

## AUTOMATION SENSOR TRANSIENT AND OVERVOLTAGE PROTECTION



**DFN-2 PACKAGE**

### DESCRIPTION

The PDFN3-32 is designed to protect 24 Volt proximity sensors for factory automation sensory applications. This device provides switch and reverse blocking protection and is compliant with IEC 61000-4-2, IEC 61000-4-4 and IEC 61000-4-5 standards. Available in a DFN-3 package configuration, the PDFN3-32 is an excellent solution where board space is at a premium.

### FEATURES

- Compatible with IEC 61000-4-2 (ESD): 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): 40A, 8/20 $\mu\text{s}$
- Compliant for Interface with Logic Input Type 1, 2, 3 IEC 61131-2
- Double Diode Array for Switch Protection and Reverse Blocking Protection
- Minimum Breakdown Voltage ( $V_{BR}$ ): 34V
- Maximum Clamping Voltage: 55V @ 25A, 8/20 $\mu\text{s}$
- Blocking Diode Drop Forward Voltage ( $V_f$ ): 1.1V @ 300mA
- Blocking Diode Maximum 10ms Square Pulse Current ( $I_{FSM}$ ): 3A
- Ambient Operating Temperature: -40°C to 100°C
- RoHS Compliant
- REACH Compliant

### APPLICATIONS

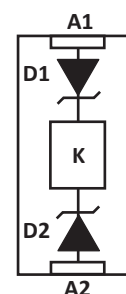
- Factory Automation Sensors
- Proximity Sensor Interfaces

### MECHANICAL CHARACTERISTICS

- Molded DFN-3 Package
- Lead-Free Plating
- Solder Reflow Temperature - 260-270°C
- 8mm Tape and Reel Per EIA Standard 481
- Flammability Rating UL 94V-0

### PINOUT CONNECTIONS

SYMBOL	DESCRIPTION
K	D1 Power Bus Protection Diode Cathode and D2 Reverse Blocking Protection Cathode
A1	D1 Power Bus Protection Diode Anode
A2	D2 Reverse Blocking Protection Anode



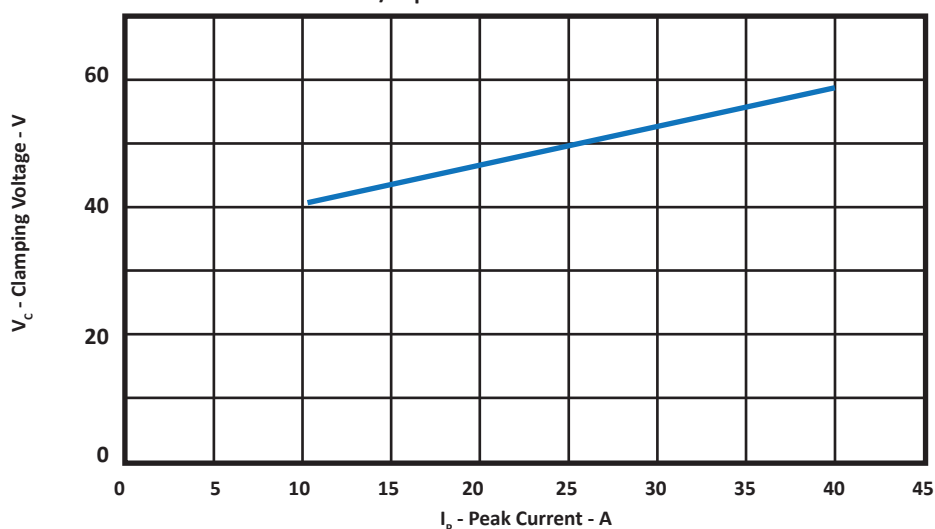
**TYPICAL DEVICE CHARACTERISTICS**
**MAXIMUM RATINGS @ 25°C Unless Otherwise Specified**

PARAMETER	SYMBOL	VALUE	UNITS
ESD Voltage Level per IEC 61000-4-2 (Air & Contact)	$V_{ESD}$	±30	kV
Peak Surge Voltage Level per IEC 61000-4-5, $R_{CC} = 500\Omega$	$V_{PP}$	1	kV
Peak Pulse Power ( $t_p = 8/20\mu s$ ) - See Figure 2	$P_{PP}$	2800	Watts
Peak Pulse Power Dissipation	$I_{PP}$	40	Amps
Storage Junction Temperature Range	$T_J$	-40 to 150	°C

