



DO-214AA PACKAGE

### APPLICATIONS

- Power Supply
- AC/DC Applications
- Telecom

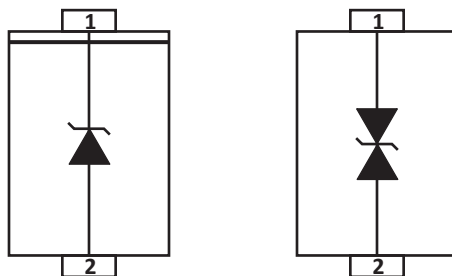
### FEATURES

- **RTCA DO-160G COMPLIANT PRODUCT**
- UL Registered
- Compatible with IEC 61000-4-2 (ESD): Level 4 - Air 15kV, Contact 8kV
- Compatible with IEC 61000-4-4 (EFT): 40A, 5/50ns
- Compatible with IEC 61000-4-5 (Surge): 8/20 $\mu$ s Waveform
- Glass Passivated Chip
- 600 Watts Peak Pulse Power per Line ( $t_p = 10/1000\mu$ s)
- Low Leakage Current
- Bidirectional and Unidirectional Configurations
- Excellent Clamping Capability
- Very Fast Response Time
- Available in Multiple Voltages
- RoHS Compliant
- REACH Compliant

### MECHANICAL CHARACTERISTICS

- Molded JEDEC DO-214AA Package
- Approximate Weight: 0.103 grams
- Lead-Free Pure-Tin Plating (Annealed)
- Solder Reflow Temperature:  
Pure-Tin - Sn, 100: 260-270°C
- 12mm Tape and Reel Per EIA Standard 481
- Terminal: Solderable per MIL-STD-750, Method 2026
- Flammability Rating UL 94V-0

### PIN CONFIGURATIONS



## TYPICAL DEVICE CHARACTERISTICS

## RTCA DO-160G COMPLIANT PRODUCT

## MAXIMUM RATINGS @ 25°C Unless Otherwise Specified

PARAMETER	SYMBOL	VALUE	UNITS
Operating Temperature	$T_J$	-55 to 150	°C
Storage Temperature	$T_{STG}$	-55 to 150	°C
Peak Pulse Power (tp = 10/1000µs) - See Figure 1 and Note 1	$P_{PP}$	600	Watts
Power Dissipation on Infinite Heatsink at $T_L = 75^\circ\text{C}$	$P_D$	5.0	Watts
Peak Forward Surge Current, 8.3ms single half sinewave - Unidirectional Only (Note 2)	$I_{FSM}$	100	Amps
Maximum Instantaneous Forward Voltage at 50A - Unidirectional Only (Note 3)	$V_F$	3.5/5.0	V

## NOTE

1. Non-repetitive current pulse per Figure 2 and derated above  $T_A = 25^\circ\text{C}$  per Figure 3.
2. Measured on 8.3ms single half sinewave or equivalent square wave, duty cycle = 4 pulses per minute maximum.
3.  $V_F < 3.5\text{V}$ .

## ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

PART NUMBER (Notes 1-2)	DEVICE MARKING		REVERSE STAND-OFF VOLTAGE  $V_{RWM}$ VOLTS	BREAKDOWN VOLTAGE  $V_{(BR)} @ I_T$ VOLTS		TEST CURRENT  @ $I_T$ mA	MAXIMUM CLAMPING VOLTAGE (Fig. 2)  @ $I_P$ $V_C$ VOLTS	MAXIMUM REVERSE SURGE CURRENT  @ $I_{PP}$ AMPS	MAXIMUM REVERSE LEAKAGE CURRENT  @ $V_{RWM}$ $I_R$ µA
	UNI	BI		MIN	MAX				
SMBJ5.0A	KE	AE	5.0	6.40	7.00	10	9.2	65.2	800
SMBJ6.0A	KG	AG	6.0	6.67	7.37	10	10.3	58.3	800
SMBJ6.5A	KK	AK	6.5	7.22	7.98	10	11.2	53.6	500
SMBJ7.0A	KM	AM	7.0	7.78	8.60	10	12.0	50.0	200
SMBJ7.5A	KP	AP	7.5	8.33	9.21	1	12.9	46.5	100
SMBJ8.0A	KR	AR	8.0	8.89	9.83	1	13.6	44.1	50
SMBJ8.5A	KT	AT	8.5	9.44	10.40	1	14.4	41.7	10
SMBJ9.0A	KV	AV	9.0	10.00	11.10	1	15.4	39.0	5
SMBJ10A	KX	AX	10.0	11.10	12.30	1	17.0	35.3	5
SMBJ11A	KZ	AZ	11.0	12.20	13.50	1	18.2	33.0	1
SMBJ12A	LE	BE	12.0	13.30	14.70	1	19.9	30.2	1
SMBJ13A	LG	BG	13.0	14.40	15.90	1	21.5	27.9	1
SMBJ14A	LK	BK	14.0	15.60	17.20	1	23.2	25.9	1
SMBJ15A	LM	BM	15.0	16.70	18.50	1	24.4	24.6	1
SMBJ16A	LP	BP	16.0	17.80	19.70	1	26.0	23.1	1
SMBJ17A	LR	BR	17.0	18.90	20.90	1	27.6	21.7	1
SMBJ18A	LT	BT	18.0	20.00	22.10	1	29.2	20.6	1
SMBJ19A	LB	BB	19.0	21.10	23.30	1	30.8	19.5	1
SMBJ20A	LV	BV	20.0	22.20	24.50	1	32.4	18.5	1
SMBJ22A	LX	BX	22.0	24.40	26.90	1	35.5	16.9	1
SMBJ24A	LZ	BZ	24.0	26.70	29.50	1	38.9	15.4	1

## TYPICAL DEVICE CHARACTERISTICS

## RTCA DO-160G COMPLIANT PRODUCT

## ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

PART NUMBER (Notes 1-2)	DEVICE MARKING		REVERSE STAND-OFF VOLTAGE  $V_{RWM}$ VOLTS	BREAKDOWN VOLTAGE  $V_{(BR)} @ I_T$ VOLTS		TEST CURRENT  @ $I_T$ mA	MAXIMUM CLAMPING VOLTAGE (Fig. 2)  @ $I_p$ $V_c$ VOLTS	MAXIMUM REVERSE SURGE CURRENT  @ $I_{PP}$ AMPS	MAXIMUM REVERSE LEAKAGE CURRENT  @ $V_{RWM}$ $I_R$ $\mu A$
	UNI	BI		MIN	MAX				
	SMBJ26A	ME	CE	26.0	28.90	31.90	1	42.1	14.3
SMBJ28A	MG	CG	28.0	31.10	34.40	1	45.4	13.2	1
SMBJ30A	MK	CK	30.0	33.30	36.80	1	48.4	12.4	1
SMBJ33A	MM	CM	33.0	36.70	40.60	1	53.3	11.3	1
SMBJ36A	MP	CP	36.0	40.00	44.20	1	58.17	10.3	1
SMBJ40A	MR	CR	40.0	44.40	49.10	1	64.5	9.3	1
SMBJ43A	MT	CT	43.0	47.80	52.80	1	69.4	8.7	1
SMBJ45A	MV	CV	45.0	50.00	55.30	1	72.7	8.3	1
SMBJ48A	MX	CX	48.0	53.30	58.90	1	77.4	7.8	1
SMBJ51A	MZ	CZ	51.0	56.70	62.70	1	82.4	7.3	1
SMBJ54A	NE	DE	54.0	60.00	66.30	1	87.1	6.9	1
SMBJ58A	NG	DG	58.0	64.40	71.20	1	93.6	6.4	1
SMBJ60A	NK	DK	60.0	66.70	73.70	1	96.8	6.2	1
SMBJ64A	NM	DM	64.0	71.10	78.60	1	103.0	5.8	1
SMBJ70A	NP	DP	70.0	77.80	86.00	1	113.0	5.3	1
SMBJ75A	NR	DR	75.0	83.30	92.10	1	121.0	5.0	1
SMBJ78A	NT	DT	78.0	86.70	95.80	1	126.0	4.8	1
SMBJ80A	NB	DB	80.0	88.80	97.60	1	129.6	4.6	1
SMBJ85A	NV	DV	85.0	94.40	104.00	1	137.0	4.4	1
SMBJ90A	NX	DX	90.0	100.00	111.00	1	146.0	4.1	1
SMBJ100A	NZ	DZ	100.0	111.00	123.00	1	162.0	3.7	1
SMBJ110A	PE	EE	110.0	122.00	135.00	1	177.0	3.4	1
SMBJ120A	PG	EG	120.0	133.00	147.00	1	193.0	3.1	1
SMBJ130A	PK	EK	130.0	144.00	159.00	1	209.0	2.9	1
SMBJ140A	PB	EB	140.0	155.00	171.00	1	226.8	2.7	1
SMBJ150A	PM	EM	150.0	167.00	185.00	1	243.0	2.5	1
SMBJ154A	PC	EC	154.0	171.00	189.00	1	246.0	2.4	0.2
SMBJ160A	PP	EP	160.0	178.00	197.00	1	259.0	2.3	1
SMBJ170A	PR	ER	170.0	189.00	209.00	1	275.0	2.2	1
SMBJ180A	PT	ET	180.0	200.00	220.00	1	291.6	2.1	1
SMBJ190A	PV	EV	190.0	211.00	232.00	1	307.8	2.0	1
SMBJ200A	PW	EW	200.0	224.00	247.00	1	324.0	1.9	1
SMBJ220A	PX	EX	220.0	246.00	272.00	1	356.0	1.7	1
SMBJ250A	PZ	EZ	250.0	279.00	309.00	1	405.0	1.5	1

