

## 600 WATT TVS COMPONENT



**DO-214AA PACKAGE**

### APPLICATIONS

- Automotive

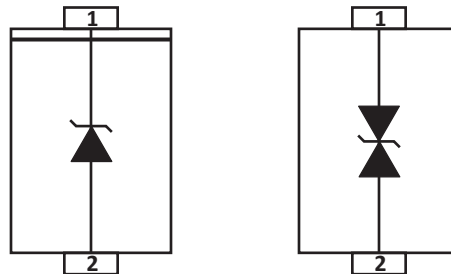
### FEATURES

- *AEC-Q101 Qualified*
- UL Registered
- Compatible with IEC 61000-4-2 (ESD): Level 4: Air  $\pm 15\text{kV}$ , Contact  $\pm 8\text{kV}$
- Compatible with IEC 61000-4-4 (EFT): 40A, 5/50ns
- Compatible with IEC 61000-4-5 (Surge): 8/20 $\mu\text{s}$  Waveform
- Glass Passivated Chip
- 600 Watts Peak Pulse Power per Line ( $t_p = 10/1000\mu\text{s}$ )
- Low Leakage Current
- Unidirectional & Bidirectional Configurations
- Excellent Clamping Capability
- Very Fast Response Time
- Available in Multiple Voltages
- RoHS 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
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	$V_F$	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.

## 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				
PAM29DOAA5.0A	KE	AE	5.0	6.40	7.00	10	9.2	65.2	800
PAM29DOAA6.0A	KG	AG	6.0	6.67	7.37	10	10.3	58.3	800
PAM29DOAA6.5A	KK	AK	6.5	7.22	7.98	10	11.2	53.6	500
PAM29DOAA7.0A	KM	AM	7.0	7.78	8.60	10	12.0	50.0	200
PAM29DOAA7.5A	KP	AP	7.5	8.33	9.21	1	12.9	46.5	100
PAM29DOAA8.0A	KR	AR	8.0	8.89	9.83	1	13.6	44.1	50
PAM29DOAA8.5A	KT	AT	8.5	9.44	10.40	1	14.4	41.7	10
PAM29DOAA9.0A	KV	AV	9.0	10.00	11.10	1	15.4	39.0	5
PAM29DOAA10A	KX	AX	10.0	11.10	12.30	1	17.0	35.3	5
PAM29DOAA11A	KZ	AZ	11.0	12.20	13.50	1	18.2	33.0	1
PAM29DOAA12A	LE	BE	12.0	13.30	14.70	1	19.9	30.2	1
PAM29DOAA13A	LG	BG	13.0	14.40	15.90	1	21.5	27.9	1
PAM29DOAA14A	LK	BK	14.0	15.60	17.20	1	23.2	25.9	1
PAM29DOAA15A	LM	BM	15.0	16.70	18.50	1	24.4	24.6	1
PAM29DOAA16A	LP	BP	16.0	17.80	19.70	1	26.0	23.1	1
PAM29DOAA17A	LR	BR	17.0	18.90	20.90	1	27.6	21.7	1
PAM29DOAA18A	LT	BT	18.0	20.00	22.10	1	29.2	20.6	1
PAM29DOAA20A	LV	BV	20.0	22.20	24.50	1	32.4	18.5	1
PAM29DOAA22A	LX	BX	22.0	24.40	26.90	1	35.5	16.9	1
PAM29DOAA24A	LZ	BZ	24.0	26.70	29.50	1	38.9	15.4	1
PAM29DOAA26A	ME	CE	26.0	28.90	31.90	1	42.1	14.3	1
PAM29DOAA28A	MG	CG	28.0	31.10	34.40	1	45.4	13.2	1

