SMCJ5.0A thru SMCJ188CA

Vishay General Semiconductor

Surface Mount TRANSZORB[®] Transient Voltage Suppressors



SMC (DO-214AB)

PRIMARY CHARACTERISTICS					
V _{BR} uni-directional	6.40 V to 231 V				
V _{BR} bi-directional	6.40 V to 231 V				
V _{WM}	5.0 V to 188 V				
P _{PPM}	1500 W				
PD	6.5 W				
I _{FSM} (uni-directional only)	200 A				
T _J max.	150 °C				
Polarity	Uni-directional, bi-directional				
Package	SMC (DO-214AB)				

DEVICES FOR BI-DIRECTION APPLICATIONS

For bi-directional devices use CA suffix (e.g. SMCJ188CA). Electrical characteristics apply in both directions.

FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Available in uni-directional and bi-directional
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
 Automotive ordering code: base P/NHE3 or P/NHM3
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: SMC (DO-214AB)

Molding compound meets UL 94 V-0 flammability rating Base P/N-E3 - RoHS-compliant, commercial grade Base P/N-M3 - halogen-free, RoHS-compliant, commercial grade

Base P/NHE3_X - RoHS-compliant and AEC-Q101 qualified Base P/NHM3_X - halogen-free, RoHS-compliant, and AEC-Q101 qualified

("_X" denotes revision code e.g. A, B, ...)

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3, M3, HE3, and HM3 suffix meets JESD 201 class 2 whisker test

Polarity: for uni-directional types the band denotes cathode end, no marking on bi-directional types

PARAMETER	SYMBOL	VALUE	UNIT				
Peak pulse power dissipation with a 10/1000 μs waveform $^{(1)(2)}$	P _{PPM}	1500	W				
Peak pulse current with a 10/1000 μs waveform $^{(1)}$	I _{PPM}	See next table	А				
Peak forward surge current 8.3 ms single half sine-wave uni-directional only $^{(2)}$	I _{FSM}	200	А				
Power dissipation on infinite heatsink, $T_A = 50 \ ^\circ C$	PD	6.5	W				
Operating junction and storage temperature range	T _J , T _{STG}	-55 to +150	°C				

Notes

⁽¹⁾ Non-repetitive current pulse, per fig. 3 and derated above $T_A = 25$ °C per fig. 2

(2) Mounted on 0.31" x 0.31" (8.0 mm x 8.0 mm) copper pads to each terminal

Revision: 24-Jan-2019 **1** Document Number: 88394 For technical questions within your region: <u>DiodesAmericas@vishay.com</u>, <u>DiodesAsia@vishay.com</u>, <u>DiodesEurope@vishay.com</u> THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT



