



### APPLICATIONS

- Power Supply
- AC/DC Applications
- Telecom

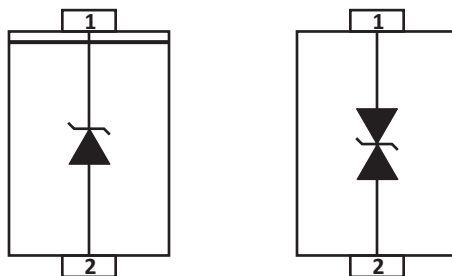
### FEATURES

- **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.  $V_F < 3.5V$ .

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

PART NUMBER (Notes 1-3)	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				
SMBJ5.0	KD	AD	5.0	6.40	7.30	10	9.6	62.5	800
SMBJ5.0A	KE	AE	5.0	6.40	7.00	10	9.2	65.2	800
SMBJ6.0	KF	AF	6.0	6.67	8.15	10	11.4	52.6	800
SMBJ6.0A	KG	AG	6.0	6.67	7.37	10	10.3	58.3	800
SMBJ6.5	KH	AH	6.5	7.22	8.82	10	12.3	48.8	500
SMBJ6.5A	KK	AK	6.5	7.22	7.98	10	11.2	53.6	500
SMBJ7.0	KL	AL	7.0	7.78	9.51	10	13.3	45.1	200
SMBJ7.0A	KM	AM	7.0	7.78	8.60	10	12.0	50.0	200
SMBJ7.5	KN	AN	7.5	8.33	10.20	1	14.3	42.0	100
SMBJ7.5A	KP	AP	7.5	8.33	9.21	1	12.9	46.5	100
SMBJ8.0	KQ	AQ	8.0	8.89	10.90	1	15.0	40.0	50
SMBJ8.0A	KR	AR	8.0	8.89	9.83	1	13.6	44.1	50
SMBJ8.5	KS	AS	8.5	9.44	11.50	1	15.9	37.7	10
SMBJ8.5A	KT	AT	8.5	9.44	10.40	1	14.4	41.7	10
SMBJ9.0	KU	AU	9.0	10.00	12.20	1	16.9	35.5	5
SMBJ9.0A	KV	AV	9.0	10.00	11.10	1	15.4	39.0	5
SMBJ10	KW	AW	10.0	11.10	13.60	1	18.8	31.9	5
SMBJ10A	KX	AX	10.0	11.10	12.30	1	17.0	35.3	5
SMBJ11	KY	AY	11.0	12.20	14.90	1	20.1	30.0	1
SMBJ11A	KZ	AZ	11.0	12.20	13.50	1	18.2	33.0	1
SMBJ12	LD	BD	12.0	13.30	16.30	1	22.0	27.2	1
SMBJ12A	LE	BE	12.0	13.30	14.70	1	19.9	30.2	1

