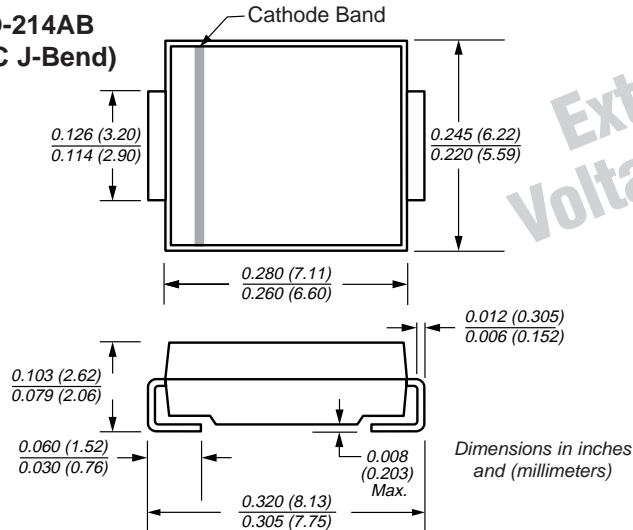




## Surface Mount TRANSZORB<sup>®</sup> Transient Voltage Suppressors

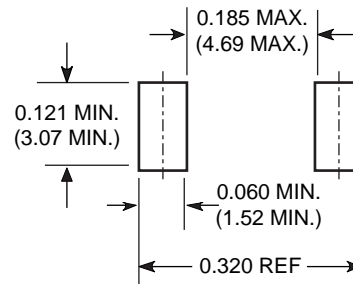
Stand-off Voltage 5.0 to 188V  
Peak Pulse Power 1500W

DO-214AB  
(SMC J-Bend)



Extended  
Voltage Range

### Mounting Pad Layout



### Features

- Underwriters Laboratory Recognition under UL standard for safety 497B: Isolated Loop Circuit Protection
- Low profile package with built-in strain relief for surface mounted applications
- Glass passivated junction
- Low incremental surge resistance, excellent clamping capability
- 1500W peak pulse power capability with a 10/1000 $\mu$ s waveform, repetition rate (duty cycle): 0.01%
- Very fast response time
- High temperature soldering guaranteed: 250°C/10 seconds at terminals

### Mechanical Data

**Case:** JEDEC DO-214AB molded plastic over passivated junction

**Terminals:** Solder plated, solderable per MIL-STD-750, Method 2026

**Polarity:** For unidirectional types the band denotes the cathode, which is positive with respect to the anode under normal TVS operation

**Weight:** 0.007 oz., 0.21 g

**Flammability:** Epoxy is rated UL 94V-0

#### Packaging Codes – Options (Antistatic):

51 – 1K per Bulk box, 10K/carton

57 – 850 per 7" plastic Reel (16mm tape), 8.5K/carton

9A – 3.5K per 13" plastic Reel (16mm tape), 35K/carton

### Devices for Bidirectional Applications

For bi-directional devices, use suffix C or CA (e.g. SMCJ10C, SMCJ10CA). Electrical characteristics apply in both directions.

### Maximum Ratings & Thermal Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Peak pulse power dissipation with a 10/1000 $\mu$ s waveform <sup>(1)(2)</sup>	PPPM	Minimum 1500	W
Peak pulse current with a 10/1000 $\mu$ s waveform <sup>(1)</sup>	IPPM	See Next Table	A
Peak forward surge current 8.3ms single half sine-wave <sup>(2)</sup> uni-directional only	IFSM	200	A
Typical thermal resistance, junction to ambient <sup>(3)</sup>	R $\theta$ JA	75	°C/W
Typical thermal resistance, junction to lead	R $\theta$ JL	15	°C/W
Operating junction 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) Mounted on 0.31 x 0.31" (8.0 x 8.0mm) copper pads to each terminal

(3) Mounted on minimum recommended pad layout

# SMCJ5.0 thru 188CA

Vishay Semiconductors  
formerly General Semiconductor



## Electrical Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.  $V_F = 3.5V$  at  $I_F = 100A$  (uni-directional only)

