

# SMBJ5.0(C)A-T to SMBJ440(C)A-T

# 600Watts

## Automotive Transient Voltage Suppressors

PROSEMI offers AEC-Q101 qualified TVS diode device is specially designed to protect sensitive electronic devices from lightning and other transient voltage induced voltage transient events.



### Features

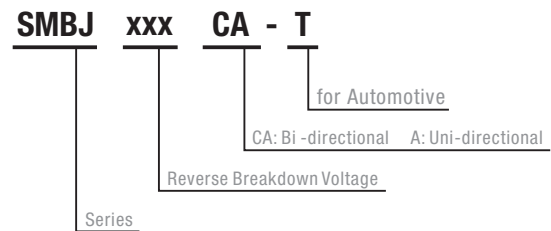
- Low profile package
- Very fast response time
- Unidirectional(A) and Bidirectional(CA) Protection
- AEC-Q101 qualified available
- Excellent Clamping Capability
- Glass Passivated Junction
- Built-in Strain relief



### Applications

- I/O Interfaces
- Power lines
- Computers & Consumer Electronics
- Automotive and Telecommunication
- Industrial Electronics

### Part Numbering System



### Absolute Maximum Rating

Rating	Symbol	Value	Units
Peak Pulse Power ( $t_p = 10/1000\mu s$ ) (see Note1,2&3)	P <sub>PPM</sub>	600	Watts
Peak pulse current (10/1000 $\mu s$ ) (see Note2&3)	I <sub>PPM</sub>	See Electrical Characteristics	A
Peak Forward surge current (see Note4&5)	I <sub>FSM</sub>	100	A
Power Dissipation on infinite heat sink T <sub>A</sub> = 50 °C (Fig5)	P <sub>D</sub>	5.0	W
Operating Junction Temperature range	T <sub>J</sub>	-55 ~ +150	°C
Typical Thermal Resistance	R <sub>θJA</sub>	100	°C/W

Note1: Peak Pulse Power Rating as Pulse Width ,perFig1.

Note2: Peak Pusle Power or Current Derated above T<sub>A</sub>=25 °C Per Fig. 2 and Non-Repetitive Current Pulse,Per Fig.3.

Note3: Mounted on 5.0x5.0mm<sup>2</sup> copper pad to each terminal.

Note4: 8.3ms Single Half Sine Wave or Equivalent Square Wave

Note5: Maximum Forward Surge Current only for Unidirectional Device per Fig6.

## Automotive Transient Voltage Suppressors

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#### Electrical Characteristics

