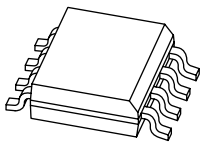


PRTR5V0U6AS

High speed interface ESD protection to IEC 61000-4-2 level 4

Rev. 01 — 18 February 2008 Product data sheet

1. Product profile

1.1 General description

The PRTR5V0U6AS is designed to protect Input/Output (I/O) ports that are sensitive to capacitive load, such as USB 2.0, Ethernet, DVI and HDMI from destruction by ElectroStatic Discharge (ESD). It provides protection to downstream signal and supply components from ESD voltages as high as ±8 kV (contact discharge).

The PRTR5V0U6AS incorporates six pairs of ultra-low capacitance rail-to-rail diodes plus a Zener diode. The rail-to-rail diodes are connected to the Zener diode which allows ESD protection to be independent of supply voltage with any ESD voltage discharged locally within the device. The PRTR5V0U6AS is fabricated using monolithic silicon technology integrating six ultra-low capacitance rail-to-rail ESD protection diodes in a miniature 8-lead SO8 (SOT96) package.

1.2 Features

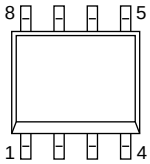
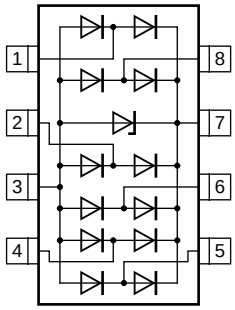
- Pb-free and RoHS compliant, dark green
- ESD protection compliant to IEC 61000-4-2 level 4, ±8 kV contact discharge
- Six ultra-low input capacitance (1 pF typical) ESD rail-to-rail ESD protection diodes
- Supply voltage independent clamping due to integrated Zener diode
- Small 8-lead SO8 (SOT96) package

1.3 Applications

- General-purpose downstream ESD protection high frequency analog signals and high-speed serial data transmission for ports inside:
  - Cellular and PCS mobile handsets
  - PC/Notebook USB2.0/IEEE1394 ports
  - DVI/HDMI interfaces
  - Cordless telephones
  - Wireless data (WAN/LAN) systems
  - PDAs

2. Pinning information

Table 1. Pinning

Pin	Description	Simplified outline	Symbol
1	ESD protection I/O 1		
2	ESD protection I/O 2		
3	ground (GND)		
4	ESD protection I/O 3		
5	ESD protection I/O 4		
6	ESD protection I/O 5		
7	supply voltage (V_{CC})		
8	ESD protection I/O 6		

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3. Ordering information

Table 2. Ordering information

Type number	Package		
	Name	Description	Version
PRTR5V0U6AS	SO8	plastic small outline package; 8 leads; body width 3.9 mm	SOT96-1

4. Limiting values

Table 3. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Min	Max	Unit
V_I	input voltage		0	5.5	V
V_{esd}	electrostatic discharge voltage	all pins; IEC 61000-4-2; level 4			
		contact discharge	–8	+8	kV
T_{stg}	storage temperature		–55	+125	°C

5. Recommended operating conditions

Table 4. Operating conditions

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
T_{amb}	ambient temperature		–40	-	+85	°C

6. Characteristics

Table 5. Characteristics

T_{amb} = 25 °C unless otherwise specified.