COMPLIANT HALOGEN

FREE



SMCJ5.0A thru SMCJ188CA



www.vishay.com

Vishay General Semiconductor

DEVICE TYPE MODIFIED DEVICE MARKING CODE VOLTAGE WR, AT Ir, (V) WR, (M) WR, (M) W	ELECTRICAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise noted)									
(HSMCJ60A ⁽⁰⁾) GDE GoDe 6.40 7.07 10 5.0 1000 163.0 (HSMCJ60A GDG GDG 6.67 7.37 10 6.0 1000 145.6 (HSMCJ6A GDK BDK 7.22 7.98 10 6.5 500 133.9 (HSMCJ6A GDM GDM 7.78 8.60 10 7.0 200 125.0 (HSMCJ6AA GDR BDP 8.33 9.21 1.0 7.5 100 116.3 (HSMCJ8AA GDR BDR 8.89 9.83 1.0 8.0 50 110.3 (HSMCJ9AA GDZ BDX 11.1 1.0 9.0 10 97.4 (HSMCJ1AA GEZ BEZ 13.3 14.7 1.0 11 5.0 75.4 (HSMCJ1AA GEE BEE 13.3 14.7 1.0 14 1.0 64.7 7 (HSMCJ1AA GEM BEK <td< th=""><th>MODIFIED</th><th>co</th><th>DE</th><th>VOLT V_{BR} A (</th><th>TAGE T I_T ⁽¹⁾ V)</th><th>CURRENT</th><th>VOLTAGE V_{WM}</th><th>REVERSE LEAKAGE AT V_{WM}</th><th>PEAK PULSE SURGE CURRENT</th><th>MAXIMUM CLAMPING VOLTAGEAT IPPM</th></td<>	MODIFIED	co	DE	VOLT V _{BR} A (TAGE T I _T ⁽¹⁾ V)	CURRENT	VOLTAGE V _{WM}	REVERSE LEAKAGE AT V _{WM}	PEAK PULSE SURGE CURRENT	MAXIMUM CLAMPING VOLTAGEAT IPPM
IPSMCJ60A GDG 6.67 7.37 10 6.0 1000 145.6 (PSMCJ65A GDK BDK 7.22 7.98 10 6.5 500 133.9 (PSMCJ7.0A GDM GDM GDM RDM 7.78 8.60 10 7.0 200 125.0 (PSMCJ8.0A GDP BDP 8.33 9.21 1.0 7.5 100 116.3 (PSMCJ8.0A GDV BDT 9.44 10.4 1.0 8.5 20 104.2 (PSMCJ8.0A GDV BDV 10.0 11 5.0 88.2 (PSMCJ10A GDZ GDZ 12.2 13.5 1.0 11 5.0 88.2 (PSMCJ12A GEE BEE 13.3 1.47 1.0 12 5.0 75.4 (PSMCJ13A GEG GEG 14.4 15.9 1.0 13 1.0 61.5 1.0 (PSMCJ16A GEW BEK	(.)	-								V _c (V)
H9MCJ65A GDK 7.28 7.98 10 6.5 500 133.9 (HSMCJ7.0A GDM GDM 7.78 8.60 10 7.0 200 125.0 (HSMCJ7.5A GDP BDP 8.83 9.21 1.0 7.5 100 116.3 (HSMCJ8.5A GDT BDT 9.44 10.4 1.0 8.5 20 104.2 (HSMCJ10A GDZ BDV 10.0 11.1 1.0 9.0 10 97.4 (HSMCJ11A GDZ GEZ 12.2 13.5 1.0 11 5.0 88.2 (HSMCJ12A GEE BEE 13.3 14.7 1.0 14 1.0 64.7 (HSMCJ13A GEG GEG 14.4 15.6 1.0 15 1.0 61.5 1.0 (HSMCJ16A GEF GEF GER 18.9 20.9 1.0 17 1.0 54.3 1.7 1.0 1.0 1.0 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>9.2</td>										9.2
(PSMCJ7.0A GDM GDM 7.8 8.60 10 7.0 200 125.0 (PSMCJ7.5A GDP BDP 8.33 9.21 1.0 7.5 100 116.3 (PSMCJ8.6A GDT BDT 9.44 10.4 1.0 8.5 20 104.2 (PSMCJ9.0A GDV BDV 10.0 11.1 1.0 9.0 10 97.4 (PSMCJ10A GDX BDX 11.1 12.3 1.0 10 5.0 88.2 (PSMCJ10A GDZ GDZ 12.2 13.5 1.0 11 5.0 88.2 (PSMCJ13A GEE BEE 13.3 14.7 1.0 12 5.0 75.4 (PSMCJ13A GEE BEE 15.6 1.0 15 1.0 61.5 .2 (PSMCJ13A GEE BEE 10.8 10.0 17 1.0 54.3 .3 (PSMCJ13A GEE BEE 20.9 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td>10.3</td>						-				10.3
