474915



Mechanical and Physical Data

- Case: JEDEC SMC molded plastic.
- Surface mount device, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denoted cathode except bidirectional.

Maximum Ratings and Thermal Characteristics

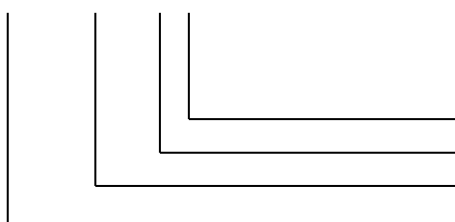
Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation on 10/1000µs waveform (Note 1, Fig.1).	P_{PPM}	Min 1500	Watt
Peak Pulse Current of 10/1000µs waveform (Note 1, Fig.3).	I_{PPM}	See Table	Amp
Steady State Power Dissipation at $T_L = 75^\circ\text{C}$, Lead lengths 0.375", (9.5mm) (Fig.5).	$P_{M(AV)}$	6.5	Watt
Peak Forward Surge Current, 8.3 ms Single Half Sine Wave Superimposed on Rated Load (Note 2, Fig.6).	I_{FSM}	200	Amp
Operating Junction and Storage Temperature Range.	T_J, T_{STG}	-55~150	$^\circ\text{C}$

Note:

1. Non-repetitive current pulse, per Fig.3 and derated above $T_A = 25^\circ\text{C}$ per Fig.2.
2. 8.3ms single half sine wave, or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.

Part Number Code

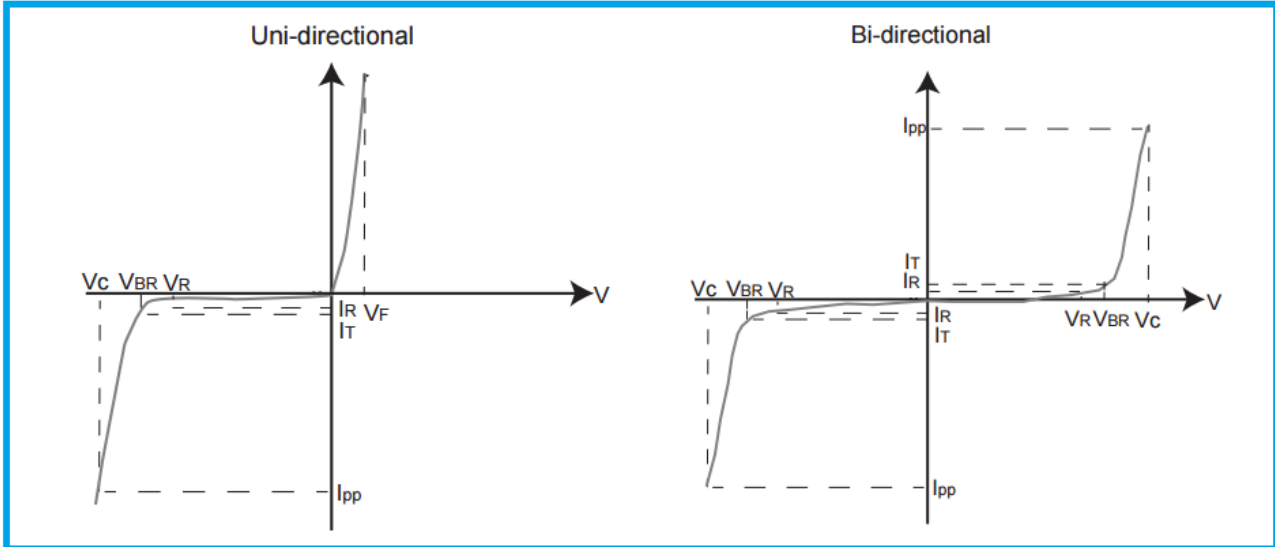
SMCJ □□□ C A



- V_{BR} Voltage tolerance (A: 5%; Blank: 10%)
- C: Bi-directional; Blank: Uni-directional
- Reverse Stand-Off Voltage or Typical Breakdown Voltage
- SMCJ Series (1500W)

TVS Diode – SMCJ Series

I-V Curve Characteristics



I_{PPM} Peak Pulse Power Dissipation – Maximum power dissipation

V_R Stand-off Voltage – Maximum voltage that can be applied to the TVS without operation

V_{BR} Breakdown Voltage – Maximum voltage that flows through the TVS at a specified test 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

