

400 WATT TVS COMPONENT



DO-214AC PACKAGE

APPLICATIONS

- Automotive Applications

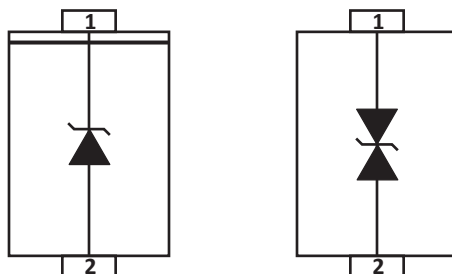
FEATURES

- *AEC-Q101 Qualified*
- UL Registered
- ISO 7637-2 Pulse 1, 2a, 2b, 3a, 3b Compliant
- IEC 61000-4-2 (ESD): Level 4 - Air 15kV, Contact 8kV
- IEC 61000-4-4 (EFT): 40A 5/50ns
- IEC 61000-4-5 (Surge): 8/20 μ s Waveform
- Glass Passivated Chip
- 400 Watts Peak Pulse Power per Line (tp = 10/1000 μ s)
- Low Leakage Current
- Unidirectional & Bidirectional Configurations
- Excellent Clamping Capability
- Very Fast Response Time
- RoHS Compliant

MECHANICAL CHARACTERISTICS

- Molded JEDEC DO-214AC Package
- Approximate Weight: 0.06 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_A	-55 to 150	°C
Storage Temperature	T_{STG}	-55 to 150	°C
Peak Pulse Power ($t_p = 10/1000\mu s$) - See Figure 1 and Note 1	P_{PP}	400	Watts
Power Dissipation on Infinite Heatsink at $T_L = 75^\circ C$	P_D	1.0	Watts
Peak Forward Surge Current, 8.3ms single half sinewave - Unidirectional Only (Note 2)	I_{FSM}	40	Amps
Maximum Instantaneous Forward Voltage at 25A - Unidirectional Only	V_F	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.

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				
PAM28DOAC5.0A	AE	WE	5.0	6.40	7.00	10	9.2	43.5	800
PAM28DOAC6.0A	AG	WG	6.0	6.67	7.37	10	10.3	38.8	800
PAM28DOAC6.5A	AK	WK	6.5	7.22	7.98	10	11.2	35.7	500
PAM28DOAC7.0A	AM	WM	7.0	7.78	8.60	10	12.0	33.3	200
PAM28DOAC7.5A	AP	WP	7.5	8.33	9.21	1	12.9	31.0	100
PAM28DOAC8.0A	AR	WR	8.0	8.89	9.83	1	13.6	29.4	50
PAM28DOAC8.5A	AT	WT	8.5	9.44	10.40	1	14.4	27.8	10
PAM28DOAC9.0A	AV	WV	9.0	10.00	11.10	1	15.4	26.0	5
PAM28DOAC10A	AX	WX	10.0	11.10	12.30	1	17.0	23.5	5
PAM28DOAC11A	AZ	WZ	11.0	12.20	13.50	1	18.2	22.0	1
PAM28DOAC12A	BE	XE	12.0	13.30	14.70	1	19.9	20.1	1
PAM28DOAC13A	BG	XG	13.0	14.40	15.90	1	21.5	18.6	1
PAM28DOAC14A	BK	XK	14.0	15.60	17.20	1	23.2	17.2	1
PAM28DOAC15A	BM	XM	15.0	16.70	18.50	1	24.4	16.4	1
PAM28DOAC16A	BP	XP	16.0	17.80	19.70	1	26.0	15.4	1
PAM28DOAC17A	BR	XR	17.0	18.90	20.90	1	27.6	14.5	1
PAM28DOAC18A	BT	XT	18.0	20.00	22.10	1	29.2	13.7	1
PAM28DOAC20A	BV	XV	20.0	22.20	24.50	1	32.4	12.4	1
PAM28DOAC22A	BX	XX	22.0	24.40	26.90	1	35.5	11.3	1
PAM28DOAC24A	BZ	XZ	24.0	26.70	29.50	1	38.9	10.3	1
PAM28DOAC26A	CE	YE	26.0	28.90	31.90	1	42.1	9.5	1
PAM28DOAC28A	CG	YG	28.0	31.10	34.40	1	45.4	8.8	1