(HSMCJ7.5A GDP BDP 8.33 9.21 1.0 7.5 100 116.3 (HSMCJ8.0A GDR BDR 8.89 9.83 1.0 8.0 50 110.3 (HSMCJ8.0A GDT BDT 9.44 10.4 1.0 8.5 20 104.2 (HSMCJ10A GDV BDV 10.0 11.1 1.0 9.0 10 97.4 (HSMCJ11A GDZ GDZ 12.2 13.5 1.0 11 5.0 88.2 (HSMCJ13A GEE BEE 13.3 14.7 1.0 12 5.0 75.4 (HSMCJ13A GEK BEK 15.6 17.2 1.0 14 1.0 64.7 15 (HSMCJ16A GEF GEF 18.9 20.9 1.0 16 1.0 57.7 10 54.3 10 10.4 10.3 10.3 10.3 10.3 10.3 11.3 11.4 1.0 10.3 10.3 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>11.2</td>										11.2
H9MCJ80A GDR BDR 8.89 9.83 1.0 8.0 50 110.3 (HSMCJ85A GDT BDT 9.44 10.4 1.0 8.5 20 104.2 (HSMCJ86A GDT BDV 10.0 11.1 1.0 9.0 10 97.4 (HSMCJ10A GDX BDX 11.1 12.3 1.0 10 5.0 88.2 (HSMCJ12A GEE BEE 13.3 14.7 1.0 12 5.0 75.4 (HSMCJ13A GEG GEG 14.4 15.9 1.0 13 1.0 69.8 1.1 (HSMCJ13A GEM BEK 15.6 17.2 1.0 14 1.0 64.7 1.1 1.0 61.5 1.0 15 1.0 61.5 1.0 10.1 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.										12.0
H9MCJ85A GDT BDT 9.44 10.4 1.0 8.5 20 104.2 (HSMCJ90A GDV BDV 10.0 11.1 1.0 9.0 10 97.4 (HSMCJ10A GDZ BDX 11.1 12.3 1.0 11 5.0 88.2 (HSMCJ1A GDZ GDZ 12.2 13.5 1.0 11 5.0 88.2 (HSMCJ1A GEE BEE 13.3 14.7 1.0 12 5.0 75.4 (HSMCJ1A GEE BEE 13.6 1.0 13 1.0 69.8 15.6 (HSMCJ15A GER BEK 15.6 17.2 1.0 16 1.0 57.7 10 (HSMCJ16A GEF BEF 20.9 1.0 17 1.0 54.3 10 10.4 46.3 10 10.4 46.3 10 10.4 46.3 10 10.4 10.3 10.4 10.3 10.4 <		-								12.9
(H)SMCJ8.0A GDV BDV 10.0 11.1 1.0 9.0 10 97.4 (H)SMCJ10A GDZ GDZ IZ.2 13.5 1.0 11 5.0 88.2 (H)SMCJ12A GEE BEE 13.3 14.7 1.0 12 5.0 75.4 (H)SMCJ12A GEE BEE 13.3 14.7 1.0 12 5.0 75.4 (H)SMCJ13A GEG GEG 14.4 15.9 1.0 13 1.0 69.8 1.1 (H)SMCJ14A GEK BEK 15.6 1.0 15 1.0 61.5 1.1 (H)SMCJ16A GEP GEP 17.8 19.7 1.0 16 1.0 57.7 1.1 (H)SMCJ20A GEV BEV 22.2 24.5 1.0 20 1.0 46.3 1.1 (H)SMCJ20A GEZ BEZ 26.7 29.5 1.0 22 1.0 42.3 1.1 <tr< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>13.6</td></tr<>										13.6
(H)SMCJ10A GDX BDX 11.1 12.3 1.0 10 5.0 88.2 (H)SMCJ1A GDZ GDZ 12.2 13.5 1.0 11 5.0 88.2 (H)SMCJ1AA GEE BEE 13.3 1.0 11 5.0 88.2 (H)SMCJ1AA GEG GEG 14.4 15.9 1.0 13 1.0 69.8 (H)SMCJ1AA GEK BEK 15.6 17.2 1.0 14 1.0 64.7 (H)SMCJ15A GEM BEM 16.6 17.2 1.0 16 1.0 57.7 (H)SMCJ17A GER GER 18.9 20.9 1.0 17 1.0 54.3 1.1 (H)SMCJ20A GEV BEV 22.2 24.5 1.0 20 1.0 46.3 1.1 (H)SMCJ22A GEZ BEZ 26.7 29.5 1.0 24 1.0 38.6 1.0 1.0 33.0 1.0 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>14.4</td>										14.4
$\begin{array}{cccccccccccccccccccccccccccccccccccc$										15.4
$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$		-					-			17.0
										18.2
										19.9
										21.5
										23.2
										24.4
							-	1.0		26.0
(+)SMCJ20A GEV BEV 22.2 24.5 1.0 20 1.0 46.3 1 (+)SMCJ22A GEX BEX 24.4 26.9 1.0 22 1.0 42.3 1 (+)SMCJ2A GEZ BEZ 26.7 29.5 1.0 24 1.0 38.6 1 (+)SMCJ2A GFE BFE 28.9 31.9 1.0 26 1.0 35.6 1 (+)SMCJ2A GFK BFK 33.3 36.8 1.0 28 1.0 33.0 1 (+)SMCJ3A GFK BFK 33.3 36.8 1.0 30 1.0 28.1 1 (+)SMCJ3A GFK BFK 43.3 36.8 1.0 30 1.0 28.1 1 (+)SMCJ4A GFF BFP 40.0 44.2 1.0 36 1.0 28.1 1 1 1.0 1.0 23.3 1 1 1 1.0 1.0 23.3 1 1 1 1 1 1 1 1	(+)SMCJ17A	GER	GER	18.9	20.9	1.0	17	1.0	54.3	27.6