## TYPICAL DEVICE CHARACTERISTICS

## RTCA DO-160G COMPLIANT PRODUCT

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

PART NUMBER (Notes 1-3)	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				
	SMBJ13	LF	BF	13.0	14.40	17.60	1	23.8	25.2
SMBJ13A	LG	BG	13.0	14.40	15.90	1	21.5	27.9	1
SMBJ14	LH	BH	14.0	15.60	19.10	1	25.8	23.3	1
SMBJ14A	LK	BK	14.0	15.60	17.20	1	23.2	25.9	1
SMBJ15	LL	BL	15.0	16.70	20.40	1	26.9	22.3	1
SMBJ15A	LM	BM	15.0	16.70	18.50	1	24.4	24.6	1
SMBJ16	LN	BN	16.0	17.80	21.80	1	28.8	20.8	1
SMBJ16A	LP	BP	16.0	17.80	19.70	1	26.0	23.1	1
SMBJ17	LQ	BQ	17.0	18.90	23.10	1	30.5	19.7	1
SMBJ17A	LR	BR	17.0	18.90	20.90	1	27.6	21.7	1
SMBJ18	LS	BS	18.0	20.00	24.40	1	32.2	18.6	1
SMBJ18A	LT	BT	18.0	20.00	22.10	1	29.2	20.6	1
SMBJ19	LA	BA	19.0	21.13	25.76	1	34.0	17.6	1
SMBJ19A	LB	BB	19.0	21.10	23.30	1	30.8	19.5	1
SMBJ20	LU	BU	20.0	22.20	27.10	1	35.8	16.8	1
SMBJ20A	LV	BV	20.0	22.20	24.50	1	32.4	18.5	1
SMBJ22	LW	BW	22.0	24.40	29.80	1	39.4	15.2	1
SMBJ22A	LX	BX	22.0	24.40	26.90	1	35.5	16.9	1
SMBJ24	LY	BY	24.0	26.70	32.60	1	43.0	14.0	1
SMBJ24A	LZ	BZ	24.0	26.70	29.50	1	38.9	15.4	1
SMBJ26	MD	CD	26.0	28.90	35.30	1	46.6	12.9	1
SMBJ26A	ME	CE	26.0	28.90	31.90	1	42.1	14.3	1
SMBJ28	MF	CF	28.0	31.10	38.00	1	50.0	12.0	1
SMBJ28A	MG	CG	28.0	31.10	34.40	1	45.4	13.2	1
SMBJ30	MH	CH	30.0	33.30	40.70	1	53.5	11.2	1
SMBJ30A	MK	CK	30.0	33.30	36.80	1	48.4	12.4	1
SMBJ33	ML	CL	33.0	36.70	44.90	1	59.0	10.2	1
SMBJ33A	MM	CM	33.0	36.70	40.60	1	53.3	11.3	1
SMBJ36	MN	CN	36.0	40.00	48.90	1	64.3	9.3	1
SMBJ36A	MP	CP	36.0	40.00	44.20	1	58.17	10.3	1
SMBJ40	MQ	CQ	40.0	44.40	54.30	1	71.4	8.4	1
SMBJ40A	MR	CR	40.0	44.40	49.10	1	64.5	9.3	1
SMBJ43	MS	CS	43.0	47.80	58.40	1	76.7	7.8	1
SMBJ43A	MT	CT	43.0	47.80	52.80	1	69.4	8.7	1

## TYPICAL DEVICE CHARACTERISTICS

## RTCA DO-160G COMPLIANT PRODUCT

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

PART NUMBER (Notes 1-3)	DEVICE MARKING		REVERSE STAND-OFF VOLTAGE	BREAKDOWN VOLTAGE		TEST CURRENT	MAXIMUM CLAMPING VOLTAGE (Fig. 2)	MAXIMUM REVERSE SURGE CURRENT	MAXIMUM REVERSE LEAKAGE CURRENT
				$V_{(BR)} @ I_T$ VOLTS					
	UNI	BI	$V_{RWM}$ VOLTS	MIN	MAX	@ $I_T$ mA	@ $I_P$ $V_C$ VOLTS	@ $I_{PP}$ AMPS	@ $V_{RWM}$ $I_R$ $\mu A$
SMBJ45	MU	CU	45.0	50.0	61.10	1	80.3	7.5	1
SMBJ45A	MV	CV	45.0	50.0	55.30	1	72.7	8.3	1
SMBJ48	MW	CW	48.0	53.30	65.10	1	85.5	7.0	1
SMBJ48A	MX	CX	48.0	53.30	58.90	1	77.4	7.8	1
SMBJ51	MY	CY	51.0	56.70	69.30	1	91.1	6.6	1
SMBJ51A	MZ	CZ	51.0	56.70	62.70	1	82.4	7.3	1
SMBJ54	ND	DD	54.0	60.00	73.30	1	96.3	6.2	1
SMBJ54A	NE	DE	54.0	60.00	66.30	1	87.1	6.9	1
SMBJ58	NF	DF	58.0	64.40	78.70	1	103.0	5.8	1
SMBJ58A	NG	DG	58.0	64.40	71.20	1	93.6	6.4	1
SMBJ60	NH	DH	60.0	66.70	81.50	1	107.0	5.6	1
SMBJ60A	NK	DK	60.0	66.70	73.70	1	96.8	6.2	1
SMBJ64	NL	DL	64.0	71.10	86.90	1	114.0	5.3	1
SMBJ64A	NM	DM	64.0	71.10	78.60	1	103.0	5.8	1
SMBJ70	NN	DN	70.0	77.80	95.10	1	125.0	4.8	1
SMBJ70A	NP	DP	70.0	77.80	86.00	1	113.0	5.3	1
SMBJ75	NQ	DQ	75.0	83.30	102.00	1	134.0	4.5	1
SMBJ75A	NR	DR	75.0	83.30	92.10	1	121.0	5.0	1
SMBJ78	NS	DS	78.0	86.70	106.00	1	139.0	4.3	1
SMBJ78A	NT	DT	78.0	86.70	95.80	1	126.0	4.8	1
SMBJ80	NA	DA	80.0	88.96	108.80	1	143.2	4.2	1
SMBJ80A	NB	DB	80.0	88.80	97.60	1	129.6	4.6	1
SMBJ85	NU	DU	85.0	94.40	115.00	1	151.0	4.0	1
SMBJ85A	NV	DV	85.0	94.40	104.00	1	137.0	4.4	1
SMBJ90	NW	DW	90.0	100.00	122.00	1	160.0	3.8	1
SMBJ90A	NX	DX	90.0	100.00	111.00	1	146.0	4.1	1
SMBJ100	NY	DY	100.0	111.00	136.00	1	179.0	3.4	1
SMBJ100A	NZ	DZ	100.0	111.00	123.00	1	162.0	3.7	1
SMBJ110	PD	ED	110.0	122.00	149.00	1	196.0	3.1	1
SMBJ110A	PE	EE	110.0	122.00	135.00	1	177.0	3.4	1
SMBJ120	PF	EF	120.0	133.00	163.00	1	214.0	2.8	1
SMBJ120A	PG	EG	120.0	133.00	147.00	1	193.0	3.1	1
SMBJ130	PH	EH	130.0	144.00	176.00	1	231.0	2.6	1
SMBJ130A	PK	EK	130.0	144.00	159.00	1	209.0	2.9	1