TYPICAL DEVICE CHARACTERISTICS

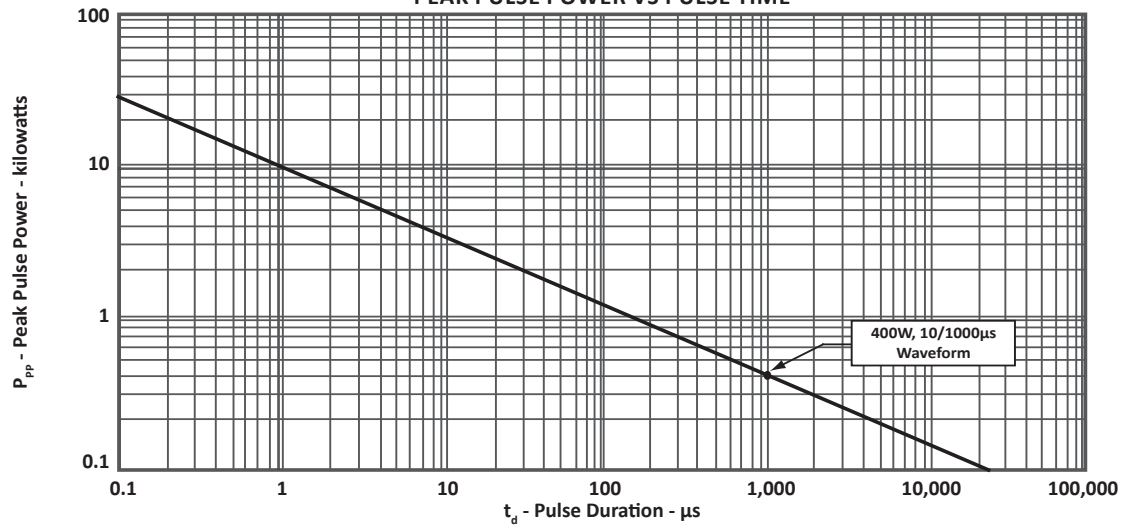
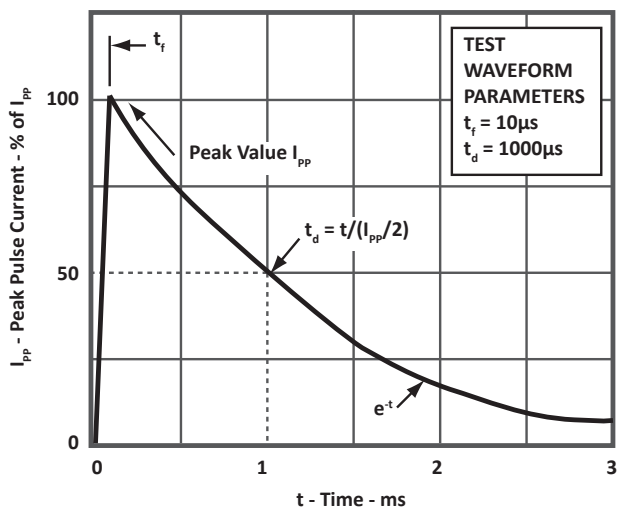
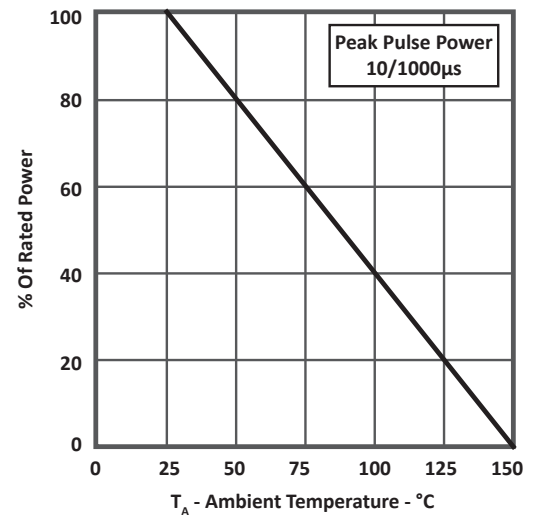
ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