Electrical Characteristics

Part Number		Marking		Reverse Stand Off Voltage V_R (V)	Breakdown Voltage V_{BR} (V) @ I_T		Test Current I_T (mA)	Maximum Clamping Voltage V_C (V) @ I_{PP}	Maximum Peak Pulse Current I_{PP} (A)	Maximum Reverse Leakage I_R (μ A) @ V_R
Uni	Bi	Uni	Bi		Min.	Max.				
SMCJ5.0A	SMCJ5.0CA	GDE	BDE	5.0	6.40	7.00	10	9.2	163.0	800
SMCJ6.0A	SMCJ6.0CA	GDG	BDG	6.0	6.67	7.37	10	10.3	145.7	800
SMCJ6.5A	SMCJ6.5CA	GDK	BDK	6.5	7.22	7.98	10	11.2	134.0	500
SMCJ7.0A	SMCJ7.0CA	GDM	BDM	7.0	7.78	8.60	10	12.0	125.0	200
SMCJ7.5A	SMCJ7.5CA	GDP	BDP	7.5	8.33	9.21	1	12.9	116.3	100
SMCJ8.0A	SMCJ8.0CA	GDR	BDR	8.0	8.89	9.83	1	13.6	110.3	50
SMCJ8.5A	SMCJ8.5CA	GDT	BDT	8.5	9.44	10.4	1	14.4	104.2	20
SMCJ9.0A	SMCJ9.0CA	GDV	BDV	9.0	10.0	11.1	1	15.4	97.4	10
SMCJ10A	SMCJ10CA	GDX	BDX	10.0	11.1	12.3	1	17.0	88.3	5
SMCJ11A	SMCJ11CA	GDZ	BDZ	11.0	12.2	13.5	1	18.2	82.5	1
SMCJ12A	SMCJ12CA	GEE	BEE	12.0	13.3	14.7	1	19.9	75.4	1
SMCJ13A	SMCJ13CA	GEG	BEG	13.0	14.4	15.9	1	21.5	69.8	1
SMCJ14A	SMCJ14CA	GEK	BEK	14.0	15.6	17.2	1	23.2	64.7	1
SMCJ15A	SMCJ15CA	GEM	BEM	15.0	16.7	18.5	1	24.4	61.5	1
SMCJ16A	SMCJ16CA	GEP	BEP	16.0	17.8	19.7	1	26.0	57.7	1
SMCJ17A	SMCJ17CA	GER	BER	17.0	18.9	20.9	1	27.6	54.4	1
SMCJ18A	SMCJ18CA	GET	BET	18.0	20.0	22.1	1	29.2	51.4	1

