

600 WATT TVS COMPONENT



DO-214AA PACKAGE

APPLICATIONS

- Power Supply
- AC/DC Applications
- Telecom

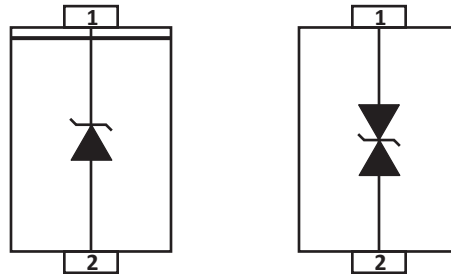
FEATURES

- 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 μ s Waveform
- Glass Passivated Chip
- 600 Watts Peak Pulse Power per Line (tp = 10/1000 μ 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
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
Typical Thermal Resistance Junction to Lead	$R_{\theta JL}$	20	°C/W
Typical Thermal Resistance Junction to Ambient	$R_{\theta JA}$	100	°C/W
Peak Pulse Power ($t_p = 10/1000\mu s$) - See Figure 1 and Note 1	P_{PP}	600	Watts
Power Dissipation on Infinite Heatsink at $T_L = 75^\circ C$	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 25A - Unidirectional Only (Note 3)	V_F	3.5/5.0	V

NOTE

1. Non-repetitive current pulse per Figure 2 and derated above $T_A = 25^\circ C$ per Figure 3.
2. Measured on 8.3ms single half sinewave or equivalent square wave, duty cycle = 4 pulses per minute maximum.
3. $V_F < 3.5V$ for devices of $V_{BR} < 200V$ and $V_F < 5.0V$ for devices of $V_{BR} > 201V$.

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				
P6SMB6.8A	6V8A	6V8C	5.8	6.46	7.14	10	10.5	57.14	1000
P6SMB12A	12A	12C	10.2	11.40	12.60	1	35.9	16.70	1
P6SMB15A	15A	15C	12.8	14.25	15.75	1	21.2	28.30	1
P6SMB18A	18A	18C	15.3	17.10	18.90	1	25.2	23.81	1
P6SMB22A	22A	22C	18.8	20.9	23.10	1	30.6	19.7	1
P6SMB30A	30A	30C	25.6	28.50	31.50	1	41.4	14.49	1
P6SMB33A	33A	33C	28.2	31.35	34.65	1	45.7	13.13	1
P6SMB36A	36A	36C	30.8	34.2	37.8	1	49.9	12.2	1
P6SMB39A	39A	39C	33.3	37.05	40.95	1	53.9	11.13	1
P6SMB43A	43A	43C	36.8	40.85	45.15	1	59.3	10.12	1
P6SMB56A	56A	56C	47.8	53.20	58.80	1	77.0	7.79	1
P6SMB70A	70A	70C	59.5	66.5	73.5	1	96.6	6.21	1
P6SMB120A	120A	120C	102.0	114.0	126.0	1	165.0	3.7	1
P6SMB150A	150A	150C	128.0	142.5	157.5	1	207.0	2.90	1
P6SMB220A	220A	220C	185.0	209.0	231.0	1	328.0	1.83	1
P6SMB250A	250A	250C	214.0	237.50	262.50	1	344.0	1.74	1
P6SMB350A	350A	350C	299.3	332.50	367.50	1	482.0	1.24	1
P6SMB400A	400A	400C	342.0	380.0	420.0	1	548.0	1.09	1
P6SMB440A	440A	440C	376.2	418.0	462.0	1	607.2	0.99	1

TYPICAL DEVICE CHARACTERISTICS
ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