## TYPICAL DEVICE CHARACTERISTICS

## RTCA DO-160G COMPLIANT PRODUCT

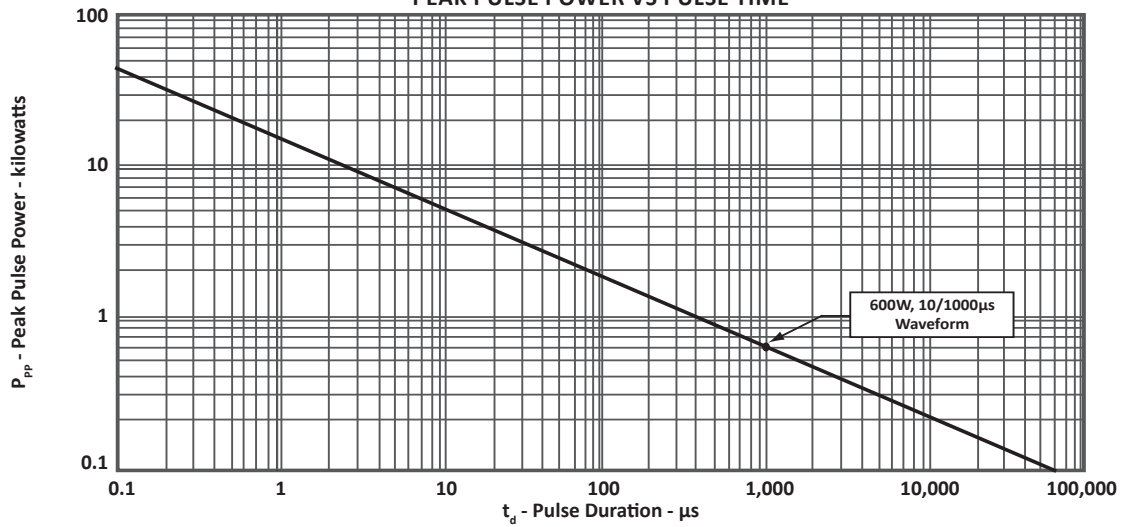
## ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