(+)SMCJ22A GEX BEX 24.4 26.9 1.0 22 1.0 42.3 1 (+)SMCJ24A GEZ BEZ 26.7 29.5 1.0 24 1.0 38.6 1 (+)SMCJ26A GFE BFE 28.9 31.9 1.0 26 1.0 35.6 1 (+)SMCJ28A GFG BFG 31.1 34.4 1.0 28 1.0 33.0 1 (+)SMCJ30A GFK BFK 33.3 36.8 1.0 30 1.0 28.1 1 (+)SMCJ30A GFF BFF 40.6 1.0 33 1.0 28.1 1 1 (+)SMCJ30A GFF BFP 40.0 44.2 1.0 36 1.0 28.8 1 1 1.0 28.1 1 1 1 1.0 28.1 1 1 1 1.0 28.1 1 1 1 1 1 0 28.1 1 1 0 1 1 0 1 1 1 0 <	⁽⁺⁾ SMCJ18A	GET	BET	20.0	22.1	1.0	18	1.0	51.4	29.2
(+)SMCJ24A GEZ BEZ 26.7 29.5 1.0 24 1.0 38.6 38.6 (+)SMCJ26A GFE BFE 28.9 31.9 1.0 26 1.0 35.6 (+)SMCJ28A GFG BFG 31.1 34.4 1.0 28 1.0 33.0 (+)SMCJ30A GFK BFK 33.3 36.8 1.0 30 1.0 31.0 (+)SMCJ3AA GFM BFM 33.3 36.8 1.0 33 1.0 28.1 31.0 (+)SMCJ3AA GFM BFM 40.6 1.0 33 1.0 28.1 31.0 (+)SMCJ4AA GFF BFF 40.0 44.2 1.0 36 1.0 23.3 31.0 (+)SMCJ43A GFT BFT 47.8 52.8 1.0 43 1.0 21.6 31.0 (+)SMCJ43A GFY GFV 50.0 55.3 1.0 45 1.0 20.6 (+)SMCJ51A GFZ GFZ 66.7 73.7 1.0 54 1.0	(+)SMCJ20A	GEV	BEV	22.2	24.5	1.0	20	1.0		32.4
(+)SMCJ26A GFE BFE 28.9 31.9 1.0 26 1.0 35.6 (+)SMCJ28A GFG BFG 31.1 34.4 1.0 28 1.0 33.0 (+)SMCJ30A GFK BFK 33.3 36.8 1.0 30 1.0 31.0 (+)SMCJ30A GFK BFK 33.3 36.8 1.0 30 1.0 28.1 (+)SMCJ30A GFK BFR 40.6 1.0 33 1.0 28.1 (+)SMCJ30A GFF BFP 40.0 44.2 1.0 36 1.0 28.1 (+)SMCJ40A GFR BFR 44.4 49.1 1.0 40 1.0 23.3 (+)SMCJ43A GFT BFT 47.8 52.8 1.0 43 1.0 21.6 (+)SMCJ48A (+)SMCJ45A GFV GFV 50.0 55.3 1.0 45 1.0 20.6 (+)SMCJ51A GFZ GFZ 56.7 62.7 1.0 51 1.0 17.2 (+)SMCJ58A	⁽⁺⁾ SMCJ22A	GEX	BEX	24.4	26.9	1.0	22	1.0	42.3	35.5
(+)SMCJ28A GFG BFG 31.1 34.4 1.0 28 1.0 33.0 (+)SMCJ30A GFK BFK 33.3 36.8 1.0 30 1.0 31.0 (+)SMCJ33A GFM BFM 36.7 40.6 1.0 33 1.0 28.1 (+)SMCJ36A GFP BFP 40.0 44.2 1.0 36 1.0 25.8 (+)SMCJ43A GFT BFR 44.4 49.1 1.0 40 1.0 23.3 (+)SMCJ43A GFT BFR 44.4 49.1 1.0 40 1.0 23.3 (+)SMCJ43A GFT BFR 44.4 49.1 1.0 43 1.0 21.6 (+)SMCJ43A GFT GFT TA7.8 52.8 1.0 448 1.0 19.4 (+)SMCJ48A GFZ GFZ 56.7 62.7 1.0 51 1.0 18.2 (+)SMCJ54A GGE GGE <td>(+)SMCJ24A</td> <td>GEZ</td> <td>BEZ</td> <td>26.7</td> <td>29.5</td> <td>1.0</td> <td>24</td> <td>1.0</td> <td>38.6</td> <td>38.9</td>	(+)SMCJ24A	GEZ	BEZ	26.7	29.5	1.0	24	1.0	38.6	38.9
(+)SMCJ30A GFK BFK 33.3 36.8 1.0 30 1.0 31.0 (+)SMCJ33A GFM BFM 36.7 40.6 1.0 33 1.0 28.1 (+)SMCJ36A GFP BFP 40.0 44.2 1.0 36 1.0 25.8 (+)SMCJ40A GFR BFR 44.4 49.1 1.0 40 1.0 23.3 (+)SMCJ40A GFR BFR 44.4 49.1 1.0 40 1.0 23.3 (+)SMCJ43A GFT BFT 47.8 52.8 1.0 43 1.0 21.6 (+)SMCJ45A GFV GFV 50.0 55.3 1.0 45 1.0 20.6 (+)SMCJ54A GFZ GFZ 56.7 62.7 1.0 51 1.0 18.2 (+)SMCJ54A GGE GGE 60.0 66.3 1.0 54 1.0 17.2 (+)SMCJ60A GGK GGK 66.7 73.7 1.0 60 1.0 15.5 (+)SMCJ60A <td< td=""><td>(+)SMCJ26A</td><td>GFE</td><td>BFE</td><td>28.9</td><td>31.9</td><td>1.0</td><td>26</td><td>1.0</td><td>35.6</td><td>42.1</td></td<>	(+)SMCJ26A	GFE	BFE	28.9	31.9	1.0	26	1.0	35.6	42.1