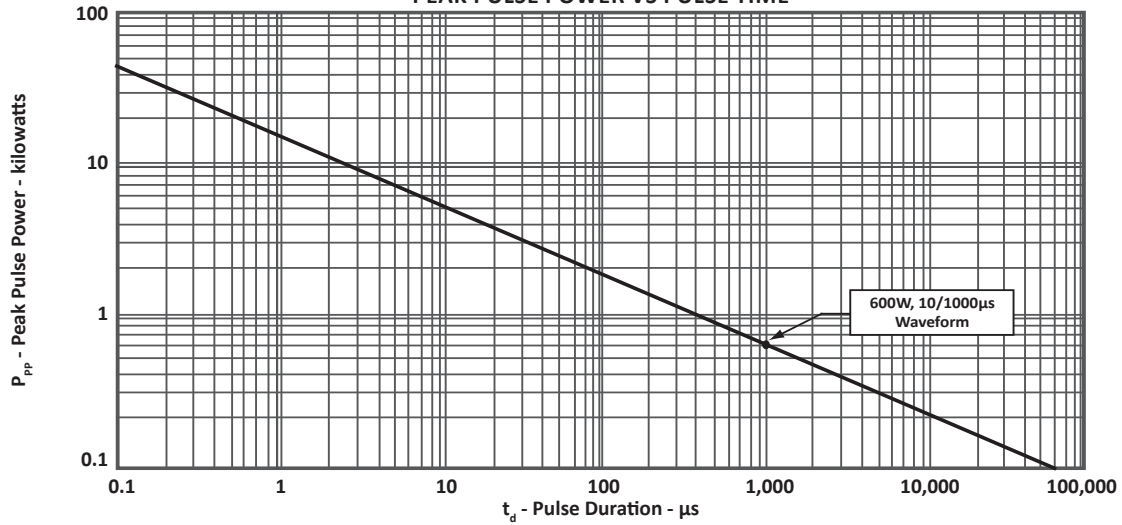
PART NUMBER (Notes 1-3)	DEVICE MARKING		REVERSE STAND-OFF VOLTAGE V_{RWM} VOLTS	BREAKDOWN VOLTAGE $V_{(BR)}$ @ I_T VOLTS		TEST CURRENT @ I_T mA	MAXIMUM CLAMPING VOLTAGE (Fig. 2) @ I_P V_C VOLTS	MAXIMUM REVERSE SURGE CURRENT @ I_{PP} AMPS	MAXIMUM REVERSE LEAKAGE CURRENT @ V_{RWM} I_R μA
	UNI	BI		MIN	MAX				
	P6SMB480A	480A	480C	408.0	456.0	504.0	1	658.0	0.90
P6SMB510A*	510A	N/A	434.0	485.0	535.0	1	704.0	0.85	1
P6SMB540A	540A	540C	460.0	513.0	567.0	1	740.0	0.80	1
P6SMB550A	550A	550C	470.3	522.5	577.5	1	759.0	0.79	1
P6SMB600A	600A	600C	513.0	570.00	630.00	1	828.0	0.72	1

NOTE

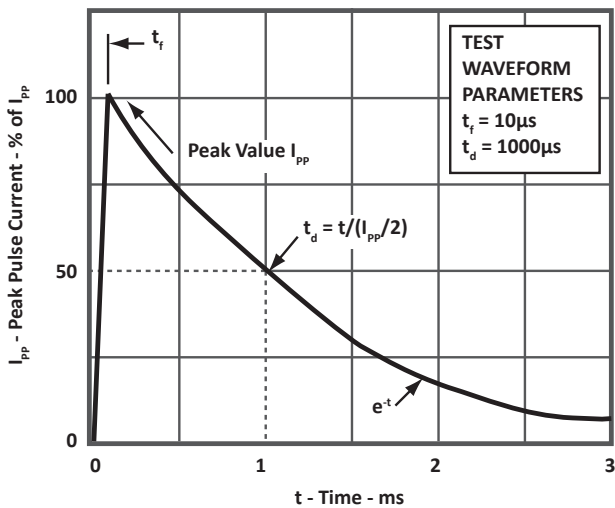
1. 5% tolerance.
2. Add suffix 'CA' after part number to specify a bidirectional device.
3. For bidirectional devices having a V_{RWM} of 10 Volts and under, the I_R limit is double.
4. Consult factory for more voltages.
5. *The P6SMB510A is unidirectional only. Peak forward surge current (I_{FSM}) is rated at 70A. Maximum instantaneous forward voltage (V_p) at 50A is rated at 5.0V.

