

5000 WATT TVS COMPONENT



DO-214AB PACKAGE

APPLICATIONS

- Power Supply
- AC/DC Applications
- Telecom

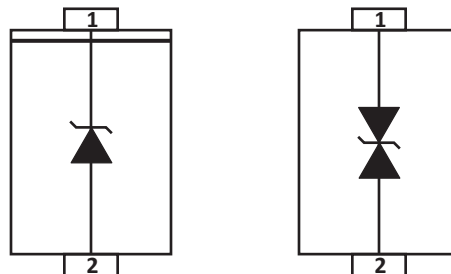
FEATURES

- UL File Recognition #E208219
- IEC Compatibility 61000-4-2 (ESD)
- IEC Compatibility 61000-4-4 (EFT)
- IEC Compatibility 61000-4-5 (Surge)
- Glass Passivated Chip
- 5000 Watts Peak Pulse Power per Line ($t_p = 10/1000\mu s$)
- 28,000 Watts Peak Pulse Power per Line ($t_p = 8/20\mu s$)
- Low Leakage Current
- Unidirectional & Bidirectional Configurations
- Available in Multiple Voltages
- Excellent Clamping Capability
- Very Fast Response Time
- RoHS Compliant
- REACH Compliant

MECHANICAL CHARACTERISTICS

- Molded JEDEC DO-214AB Package
- Approximate Weight: 0.248 grams
- Lead-Free Pure-Tin Plating (Annealed)
- Solder Reflow Temperature:
Pure-Tin - Sn, 100: 260-270°C
- 16mm 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
MAXIMUM RATINGS @ 25°C Unless Otherwise Specified

PARAMETER	SYMBOL	VALUE	UNITS
Operating Temperature	T_A	-55 to 150	°C
Storage Temperature	T_{STG}	-55 to 150	°C
Peak Pulse Power (tp = 10/1000µs) - See Figure 1 and Note 2	P_{PP}	5000	Watts
Peak Pulse Power (tp = 8/20µs) - See Figure 1 and Note 2	P_{PP}	28000	Watts
Power Dissipation on Infinite Heatsink at $T_L = 75^\circ\text{C}$	P_D	6.5	Watts
Peak Forward Surge Current, 8.3ms single half sinewave - Unidirectional Only (Note 2)	I_{FSM}	500	Amps
Peak Pulse Current (tp = 8/20µs)	I_{PP}	2500	Amps
Maximum Instantaneous Forward Voltage at 100A - Unidirectional Only	V_F	3.5	V

NOTE

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

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				
5.0SMDJ6.0CA		5DDG	6.0	6.67	7.37	50	10.3	485	2000
5.0SMDJ11	5PDW	5BDW	11.0	12.20	14.90	1	20.1	251	800
5.0SMDJ11A	5PDX	5BDX	11.0	12.20	13.50	1	18.2	278	800
5.0SMDJ12	5PDY	5BDY	12.0	13.30	16.30	1	22.0	230	800
5.0SMDJ12A	5PDZ	5BDZ	12.0	13.30	14.70	1	19.9	254	800
5.0SMDJ13	5PED	5BED	13.0	14.40	17.60	1	23.8	212	500
5.0SMDJ13A	5PEE	5BEE	13.0	14.40	15.90	1	21.5	235	500
5.0SMDJ14	5PEF	5BEF	14.0	15.60	19.10	1	25.8	196	200
5.0SMDJ14A	5PEG	5BEG	14.0	15.60	17.20	1	23.2	218	200
5.0SMDJ15	5PEH	5BEH	15.0	16.70	20.40	1	26.9	188	100
5.0SMDJ15A	5PEK	5BEK	15.0	16.70	18.50	1	24.4	207	100
5.0SMDJ16	5PEL	5BEL	16.0	17.80	21.80	1	28.8	175	50
5.0SMDJ16A	5PEM	5BEM	16.0	17.80	19.70	1	26.0	194	50
5.0SMDJ17	5PEN	5BEN	17.0	18.90	23.10	1	30.5	166	20
5.0SMDJ17A	5PEP	5BEP	17.0	18.90	20.90	1	27.6	183	20
5.0SMDJ18	5PEQ	5BEQ	18.0	20.00	24.40	1	32.2	157	10
5.0SMDJ18A	5PER	5BER	18.0	20.00	22.10	1	29.2	173	10
5.0SMDJ19	5PES	5BES	19.0	21.13	25.76	1	34.0	148	10
5.0SMDJ19A	5PET	5BET	19.0	21.10	23.30	1	30.8	164	10