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

PART NUMBER	DEVICE MARKING	RATED STAND-OFF VOLTAGE  $V_{WM}$ VOLTS	MINIMUM BREAKDOWN VOLTAGE  @ 1mA $V_{(BR)}$ VOLTS	MAXIMUM BREAKDOWN VOLTAGE  @ 1mA $V_{(BR)}$ VOLTS	MAXIMUM CLAMPING VOLTAGE (Fig. 3)  @ IP = 25A $V_C$ VOLTS	MAXIMUM CLAMPING VOLTAGE (Fig. 3)  @ IP = 40A $V_C$ VOLTS	MAXIMUM LEAKAGE CURRENT  @ 32V $I_D$ nA	MAXIMUM LEAKAGE CURRENT  @ 32V $T_J = 150^\circ C$ $I_D$ $\mu A$
PDFN3-32	332	32	34	39	55	70	200	5

**FIGURE 1**  
**8/20 $\mu s$  SURGE PERFORMANCE**



TYPICAL DEVICE CHARACTERISTICS

FIGURE 2  
PEAK PULSE POWER VS PULSE TIME

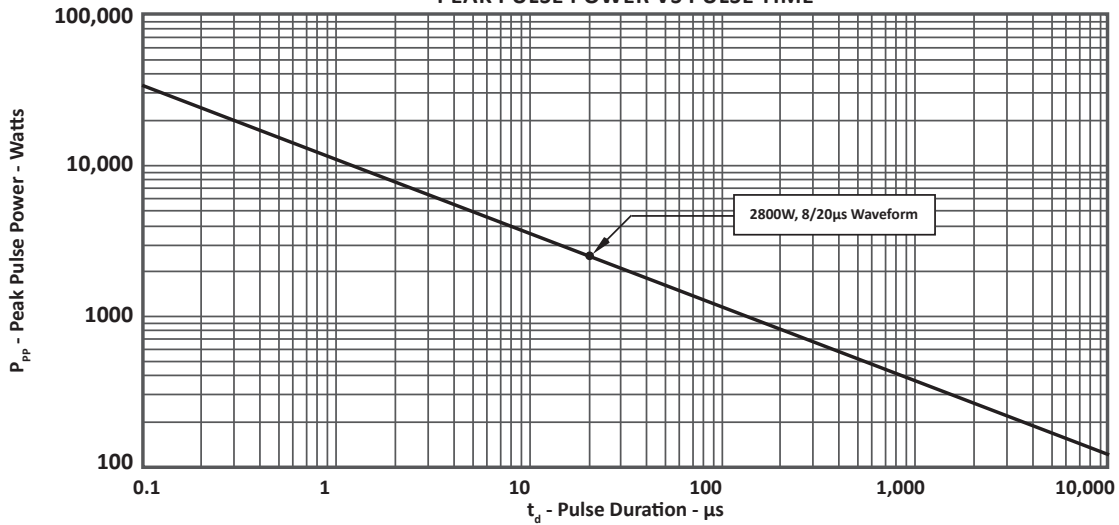


FIGURE 3  
PULSE WAVE FORM

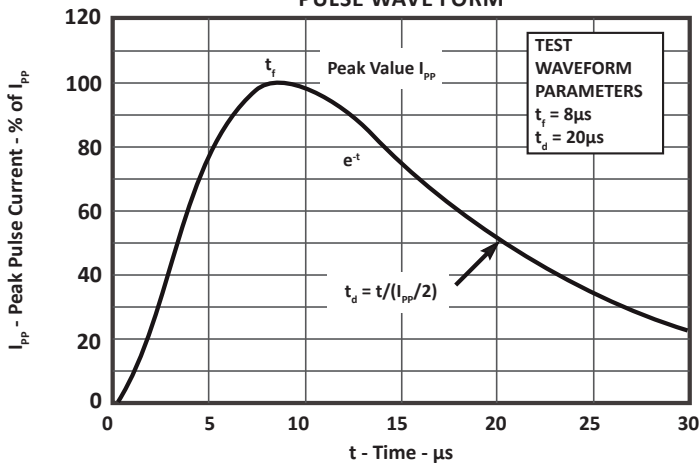
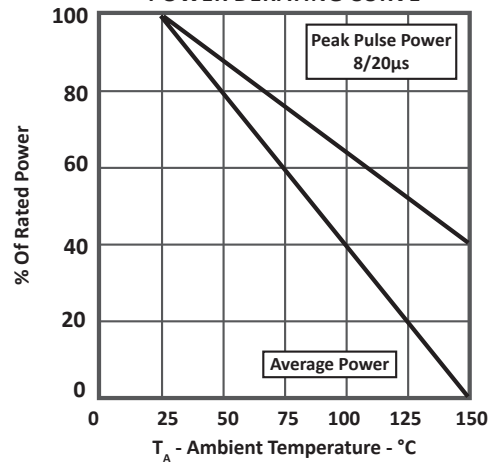
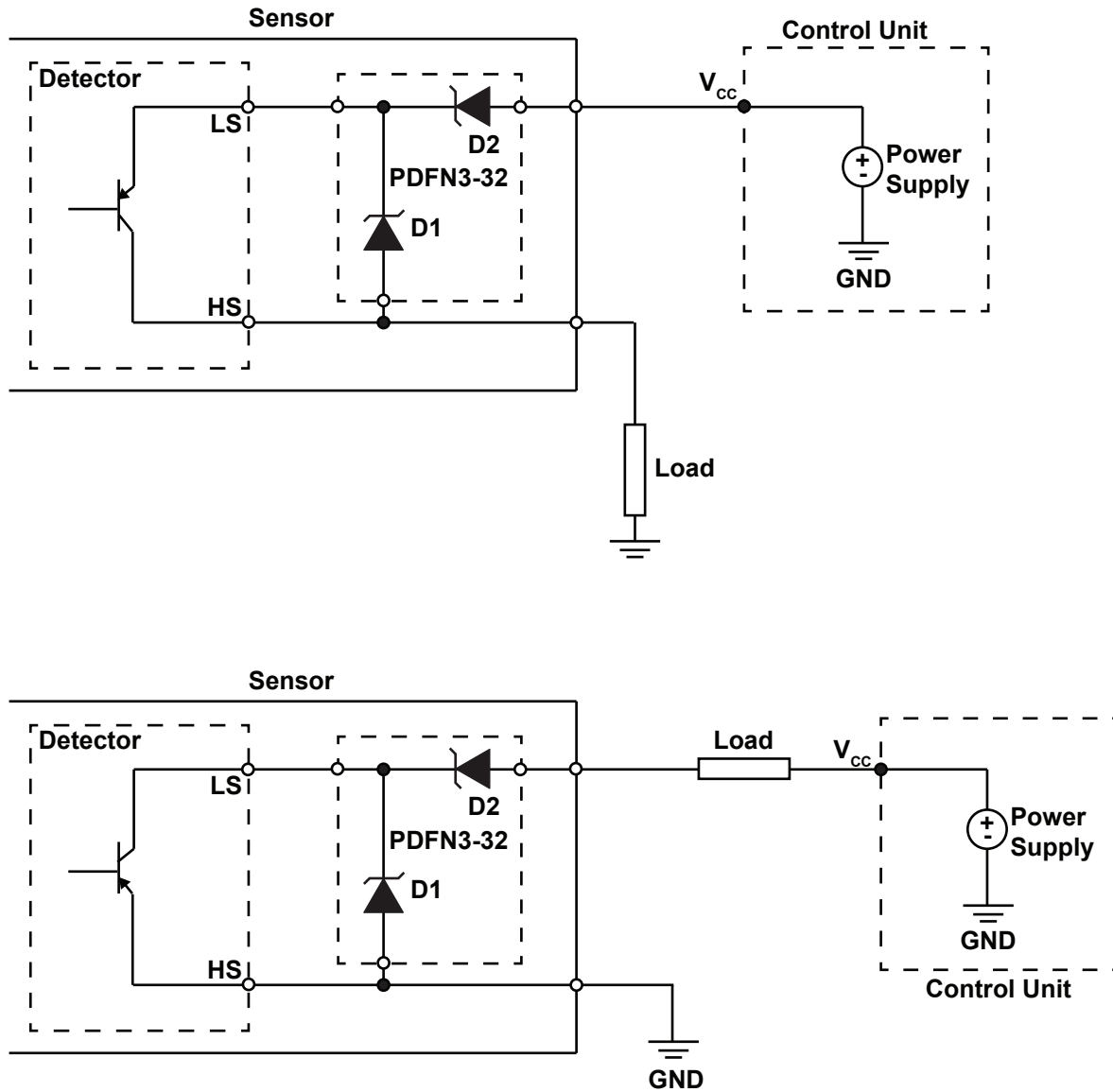