TVS Diode – SMCJ Series

Part Number		Marking		Reverse Stand Off Voltage V_R (V)	Breakdown Voltage V_{BR} (V) @ I_T		Test Current I_T (mA)	Maximum Clamping Voltage V_C (V) @ I_{PP}	Maximum Peak Pulse Current I_{PP} (A)	Maximum Reverse Leakage I_R (μ A) @ V_R
Uni	Bi	Uni	Bi		Min.	Max.				
SMCJ20A	SMCJ20CA	GEV	BEV	20.0	22.2	24.5	1	32.4	46.3	1
SMCJ22A	SMCJ22CA	GEX	BEX	22.0	24.4	26.9	1	35.5	42.3	1
SMCJ24A	SMCJ24CA	GEZ	BEZ	24.0	26.7	29.5	1	38.9	38.6	1
SMCJ26A	SMCJ26CA	GFE	BFE	26.0	28.9	31.9	1	42.1	35.7	1
SMCJ28A	SMCJ28CA	GFG	BFG	28.0	31.1	34.4	1	45.4	33.1	1
SMCJ30A	SMCJ30CA	GFK	BFK	30.0	33.3	36.8	1	48.4	31.0	1
SMCJ33A	SMCJ33CA	GFM	BFM	33.0	36.7	40.6	1	53.3	28.2	1
SMCJ36A	SMCJ36CA	GFP	BFP	36.0	40.0	44.2	1	58.1	25.9	1
SMCJ40A	SMCJ40CA	GFR	BFR	40.0	44.4	49.1	1	64.5	23.3	1
SMCJ43A	SMCJ43CA	GFT	BFT	43.0	47.8	52.8	1	69.4	21.7	1
SMCJ45A	SMCJ45CA	GFV	BFV	45.0	50.0	55.3	1	72.7	20.6	1
SMCJ48A	SMCJ48CA	GFX	BFX	48.0	53.3	58.9	1	77.4	19.4	1
SMCJ51A	SMCJ51CA	GFZ	BFZ	51.0	56.7	62.7	1	82.4	18.2	1
SMCJ54A	SMCJ54CA	GGE	BGE	54.0	60.0	66.3	1	87.1	17.3	1
SMCJ58A	SMCJ58CA	GGG	BGG	58.0	64.4	71.2	1	93.6	16.1	1
SMCJ60A	SMCJ60CA	GGK	BGK	60.0	66.7	73.7	1	96.8	15.5	1
SMCJ64A	SMCJ64CA	GGM	BGM	64.0	71.1	78.6	1	103.0	14.6	1
SMCJ70A	SMCJ70CA	GGP	BGP	70.0	77.8	86.0	1	113.0	13.3	1
SMCJ75A	SMCJ75CA	GGR	BGR	75.0	83.3	92.1	1	121.0	12.4	1
SMCJ78A	SMCJ78CA	GGT	BGT	78.0	86.7	95.8	1	126.0	11.9	1
SMCJ85A	SMCJ85CA	GGV	BGV	85.0	94.4	104.0	1	137.0	11.0	1
SMCJ90A	SMCJ90CA	GGX	BGX	90.0	100.0	111.0	1	146.0	10.3	1
SMCJ100A	SMCJ100CA	GGZ	BGZ	100.0	111.0	123.0	1	162.0	9.3	1
SMCJ110A	SMCJ110CA	GHE	BHE	110.0	122.0	135.0	1	177.0	8.5	1
SMCJ120A	SMCJ120CA	GHG	BHG	120.0	133.0	147.0	1	193.0	7.8	1
SMCJ130A	SMCJ130CA	GHK	BHK	130.0	144.0	159.0	1	209.0	7.2	1
SMCJ150A	SMCJ150CA	GHM	BHM	150.0	167.0	185.0	1	243.0	6.2	1
SMCJ160A	SMCJ160CA	GHP	BHP	160.0	178.0	197.0	1	259.0	5.8	1
SMCJ170A	SMCJ170CA	GHR	BHR	170.0	189.0	209.0	1	275.0	5.5	1
SMCJ180A	SMCJ180CA	GHT	BHT	180.0	201.0	222.0	1	292.0	5.1	1
SMCJ190A	SMCJ190CA	GHU	BHU	190.0	209.0	243.0	1	308.0	4.8	1
SMCJ200A	SMCJ200CA	GHV	BHV	200.0	224.0	247.0	1	324.0	4.6	1
SMCJ220A	SMCJ220CA	GHX	BHX	220.0	246.0	272.0	1	356.0	4.2	1
SMCJ250A	SMCJ250CA	GHZ	BHZ	250.0	279.0	309.0	1	405.0	3.7	1
SMCJ300A	SMCJ300CA	GJE	BJE	300.0	335.0	371.0	1	486.0	3.1	1
SMCJ350A	SMCJ350CA	GJG	BJG	350.0	391.0	432.0	1	567.0	2.6	1
SMCJ400A	SMCJ400CA	GJK	BJK	400.0	447.0	494.0	1	648.0	2.3	1
SMCJ440A	SMCJ440CA	GJM	BJM	440.0	492.0	543.0	1	713.0	2.1	1

Note:

1. For bi-directional type having V_R of 10 volts and less, the I_R limit is double.

TVS Diode – SMCJ Series

Ratings and Characteristic Curves

Fig 1 - Peak Pulse Power Rating Curve

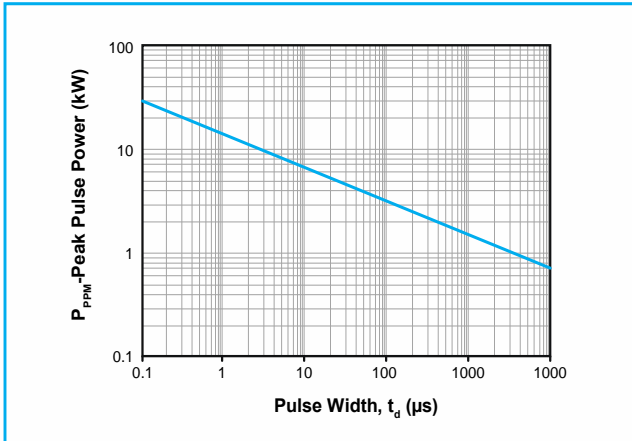


Fig 2 - Pulse Derating Curve

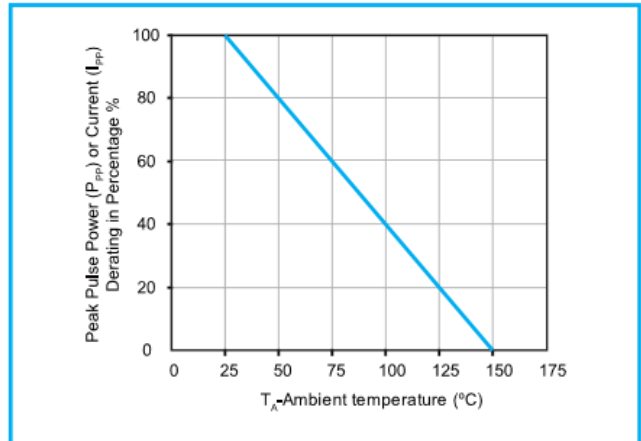


Fig 3 - Pulse Waveform

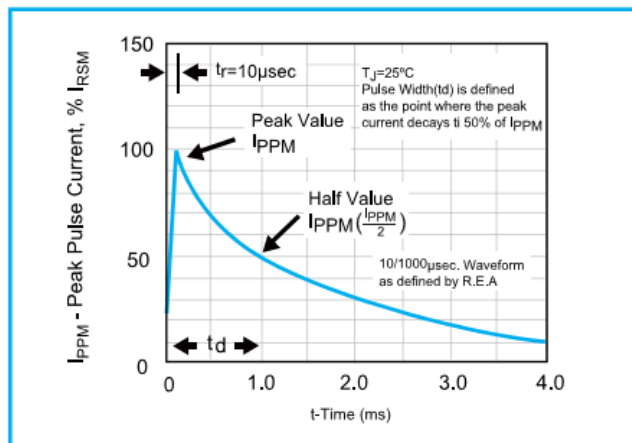


Fig 4 - Typical Junction Capacitance

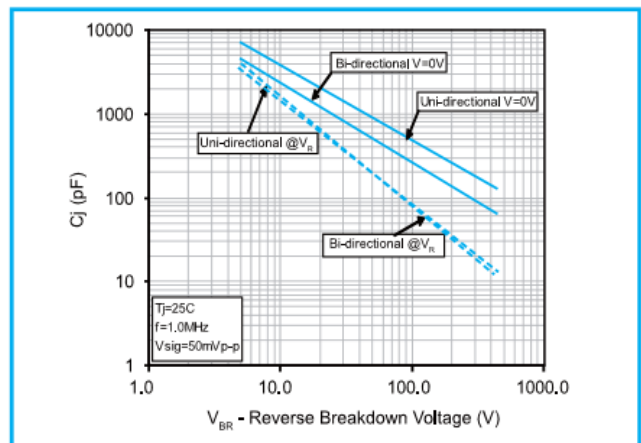


Fig 5 - Steady State Power Dissipation Derating Curve

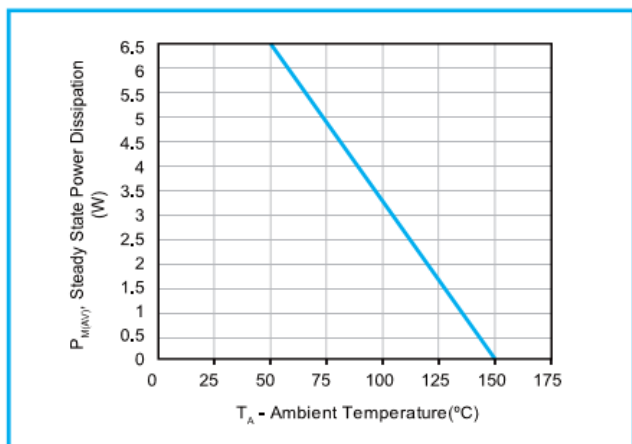
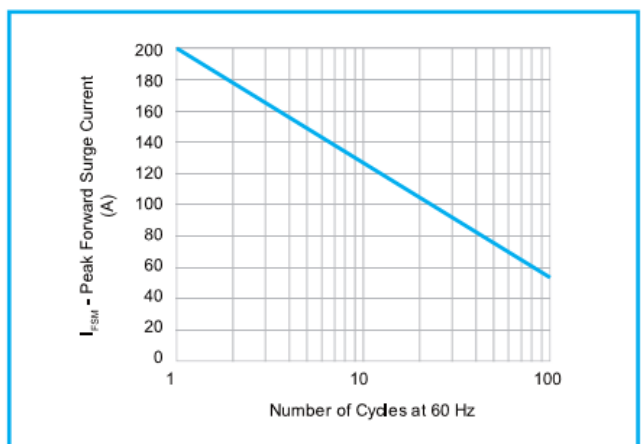
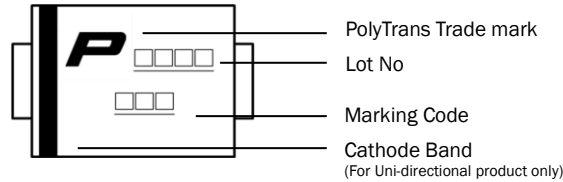