(+)SMCJ30A GFK BFK 33.3 36.8 1.0 30 1.0 31.0 (+)SMCJ33A GFM BFM 36.7 40.6 1.0 33 1.0 28.1 (+)SMCJ36A GFP BFP 40.0 44.2 1.0 36 1.0 25.8 (+)SMCJ40A GFR BFR 44.4 49.1 1.0 40 1.0 23.3 (+)SMCJ40A GFR BFR 44.4 49.1 1.0 40 1.0 23.3 (+)SMCJ43A GFT BFT 47.8 52.8 1.0 43 1.0 21.6 (+)SMCJ45A GFV GFV 50.0 55.3 1.0 45 1.0 20.6 (+)SMCJ54A GFZ GFZ 56.7 62.7 1.0 51 1.0 18.2 (+)SMCJ54A GGE GGE 60.0 66.3 1.0 54 1.0 17.2 (+)SMCJ60A GGK GGK 66.7 73.7 1.0 60 1.0 15.5 (+)SMCJ60A <td< td=""><td>(+)SMCJ28A</td><td>GFG</td><td>BFG</td><td>31.1</td><td>34.4</td><td>1.0</td><td>28</td><td>1.0</td><td>33.0</td><td>45.4</td></td<>	(+)SMCJ28A	GFG	BFG	31.1	34.4	1.0	28	1.0	33.0	45.4
(+)SMCJ33A GFM BFM 36.7 40.6 1.0 33 1.0 28.1 1 (+)SMCJ36A GFP BFP 40.0 44.2 1.0 36 1.0 25.8 1 (+)SMCJ40A GFR BFR 44.4 49.1 1.0 40 1.0 23.3 1 (+)SMCJ43A GFT BFT 47.8 52.8 1.0 43 1.0 21.6 1 (+)SMCJ45A GFV GFV 50.0 55.3 1.0 45 1.0 20.6 (+)SMCJ48A GFX GFX 53.3 58.9 1.0 48 1.0 19.4 1 (+)SMCJ51A GFZ GFZ 56.7 62.7 1.0 51 1.0 18.2 1 (+)SMCJ54A GGE GGE 60.0 66.3 1.0 54 1.0 17.2 1 (+)SMCJ60A GGK GGK 66.7 73.7 1.0 60 1.0 15.5 1 (+)SMCJ60A GGM GGM 71.1 78.6		GFK	BFK	33.3	36.8	1.0	30	1.0	31.0	48.4
(+)SMCJ36A GFP BFP 40.0 44.2 1.0 36 1.0 25.8 (+)SMCJ40A GFR BFR 44.4 49.1 1.0 40 1.0 23.3 10 (+)SMCJ43A GFT BFT 47.8 52.8 1.0 43 1.0 21.6 (+)SMCJ45A GFV GFV 50.0 55.3 1.0 45 1.0 20.6 (+)SMCJ45A GFX GFX 53.3 58.9 1.0 48 1.0 19.4 (+)SMCJ51A GFZ GFZ 56.7 62.7 1.0 51 1.0 18.2 (+)SMCJ54A GGE GGE 60.0 66.3 1.0 54 1.0 17.2 16 (+)SMCJ60A GGK GGK 66.7 73.7 1.0 60 1.0 15.5 16 (+)SMCJ60A GGM GGM 71.1 78.6 1.0 64 1.0 14.6 16 16.0		GFM	BFM	36.7	40.6	1.0	33	1.0	28.1	53.3
(+)SMCJ43A GFT BFT 47.8 52.8 1.0 43 1.0 21.6 (+)SMCJ45A GFV GFV 50.0 55.3 1.0 45 1.0 20.6 (+)SMCJ48A GFX GFX 53.3 58.9 1.0 48 1.0 19.4 (+)SMCJ51A GFZ GFZ 56.7 62.7 1.0 51 1.0 18.2 (+)SMCJ54A GGE GGG 64.4 71.2 1.0 58 1.0 16.0 (+)SMCJ60A GGK GGG 64.4 71.2 1.0 58 1.0 16.0 (+)SMCJ60A GGK GGG 64.4 71.2 1.0 60 1.0 15.5 (+)SMCJ60A GGK GGM 71.1 78.6 1.0 64 1.0 14.6 (+)SMCJ70A GGP GGP 77.8 86.0 1.0 75 1.0 12.4 (+)SMCJ75A GGR GGT 86.7 95.8 1.0 78 1.0 11.9 (+)SMCJ85A <td< td=""><td></td><td>GFP</td><td>BFP</td><td>40.0</td><td>44.2</td><td>1.0</td><td>36</td><td>1.0</td><td>25.8</td><td>58.1</td></td<>		GFP	BFP	40.0	44.2	1.0	36	1.0	25.8	58.1
(+)SMCJ43A GFT BFT 47.8 52.8 1.0 43 1.0 21.6 (+)SMCJ45A GFV GFV 50.0 55.3 1.0 45 1.0 20.6 (+)SMCJ48A GFX GFX 53.3 58.9 1.0 48 1.0 19.4 (+)SMCJ51A GFZ GFZ 56.7 62.7 1.0 51 1.0 18.2 (+)SMCJ54A GGE GGG 64.4 71.2 1.0 58 1.0 16.0 (+)SMCJ60A GGK GGK 66.7 73.7 1.0 60 1.0 15.5 (+)SMCJ64A GGM GGM 71.1 78.6 1.0 64 1.0 14.6 (+)SMCJ70A GGP GGP 77.8 86.0 1.0 75 1.0 12.4 (+)SMCJ75A GGR GGT 86.7 95.8 1.0 78 1.0 11.9 (+)SMCJ78A GGT GGT 86.7 95.8 1.0 78 1.0 10.9 (+)SMCJ85A <td< td=""><td>(+)SMCJ40A</td><td>GFR</td><td>BFR</td><td>44.4</td><td>49.1</td><td>1.0</td><td>40</td><td>1.0</td><td>23.3</td><td>64.5</td></td<>	(+)SMCJ40A	GFR	BFR	44.4	49.1	1.0	40	1.0	23.3	64.5