TYPICAL DEVICE CHARACTERISTICS

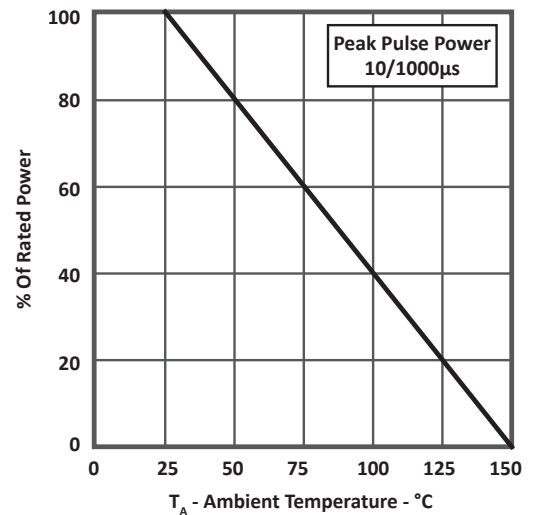
**FIGURE 1
PEAK PULSE POWER VS PULSE TIME**



**FIGURE 2
PULSE WAVEFORM**



**FIGURE 3
POWER DERATING CURVE**



TYPICAL DEVICE CHARACTERISTICS

FIGURE 4
TYPICAL JUNCTION CAPACITANCE

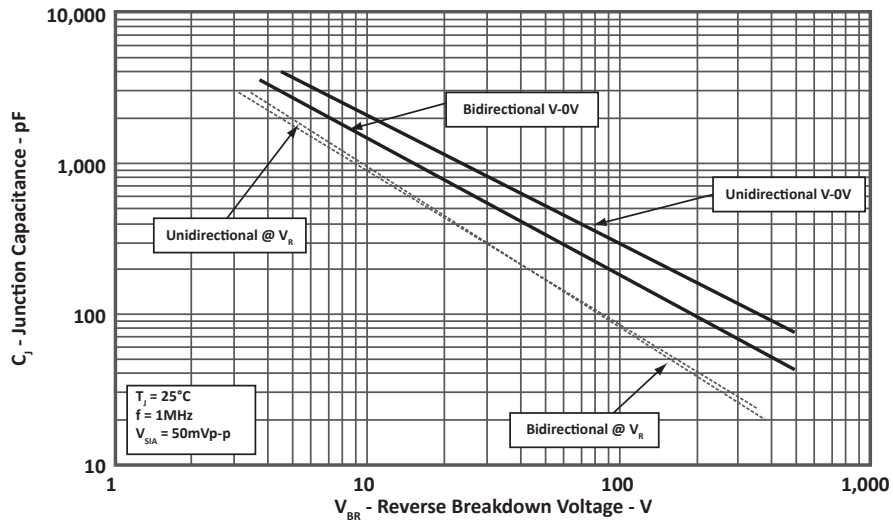


FIGURE 5
MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

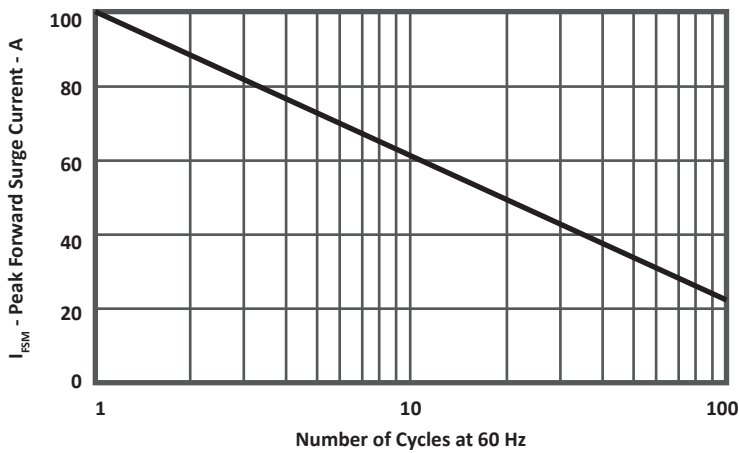
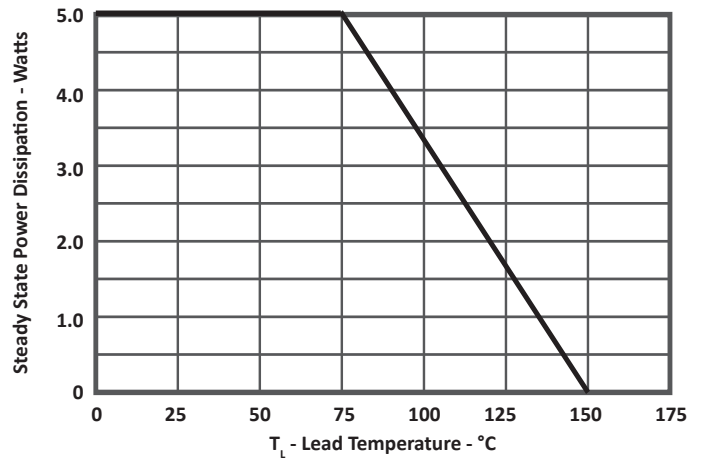