## TYPICAL DEVICE CHARACTERISTICS

## RTCA DO-160G COMPLIANT PRODUCT

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

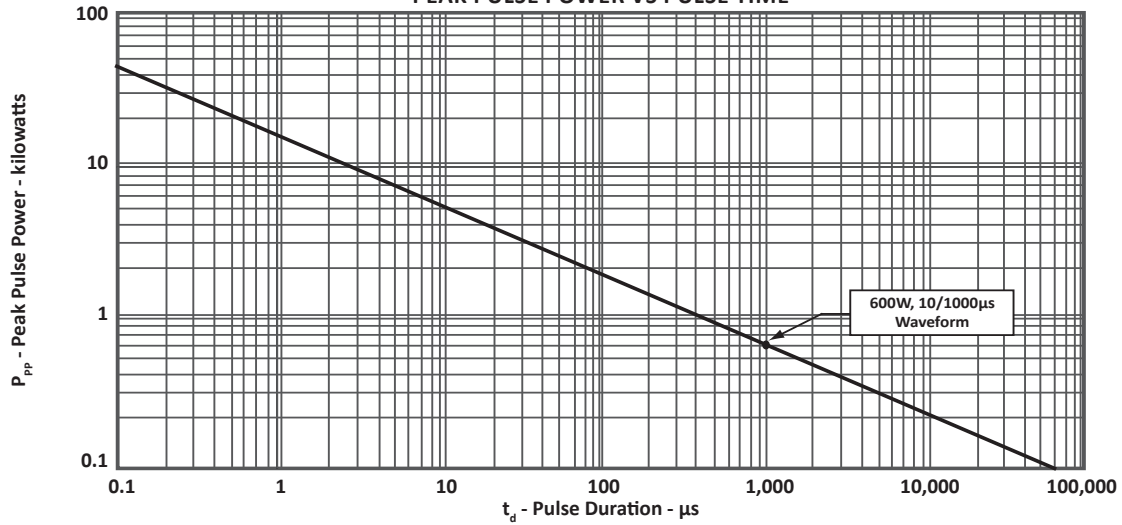
PART NUMBER (Notes 1-3)	DEVICE MARKING		REVERSE STAND-OFF VOLTAGE  $V_{RWM}$ VOLTS	BREAKDOWN VOLTAGE  $V_{(BR)} @ I_T$ VOLTS		TEST CURRENT  @ $I_T$ mA	MAXIMUM CLAMPING VOLTAGE (Fig. 2)  @ $I_P$ $V_C$ VOLTS	MAXIMUM REVERSE SURGE CURRENT  @ $I_{PP}$ AMPS	MAXIMUM REVERSE LEAKAGE CURRENT  @ $V_{RWM}$ $I_R$ $\mu A$
	UNI	BI		MIN	MAX				
	SMBJ140	PA	EA	140.0	155.68	190.40	1	250.6	2.4
SMBJ140A	PB	EB	140.0	155.00	171.00	1	226.8	2.7	1
SMBJ150	PL	EL	150.0	167.00	204.00	1	268.0	2.2	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
SMBJ160	PN	EN	160.0	178.00	218.00	1	287.0	2.1	1
SMBJ160A	PP	EP	160.0	178.00	197.00	1	259.0	2.3	1
SMBJ170	PQ	EQ	170.0	189.00	231.00	1	304.0	2.0	1
SMBJ170A	PR	ER	170.0	189.00	209.00	1	275.0	2.2	1
SMBJ180	PS	ES	180.0	200.16	244.80	1	322.2	1.9	1
SMBJ180A	PT	ET	180.0	200.00	220.00	1	291.6	2.1	1
SMBJ190	PU	EU	190.0	211.28	258.40	1	340.1	1.8	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
SMBJ300A	QE	FE	300.0	335.00	371.00	1	486.0	1.2	1
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

