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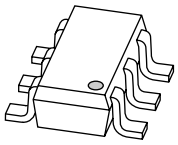
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Kind regards,

Team Nexperia



PRTR5V0U4AD

Integrated quad ultra-low capacitance ESD protection

Rev. 01 — 17 December 2007 Product data sheet

1. Product profile

1.1 General description

The PRTR5V0U4AD is designed to protect Input/Output (I/O) ports that are sensitive concerning capacitive load, such as USB 2.0, Ethernet, Digital Video Interface (DVI), etc. from destruction by ElectroStatic Discharges (ESD). It provides protection to downstream signal and supply components from ESD voltages as high as ±8 kV (contact discharge).

The PRTR5V0U4AD incorporates four pairs of ultra-low capacitance rail-to-rail diodes plus an additional Zener diode. The rail-to-rail diodes are connected to the Zener diode which allows ESD protection to be independent of the availability of a supply voltage.

The PRTR5V0U4AD is fabricated using thin film-on-silicon technology integrating four ultra-low capacitance rail-to-rail ESD protection diodes in a miniature 6-lead SOT457 package.

1.2 Features

- ESD protection compliant to IEC 61000-4-2 level 4, ±8 kV contact discharge
- Low voltage clamping due to integrated Zener diode
- Four ultra-low input capacitance (1 pF typical) rail-to-rail ESD protection diodes
- Small 6-lead SOT457 package

1.3 Applications

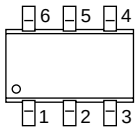
- General-purpose downstream ESD protection of high frequency analog signals and high-speed serial data transmission for ports inside:
  - Cellular mobile handsets
  - USB 2.0 and IEEE 1394 ports in PC or notebook
  - Interfaces: DVI and High Definition Multimedia Interface (HDMI)
  - Cordless telephones
  - Wireless data systems: Wide Area Network (WAN) and Local Area Network (LAN)
  - Personal Digital Assistants (PDAs)

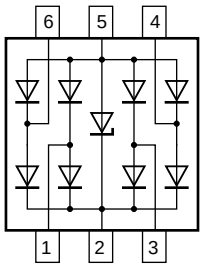
NXP founded by Philips

2. Pinning information

Table 1. Pinning

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





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3. Ordering information

Table 2. Ordering information

Type number	Package		
	Name	Description	Version
PRTR5V0U4AD	TSOP6	plastic surface-mounted package (TSOP6); 6 leads	SOT457

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
		air discharge	–15	+15	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

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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	$V_{(I/O-GND)}$ = 0 V; V_{CC} = 3.0 V; f = 1 MHz	[1]	-	1.0	-	pF
I_{LR}	reverse leakage current	$V_{(I/O-GND)}$ = 3.0 V	[1]	-	-	100	nA
V_{BR}	breakdown voltage	I_I = 1 mA		6	-	9	V
C_{sup}	supply pin to ground capacitance	$V_{(I/O-GND)}$ = 0 V; V_{CC} = 3.0 V; f = 1 MHz	[2]	-	40	-	pF
V_F	forward voltage			-	0.7	-	V

[1] Measured from pins 1, 3, 4 and 6 to ground (GND).

[2] Measured from pin 2 to ground (GND).

7. Application information

The PRTR5V0U4AD is optimized to protect e.g. two USB 2.0 ports against ESD. Each device is capable to protect both USB data lines and the V_{BUS} supply.

A typical application is shown in Figure 1.