FIGURE 6
STEADY STATE POWER DERATING CURVE



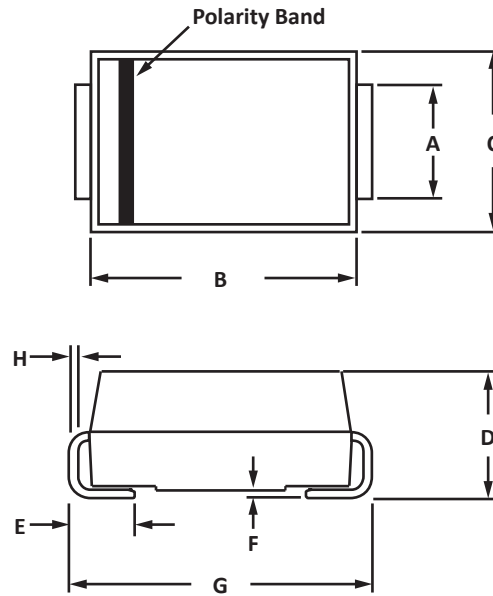
DO-214AA PACKAGE INFORMATION

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

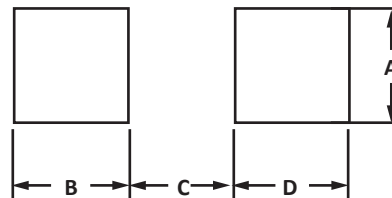
NOTES

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

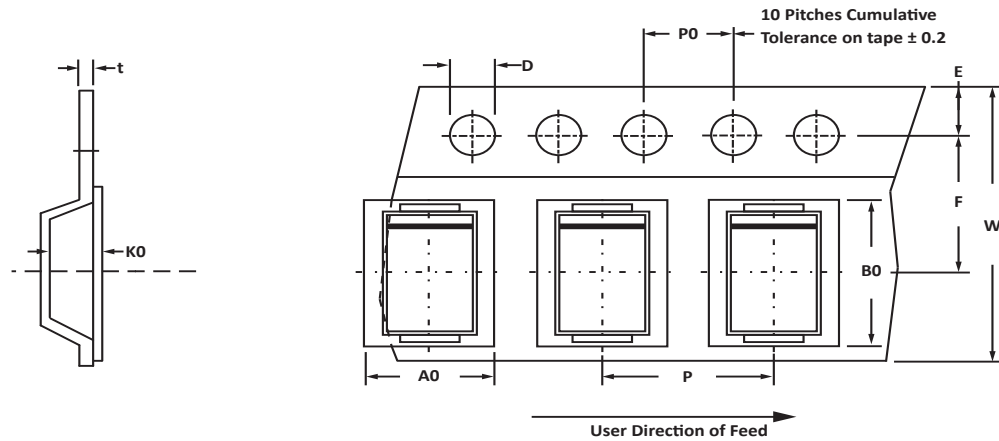


PAD LAYOUT DIMENSIONS

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



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 per 12mm tape.
- Marking on Part - marking code (see page 2), date code, logo and cathode defined by polarity band.

ORDERING INFORMATION

BASE PART NUMBER (XX = VOLTAGE)	LEADFREE SUFFIX	TAPE SUFFIX	QTY/REEL	REEL SIZE	TUBE QTY
P6SMBxxxA/CA	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 LED wafer die for ESD protection and related high frequency products.

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