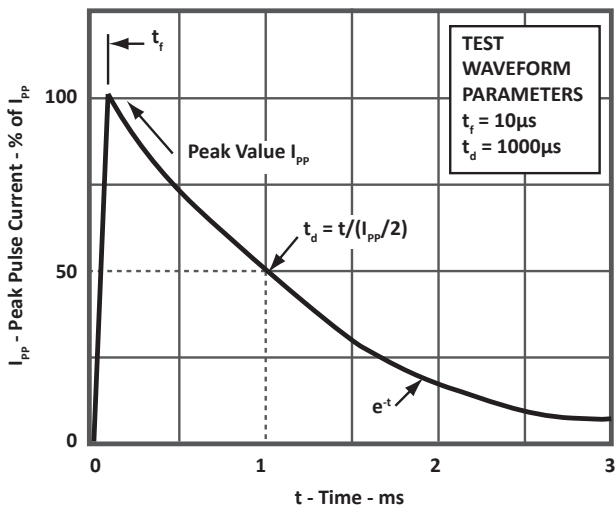
1. Suffix 'A' denotes 5% tolerance, without 'A' denotes 10% tolerance.
2. Add suffix 'C' or 'CA' after part number to specify a bidirectional device.
3. For bidirectional devices having a  $V_{RWM}$  of 10 Volts and under, the  $I_R$  limit is double.