Device Type Modified "J" Bend Lead	Device Marking Code		Breakdown Voltage $V_{(BR)}$ at $I_T^{(1)}$ (V)		Test Current $I_T$ (mA)	Stand-off Voltage $V_{WM}$ (V)	Maximum Reverse Leakage at $V_{WM}$ $I_D$ ( $\mu A$ ) <sup>(3)</sup>	Maximum Peak Pulse Surge Current $I_{PPM}$ (A) <sup>(2)</sup>	Maximum Clamping Voltage at $I_{PPM}$ $V_C$ (V)
	UNI	BI	Min	Max					
+SMCJ5.0	GDD	GDD	6.40	7.82	10.0	5.0	1000	156.3	9.6
+SMCJ5.0A <sup>(5)</sup>	GDE	GDE	6.40	7.07	10.0	5.0	1000	163.0	9.2
+SMCJ6.0	GDF	GDF	6.67	8.15	10.0	6.0	1000	131.6	11.4
+SMCJ6.0A	GDG	GDG	6.67	7.37	10.0	6.0	1000	145.6	10.3
+SMCJ6.5	GDH	BDH	7.22	8.82	10.0	6.5	500	122.0	12.3
+SMCJ6.5A	GDK	BDK	7.22	7.98	10.0	6.5	500	133.9	11.2
+SMCJ7.0	GDL	GDL	7.78	9.51	10.0	7.0	200	112.8	13.3
+SMCJ7.0A	GDM	GDM	7.78	8.60	10.0	7.0	200	125.0	12.0
+SMCJ7.5	GDN	BDN	8.33	10.2	1.0	7.5	100	104.9	14.3
+SMCJ7.5A	GDP	BDP	8.33	9.21	1.0	7.5	100	116.3	12.9
+SMCJ8.0	GDQ	BDG	8.89	10.9	1.0	8.0	50	100.0	15.0
+SMCJ8.0A	GDR	BDR	8.89	9.83	1.0	8.0	50	110.3	13.6
+SMCJ8.5	GDS	BDS	9.44	11.5	1.0	8.5	20	94.3	15.9
+SMCJ8.5A	GDT	BDT	9.44	10.4	1.0	8.5	20	104.2	14.4
+SMCJ9.0	GDU	BDU	10.0	12.2	1.0	9.0	10	88.8	16.9
+SMCJ9.0A	GDV	BDV	10.0	11.1	1.0	9.0	10	97.4	15.4
+SMCJ10	GDW	BDW	11.1	13.6	1.0	10	5.0	79.8	18.8
+SMCJ10A	GDX	BDX	11.1	12.3	1.0	10	5.0	88.2	17.0
+SMCJ11	GDY	GDY	12.2	14.9	1.0	11	5.0	74.6	20.1
+SMCJ11A	GDZ	GDZ	12.2	13.5	1.0	11	5.0	82.4	18.2
+SMCJ12	GED	BED	13.3	16.3	1.0	12	5.0	68.2	22.0
+SMCJ12A	GEE	BEE	13.3	14.7	1.0	12	5.0	75.4	19.9
+SMCJ13	GEF	GEF	14.4	17.6	1.0	13	1.0	63.0	23.8
+SMCJ13A	GEG	GEG	14.4	15.9	1.0	13	1.0	69.8	21.5
+SMCJ14	GEH	BEH	15.6	19.1	1.0	14	1.0	58.1	25.8
+SMCJ14A	GEK	BEK	15.6	17.2	1.0	14	1.0	64.7	23.2
+SMCJ15	GEL	BEL	16.7	20.4	1.0	15	1.0	55.8	26.9
+SMCJ15A	GEM	BEM	16.7	18.5	1.0	15	1.0	61.5	24.4
+SMCJ16	GEN	GEN	17.8	21.8	1.0	16	1.0	52.1	28.8
+SMCJ16A	GEP	GEP	17.8	19.7	1.0	16	1.0	57.7	26.0
+SMCJ17	GEQ	GEQ	18.9	23.1	1.0	17	1.0	49.2	30.5
+SMCJ17A	GER	GER	18.9	20.9	1.0	17	1.0	54.3	27.6
+SMCJ18	GES	BES	20.0	24.4	1.0	18	1.0	46.6	32.2
+SMCJ18A	GET	BET	20.0	22.1	1.0	18	1.0	51.4	29.2
+SMCJ20	GEU	BEU	22.2	27.1	1.0	20	1.0	41.9	35.8
+SMCJ20A	GEV	BEV	22.2	24.5	1.0	20	1.0	46.3	32.4
+SMCJ22	GEW	BEW	24.4	29.8	1.0	22	1.0	38.1	39.4
+SMCJ22A	GEX	BEX	24.4	26.9	1.0	22	1.0	42.3	35.5
+SMCJ24	GEY	BEY	26.7	32.6	1.0	24	1.0	34.9	43.0
+SMCJ24A	GEZ	BEZ	26.7	29.5	1.0	24	1.0	38.6	38.9
+SMCJ26	GFD	BFD	28.9	35.3	1.0	26	1.0	32.2	46.6
+SMCJ26A	GFE	BFE	28.9	31.9	1.0	26	1.0	35.6	42.1
+SMCJ28	GFF	BFF	31.1	38.0	1.0	28	1.0	30.0	50.0
+SMCJ28A	GFG	BFG	31.1	34.4	1.0	28	1.0	33.0	45.4
+SMCJ30	GFH	BFH	33.3	40.7	1.0	30	1.0	28.0	53.5
+SMCJ30A	GFK	BFK	33.3	36.8	1.0	30	1.0	31.0	48.4

