PCcardsDirect.com

PCI ExpressCard

Product Specifications
V1.0

Contents:

PCcardsDirect

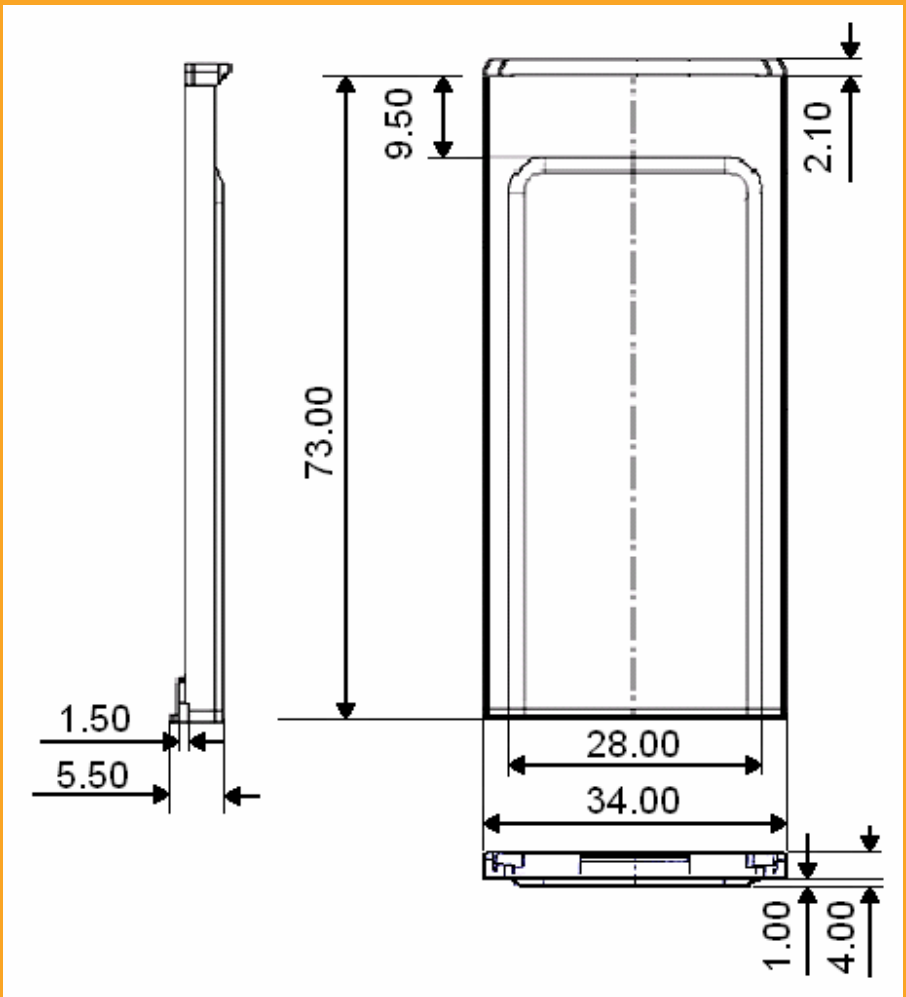
1 Description

PCcardsDirect Express Card is compatible with USB 2.0 standard and Express Card™ standards. It is solid-state design in small size for using in notebook computer, and has huge capacity and low power consumption.

2 Features

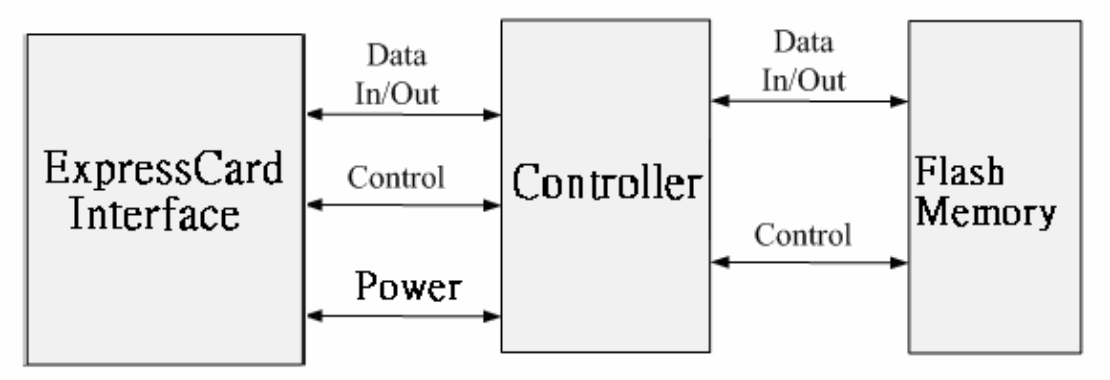
- Compliant with USB specification 2.0
- Compatible with Express Card™ standards
- No external power or battery needed
- Support low power mode
- Support smart application
  - Support partition management and lock disk function
  - Support password protection for access security
- Work with default driver from Windows ME, Windows 2000, Windows XP, Mac 9.2, Mac OS X