Part Number		Marking		Reverse Stand Off Voltage	Breakdown Voltage		Test Current	Maximum Clamping Voltage	Maximum Peak Pulse Current	Maximum Reverse Leakage
Uni	Bi	Uni	Bi	$V_R$ (V)	$V_{BR}$ (V) @ $I_T$		$I_T$ (mA)	$V_C$ (V) @ $I_{PP}$	$I_{PP}$ (A)	$I_R$ ( $\mu$ A) @ $V_R$
					Min.	Max.				
SMBJ5.0A-T	SMBJ5.0CA-T	KET	AET	5.0	6.40	7.00	10	9.2	65.3	800
SMBJ6.0A-T	SMBJ6.0CA-T	KGT	AGT	6.0	6.67	7.37	10	10.3	58.3	800
SMBJ6.5A-T	SMBJ6.5CA-T	KKT	AKT	6.5	7.22	7.98	10	11.2	53.6	500
SMBJ7.0A-T	SMBJ7.0CA-T	KMT	AMT	7.0	7.78	8.60	10	12.0	50.0	200
SMBJ7.5A-T	SMBJ7.5CA-T	KPT	APT	7.5	8.33	9.21	1	12.9	46.6	100
SMBJ8.0A-T	SMBJ8.0CA-T	KRT	ART	8.0	8.89	9.83	1	13.6	44.2	50
SMBJ8.5A-T	SMBJ8.5CA-T	KTT	ATT	8.5	9.44	10.40	1	14.4	41.7	20
SMBJ9.0A-T	SMBJ9.0CA-T	KVT	AVT	9.0	10.00	11.10	1	15.4	39.0	10
SMBJ10A-T	SMBJ10CA-T	KXT	AXT	10.0	11.10	12.30	1	17.0	35.3	5
SMBJ11A-T	SMBJ11CA-T	KZT	AZT	11.0	12.20	13.50	1	18.2	33.0	1
SMBJ12A-T	SMBJ12CA-T	LET	BET	12.0	13.30	14.70	1	19.9	30.2	1
SMBJ13A-T	SMBJ13CA-T	LGT	BGT	13.0	14.40	15.90	1	21.5	28.0	1
SMBJ14A-T	SMBJ14CA-T	LKT	BKT	14.0	15.60	17.20	1	23.2	25.9	1
SMBJ15A-T	SMBJ15CA-T	LMT	BMT	15.0	16.70	18.50	1	24.4	24.6	1
SMBJ16A-T	SMBJ16CA-T	LPT	BPT	16.0	17.80	19.70	1	26.0	23.1	1
SMBJ17A-T	SMBJ17CA-T	LRT	BRT	17.0	18.90	20.90	1	27.6	21.8	1
SMBJ18A-T	SMBJ18CA-T	LTT	BTT	18.0	20.00	22.10	1	29.2	20.6	1
SMBJ20A-T	SMBJ20CA-T	LVT	BVT	20.0	22.20	24.50	1	32.4	18.6	1
SMBJ22A-T	SMBJ22CA-T	LXT	BXT	22.0	24.40	26.90	1	35.5	16.9	1
SMBJ24A-T	SMBJ24CA-T	LZT	BZT	24.0	26.70	29.50	1	38.9	15.5	1
SMBJ26A-T	SMBJ26CA-T	MET	CET	26.0	28.90	31.90	1	42.1	14.3	1
SMBJ28A-T	SMBJ28CA-T	MGT	CGT	28.0	31.10	34.40	1	45.4	13.3	1
SMBJ30A-T	SMBJ30CA-T	MKT	CKT	30.0	33.30	36.80	1	48.4	12.4	1
SMBJ33A-T	SMBJ33CA-T	MMT	CMT	33.0	36.70	40.60	1	53.3	11.3	1
SMBJ36A-T	SMBJ36CA-T	MPT	CPT	36.0	40.00	44.20	1	58.1	10.4	1
SMBJ40A-T	SMBJ40CA-T	MRT	CRT	40.0	44.40	49.10	1	64.5	9.3	1
SMBJ43A-T	SMBJ43CA-T	MTT	CTT	43.0	47.80	52.80	1	69.4	8.7	1
SMBJ45A-T	SMBJ45CA-T	MVT	CVT	45.0	50.00	55.30	1	72.7	8.3	1
SMBJ48A-T	SMBJ48CA-T	MXT	CXT	48.0	53.30	58.90	1	77.4	7.8	1
SMBJ51A-T	SMBJ51CA-T	MZT	CZT	51.0	56.70	62.70	1	82.4	7.3	1
SMBJ54A-T	SMBJ54CA-T	NET	DET	54.0	60.00	66.30	1	87.1	6.9	1
SMBJ58A-T	SMBJ58CA-T	NGT	DGT	58.0	64.40	71.20	1	93.6	6.5	1
SMBJ60A-T	SMBJ60CA-T	NKT	DKT	60.0	66.70	73.70	1	96.8	6.2	1
SMBJ64A-T	SMBJ64CA-T	NMT	DMT	64.0	71.10	78.60	1	103.0	5.9	1
SMBJ70A-T	SMBJ70CA-T	NPT	DPT	70.0	77.80	86.00	1	113.0	5.3	1

## Automotive Transient Voltage Suppressors

### SMBJ5.0(C)A-T to SMBJ440(C)A-T

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#### Electrical Characteristics (continued)