TYPICAL DEVICE CHARACTERISTICS

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				
	5.0SMDJ20	5PEU	5BEU	20.0	22.20	27.10	1	35.8	141
5.0SMDJ20A	5PEV	5BEV	20.0	22.20	24.50	1	32.4	156	5
5.0SMDJ22	5PEW	5BEW	22.0	24.40	29.80	1	39.4	128	5
5.0SMDJ22A	5PEX	5BEX	22.0	24.40	26.90	1	35.5	142	5
5.0SMDJ24	5PEY	5BEY	24.0	26.70	32.60	1	43.0	117	5
5.0SMDJ24A	5PEZ	5BEZ	24.0	26.70	29.50	1	38.9	130	5
5.0SMDJ26	5PFD	5BFD	26.0	28.90	35.30	1	46.6	108	5
5.0SMDJ26A	5PFE	5BFE	26.0	28.90	31.90	1	42.1	120	5
5.0SMDJ28	5PFF	5BFF	28.0	31.10	38.00	1	50.0	101	5
5.0SMDJ28A	5PFG	5BFG	28.0	31.10	34.40	1	45.4	111	5
5.0SMDJ30	5PFH	5BFG	30.0	33.30	40.70	1	53.5	94.4	5
5.0SMDJ30A	5PFK	5BFK	30.0	33.30	36.80	1	48.4	104	5
5.0SMDJ33	5PFL	5BFL	33.0	36.70	44.90	1	59.0	85.6	5
5.0SMDJ33A	5PFM	5BFM	33.0	36.70	40.60	1	53.3	94.8	5
5.0SMDJ36	5PFN	5BFN	36.0	40.00	48.90	1	64.3	78.5	5
5.0SMDJ36A	5PFP	5BFP	36.0	40.00	44.20	1	58.1	86.9	5
5.0SMDJ40	5PFQ	5BFQ	40.0	44.40	54.30	1	71.4	70.7	5
5.0SMDJ40A	5PFR	5BFR	40.0	44.40	49.10	1	64.5	78.3	5
5.0SMDJ43	5PFS	5BFS	43.0	47.80	58.40	1	76.7	65.8	5
5.0SMDJ43A	5PFT	5BFT	43.0	47.80	52.80	1	69.4	72.8	5
5.0SMDJ45	5PFU	5BFU	45.0	50.00	61.10	1	80.3	62.9	5
5.0SMDJ45A	5PFV	5BFV	45.0	50.00	55.30	1	72.7	69.5	5
5.0SMDJ48	5PFW	5BFW	48.0	53.30	65.10	1	85.5	59.1	5
5.0SMDJ48A	5PFX	5BFX	48.0	53.30	58.90	1	77.4	65.3	5
5.0SMDJ51	5PFY	5BFY	51.0	56.70	69.30	1	91.1	55.4	5
5.0SMDJ51A	5PFZ	5BFZ	51.0	56.70	62.70	1	82.4	61.3	5
5.0SMDJ54	5PGD	5BGD	54.0	60.00	73.70	1	96.30	52.4	5
5.0SMDJ54A	5PGE	5BGE	54.0	60.00	66.30	1	87.1	58.0	5
5.0SMDJ58	5PGF	5BGF	58.0	64.40	78.70	1	103.0	49.0	5
5.0SMDJ58A	5PGG	5BGG	58.0	64.40	71.20	1	93.6	54.0	5
5.0SMDJ60	5PGH	5BGH	60.0	66.70	81.50	1	107.0	47.2	5
5.0SMDJ60A	5PGK	5BGK	60.0	66.70	73.70	1	96.8	52.2	5