**FIGURE 1**

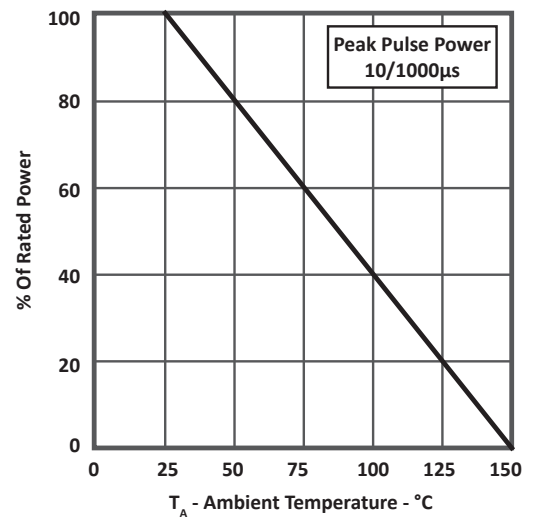
**PEAK PULSE POWER VS PULSE TIME**



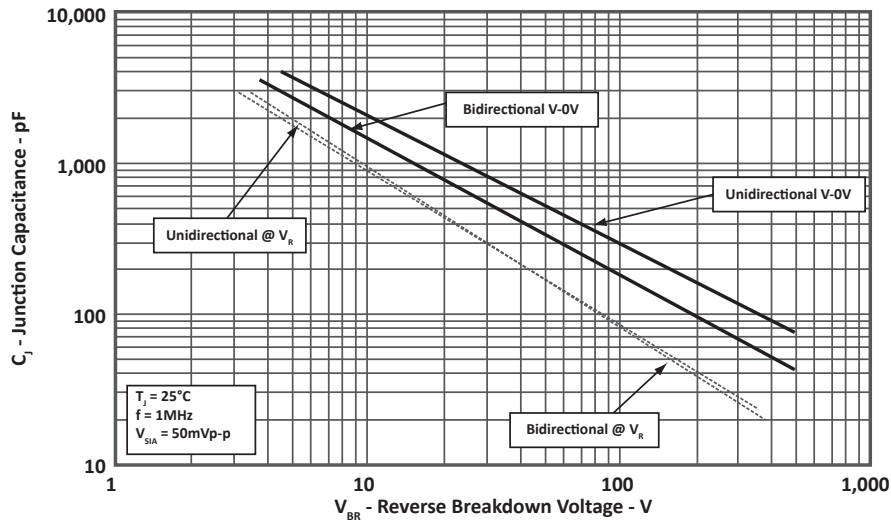
**FIGURE 2**  
**PULSE WAVEFORM**



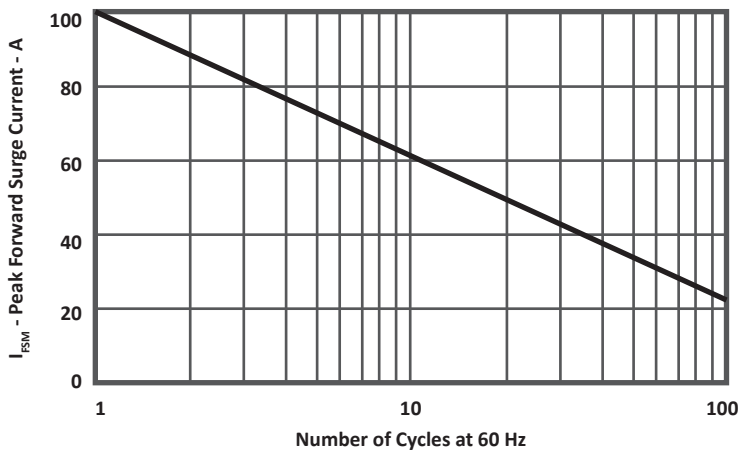
**FIGURE 3**  
**POWER DERATING CURVE**



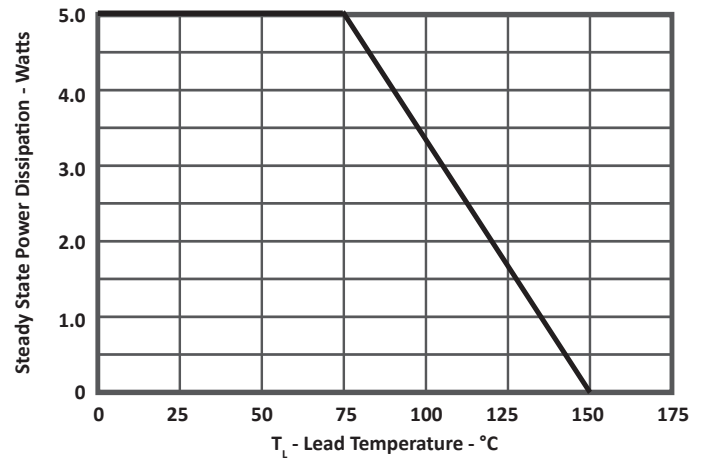
**FIGURE 4**  
TYPICAL JUNCTION CAPACITANCE