(+)SMCJ45A GFV GFV 50.0 55.3 1.0 45 1.0 20.6 (+)SMCJ48A GFX GFX 53.3 58.9 1.0 48 1.0 19.4 (+)SMCJ51A GFZ GFZ 56.7 62.7 1.0 51 1.0 18.2 (+)SMCJ54A GGE GGE 60.0 66.3 1.0 54 1.0 17.2 (+)SMCJ58A GGG GGG 64.4 71.2 1.0 58 1.0 16.0 (+)SMCJ60A GGK GGK 66.7 73.7 1.0 60 1.0 15.5 (+)SMCJ64A GGM GGM 71.1 78.6 1.0 64 1.0 14.6 (+)SMCJ70A GGP GGP 77.8 86.0 1.0 75 1.0 12.4 (+)SMCJ75A GGR GGT 86.7 95.8 1.0 78 1.0 11.9 (+)SMCJ78A GGT GGX 100 111 1.0 85 1.0 10.9 (+)SMCJ30A G	(+)SMCJ43A	GFT	BFT	47.8	52.8	1.0	43			69.4
(+)SMCJ48A GFX GFX 53.3 58.9 1.0 48 1.0 19.4 (+)SMCJ51A GFZ GFZ 56.7 62.7 1.0 51 1.0 18.2 (+)SMCJ54A GGE GGE 60.0 66.3 1.0 54 1.0 17.2 (+)SMCJ58A GGG GGG 64.4 71.2 1.0 58 1.0 16.0 (+)SMCJ60A GGK GGK 66.7 73.7 1.0 60 1.0 15.5 (+)SMCJ64A GGM GGM 71.1 78.6 1.0 64 1.0 14.6 (+)SMCJ70A GGP GGP 77.8 86.0 1.0 70 1.0 13.3 (+)SMCJ75A GGR GGT 86.7 95.8 1.0 78 1.0 11.9 (+)SMCJ85A GGV GGV 94.4 104 1.0 85 1.0 10.9 (+)SMCJ90A GGZ GGZ 111 123 1.0 100 1.0 9.3 (+)SMCJ100A G	(+)SMCJ45A	GFV	GFV	50.0	55.3	1.0	45	1.0	20.6	72.7
(+)SMCJ51A GFZ GFZ 56.7 62.7 1.0 51 1.0 18.2 (+)SMCJ54A GGE GGE 60.0 66.3 1.0 54 1.0 17.2 10 10 17.2 10 10 17.2 10 10 16.0 10 17.2 10 10 16.0 10 11 10 11.0 11.0 11.0 11.0 11 10 10 11 10 11 10 11 10 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 10 11 10 10 10 11 10 10 10 10 10 10 10 10 10 10 10 10 10										77.4
(+)SMCJ54A GGE GGE 60.0 66.3 1.0 54 1.0 17.2 (+)SMCJ58A GGG GGG 64.4 71.2 1.0 58 1.0 16.0 16.0 (+)SMCJ60A GGK GGK 66.7 73.7 1.0 60 1.0 15.5 10 (+)SMCJ64A GGM GGM 71.1 78.6 1.0 64 1.0 14.6 (+)SMCJ70A GGP GGP 77.8 86.0 1.0 70 1.0 13.3 (+)SMCJ75A GGR GGR 83.3 92.1 1.0 75 1.0 12.4 (+)SMCJ78A GGT GGT 86.7 95.8 1.0 78 1.0 11.9 (+)SMCJ85A GGV GGV 94.4 104 1.0 85 1.0 10.9 (+)SMCJ100A GGZ GGZ 111 1.0 100 1.0 9.3 (+)SMCJ100A GGZ GGZ 111 123 1.0 100 1.0 9.3 (+)SMCJ12		GFZ	GFZ	56.7	62.7	1.0		1.0	18.2	82.4
(+)SMCJ58A GGG GGG 64.4 71.2 1.0 58 1.0 16.0 16.0 (+)SMCJ60A GGK GGK 66.7 73.7 1.0 60 1.0 15.5 15.5 (+)SMCJ64A GGM GGM 71.1 78.6 1.0 64 1.0 14.6 (+)SMCJ70A GGP GGP 77.8 86.0 1.0 70 1.0 13.3 (+)SMCJ75A GGR GGR 83.3 92.1 1.0 75 1.0 12.4 (+)SMCJ78A GGT GGT 86.7 95.8 1.0 78 1.0 11.9 (+)SMCJ85A GGV GGV 94.4 104 1.0 85 1.0 10.9 (+)SMCJ90A GGZ GGZ 111 1.0 100 1.0 10.3 (+)SMCJ100A GGZ GGZ 111 123 1.0 100 1.0 9.3 (+)SMCJ120A GHE GHE 122 135 1.0 110 1.0 8.5										87.1