Part Number		Marking		Reverse Stand Off Voltage $V_R$ (V)	Breakdown Voltage		Test Current $I_T$ (mA)	Maximum Clamping Voltage $V_C$ (V) @ $I_{PP}$	Maximum Peak Pulse Current $I_{PP}$ (A)	Maximum Reverse Leakage $I_R$ ( $\mu$ A) @ $V_R$
Uni	Bi	Uni	Bi		$V_{BR}$ (V) @ $I_T$ Min.	Max.				
SMBJ75A-T	SMBJ75CA-T	NRT	DRT	75.0	83.30	92.10	1	121.0	5.0	1
SMBJ78A-T	SMBJ78CA-T	NTT	DTT	78.0	86.70	95.80	1	126.0	4.8	1
SMBJ85A-T	SMBJ85CA-T	NVT	DVT	85.0	94.40	104.00	1	137.0	4.4	1
SMBJ90A-T	SMBJ90CA-T	NXT	DXT	90.0	100.00	111.00	1	146.0	4.1	1
SMBJ100A-T	SMBJ100CA-T	NZT	DZT	100.0	111.00	123.00	1	162.0	3.7	1
SMBJ110A-T	SMBJ110CA-T	PET	EET	110.0	122.00	135.00	1	177.0	3.4	1
SMBJ120A-T	SMBJ120CA-T	PGT	EGT	120.0	133.00	147.00	1	193.0	3.1	1
SMBJ130A-T	SMBJ130CA-T	PKT	EKT	130.0	144.00	159.00	1	209.0	2.9	1
SMBJ150A-T	SMBJ150CA-T	PMT	EMT	150.0	167.00	185.00	1	243.0	2.5	1
SMBJ160A-T	SMBJ160CA-T	PPT	EPT	160.0	178.00	197.00	1	259.0	2.3	1
SMBJ170A-T	SMBJ170CA-T	PRT	ERT	170.0	189.00	209.00	1	275.0	2.2	1
SMBJ180A-T	SMBJ180CA-T	PTT	ETT	180.0	201.00	222.00	1	292.0	2.1	1
SMBJ188A-T	SMBJ188CA-T	PBT	EBT	188.0	209.00	231.00	1	304.0	2.0	1
SMBJ200A-T	SMBJ200CA-T	PVT	EVT	200.0	224.00	247.00	1	324.0	1.9	1
SMBJ220A-T	SMBJ220CA-T	PXT	EXT	220.0	246.00	272.00	1	356.0	1.7	1
SMBJ250A-T	SMBJ250CA-T	PZT	EZT	250.0	279.00	309.00	1	405.0	1.5	1
SMBJ300A-T	SMBJ300CA-T	QET	FET	300.0	335.00	371.00	1	486.0	1.3	1
SMBJ350A-T	SMBJ350CA-T	QGT	FGT	350.0	391.00	432.00	1	567.0	1.1	1
SMBJ400A-T	SMBJ400CA-T	QKT	FKT	400.0	447.00	494.00	1	648.0	0.9	1
SMBJ440A-T	SMBJ440CA-T	QMT	FMT	440.0	492.00	543.00	1	713.0	0.9	1