TYPICAL DEVICE CHARACTERISTICS

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				
	5.0SMDJ64	5PGL	5BGL	64.0	71.10	86.90	1	114.0	44.3
5.0SMDJ64A	5PGM	5BGM	64.0	71.10	78.60	1	103.0	49.0	5
5.0SMDJ70	5PGN	5BGN	70.0	77.80	95.10	1	125.0	40.4	5
5.0SMDJ70A	5PGP	5BGP	70.0	77.80	86.00	1	113.0	44.7	5
5.0SMDJ75	5PGQ	5BGP	75.0	83.30	102.00	1	134.0	37.7	5
5.0SMDJ75A	5PGR	5BGR	75.0	83.30	92.10	1	121.0	41.7	5
5.0SMDJ78	5PGS	5BGS	78.0	86.70	106.00	1	139.0	36.3	5
5.0SMDJ78A	5PGT	5BGT	78.0	86.70	95.80	1	126.0	40.1	5
5.0SMDJ80	5PGA	5BGA	80.0	88.96	108.80	1	143.2	35.3	5
5.0SMDJ80A	5PGB	5BGB	80.0	88.80	97.60	1	129.6	39.0	5
5.0SMDJ85	5PGU	5BGU	85.0	94.40	115.00	1	151.0	33.4	5
5.0SMDJ85A	5PGV	5BGV	85.0	94.40	104.00	1	137.0	36.9	5
5.0SMDJ90	5PGW	5BGW	90.0	100.00	122.00	1	160.0	31.6	5
5.0SMDJ90A	5PGX	5BGX	90.0	100.00	111.00	1	146.0	34.6	5
5.0SMDJ100	5PGY	5BGY	100.0	111.00	136.00	1	179.0	28.2	5
5.0SMDJ100A	5PGZ	5BGZ	100.0	111.0	123.00	1	162.0	31.2	5
5.0SMDJ110	5PHD	5BHD	110.0	122.00	149.00	1	196.0	25.8	5
5.0SMDJ110A	5PHE	5BHE	110.0	122.00	135.00	1	177.0	28.5	5
5.0SMDJ120	5PHF	5BHF	120.0	133.00	163.00	1	214.0	23.6	5
5.0SMDJ120A	5PHG	5BHG	120.0	133.00	147.00	1	193.0	26.2	5
5.0SMDJ130	5PHH	5BHH	130.0	144.00	176.00	1	231.0	21.9	5
5.0SMDJ130A	5PHK	5BHK	130.0	144.00	159.00	1	209.0	24.2	5
5.0SMDJ140	5PHA	5BHA	140.0	155.68	190.40	1	250.6	20.2	5
5.0SMDJ140A	5PHB	5BHB	140.0	155.00	171.00	1	226.8	22.3	5
5.0SMDJ150	5PHL	5BHL	150.0	167.00	204.00	1	268.0	18.9	5
5.0SMDJ150A	5PHM	5BHM	150.0	167.0	185.00	1	243.0	20.8	5
5.0SMDJ160	5PHN	5BHN	160.0	178.00	218.00	1	287.0	17.6	5
5.0SMDJ160A	5PHP	5BHP	160.0	178.00	197.00	1	259.0	19.5	5
5.0SMDJ170	5PHQ	5BHQ	170.0	189.00	231.00	1	304.0	16.7	5
5.0SMDJ170A	5PHR	5BHR	170.0	189.00	209.00	1	275.0	18.4	5
5.0SMDJ180	5PHS	5BHS	180.0	200.16	244.80	1	322.2	15.7	5
5.0SMDJ180A	5PHT	5BHT	180.0	200.00	220.0	1	291.6	17.3	5