3 Dimensions



unit：mm

4 Block Diagram



5 Pin Assignments

Pin Number	Pin Name	Function
1	GND	Ground
2	USB-	USB interface
3	USB+	
4	CPUSB	USB interface presence detect
5	RSVD1	Reserve data pins
6	RSVD2	
7	RSVD3	
8	SMBCLK	SMBus
9	SMBDATA	
10	1.5V	Power
11	WAKE	Request the host interface return to full operation and respond to PCI Express
12	3.3VAUX	Power
13	PERST	Reset
14	3.3V	Power
15	3.3V	

16	CLKREQ	Request REFCLK be enabled
17	CPPE	PCI Express interface presence detect
18	REFCLK-	PCI Express reference clock
19	REFCLK+	
20	GND	Ground
21	PERN0	PCI Express interface
22	PERP0	
23	GND	Ground
24	PENTN0	PCI Express interface
25	PENTP0	
26	GND	Ground

6 Specifications

Host Interface	Express Card™
Storage Capacity	128MB-16GB
Color	Silver
Data Retention	10 years
Erase Cycles	>100,000 times
Media Transfer Rate	Read: 18 M Byte/sec Write: 11 M Byte /sec
Power Supply	DC 5V ± 10% via the ExpressCard port
Temperature Range	Operation: 0℃~+70℃ Storage:-20℃~+80℃
Driver	Only in Win98/Win98SE need.

7 Electrical Characteristics

7.1 Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
V_{CC}	Power Supply	-0.3 to VCC+0.3	V
V_{IN}	Input Voltage	-0.3 to 3.6	V
V_{OUT}	Output Voltage	-0.3 to VCC+0.3	V
T_{STG}	Storage Temperature	-40 to 150	℃

7.2 Recommended Operating Conditions

Symbol	Parameter	MIN	TYP	MAX	Unit
A_{DD}	5V Power Supply	4.75	5.0	5.25	V
V_{CC}	Power Supply	3.0	3.3	3.6	V
V_{DD}	Digital Supply	1.62	1.8	1.98	V
V_{IN}	Input Voltage	0	3.3	3.6	V
T_{OPRS}	Operating Standard Temperature	0		70	℃

7.3 General DC Characteristics

Symbol	Parameter	Condition	MIN	TYP	MAX	Unit
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

7.4 DC Electrical Characteristics of 3.3V I/O Cells

Symbol	Parameter	Condition	MIN	TYP	MAX	Unit
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	55	75	110	KΩ
R_{pd}	Input pull-down resistance	PU=low, PD=high	40	75	150	KΩ
I_{in}	Input leakage current	Vin= VCC or 0	-10	±1	10	μA
I_{oz}	Tri-state output leakage current		-10	±1	10	μA

7.5 USB Transceiver electrical characteristics

Symbol	Parameter	Condition	MIN	MAX	Unit
AV_{CC}	Analog supply Voltage		3.0	3.6	V
V_{CC}	Digital supply Voltage		1.62	1.98	V
I_{CC}	Operating supply current	High speed operating at 480 MHz		55	mA
$I_{CC\ (susp)}$	Suspend supply current	In suspend mode, current with 1.5kΩ pull-up resistor on pin RPU disconnected		120	μA

7.6 Static characteristic：Digital pin

Symbol	Parameter	MIN	MAX	Unit
Input levels				
V_{IL}	Low-level input voltage		0.8	V
V_{IH}	High-level input voltage	2.0		V
Output levels				
V_{OL}	Low-level output voltage		0.2	V