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### Typical Characteristics

Figure 1: Peak Pulse Power Rating Curve

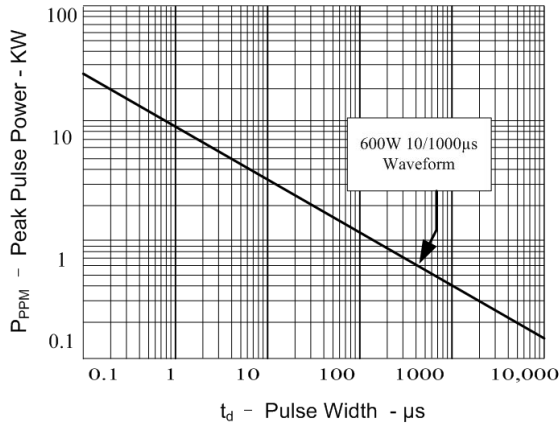


Figure 2: Pulse Derating Curve

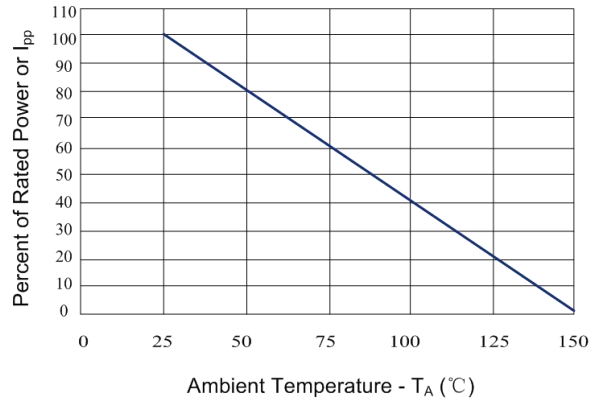


Figure 3: Pulse Waveform

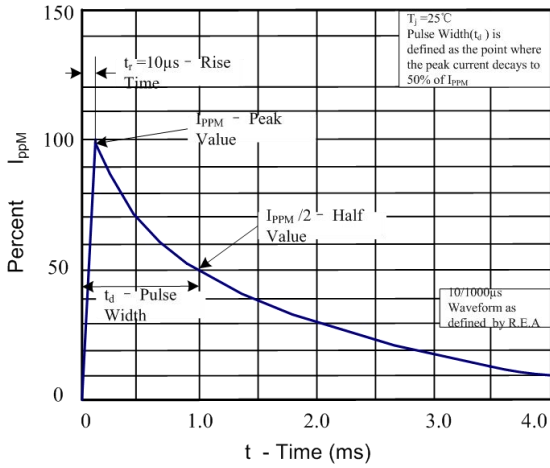


Figure 4: Typical Junction Capacitance

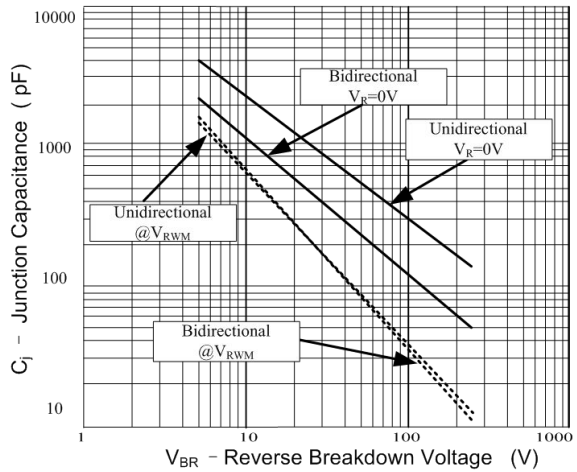


Figure 5: Steady State Power Dissipation Derating Curve

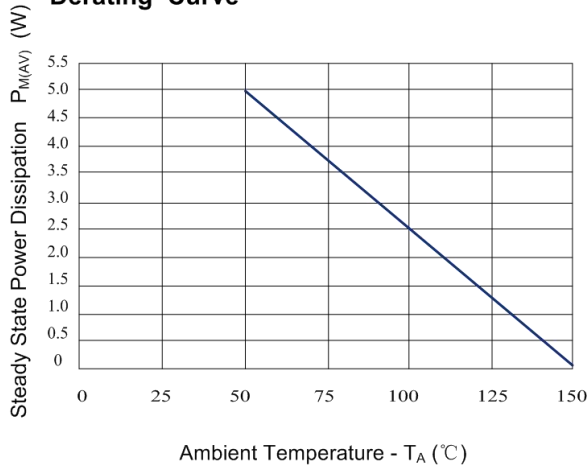
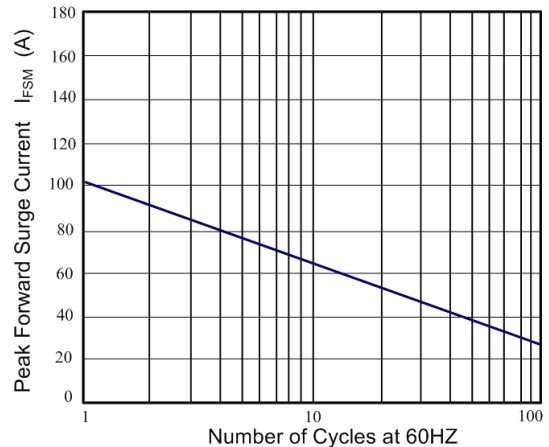


Figure 6: Maximum Non-Repetitive Forward Surge Current Only Unidirectional

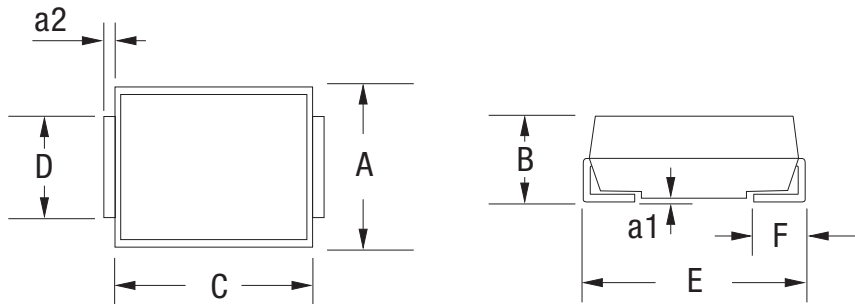


## Automotive Transient Voltage Suppressors

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Dimension (Unit: mm)



A		B		C		D		E		F		a1		a2	
Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
3.300	3.940	2.050	2.450	4.050	4.650	1.800	2.200	5.080	5.590	0.760	1.520	-	0.203	0.152	0.305

### Packaging

- Quantity: 3,000pcs
- 12mm wide tape on 330mm(13 inch) diameter reel –specification EIA Standard 481.

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