PART NUMBER (Notes 1-2)	DEVICE MARKING		REVERSE STAND-OFF VOLTAGE  $V_{RWM}$ VOLTS	BREAKDOWN VOLTAGE  $V_{(BR)} @ I_T$ VOLTS		TEST CURRENT  @ $I_T$ mA	MAXIMUM CLAMPING VOLTAGE (Fig. 2)  @ $I_P$ $V_C$ VOLTS	MAXIMUM REVERSE SURGE CURRENT  @ $I_{PP}$ AMPS	MAXIMUM REVERSE LEAKAGE CURRENT  @ $V_{RWM}$ $I_R$ $\mu A$
	UNI	BI		MIN	MAX				
	SMBJ300A	QE		FE	300.0				
SMBJ350A	QG	FG	350.0	391.00	432.00	1	567.0	1.1	1
SMBJ400A	QK	FK	400.0	447.00	494.00	1	648.0	0.9	1
SMBJ440A	QM	FM	440.0	492.00	543.00	1	713.0	0.8	1
SMBJ480A	QN	FN	480.0	537.0	593.0	1	779.0	0.77	1

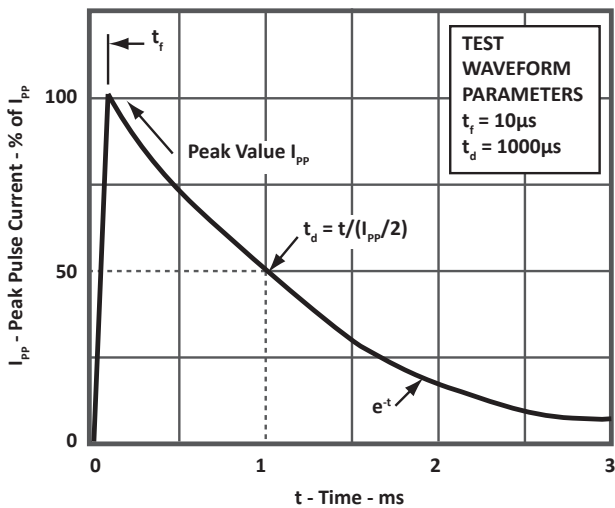
**NOTE**

- Suffix 'A' denotes 5% tolerance.
- Add suffix 'CA' after part number to specify a bidirectional device.

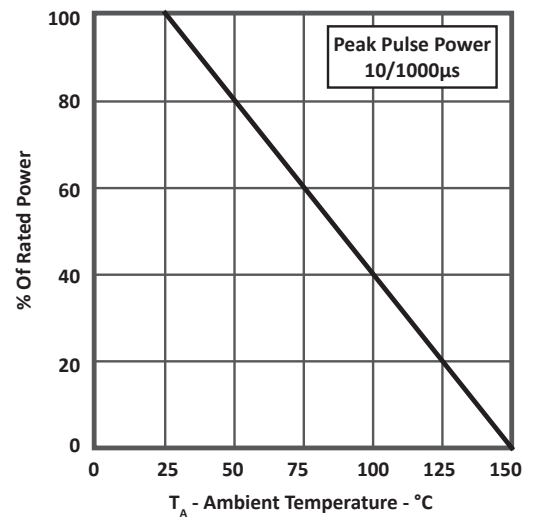
**FIGURE 1**  
PEAK PULSE POWER VS PULSE TIME