## TYPICAL DEVICE CHARACTERISTICS

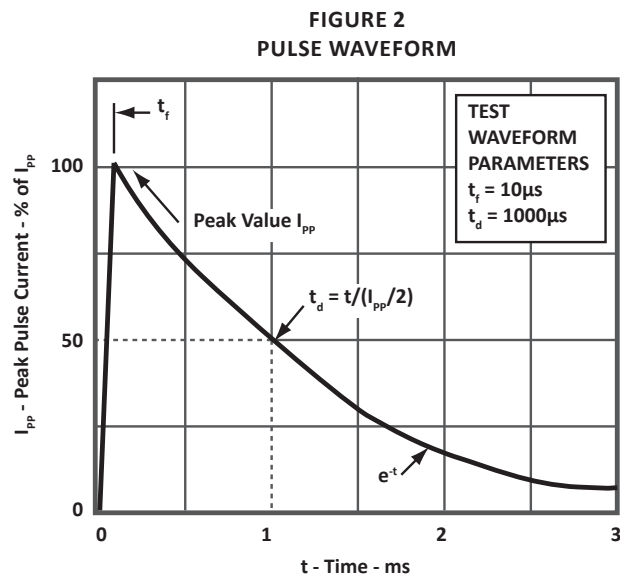
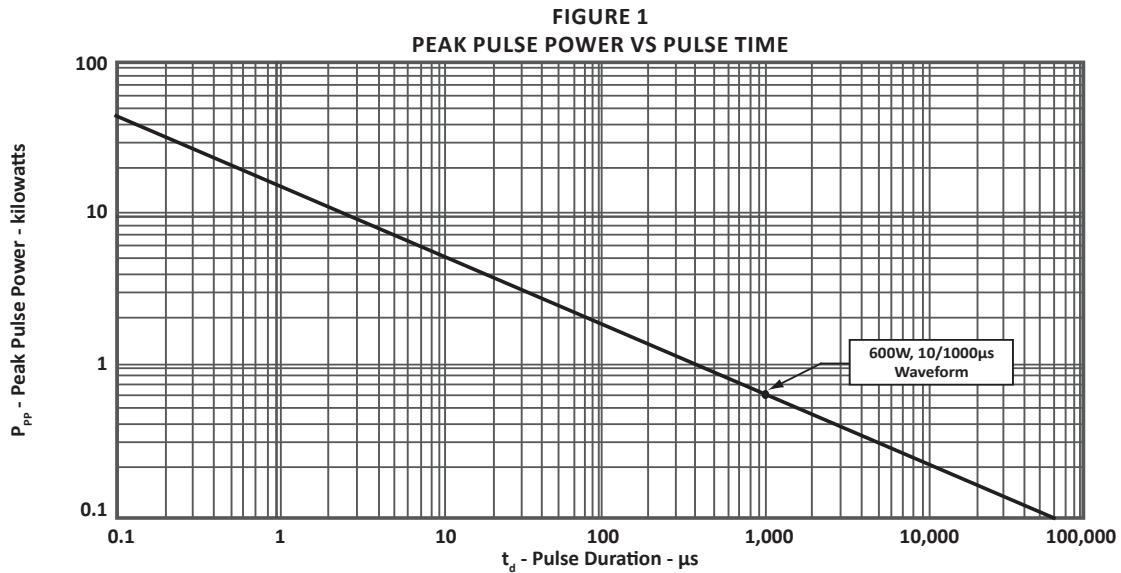
## ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

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				
PAM29DOAA30A	MK	CK	30.0	33.30	36.80	1	48.4	12.4	1
PAM29DOAA33A	MM	CM	33.0	36.70	40.60	1	53.3	11.3	1
PAM29DOAA36A	MP	CP	36.0	40.00	44.20	1	58.17	10.3	1
PAM29DOAA40A	MR	CR	40.0	44.40	49.10	1	64.5	9.3	1
PAM29DOAA43A	MT	CT	43.0	47.80	52.80	1	69.4	8.7	1
PAM29DOAA54A	NE	DE	54.0	60.00	66.30	1	87.1	6.9	1
PAM29DOAA58A	NG	DG	58.0	64.40	71.20	1	93.6	6.4	1
PAM29DOAA60A	NK	DK	60.0	66.70	73.70	1	96.8	6.2	1
PAM29DOAA64A	NM	DM	64.0	71.10	78.60	1	103.0	5.8	1
PAM29DOAA70A	NP	DP	70.0	77.80	86.00	1	113.0	5.3	1
PAM29DOAA75A	NR	DR	75.0	83.30	92.10	1	121.0	5.0	1
PAM29DOAA78A	NT	DT	78.0	86.70	95.80	1	126.0	4.8	1
PAM29DOAA85A	NV	DV	85.0	94.40	104.00	1	137.0	4.4	1
PAM29DOAA90A	NX	DX	90.0	100.00	111.00	1	146.0	4.1	1
PAM29DOAA100A	NZ	DZ	100.0	111.00	123.00	1	162.0	3.7	1
PAM29DOAA110A	PE	EE	110.0	122.00	135.00	1	177.0	3.4	1
PAM29DOAA120A	PG	EG	120.0	133.00	147.00	1	193.0	3.1	1
PAM29DOAA130A	PK	EK	130.0	144.00	159.00	1	209.0	2.9	1
PAM29DOAA150A	PM	EM	150.0	167.00	185.00	1	243.0	2.5	1
PAM29DOAA160A	PP	EP	160.0	178.00	197.00	1	259.0	2.3	1
PAM29DOAA170A	PR	ER	170.0	189.00	209.00	1	275.0	2.2	1
PAM29DOAA180A	PT	ET	180.0	200.00	220.00	1	291.6	2.1	1
PAM29DOAA190A	PV	EV	190.0	211.00	232.00	1	307.8	2.0	1
PAM29DOAA200A	PW	EW	200.0	224.00	247.00	1	324.0	1.9	1
PAM29DOAA220A	PX	EX	220.0	246.00	272.00	1	356.0	1.7	1
PAM29DOAA250A	PZ	EZ	250.0	279.00	309.00	1	405.0	1.5	1
PAM29DOAA300A	QE	FE	300.0	335.00	371.00	1	486.0	1.2	1
PAM29DOAA350A	QG	FG	350.0	391.00	432.00	1	567.0	1.1	1
PAM29DOAA400A	QK	FK	400.0	447.00	494.00	1	648.0	0.9	1
PAM29DOAA440A	QM	FM	440.0	492.00	543.00	1	713.0	0.8	1