(+)SMCJ60A GGK GGK 66.7 73.7 1.0 60 1.0 15.5 10 (+)SMCJ64A GGM GGM GGM 71.1 78.6 1.0 64 1.0 14.6 (+)SMCJ70A GGP GGP 77.8 86.0 1.0 70 1.0 13.3 (+)SMCJ75A GGR GGR 83.3 92.1 1.0 75 1.0 12.4 (+)SMCJ78A GGT GGT 86.7 95.8 1.0 78 1.0 11.9 (+)SMCJ85A GGV GGV 94.4 104 1.0 85 1.0 10.9 (+)SMCJ90A GGZ GGZ 111 1.0 90 1.0 10.3 (+)SMCJ100A GGZ GGZ 111 123 1.0 100 1.0 9.3 (+)SMCJ120A GHE GHE 122 135 1.0 110 1.0 8.5 (+)SMCJ120A GHG GHG </td <td>(+)SMCJ58A</td> <td>GGG</td> <td>GGG</td> <td>64.4</td> <td></td> <td>1.0</td> <td>58</td> <td>1.0</td> <td>16.0</td> <td>93.6</td>	(+)SMCJ58A	GGG	GGG	64.4		1.0	58	1.0	16.0	93.6
(+)SMCJ64A GGM GGM 71.1 78.6 1.0 64 1.0 14.6 (+)SMCJ70A GGP GGP 77.8 86.0 1.0 70 1.0 13.3 (+)SMCJ75A GGR GGR 83.3 92.1 1.0 75 1.0 12.4 (+)SMCJ78A GGT GGT 86.7 95.8 1.0 78 1.0 11.9 (+)SMCJ85A GGV GGV 94.4 104 1.0 85 1.0 10.9 (+)SMCJ90A GGZ GGZ 111 1.0 90 1.0 10.3 (+)SMCJ100A GGZ GGZ 111 123 1.0 100 1.0 9.3 (+)SMCJ110A GHE GHE 122 135 1.0 110 1.0 8.5 (+)SMCJ120A GHG GHG 133 147 1.0 120 1.0 7.8										96.8
(+)SMCJ70A GGP GGP 77.8 86.0 1.0 70 1.0 13.3 (+)SMCJ75A GGR GGR 83.3 92.1 1.0 75 1.0 12.4 (+)SMCJ78A GGT GGT 86.7 95.8 1.0 78 1.0 11.9 (+)SMCJ85A GGV GGV 94.4 104 1.0 85 1.0 10.9 (+)SMCJ90A GGX GGX 100 111 1.0 90 1.0 10.3 (+)SMCJ100A GGZ GGZ 111 123 1.0 100 1.0 9.3 (+)SMCJ10A GHE GHE 122 135 1.0 110 1.0 8.5 (+)SMCJ120A GHG GHG 133 147 1.0 120 1.0 7.8							64			103
(+)SMCJ75A GGR GGR 83.3 92.1 1.0 75 1.0 12.4 (+)SMCJ78A GGT GGT 86.7 95.8 1.0 78 1.0 11.9 (+)SMCJ85A GGV GGV 94.4 104 1.0 85 1.0 10.9 (+)SMCJ90A GGX GGX 100 111 1.0 90 1.0 10.3 (+)SMCJ100A GGZ GGZ 111 123 1.0 100 1.0 9.3 (+)SMCJ110A GHE GHE 122 135 1.0 110 1.0 8.5 (+)SMCJ120A GHG GHG 133 147 1.0 120 1.0 7.8							-			113
(+)SMCJ78A GGT GGT 86.7 95.8 1.0 78 1.0 11.9 (+)SMCJ85A GGV GGV 94.4 104 1.0 85 1.0 10.9 (+)SMCJ90A GGX GGX 100 111 1.0 90 1.0 10.3 (+)SMCJ100A GGZ GGZ 111 123 1.0 100 1.0 9.3 (+)SMCJ110A GHE GHE 122 135 1.0 110 1.0 8.5 (+)SMCJ120A GHG GHG 133 147 1.0 120 1.0 7.8										121
(+)SMCJ85A GGV GGV 94.4 104 1.0 85 1.0 10.9 (+)SMCJ90A GGX GGX 100 111 1.0 90 1.0 10.3 (+)SMCJ100A GGZ GGZ 111 123 1.0 100 1.0 9.3 (+)SMCJ110A GHE GHE 122 135 1.0 110 1.0 8.5 (+)SMCJ120A GHG GHG 133 147 1.0 120 1.0 7.8										126
(+)SMCJ90A GGX GGX 100 111 1.0 90 1.0 10.3 (+)SMCJ100A GGZ GGZ 111 123 1.0 100 1.0 9.3 (+)SMCJ110A GHE GHE 122 135 1.0 110 1.0 8.5 (+)SMCJ120A GHG GHG 133 147 1.0 120 1.0 7.8										137
(+)SMCJ100A GGZ GGZ 111 123 1.0 100 1.0 9.3 (+)SMCJ110A GHE GHE 122 135 1.0 110 1.0 8.5 (+)SMCJ120A GHG GHG 133 147 1.0 120 1.0 7.8										146
(+)SMCJ110A GHE GHE 122 135 1.0 110 1.0 8.5 (+)SMCJ120A GHG GHG 133 147 1.0 120 1.0 7.8										162
(+)SMCJ120A GHG GHG 133 147 1.0 120 1.0 7.8										177
										193
V#SMCJ130A (HK (HK 144 159 10 130 10 72	(+)SMCJ130A	GHK	GHK	144	159	1.0	130	1.0	7.2	209
										243
										259
										275
										328

