

## 12

## Electrical Characteristics

## 12.1 Absolute Maximum Ratings

Junction Temperature	125°C
Storage Temperature	-65°C to 150°C
VCC2.5 DC Supply Voltage	2.8V
VCC3.3 DC Supply Voltage	3.8V
I/O Pin Voltage with respect to GND	-0.5V to VCC3.3 + 0.5V

## 12.2 DC Specifications

Symbol	Parameter	Min	Max	Unit
VCC3.3	Supply Voltage	3.15	3.45	V
VCC2.5	Supply Voltage	2.25	2.75	V
LPIN	Pin Inductance		10 (sig); 8 (pwr)	nH
ICC (3V)	Power Supply Current		1	A
ICC (2.5V)	Power Supply Current		1.4	A

## 12.2.1 PCI Signal DC Specifications

Symbol	Parameter	Min	Max	Unit
V <sub>PIL</sub>	Input Low Voltage		0.8	V
V <sub>PIH</sub>	Input High Voltage	2.0		V
V <sub>POL</sub>	Output Low Voltage		0.5	V
V <sub>POH</sub>	Output High Voltage	2.4		V
I <sub>PIL</sub>	Input Low Current		-20	uA
I <sub>PIH</sub>	Input High Current		+20	uA
C <sub>PIN</sub>	Input Capacitance		10	pF
C <sub>CLK</sub>	PCI Clock Input Capacitance		10	pF
C <sub>IDSEL</sub>	PCI Idsel Input Capacitance		8	pF

### 12.1.1 Non-PCI Signal DC Specifications

Symbol	Parameter	Min	Max	Unit
V <sub>IL</sub>	Input Low Voltage		0.8	V
V <sub>IH</sub>	Input High Voltage	2.0		V
V <sub>OL</sub>	Output Low Voltage		0.5	V
V <sub>OH</sub>	Output High Voltage	2.4		V
I <sub>IL</sub>	Input Low Current		+10	uA
I <sub>IH</sub>	Input High Current		-10	uA
I <sub>IHPD</sub>	Pulldown Input High Current		250	uA
I <sub>ILPU</sub>	Pullup Input Low Current		250	uA
C <sub>IN</sub>	Input Capacitance		10	pF

### 12.3 AC Specifications

Pin Name	Capacitive Load
MADD[9:0], MCAS[1:0], MDSF[1:0], MRAS[1:0], MWE[1:0]	80pF
PCIAD[31:0], PCICBEN[3:0], PCIPar, PCIFrameN, PCIIRdyN, PCITRdyN, PCIStopN, PCIHdsel, PCIDevselN, PCIReqN, PCIGntN, PCIIntAN, AGPPipeN, AGPRbfN, AGPSBA[7:0]	50pF in PCI 33 system 10pF in AGP system
MBANK[3:0], MBYTE[7:0], MEMCKE, MEMCKOUT[1:0], VidDDCClk, VidDDCData, VidRightEye, VidHSYNC, VidVSYNC, VSAResetN, VSBResetN, RenderSyncN	50pF
MDAT[63:0]	40pF
ROMSelectN, ROMWEN, SBCLK, SBData, VSAData[7:0], VSBDData[7:0], VSCd[7:0], VSGPChipSelectN, VSGPDataAckN, VSGPDataStrobeN, VSGPReadWriteN	30pF

### 12.3.1 Clock Timing

Symbol	Parameter	Min	Max	Units	Notes
T <sub>PCyc</sub>	PCIClk Cycle Time	15	-	ns	
T <sub>PHigh</sub>	PCIClk High Time	-	-	ns	
T <sub>SLow</sub>	PCIClk Low Time	-	-	ns	
T <sub>MCyc</sub>	MClkin Cycle Time	8	-	ns	
T <sub>MHigh</sub>	MClkin High Time	-	-	ns	
T <sub>MLow</sub>	MClkin Low Time	-	-	ns	
T <sub>SCyc</sub>	SClkin Cycle Time	15	-	ns	
T <sub>SHigh</sub>	SClkin High Time	6	-	ns	
T <sub>SLow</sub>	SClkin Low Time	6	-	ns	
T <sub>DCyc</sub>	DClk Cycle Time	4	-	ns	
T <sub>DHigh</sub>	DClk High Time	-	-	ns	
T <sub>DLow</sub>	DClk Low Time	-	-	ns	