AV_{CC} =3.0V~3.6V；VDDU, V_{CC} =1.62V~1.98V；Temp=0℃~70℃

7.7 Static characteristic：Analog I/O pins (DP/DM)

Symbol	Parameter	Condition	MIN	TYP	MAX	Unit
USB2.0 Transceiver (HS)						
Input Levels (differential receiver)						
V_{HSDIFF}	High speed differential input sensitivity	| $V_{I\ (DP)}$ - $V_{I\ (DM)}$ | measured at the connection as application circuit	300			mV
V_{HSCM}	High speed data signaling common mode voltage range		-50		500	mV
V_{HSSQ}	High speed squelch detection threshold	Squelch detected			100	mV
		No squelch detected	150			mV
V_{HSDSC}	High speed disconnection detection threshold	Disconnection detected	625			mV
		Disconnection not detected			525	mV
Output Levels						
V_{HSOI}	High speed idle level output		-10		10	mV

	voltage(differential)					
V_{HSOL}	High speed low level output voltage(differential)		-10		10	mV
V_{HSOH}	High speed high level output voltage(differential)		-360		400	mV
V_{CHIRPJ}	Chirp-J output voltage(differential)		700		1100	mV
V_{CHIRPK}	Chirp-K output voltage(differential)		-900		-500	mV
Resistance						
R_{DRV}	Driver output impedance	Equivalent resistance used as internal chip only	3	6	9	Ω
		Overall resistance including external resistor	40.5	45	49.5	Ω
Termination						
V_{TERM}	Termination voltage for pull-up resistor on pin RPU		3.0		3.6	V
USB1.1 Transceiver(FS/LS)						
Input Levels(differential receiver)						
V_{DI}	Differential input sensitivity	$\lvert V_{I(DP)} - V_{I(DM)} \rvert$	0.2			V
V_{CM}	Differential common mode voltage		0.8		2.5	V
Input Levels(single-ended receivers)						
V_{SE}	Single ended receiver threshold		0.8		2.0	V
Output levels						
V_{OL}	Low-level output voltage		0		0.3	V
V_{OH}	High-level output voltage		2.8		3.6	V

AV_{CC} =3.0V~3.6V；V_{CC} =1.62V~1.98V；Temp=0℃~70℃

7.8 Dynamic characteristic

Symbol	Parameter	Condition	MIN	TYP	MAX	Unit
Driver Characteristics						
High-Speed Mode						
t_{HSR}	High-speed differential rise time		500			ps
t_{HSF}	High-speed differential fall time		500			ps
Full-Speed Mode						
t_{FR}	Rise time	CL=50pF；10 to 90%of |V_{OH}-V_{OL}|	4		20	ns
t_{FF}	Fall time	CL=50pF；90 to 10%of |V_{OH}-V_{OL}|	4		20	ns
t_{FRMA}	Differential rise/fall time matching (t_{FR} / t_{FF})	Excluding the first transition from idle mode	90		110	%
V_{CRS}	Output signal crossover voltage	Excluding the first transition from idle mode	1.3		2.0	V
Low-Speed Mode						
t_{LR}	Rise time	CL=200pF -600pF 10 to 90%of |V_{OH}-V_{OL}|	75		300	ns
t_{LF}	Fall time	CL=200pF -600pF 90 to 10%of |V_{OH}-V_{OL}|	75		300	ns
t_{LRMA}	Differential rise/fall time matching (t_{LR} / t_{LF})	Excluding the first transition from idle mode	80		125	%
V_{CRS}	Output signal crossover voltage	Excluding the first transition from idle mode	1.3		2.0	V
V_{OH}	High-level output voltage		2.8		3.6	V

8 Product Model Numbers

Part Numbers

PCDEXP512MB
512MB ExpressCard 34mm High-speed USB or PCI Express serial interfaces compatible

PCDEXP1024MB
1GB ExpressCard 34mm High-speed USB or PCI Express serial interfaces compatible

PCDEXP2048MB
2GB ExpressCard 34mm High-speed USB or PCI Express serial interfaces compatible

PCDEXP4096MB
4GB ExpressCard 34mm High-speed USB or PCI Express serial interfaces compatible

PCDEXP8192MB
8GB ExpressCard 34mm High-speed USB or PCI Express serial interfaces compatible