Notes

⁽¹⁾ Pulse test: $t_p \le 50 \text{ ms}$

⁽²⁾ Surge current waveform per fig. 3 and derate per fig. 2

 $^{(3)}$ For bi-directional types having V_{WM} of 10 V and less, the I_D limit is doubled

⁽⁴⁾ All terms and symbols are consistent with ANSI/IEEE C62.35

 $^{(5)}\,$ For the bi-directional SMCJ5.0CA, the maximum $V_{BR}\,$ is 7.25 V

 $^{(6)}$ V_F = 3.5 V at I_F = 100 A (uni-directional only)

(+) Underwriters laboratory recognition for the classification of protectors (QVGQ2) under the UL standard for safety 497B and file number E136766 for both uni-directional and bi-directional devices

Revision: 24-Jan-2019

2

For technical questions within your region: <u>DiodesAmericas@vishay.com</u>, <u>DiodesAsia@vishay.com</u>, <u>DiodesEurope@vishay.com</u> THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT <u>www.vishay.com/doc?91000</u>

SMCJ5.0A thru SMCJ188CA



Vishay General Semiconductor

THERMAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise noted)						
PARAMETER	SYMBOL	VALUE	UNIT			
Typical thermal resistance, junction to ambient air ⁽¹⁾	$R_{ extsf{ heta}JA}$	75	°C/W			
Typical thermal resistance, junction to lead	$R_{ ext{ ext{ heta}JL}}$	15	C/ W			

Note

⁽¹⁾ Mounted on minimum recommended pad layout

ORDERING INFORMATION (Example)						
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
SMCJ5.0A-E3/57T	0.211	57T	850	7" diameter plastic tape and reel		
SMCJ5.0A-M3/57T	0.211	571				
SMCJ5.0A-E3/9AT	0.211	0.211 9AT		10" diameter plastic tana and real		
SMCJ5.0A-M3/9AT	0.211	941	3500	13" diameter plastic tape and reel		
SMCJ5.0AHE3_A/H ⁽¹⁾	0.011		050			
SMCJ5.0AHM3_A/H ⁽¹⁾	0.211	Н	850	7" diameter plastic tape and reel		
SMCJ5.0AHE3_A/I (1)	0.211	1	3500	13" diameter plastic tape and reel		
SMCJ5.0AHM3_A/I ⁽¹⁾	0.211	I		To diameter plastic tape and reel		

Note

(1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

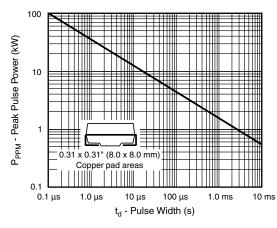


Fig. 1 - Peak Pulse Power Rating Curve

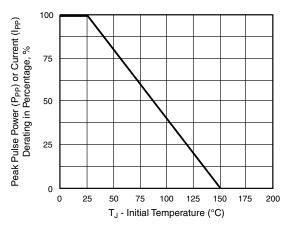


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature



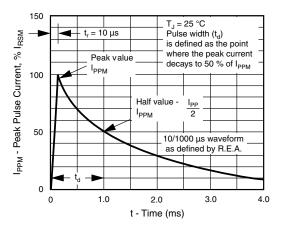


Fig. 3 - Pulse Waveform

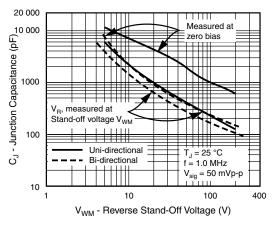
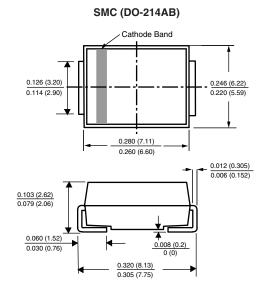
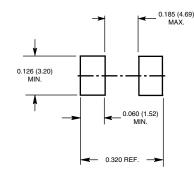


Fig. 4 - Typical Junction Capacitance Uni-Directional

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Mounting Pad Layout



SMCJ5.0A thru SMCJ188CA

Vishay General Semiconductor

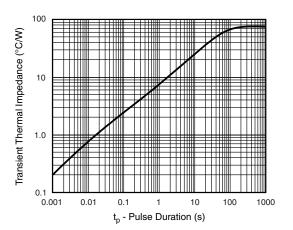


Fig. 5 - Typical Transient Thermal Impedance

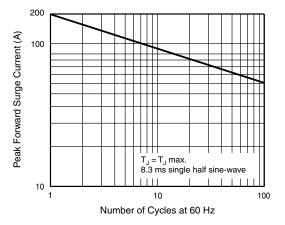


Fig. 6 - Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Use On

 Revision: 24-Jan-2019
 4
 Document Number: 88394

 For technical questions within your region: DiodesAsia@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com

 THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000



Vishay

Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Vishay manufacturer:

Other Similar products are found below :

M39006/22-0577H M39006/22-0608H/96 Y00892K49000BR13L VS-12CWQ10FNPBF M8340109M6801GGD03 VS-MBRB1545CTPBF 1KAB100E CCF5020K0FKR36 CCF5010K0FKE36 VSMF4720-GS08 001789X LTO050FR0500JTE3 LVR10R0200FE03 CRCW12063K01FKEA CRCW12063K30FKEAHP 009923A CRHV1206AF80M0FKET CS6600552K000B8768 M39003/01-2289 M39003/01-2784 CW0106K000JE73 672D826H075EK5C CWR06JC105KC CWR06NC475JC MAL202118471E3 MAL213660221E3 MAL213666102E3 MAL215058102E3 MAL219699001E3 PTF56100K00QYEK PTN0805H1502BBTR1K RCL12252K20JNEG RCWL1210R130JNEA RE65G2211C02 RH005220R0FE02 RH005330R0FC02 RH010R0500FC02 132B20103 RH0501R650FC02 RH0507R000FC02 RH1007R000FJ01 RH2503R500FE01 RH254R220FS03 RH-50-40R2-1%-C02 134D336X9075C6 132B00301 DG9426EDQ-T1-GE3 138D685X0075C2 RN55C1242FB14 RN55D3010FB14