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 μA
	UNI	BI		MIN	MAX				
PAM28DOAC30A	CK	YK	30.0	33.30	36.80	1	48.4	8.3	1
PAM28DOAC33A	CM	YM	33.0	36.70	40.60	1	53.3	7.5	1
PAM28DOAC36A	CP	YP	36.0	40.00	44.20	1	58.1	6.9	1
PAM28DOAC40A	CR	YR	40.0	44.40	49.10	1	64.5	6.2	1
PAM28DOAC43A	CT	YT	43.0	47.80	52.80	1	69.4	5.8	1
PAM28DOAC45A	CV	YV	45.0	50.00	55.30	1	72.7	5.5	1
PAM28DOAC48A	CX	YX	48.0	53.30	58.90	1	77.4	5.2	1
PAM28DOAC51A	CZ	YZ	51.0	56.70	62.70	1	82.4	4.9	1
PAM28DOAC54A	RE	ZE	54.0	60.00	66.30	1	87.1	4.6	1
PAM28DOAC58A	RG	ZG	58.0	64.40	71.20	1	93.6	4.3	1
PAM28DOAC60A	RK	ZK	60.0	66.70	73.70	1	96.8	4.1	1
PAM28DOAC64A	RM	ZM	64.0	71.10	78.60	1	103.0	3.9	1
PAM28DOAC70A	RP	ZP	70.0	77.80	86.00	1	113.0	3.5	1
PAM28DOAC75A	RR	ZR	75.0	83.30	92.10	1	121.0	3.3	1
PAM28DOAC78A	RT	ZT	78.0	86.70	95.80	1	126.0	3.2	1
PAM28DOAC85A	RV	ZV	85.0	94.40	104.00	1	137.0	2.9	1
PAM28DOAC90A	RX	ZX	90.0	100.00	111.00	1	146.0	2.7	1
PAM28DOAC100A	RZ	ZZ	100.0	111.00	123.00	1	162.0	2.5	1
PAM28DOAC110A	SE	VE	110.0	122.00	135.00	1	177.0	2.3	1
PAM28DOAC120A	SG	VG	120.0	133.00	147.00	1	193.0	2.1	1
PAM28DOAC130A	SK	VK	130.0	144.00	159.00	1	209.0	1.9	1
PAM28DOAC150A	SM	VM	150.0	167.00	185.00	1	243.0	1.7	1
PAM28DOAC160A	SP	VP	160.0	178.00	197.00	1	259.0	1.5	1
PAM28DOAC170A	SR	VR	170.0	189.00	209.00	1	275.0	1.5	1
PAM28DOAC180A	ST	VT	180.0	200.00	220.00	1	291.6	1.4	1
PAM28DOAC200A	SW	VW	200.0	224.00	247.00	1	324.0	1.2	1
PAM28DOAC220A	SX	VX	220.0	246.00	272.00	1	356.0	1.1	1
PAM28DOAC250A	SZ	VZ	250.0	279.00	309.00	1	405.0	1.0	1
PAM28DOAC300A	DE	HE	300.0	335.00	371.00	1	486.0	0.8	1
PAM28DOAC350A	DG	HG	350.0	391.00	432.00	1	567.0	0.7	1
PAM28DOAC400A	DK	HK	400.0	447.00	494.00	1	648.0	0.6	1
PAM28DOAC440A	DM	HM	440.0	492.00	543.00	1	713.0	0.6	1