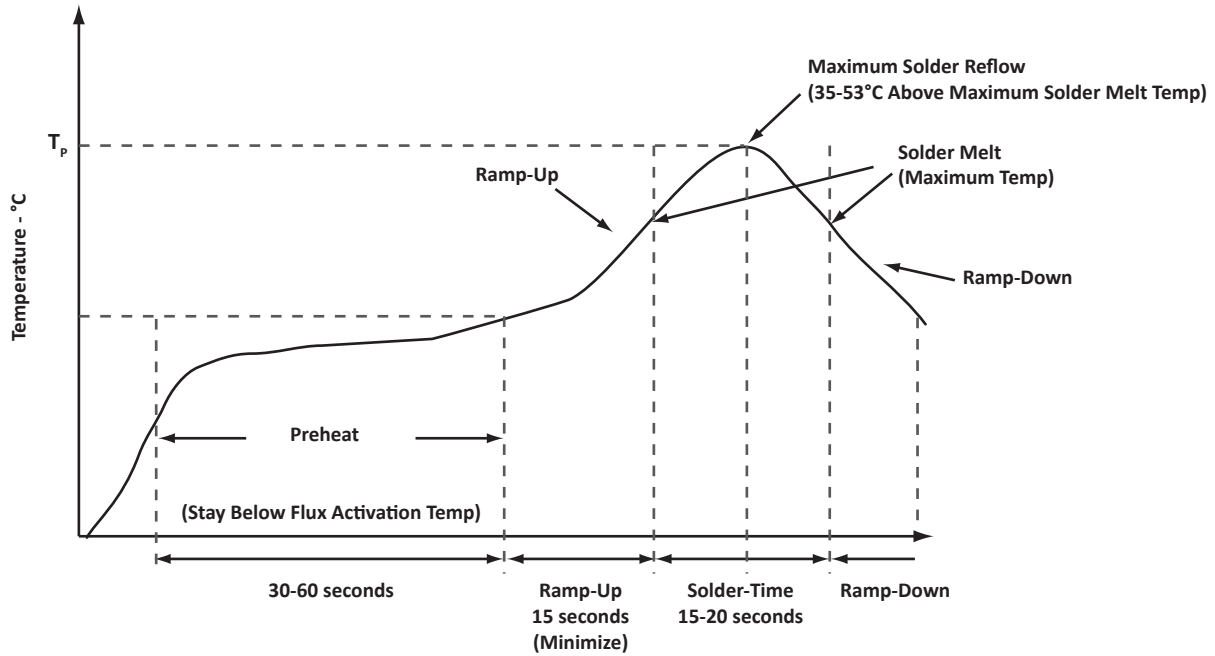
FIGURE 4  
POWER DERATING CURVE



## APPLICATION INFORMATION

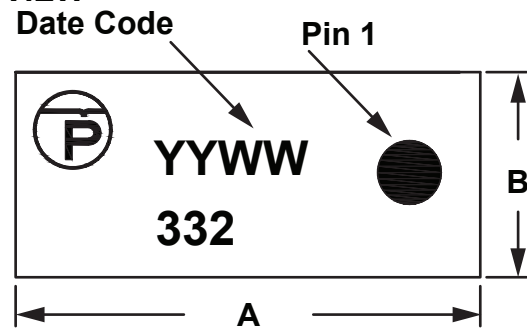
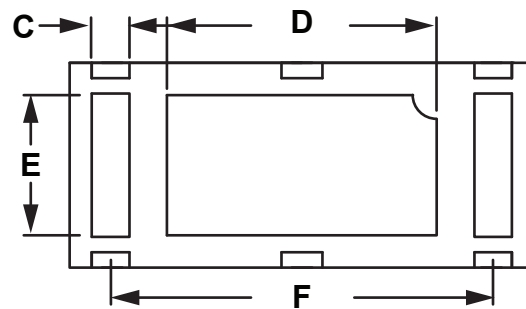
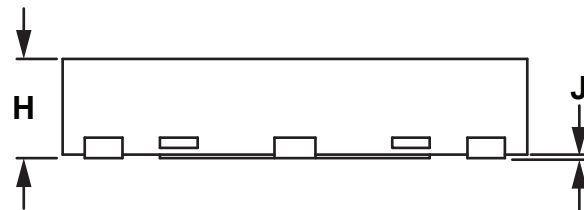