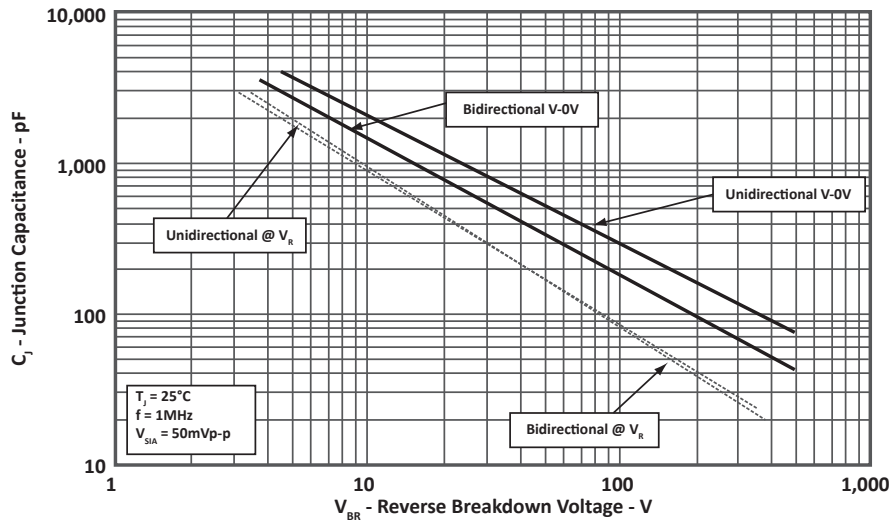
**FIGURE 2**  
PULSE WAVEFORM



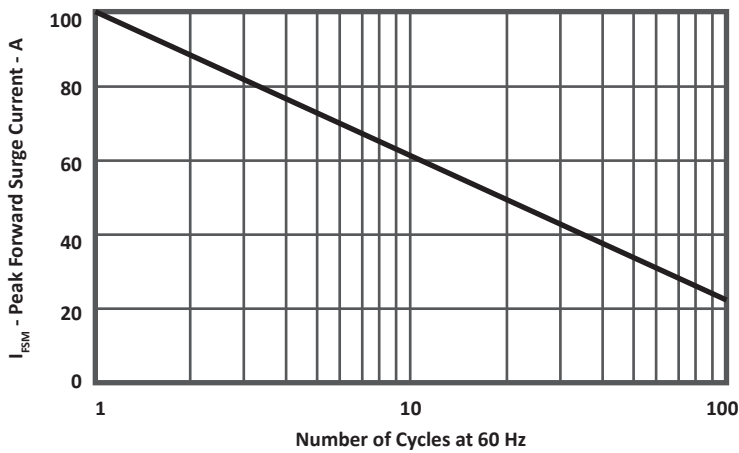
**FIGURE 3**  
POWER DERATING CURVE



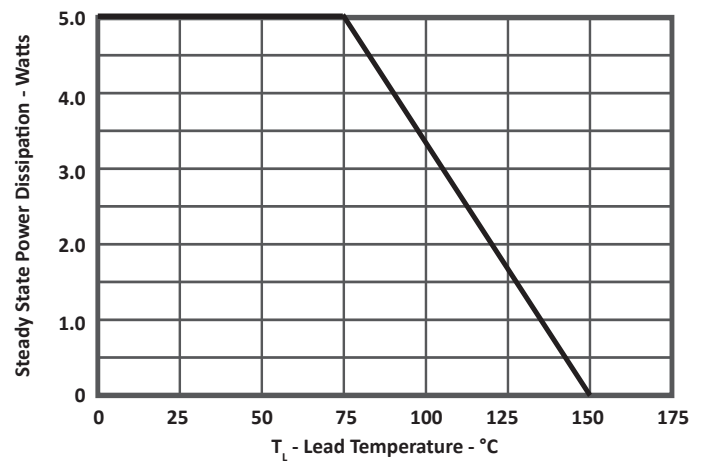
**FIGURE 4**  
TYPICAL JUNCTION CAPACITANCE



**FIGURE 5**  
MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT



**FIGURE 6**  
STEADY STATE POWER DERATING CURVE



## DO-214AA PACKAGE INFORMATION

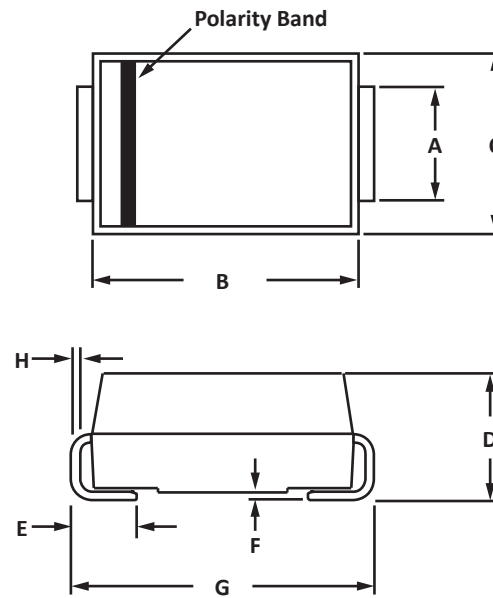
## RTCA DO-160G COMPLIANT PRODUCT

## OUTLINE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.96	2.20	0.077	0.087
B	4.35	4.85	0.171	0.191
C	3.30	3.94	0.130	0.155
D	2.13	2.44	0.084	0.096
E	0.75	1.52	0.030	0.060
F	0.02	0.20	0.001	0.008
G	5.10	5.50	0.201	0.216
H	0.15	0.30	0.006	0.012