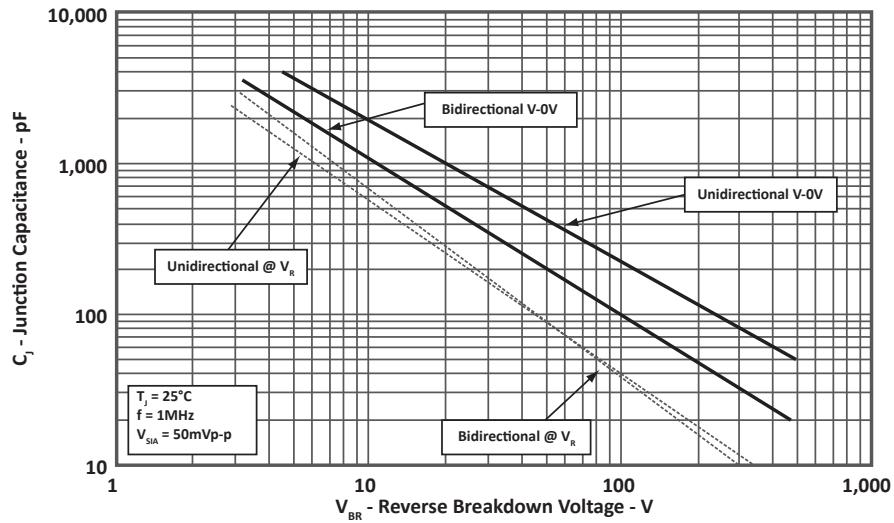
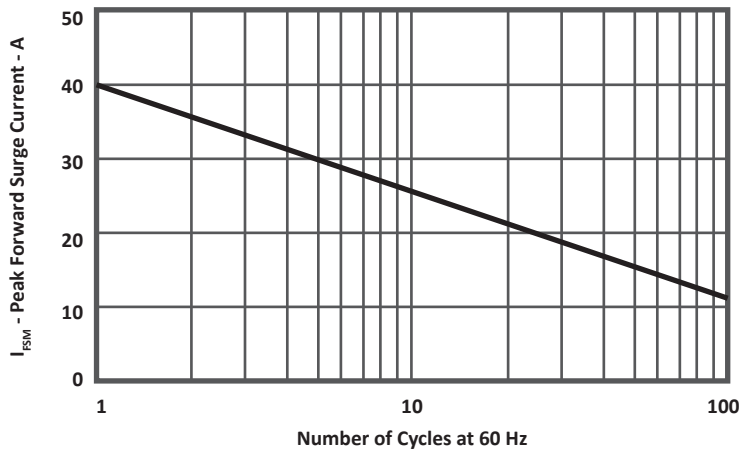
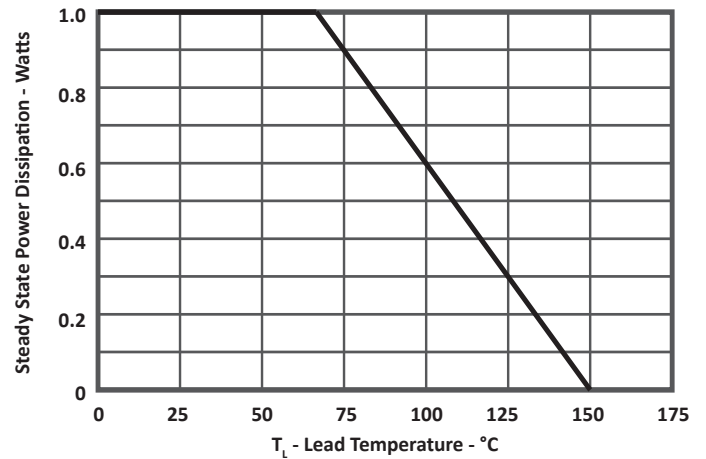
NOTE