Fig 6 - Maximum Non-Repetitive Forward Surge Current (Uni-directional Only)

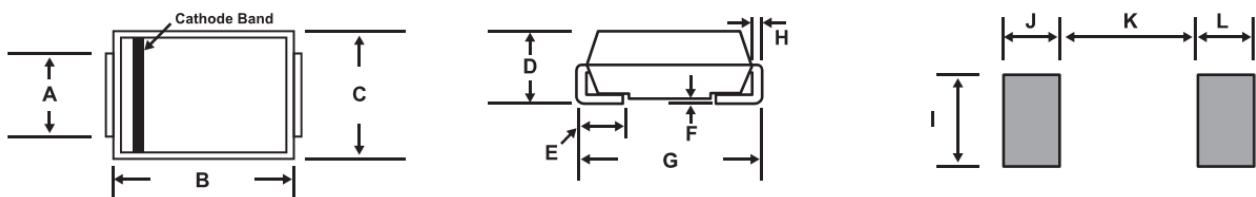


TVS Diode – SMCJ Series

Marking Definitions



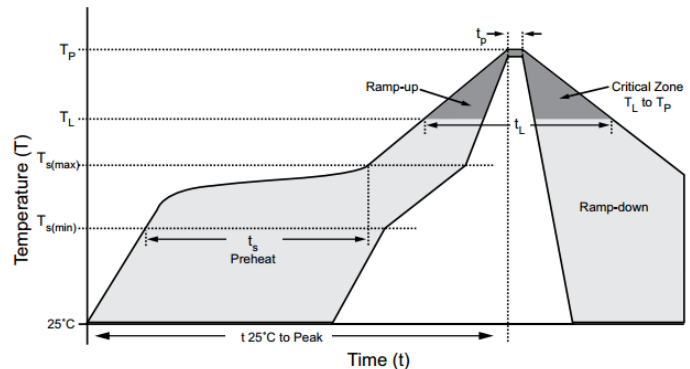
Physical Dimensions



Dimension	Millimeters		Inches	
	Min	Max	Min	Max
A	2.90	3.20	0.114	0.126
B	6.60	7.11	0.260	0.280
C	5.59	6.22	0.220	0.245
D	2.20	2.80	0.087	0.110
E	0.76	1.52	0.030	0.060
F	-	0.20	-	0.008
G	7.75	8.13	0.305	0.320
H	0.15	0.31	0.006	0.012
I	3.30	-	0.129	-
J	2.40	-	0.094	-
K	-	4.20	-	0.165
L	2.40	-	0.094	-

Lead Free Reflow Soldering Recommendations

Preheat	
- Temperature Min (T_{s_min})	150°C
- Temperature Max (T_{s_max})	200°C
- Time (T_{s_min} to T_{s_max})	60-180 seconds
- Average Ramp-Up Rate	1~3°C/second
Peak Temperature	260°C max.
Time within 5°C of actual Peak Temperature (t_p)	40 seconds max.
Ramp-Down Rate	6 °C /second max.



Note: If the soldering temperatures exceed the recommended profile, devices may not meet the performance requirements.

TVS Diode – SMCJ Series

Packaging Information

Part Number	Component Package	Quantity	Packaging Option	Packaging Specification
SMCJ Series	DO-214AB	3000	Tape & Reel – 16mm tape/13" reel	EIA STD RS-481

Tape and Reel Specifications