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



**FIGURE 6**  
STEADY STATE POWER DERATING CURVE



## DO-214AA PACKAGE INFORMATION

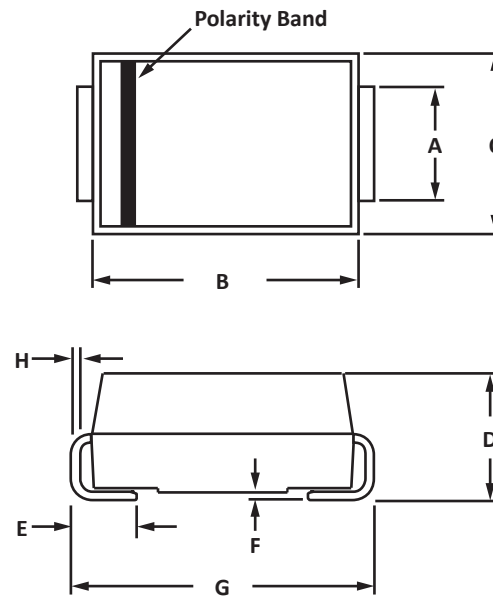
## RTCA DO-160G COMPLIANT PRODUCT

## 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

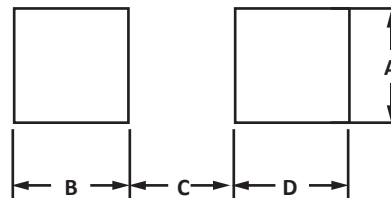
## NOTES

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



## PAD LAYOUT DIMENSIONS

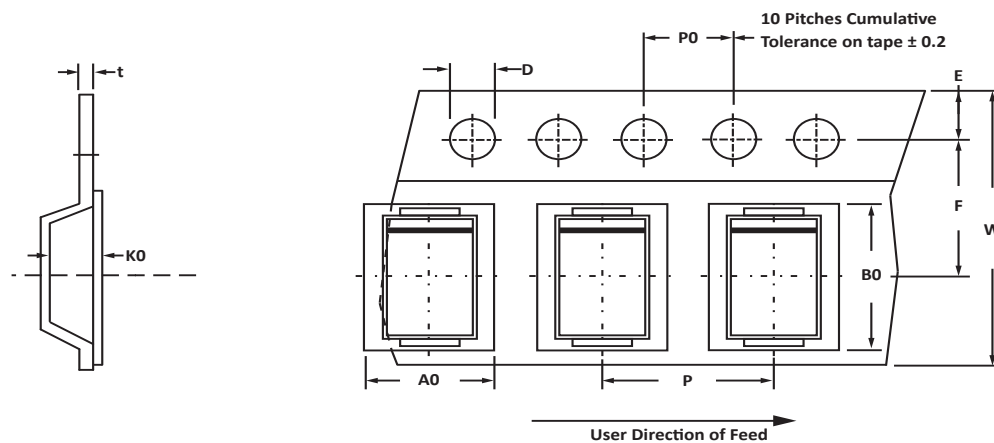
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.03	-	0.080	-
B	1.91	-	0.075	-
C	-	2.54	-	1.00
D	1.91	-	0.075	-





## 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.
- Suffix - T13 = 13" Reel - 3,000 pieces and T500 = 7" Reel - 500 pieces per 16mm tape.
- 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
SMBJxx	N/A	-T13	3,000	13"	N/A
SMBJxxA	N/A	-T13	3,000	13"	N/A
SMBJxxC	N/A	-T13	3,000	13"	N/A
SMBJxxCA	N/A	-T13	3,000	13"	N/A
SMBJxx	N/A	-T500	500	7"	N/A
SMBJxxA	N/A	-T500	500	7"	N/A
SMBJxxC	N/A	-T500	500	7"	N/A
SMBJxxCA	N/A	-T500	500	7"	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 25 years, ProTek Devices™ is a privately held semiconductor company. The company offers a product line of overvoltage protection and overcurrent protection components. These include transient voltage suppressor array (TVS arrays) avalanche breakdown diode, steering diode TVS array and electronics SMD chip fuses. These components deliver circuit protection in electronic systems from numerous overvoltage and overcurrent events. They include lightning; electrostatic discharge (ESD); nuclear electromagnetic pulses (NEMP); inductive switching; and electromagnetic interference (EMI) / radio frequency interference (RFI). ProTek Devices also offers LED wafer die for ESD protection and related high frequency products. ProTek Devices is ISO 9001:2015 certified.

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