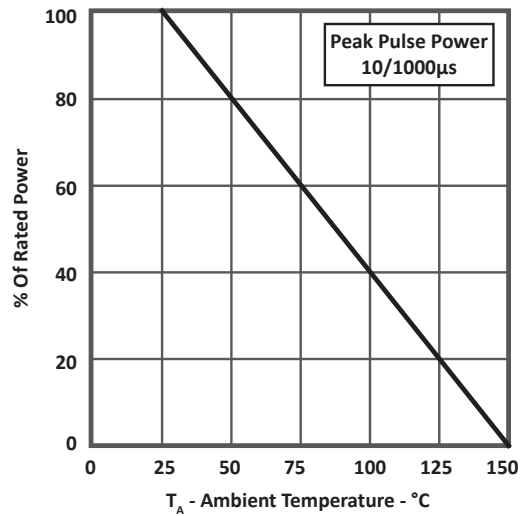
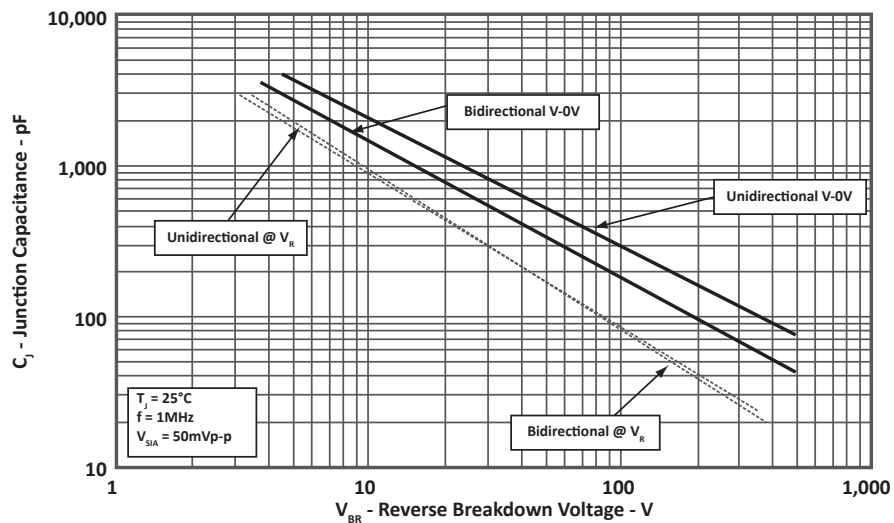
## NOTE

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

## TYPICAL DEVICE CHARACTERISTICS



## TYPICAL DEVICE CHARACTERISTICS

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

**FIGURE 4**  
**TYPICAL JUNCTION CAPACITANCE**


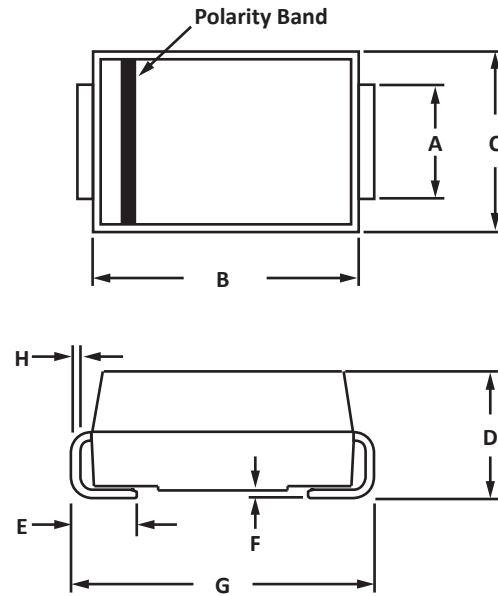
## DO-214AA PACKAGE INFORMATION

## OUTLINE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.90	2.20	0.075	0.087
B	4.30	4.80	0.169	0.189
C	3.30	3.94	0.130	0.155
D	2.10	2.40	0.083	0.094
E	0.95	1.52	0.037	0.060
F	0.051	0.203	0.002	0.008
G	5.20	5.60	0.205	0.220
H	0.15	0.31	0.006	0.012