Notes: (1) Pulse test:  $t_p \leq 50ms$

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

(3) For bi-directional types having  $V_{WM}$  of 10 Volts 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 SMCJ/SMCJ5.0CA, the maximum  $V_{(BR)}$  is 7.25V

+ Underwriters Laboratory Recognition for the classification of protectors (QVQG2) under the UL standard for safety 497B and file number E136766 for both uni-directional and bi-directional devices



**Electrical Characteristics** Ratings at 25°C ambient temperature unless otherwise specified.  $V_F = 3.5V$  at  $I_F = 100A$  (uni-directional only)

Device Type Modified "J" Bend Lead	Device Marking Code		Breakdown Voltage $V_{(BR)}$ at $I_T^{(1)}$ (V)		Test Current $I_T$ (mA)	Stand-off Voltage $V_{WM}$ (V)	Maximum Reverse Leakage at $V_{WM}$ $I_D$ ( $\mu A$ ) <sup>(3)</sup>	Maximum Peak Pulse Surge Current $I_{PPM}$ (A) <sup>(2)</sup>	Maximum Clamping Voltage at $I_{PPM}$ $V_C$ (V)
	UNI	BI	Min	Max					
+SMCJ33	GFL	BFL	36.7	44.9	1.0	33	1.0	25.4	59.0
+SMCJ33A	GFM	BFM	36.7	40.6	1.0	33	1.0	28.1	53.3
+SMCJ36	GFN	BFN	40.0	48.9	1.0	36	1.0	23.3	64.3
+SMCJ36A	GFP	BFP	40.0	44.2	1.0	36	1.0	25.8	58.1
+SMCJ40	GFQ	BFQ	44.4	54.3	1.0	40	1.0	21.0	71.4
+SMCJ40A	GFR	BFR	44.4	49.1	1.0	40	1.0	23.3	64.5
+SMCJ43	GFS	BFS	47.8	58.4	1.0	43	1.0	19.6	76.7
+SMCJ43A	GFT	BFT	47.8	52.8	1.0	43	1.0	21.6	69.4
+SMCJ45	GFU	GFU	50.0	61.1	1.0	45	1.0	18.7	80.3
+SMCJ45A	GFV	GFV	50.0	55.3	1.0	45	1.0	20.6	72.7
+SMCJ48	GFW	GFW	53.3	65.1	1.0	48	1.0	17.5	85.5
+SMCJ48A	GFX	GFX	53.3	58.9	1.0	48	1.0	19.4	77.4
+SMCJ51	GFY	GFY	56.7	69.3	1.0	51	1.0	16.5	91.1
+SMCJ51A	GFZ	GFZ	56.7	62.7	1.0	51	1.0	18.2	82.4
+SMCJ54	GGD	GGD	60.0	73.3	1.0	54	1.0	15.6	96.3
+SMCJ54A	GGE	GGE	60.0	66.3	1.0	54	1.0	17.2	87.1
+SMCJ58	GGF	GGF	64.4	78.7	1.0	58	1.0	14.6	103
+SMCJ58A	GGG	GGG	64.4	71.2	1.0	58	1.0	16.0	93
+SMCJ60	GGH	GGH	66.7	81.5	1.0	60	1.0	14.0	107