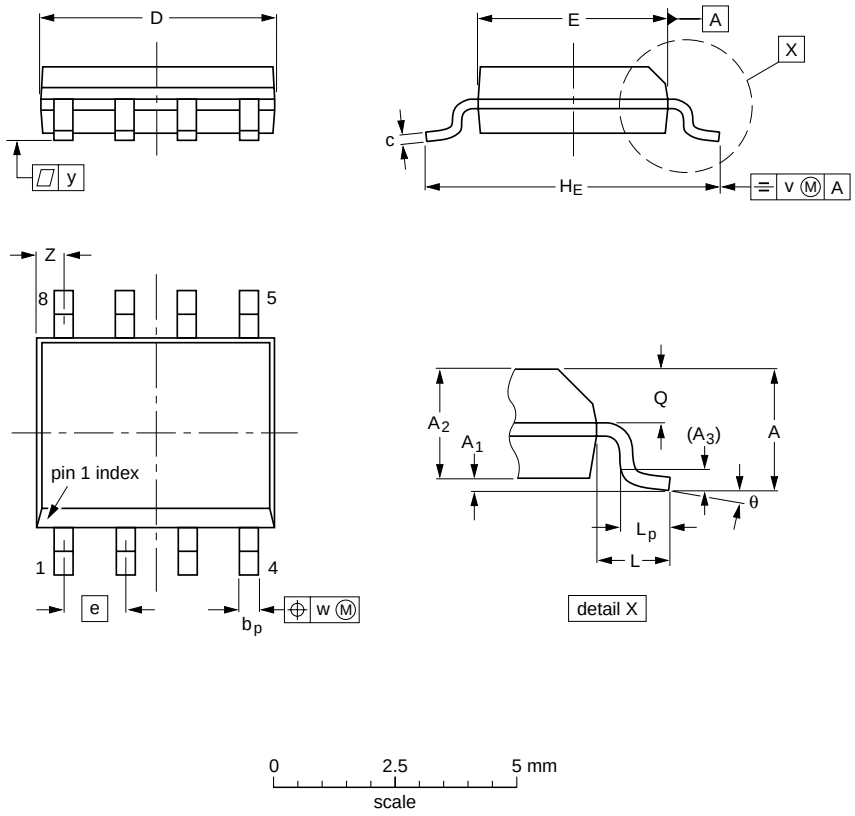
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$C_{(I/O-GND)}$	input/output to ground capacitance	V_I = 0 V; f = 1 MHz; V_{CC} = 3 V	[1]	-	1.0	-	pF
I_{LR}	reverse leakage current	V_I = 3 V	[1]	-	-	100	nA
V_{BR}	breakdown voltage	Zener diode; I_I = 1 mA	[2]	6	-	9	V
C_{sup}	supply pin to ground capacitance	V_I = 0 V; f = 1 MHz; V_{CC} = 3 V	[2]	-	30	-	pF
V_F	forward voltage			-	0.7	-	V

[1] Measured from pin 1, 2, 4, 5, 6 and 8 to ground.

[2] Measured from pin 7 to ground.

7. Package outline

SO8: plastic small outline package; 8 leads; body width 3.9 mm **SOT96-1**



DIMENSIONS (inch dimensions are derived from the original mm dimensions)

UNIT	A max.	A_1	A_2	A_3	b_p	c	$D^{(1)}$	$E^{(2)}$	e	H_E	L	L_p	Q	v	w	y	$Z^{(1)}$	θ
mm	1.75	0.25 0.10	1.45 1.25	0.25	0.49 0.36	0.25 0.19	5.0 4.8	4.0 3.8	1.27	6.2 5.8	1.05	1.0 0.4	0.7 0.6	0.25	0.25	0.1	0.7 0.3	8^o 0^o
inches	0.069	0.010 0.004	0.057 0.049	0.01	0.019 0.014	0.0100 0.0075	0.20 0.19	0.16 0.15	0.05	0.244 0.228	0.041	0.039 0.016	0.028 0.024	0.01	0.01	0.004	0.028 0.012	

Notes

1. Plastic or metal protrusions of 0.15 mm (0.006 inch) maximum per side are not included.
2. Plastic or metal protrusions of 0.25 mm (0.01 inch) maximum per side are not included.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT96-1	076E03	MS-012				~~99-12-27~~ 03-02-18

Fig 1. Package outline SOT96-1 (SO8)

8. Abbreviations

Table 6. Abbreviations

Acronym	Description
DVI	Digital Video Interface
ESD	ElectroStatic Discharge
HDMI	High Definition Multimedia interface
LAN	Local Area Network
PCS	Personal Computing System
PDA	Personal Digital Assistant
RoHS	Restriction of Hazardous Substances
USB	Universal Serial Bus
WAN	Wide Area Network

9. Revision history

Table 7. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
PRTR5V0U6AS_1	20080218	Product data sheet	-	-

10. Legal information

10.1 Data sheet status

Document status[1][2]	Product status[3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL http://www.nxp.com.

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12. Contents

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