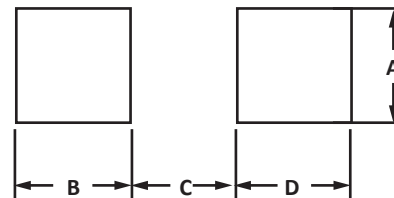
## NOTES

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

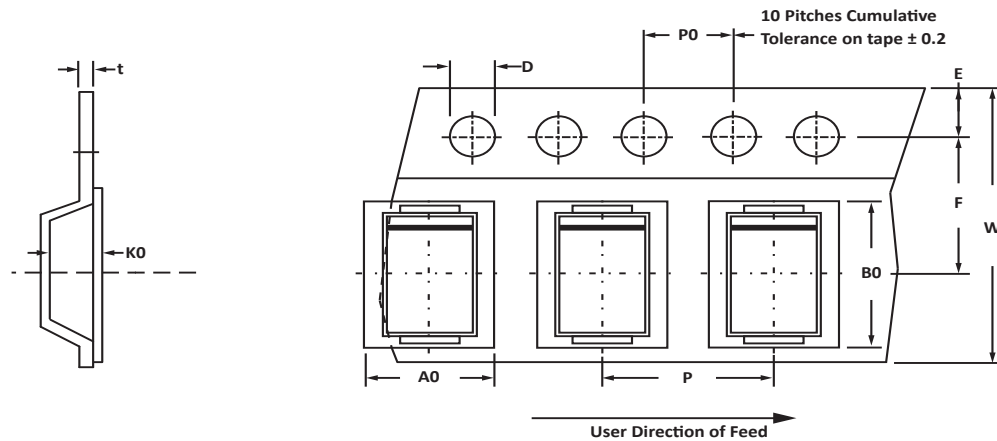


## PAD LAYOUT DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.30	-	0.091	-
B	2.20	-	0.087	-
C	-	2.60	-	0.102
D	2.20	-	0.087	-



## TAPE AND REEL



## SPECIFICATIONS

REEL DIA.	TAPE WIDTH	A0	B0	K0	D	E	F	W	P0	P	tmax
330mm (13")	12mm	3.76 ± 0.30	5.69 ± 0.30	2.67 ± 0.10	1.55 ± 0.10	1.75 ± 0.20	5.5 ± 0.20	12.00 ± 0.20	4.00 ± 0.20	8.00 ± 0.20	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
PAM29DOAAxxA/CA	N/A	-T500	500	7"	N/A
PAM29DOAAxxA/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 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.

### CONTACT US

#### Corporate Headquarters

2929 South Fair Lane  
Tempe, Arizona 85282  
USA

#### By Telephone

General: 602-431-8101  
Sales: & Marketing: 602-414-5109  
Customer Service: 602-414-5114  
Product Technical Support: 602-414-5107

#### By Fax

General: 602-431-2288

#### By E-mail:

Asia Sales: [asiasales@protekdevices.com](mailto:asiasales@protekdevices.com)  
Europe Sales: [europesales@protekdevices.com](mailto:europesales@protekdevices.com)  
U.S. Sales: [ussales@protekdevices.com](mailto:ussales@protekdevices.com)  
Distributor Sales: [distysales@protekdevices.com](mailto:distysales@protekdevices.com)  
Customer Service: [service@protekdevices.com](mailto:service@protekdevices.com)  
Technical Support: [support@protekdevices.com](mailto:support@protekdevices.com)

#### Web

[www.protekdevices.com](http://www.protekdevices.com)

COPYRIGHT © ProTek Devices 2017 - This literature is subject to all applicable copyright laws and is not for resale in any manner.

SPECIFICATIONS: ProTek reserves the right to change the electrical and or mechanical characteristics described herein without notice.

DESIGN CHANGES: ProTek reserves the right to discontinue product lines without notice and that the final judgement concerning selection and specifications is the buyer's and that in furnishing engineering and technical assistance. ProTek assumes no responsibility with respect to the selection or specifications of such products. ProTek makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ProTek assume any liability arising out of the application or use of any product or circuit and specifically disclaims any and all liability without limitation special, consequential or incidental damages.

LIFE SUPPORT POLICY: ProTek Devices products are not authorized for use in life support systems without written consent from the factory.