+SMCJ60A	GGK	GGK	66.7	73.7	1.0	60	1.0	15.5	96
+SMCJ64	GGL	GGL	71.1	86.9	1.0	64	1.0	13.2	114
+SMCJ64A	GGM	GGM	71.1	78.6	1.0	64	1.0	14.6	103
+SMCJ70	GGN	GGN	77.8	95.1	1.0	70	1.0	12.0	125
+SMCJ70A	GGP	GGP	77.8	86.0	1.0	70	1.0	13.3	113
+SMCJ75	GGQ	GGQ	83.3	102	1.0	75	1.0	11.2	134
+SMCJ75A	GGR	GGR	83.3	92.1	1.0	75	1.0	12.4	121
+SMCJ78	GGS	GGS	86.7	106	1.0	78	1.0	10.8	139
+SMCJ78A	GGT	GGT	86.7	95.8	1.0	78	1.0	11.9	126
+SMCJ85	GGU	GGU	94.4	115	1.0	85	1.0	9.9	151
+SMCJ85A	GGV	GGV	94.4	104	1.0	85	1.0	10.9	137
+SMCJ90	GGW	GGW	100	122	1.0	90	1.0	9.4	160
+SMCJ90A	GGX	GGX	100	111	1.0	90	1.0	10.3	146
+SMCJ100	GGY	GGY	111	136	1.0	100	1.0	8.4	179
+SMCJ100A	GGZ	GGZ	111	123	1.0	100	1.0	9.3	162
+SMCJ110	GHD	GHD	122	149	1.0	110	1.0	7.7	196
+SMCJ110A	GHE	GHE	122	135	1.0	110	1.0	8.5	177
+SMCJ120	GHF	GHF	133	163	1.0	120	1.0	7.0	214
+SMCJ120A	GHG	GHG	133	147	1.0	120	1.0	7.8	193
+SMCJ130	GHH	GHH	144	176	1.0	130	1.0	6.5	231
+SMCJ130A	GHK	GHK	144	159	1.0	130	1.0	7.2	209
+SMCJ150	GHL	GHL	167	204	1.0	150	1.0	5.6	268
+SMCJ150A	GHM	GHM	167	185	1.0	150	1.0	6.2	243
+SMCJ160	GHN	GHN	178	218	1.0	160	1.0	5.2	287
+SMCJ160A	GHP	GHP	178	197	1.0	160	1.0	5.8	259
+SMCJ170	GHQ	GHQ	189	231	1.0	170	1.0	4.9	304
+SMCJ170A	GHR	GHR	189	209	1.0	170	1.0	5.5	275
SMCJ188	GHT	GHT	209	255	1.0	188	1.0	4.4	344
SMCJ188A	GHS	GHS	209	231	1.0	188	1.0	4.6	328

- Notes: (1) Pulse test:  $t_p \leq 50ms$   
 (2) Surge current waveform per Fig. 3 and derate per Fig. 2  
 (3) For bi-directional types having  $V_{WM}$  of 10 Volts and less, the  $I_D$  limit is doubled  
 (4) All terms and symbols are consistent with ANSI/IEEE C62.35  
 + Underwriters Laboratory Recognition for the classification of protectors (QVQG2) under the UL standard for safety 497B and file number E136766 for both uni-directional and bi-directional devices

**Ratings and Characteristic Curves** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