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

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


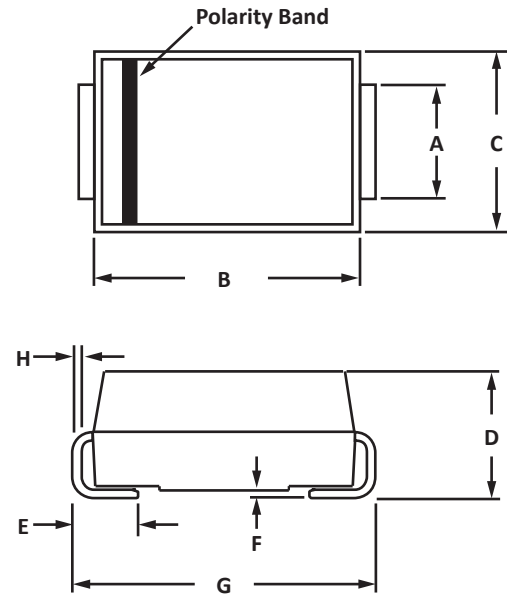
DO-214AC PACKAGE INFORMATION

OUTLINE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.25	1.65	0.049	0.065
B	4.15	4.65	0.163	0.183
C	2.60	3.00	0.102	0.118
D	2.00	2.44	0.079	0.096
E	0.95	1.52	0.037	0.060
F	0.051	0.203	0.002	0.008
G	4.90	5.30	0.193	0.209
H	0.15	0.31	0.006	0.012

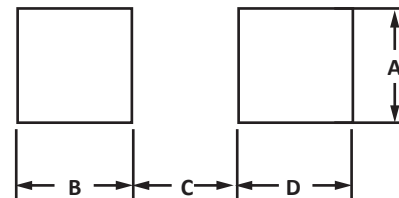
NOTES

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

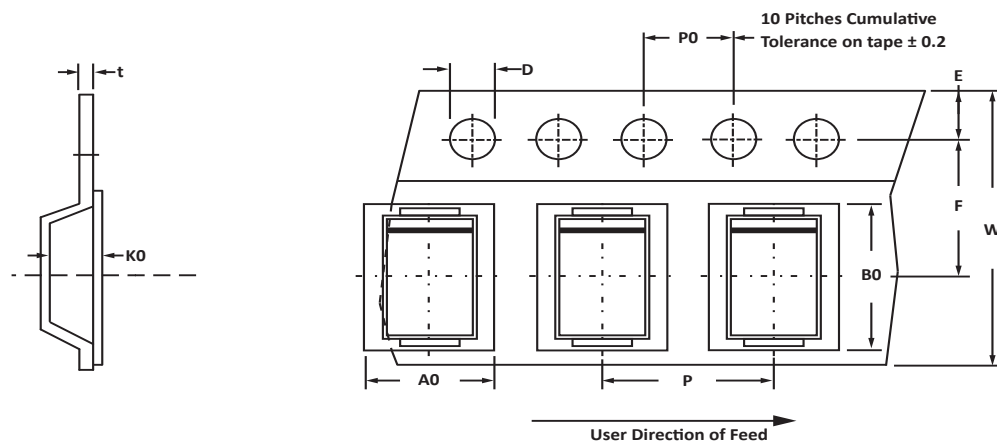


PAD LAYOUT DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.80	-	0.071	-
B	2.00	-	0.079	-
C	-	2.30	-	0.091
D	2.00	-	0.079	-



TAPE AND REEL



SPECIFICATIONS

REEL DIA.	TAPE WIDTH	A0	B0	K0	D	E	F	W	P0	P	tmax
330mm (13")	12mm	2.79 ± 0.3	5.33 ± 0.3	2.24 ± 0.20	1.55 ± 0.10	1.75 ± 0.2	5.5 ± 0.2	12.00 ± 0.2	4.00 ± 0.2	4.00 ± 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	LEADFREE SUFFIX	TAPE SUFFIX	QTY/REEL	REEL SIZE	TUBE QTY
PAM28DOACxxA/CA	N/A	-T500	500	7"	N/A
PAM28DOACxxA/CA	N/A	-T13	7,500	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.

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