

TS-RDS1

USB 2.0 Compact Card Reader

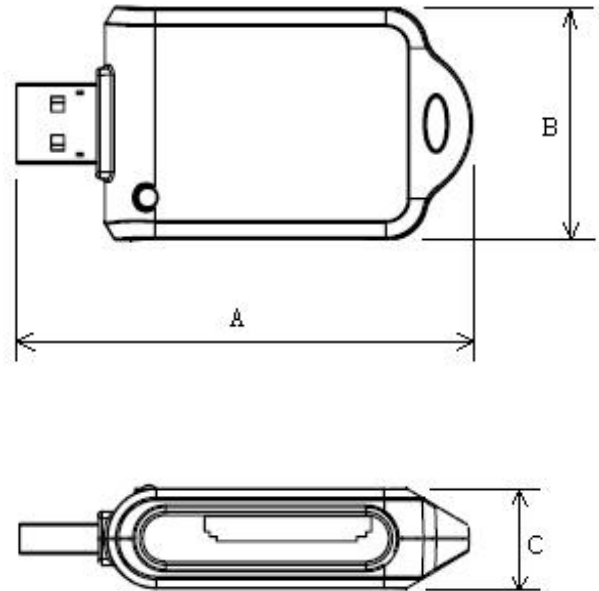
Description

TS-RDS1 is a USB 2.0 Compact Card Reader. It is a small device specifically designed for fast, easy data transfer and exchange using multiple types of Memory Cards. The Card Reader accepts the direct insertion of; **Secure Digital (SD™)**, **Secure Digital High Capacity (SDHC™)**, **miniSD™ (SD™)**, **miniSDHC™**, **MultiMediaCard (MMC™)**, **MMCplus™**, **RS-MMC**, and **MMCmobile™** Memory Cards. In addition the Reader supports **microSD™** and **MMCmicro™** Memory Cards, when combined with their adapter.

Features

- Fully Compliant with the Hi-Speed USB 2.0 specification
- Hi-Speed Data transfer rates of up to 480Mb/s
- USB powered (no external power or battery needed)
- Supports many different types of Memory Cards without the need for an adapter :
 - **Secure Digital Card (SD™)**
 - **Secure Digital High Capacity (SDHC™)**
 - **miniSD™**
 - **miniSDHC™**
 - **MultiMediaCard (MMC™)**
 - **MMCplus™**
 - **RS-MMC**
 - **MMCmobile™**
- Supports additional Memory Cards with an adapter :
 - **microSD™**
 - **MMCmicro™**
- LED indicates power connection

Placement



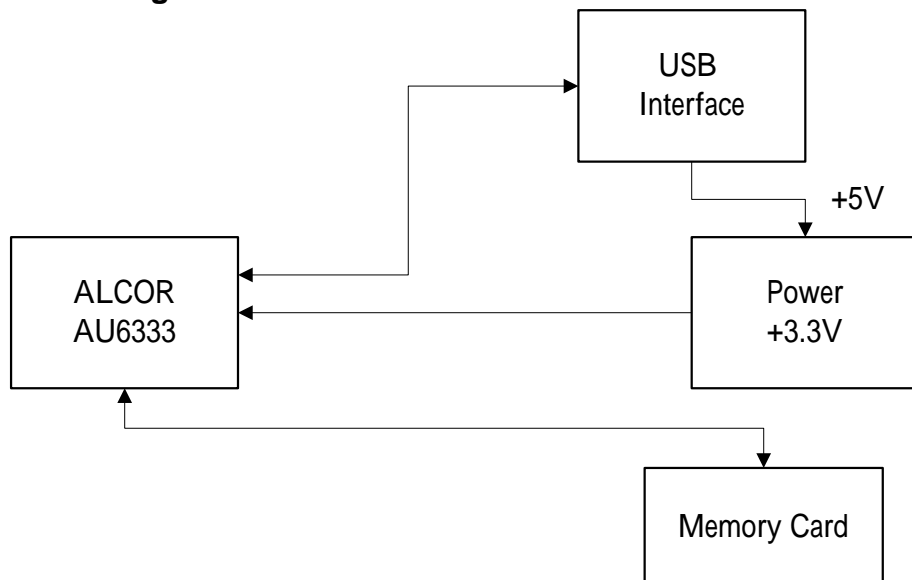
Dimensions

Side	Millimeters	Inches
A	69.00 ± 1.00	2.72 ± 0.04
B	35.00 ± 1.00	1.38 ± 0.04
C	15.00 ± 1.00	0.59 ± 0.04

System Requirements

- Desktop or notebook computer with a working USB port
- One of the following Operating Systems:
 - Windows® 98/98SE
 - Windows® 2000
 - Windows® Me
 - Windows® XP
 - Mac™ OS 9.x, or later
 - Linux™ Kernel 2.4, or later

Block Diagram



Pinouts

Pin No.	Pin Name
01	VCC
02	USB-
03	USB+
04	VSS

Pin Identification

Symbol	Function
USB- USB+	USB differential signal: The pairs are used to transmit Data/Address/Command
VSS	Ground
VCC	USB Power Input

Absolute Maximum Rating

SYMBOL	PARAMETER	RATING	UNITS
V _{CC}	Power Supply	-0.3 to V _{CC} +0.3	V
V _{IN}	Input Voltage	-0.3 to 3.3	V
V _{OUT}	Output Voltage	-0.3 to V _{CC} +0.3	V
T _{STG}	Storage Temperature	-40 to 150	°C

Recommended Operating Conditions

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS
V _{CC}	Power Supply	3.0	3.3	3.6	V
V _{IN}	Input Voltage	0	3.3	5.2	V
T _{OPR}	Operating Temperature	-40		115	°C

General DC Characteristics

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
I _{IN}	Input current	no pull-up or pull-down	-10	±1	10	μA
I _{OZ}	Tri-state leakage current		-10	±1	10	μA
C _{IN}	Input capacitance	Pad Limit		2.8		ρF
C _{OUT}	Output capacitance	Pad Limit		2.8		ρF
C _{BID}	Bi-directional buffer capacitance	Pad Limit		2.8		ρF

DC Characteristics

SYMBOL	PARAMETER	CONDITIONS	Limits			UNIT
			MIN	TYP	MAX	
V _{CC}	Power supply	3.3V I/O	3.0	3.3	3.6	V
V _{il}	Input low voltage	LVTTL			0.8	V
V _{ih}	Input high voltage		2.0			V
V _{ol}	Output low voltage	I _{ol} = 2~16mA			0.4	V
V _{oh}	Output high voltage	I _{oh} = 2~16mA	2.4			V
R _{pu}	Input pull-up resistance	PU=high, PD=low	40	75	190	KΩ
R _{pd}	Input pull-down resistance	PU=low, PD=high	40	75	190	KΩ
I _{in}	Input leakage current	V _{in} = V _{CC} or 0	-10	±1	10	μA
I _{oz}	Tri-state output leakage current		-10	±1	10	μA

USB Transceiver Electrical Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
AVCC	Analog supply current		3.0	3.3	3.6	V
VCC	Digital supply current		2.25	2.5	2.75	V
I _{CC}	Operating supply current	High speed operating at 480 MHz			73	mA
I _{CC(susp)}	Suspend supply current	In suspend mode, current with 1.5kΩ pull-up resistor on pin RPU disconnected			120	μA

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