TYPICAL DEVICE CHARACTERISTICS

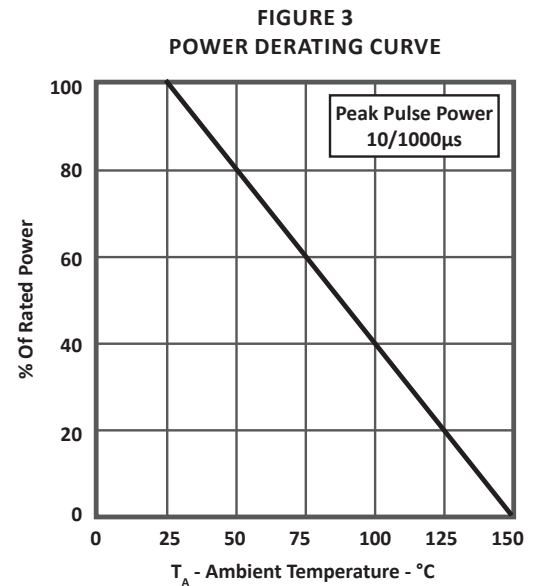
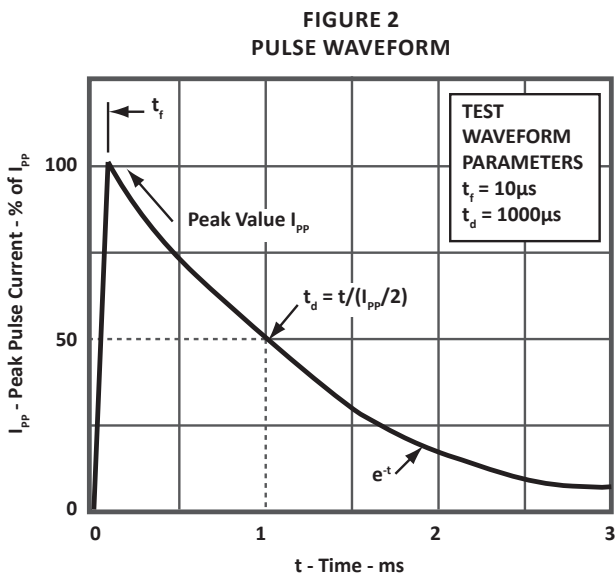
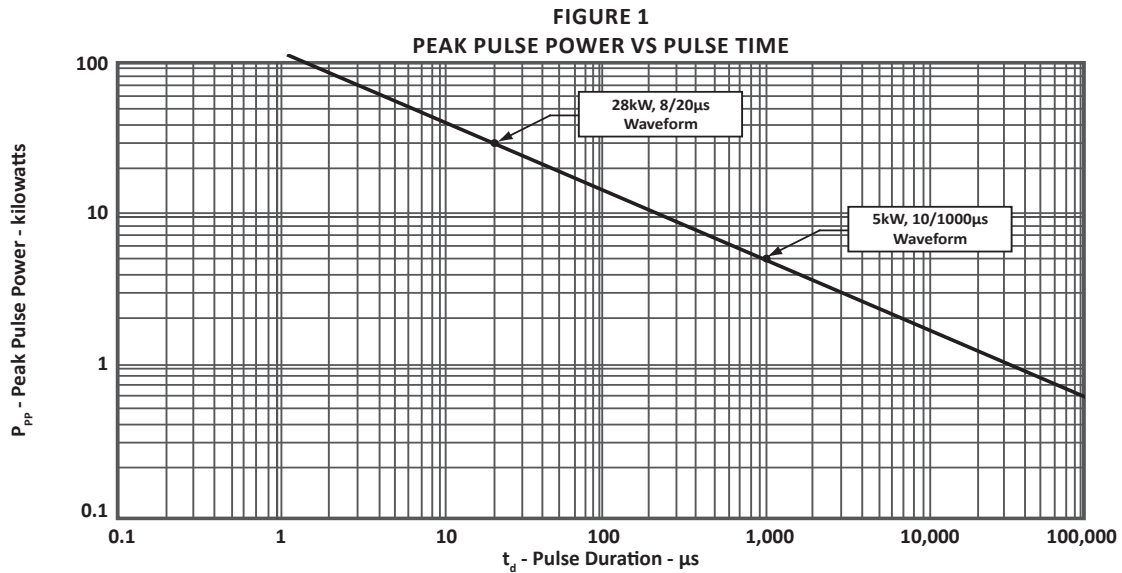
ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

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				
	5.0SMDJ190	5PHU	5BHU	190.0	221.28	258.40	1	340.1	14.9
5.0SMDJ190A	5PHV	5BHV	190.0	211.00	232.00	1	307.8	16.4	5
5.0SMDJ200A	5PHW	5BHW	200.0	224.00	247.00	1	324.0	15.4	5
5.0SMDJ220A	5PHX	5BHX	220.0	246.00	272.00	1	356.0	14.0	5
5.0SMDJ250A	5PHZ	5BHZ	250.0	279.00	309.00	1	405.0	12.4	5
5.0SMDJ300A	5PJE	5BJE	300.0	335.00	371.00	1	486.0	10.3	5
5.0SMDJ350A	5PJG	5BJG	350.0	391.00	432.00	1	567.0	8.8	5
5.0SMDJ400A	5PJK	5BJK	400.0	447.00	494.00	1	648.0	7.7	5
5.0SMDJ440A	5PJM	5BJM	440.0	492.00	543.00	1	713.0	7.0	5