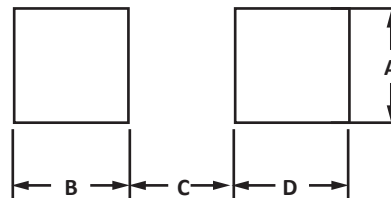
## NOTES

1. Dimensions are exclusive of mold flash and metal burrs.



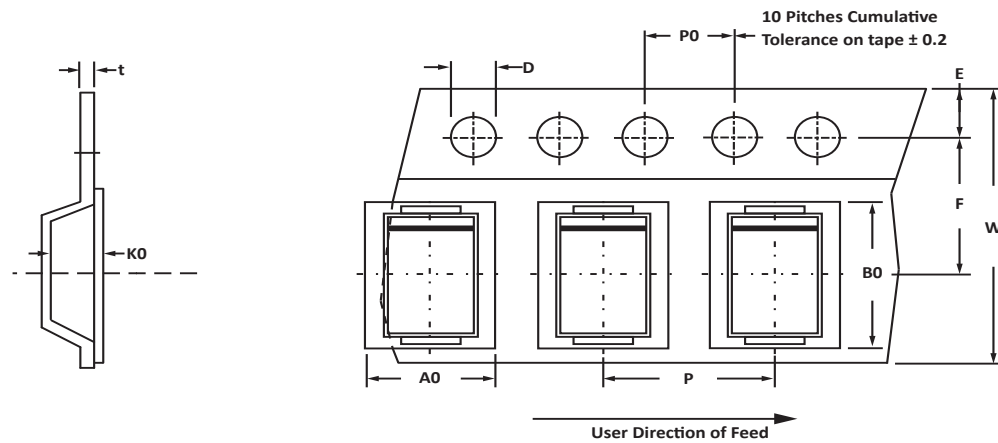
## PAD LAYOUT DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.03	-	0.080	-
B	1.91	-	0.075	-
C	-	2.54	-	1.00
D	1.91	-	0.075	-



## TAPE AND REEL

## RTCA DO-160G COMPLIANT PRODUCT



## SPECIFICATIONS

REEL DIA.	TAPE WIDTH	A0	B0	K0	D	E	F	W	P0	P	tmax
330mm (13")	12mm	3.67 ± 0.10	5.69 ± 0.10	2.67 ± 0.10	1.55 ± 0.10	1.75 ± 0.10	5.5 ± 0.05	12.00 ± 0.30	4.00 ± 0.10	8.00 ± 0.10	0.4

## NOTES

- Dimensions are in millimeters.
- Surface mount product is taped and reeled in accordance with EIA-481.
- Marking on Part - marking code (see page 2), date code, logo and cathode defined by polarity band.

## ORDERING INFORMATION

BASE PART NUMBER (Voltage = xx)	LEADFREE SUFFIX	TAPE SUFFIX	QTY/REEL	REEL SIZE	TUBE QTY
SMBJxxA	N/A	-T13	3,000	13"	N/A
SMBJxxCA	N/A	-T13	3,000	13"	N/A

This device is only available in a Lead-Free configuration.



**COMPANY INFORMATION****RTCA DO-160G COMPLIANT PRODUCT****COMPANY PROFILE**

In business more than 30 years, ProTek Devices™ is a privately held semiconductor company. The company offers a product line of overvoltage protection that include Transient Voltage Suppressor (TVS) Arrays, Steering Diode Array Hybrids, High-power Components and Modules, as well as Steering Diodes, EMI Filter/TVS Arrays and Thyristor Surge Suppressors. These components deliver circuit protection in electronic systems from numerous overvoltage events. They include lightning; electrostatic discharge (ESD); nuclear electromagnetic pulses (NEMP); inductive switching; and electromagnetic interference (EMI) / radio frequency interference (RFI). ProTek Devices is an ISO 9001 certified company.

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