## PACKAGE INFORMATION

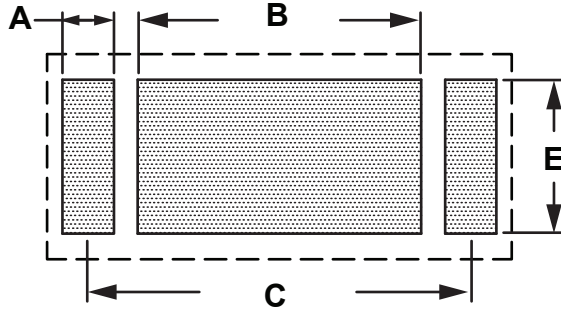
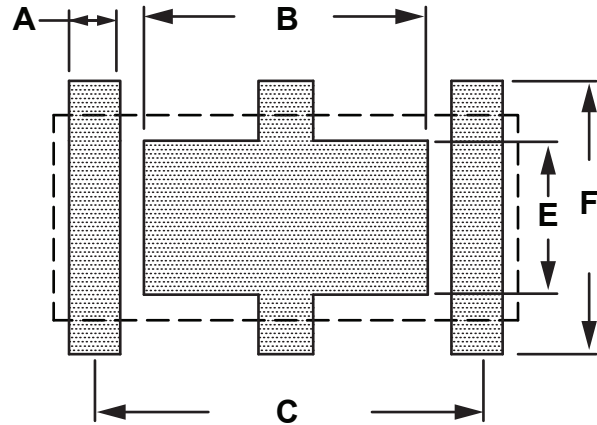


**PACKAGE INFORMATION**

OUTLINE DIMENSIONS				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	3.40	3.50	0.134	0.138
B	1.47	1.57	0.055	0.065
C	0.23	0.33	0.009	0.013
D	1.96	2.06	0.077	0.081
E	1.02	1.12	0.040	0.044
F	2.79		0.110	
H	0.69	0.81	0.027	0.032
J	0.00	0.05	0.000	0.002

**TOP VIEW**

**BOTTOM VIEW**

**SIDE VIEW**


## PACKAGE INFORMATION

**WITHOUT VISUAL  
INSPECTION JOINTS**

**WITH VISUAL  
INSPECTION JOINTS**

**PAD LAYOUT DIMENSIONS**

DIM	MILLIMETERS	INCHES
	NOM	NOM
A	0.38	0.015
B	2.11	0.083
C	2.79	0.110
E	1.14	0.045

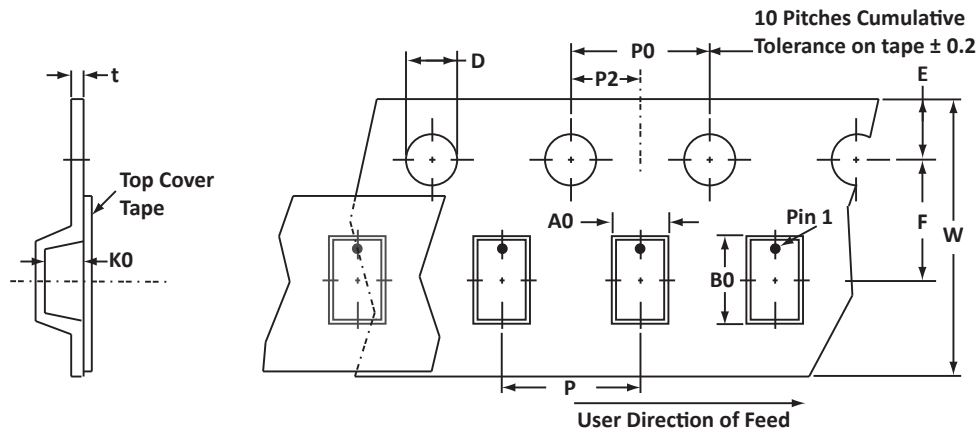
**NOTES**  
1. Controlling dimension: millimeters.

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A	0.38	0.015
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C	2.79	0.110
E	1.14	0.045
F	2.03	0.080

**NOTES**  
1. Controlling dimension: millimeters.

## TAPE AND REEL



## SPECIFICATIONS

REEL DIA.	TAPE WIDTH	A0	B0	K0	D	E	F	W	P0	P2	P	t <sub>max</sub>
178mm (7")	8mm	1.78 ± 0.05	3.55 ± 0.05	1.00 ± 0.003	1.55 ± 0.10	1.75 ± 0.10	3.50 ± 0.05	8.00 ± 0.30	4.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	0.25

## NOTES

- Dimensions are in millimeters.
- Surface mount product is taped and reeled in accordance with EIA-481.
- Suffix - T73 = 7" Reel - 3,000 pieces per 8mm tape.
- Marking on Part - marking code, logo, date code and pin one (defined by a polarity dot).

## ORDERING INFORMATION

BASE PART NUMBER	LEADFREE SUFFIX	TAPE SUFFIX	QTY/REEL	REEL SIZE	TUBE QTY
PDFN3-32	N/A	-T73	3,000	7"	N/A

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



## COMPANY INFORMATION

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### 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.

### 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)

#### ProTek Devices (Asia Pacific) Pte. Ltd.

8 Ubi Road 2, #06-19  
Zervex  
Singapore - 408538  
Tel: +65-67488312  
Fax: +65-67488313

#### Web

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

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