NOTE

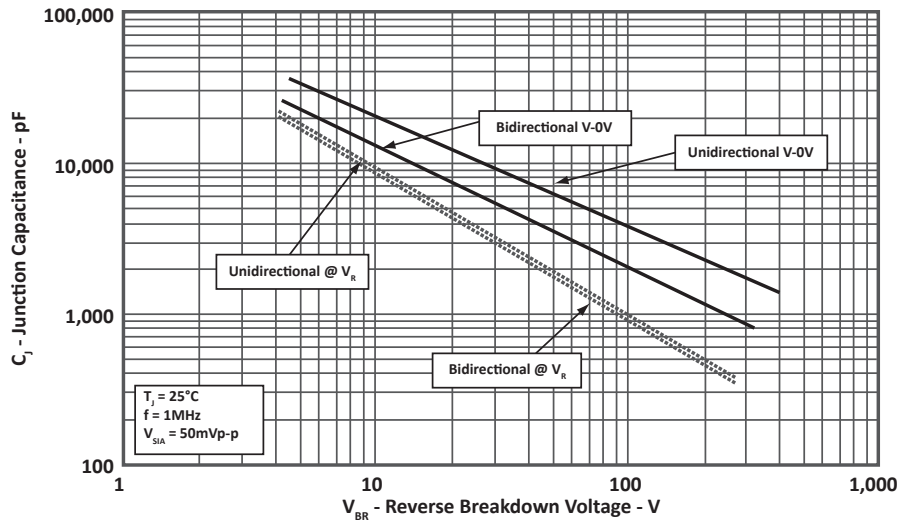
- Suffix 'A' denotes 5% tolerance, without 'A' denotes 10% tolerance.
- Add suffix 'C' or 'CA' after part number to specify a bidirectional device.
- For bidirectional devices having a V_{RWM} of 10 Volts and under, the I_R limit is double.

TYPICAL DEVICE CHARACTERISTICS

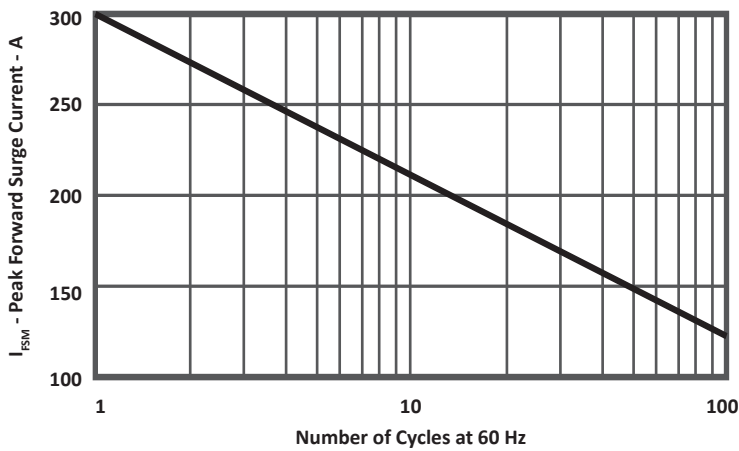


TYPICAL DEVICE CHARACTERISTICS

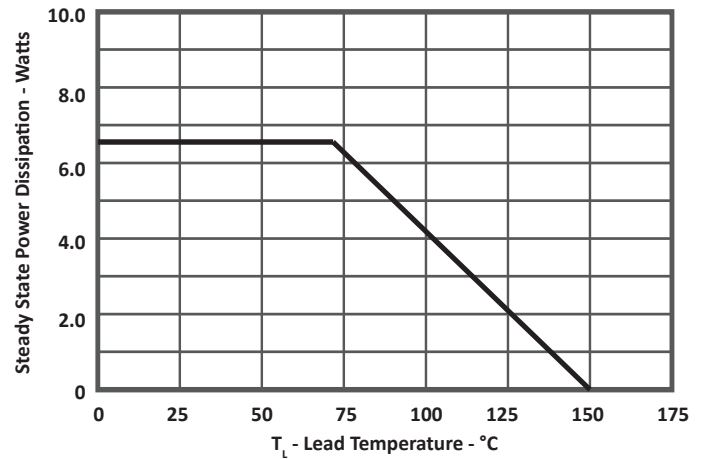
**FIGURE 4
TYPICAL JUNCTION CAPACITANCE**