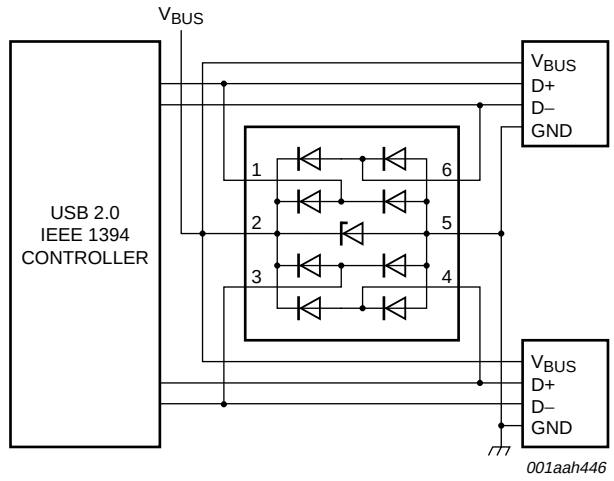
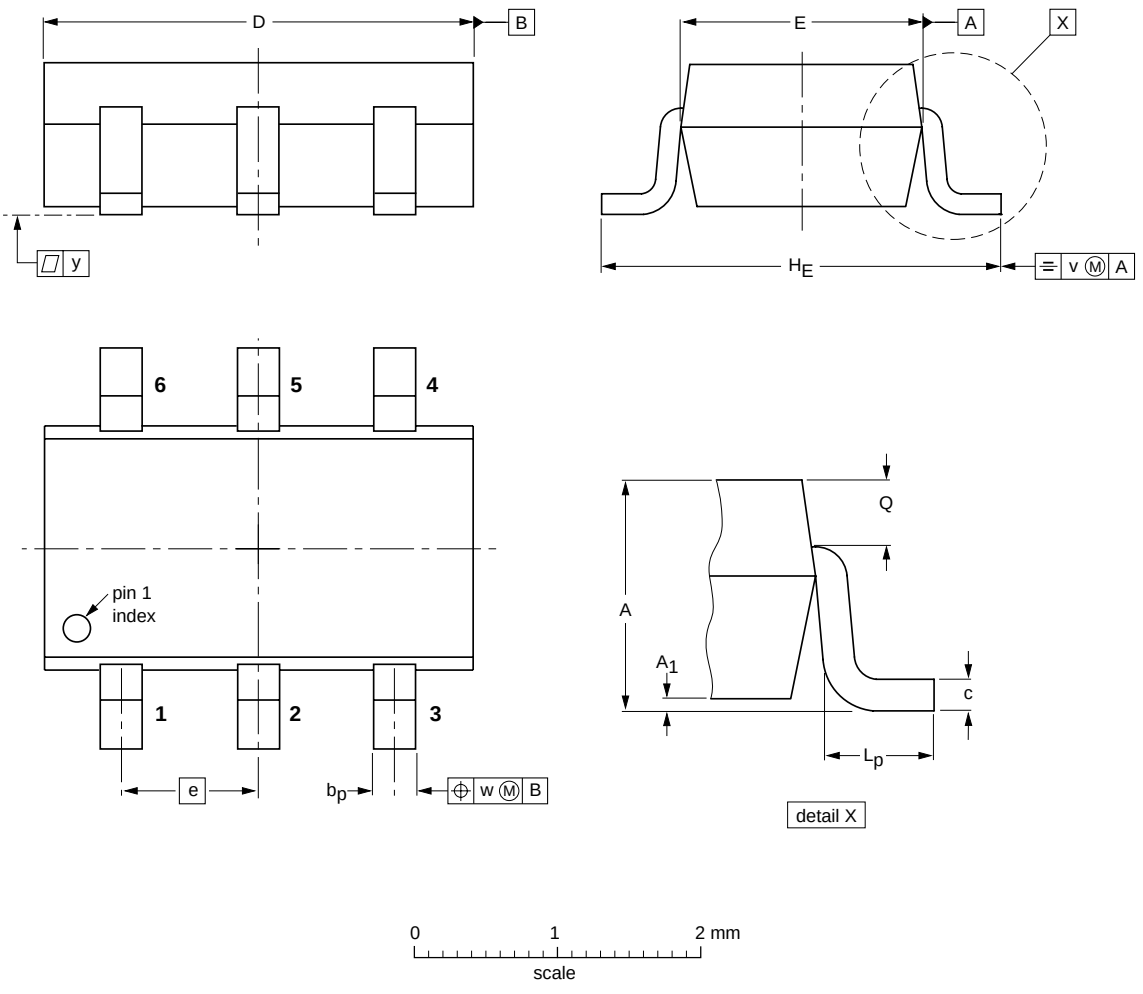


Fig 1. Typical application of PRTR5V0U4AD

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8. Package outline

Plastic surface-mounted package (TSOP6); 6 leads **SOT457**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1	b_p	c	D	E	e	H_E	L_p	Q	v	w	y
mm	1.1 0.9	0.1 0.013	0.40 0.25	0.26 0.10	3.1 2.7	1.7 1.3	0.95	3.0 2.5	0.6 0.2	0.33 0.23	0.2	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT457			SC-74			~~05-11-07~~ 06-03-16

Fig 2. Package outline SOT457 (TSOP6)

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9. Revision history

Table 6. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
PRTR5V0U4AD_1	20071217	Product data sheet	-	-

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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".

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