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



**FIGURE 6
STEADY STATE POWER DERATING CURVE**



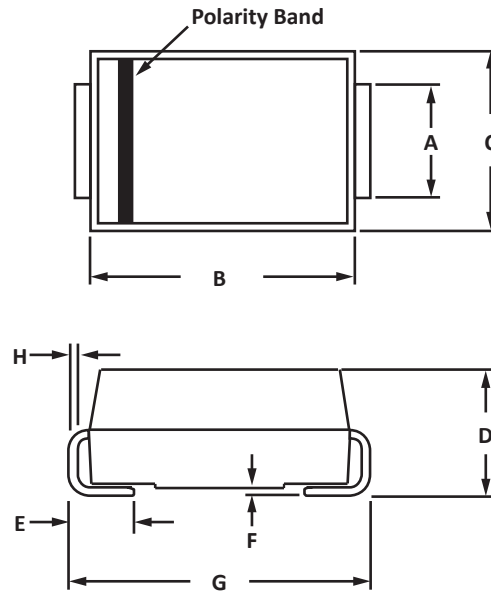
DO-214AB PACKAGE INFORMATION

OUTLINE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.86	3.16	0.114	0.126
B	6.52	7.02	0.260	0.280
C	5.52	6.15	0.220	0.245
D	1.98	2.59	0.079	0.103
E	0.75	1.51	0.030	0.060
F	0.00	0.20	0.000	0.008
G	7.64	8.02	0.305	0.320
H	0.15	0.30	0.006	0.012

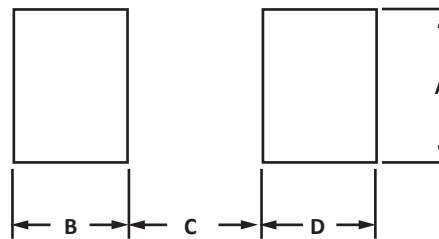
NOTES

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

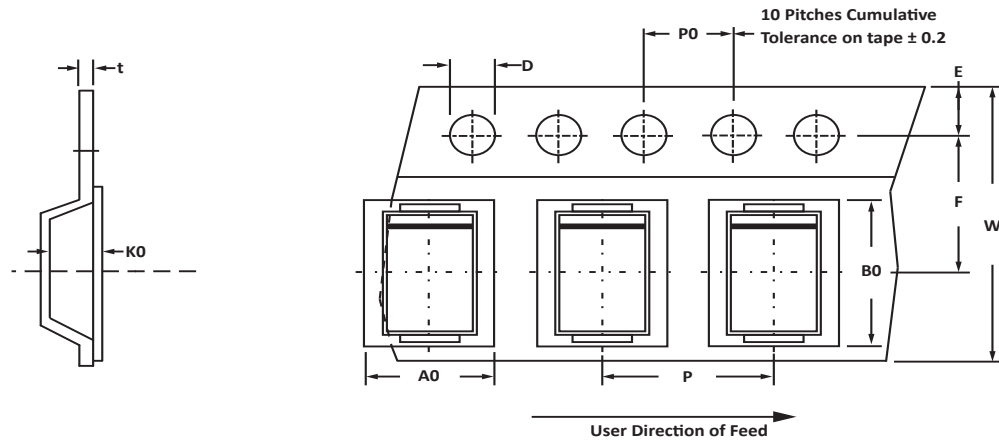


PAD LAYOUT DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	3.43	-	0.135	-
B	2.03	-	0.080	-
C	-	4.32	-	0.170
D	2.03	-	0.080	-



TAPE AND REEL



SPECIFICATIONS

REEL DIA.	TAPE WIDTH	A0	B0	K0	D	E	F	W	P0	P	tmax
330mm (13")	16mm	6.05 ± 0.10	8.31 ± 0.10	2.54 ± 0.10	1.55 ± 0.05	1.75 ± 0.10	7.5 ± 0.10	16.00 ± 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 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
5.0SMDJxx	N/A	-T13	3,000	13"	N/A
5.0SMDJxxA	N/A	-T13	3,000	13"	N/A
5.0SMDJxxC	N/A	-T13	3,000	13"	N/A
5.0SMDJxxCA	N/A	-T13	3,000	13"	N/A

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

COMPANY INFORMATION

COMPANY PROFILE

In business more than 20 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 high performance interface and linear products. They include analog switches; multiplexers; LED drivers; LED wafer die for ESD protection; audio control ICs; RF and related high frequency products.

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