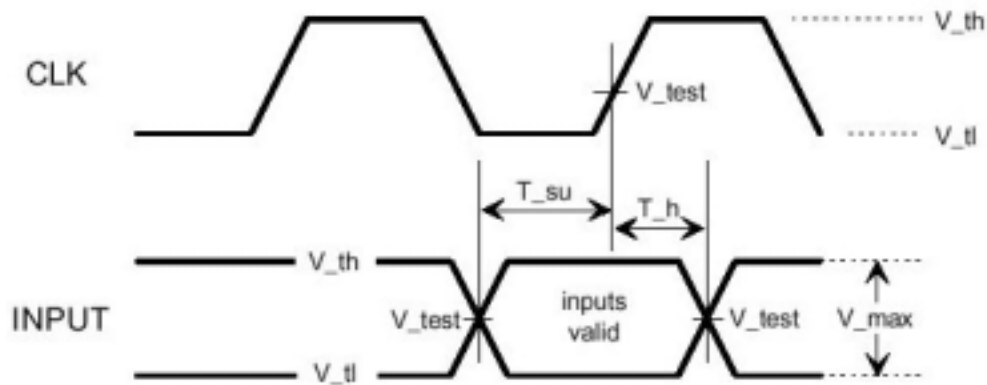


Figure 0.1 Input Timing Parameters

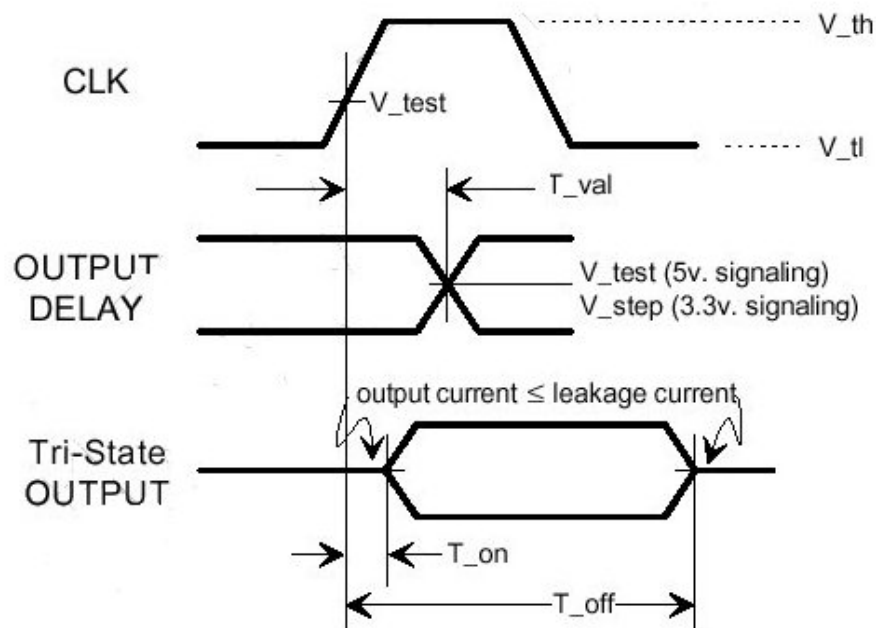


Figure 0.2 Output Timing Parameters

### 12.1.2 PCI Clock Referenced Input Timing

Parameter	T <sub>Su</sub> Min	T <sub>TH</sub> Min	Units	Notes
PCIAD(31:0), PCICBEN(3:0), PCIPar, PCIFrameN, PCIIRdyN, PCITRdyN, PCISstopN, PCIHdsel, PCIDevselN, AGPSt0-2	5	0	ns	
PCIGntN	5	0	ns	
PCIRstN	7	0	ns	1

Note 1: PCIRstN is resynchronised internally. The timings given, when met, ensure that the reset is detected in the current cycle.

### 12.1.3 PCI -Referenced Output Timing

Parameter	T <sub>Val</sub>		T <sub>On</sub>		T <sub>Off</sub>		Units	Notes
	Min	Max	Min	Max	Min	Max		
PCIAD(31:0), PCICBEN(3:0), PCIPar, PCIFrameN, PCIIRdyN, PCITRdyN, PCISstopN, PCIHdsel, PCIDevselN	2	11	2	11	2	11	ns	
PCIReqN	2	12					ns	
PCIIntAN	2	11					ns	1

Note 1: Timings given are for falling edges of the open drain signal. Rise times are dependent on the external pull-up resistor.

### 12.1.4 AGP Referenced Output Timing

Parameter	T <sub>Val</sub>		T <sub>On</sub>		T <sub>Off</sub>		Units	Notes
	Min	Max	Min	Max	Min	Max		
PCIAD(31:0), PCICBEN(3:0), PCIPar, PCIFrameN, PCIIRdyN, PCITRdyN, PCIStopN, PCIHdsel, PCIDevselN	1.5	6	1.5	6	1.0	14	ns	
PCIReqN	1.5	6					ns	
PCIntAN	1.5	6					ns	1

Note 1: Timings given are for falling edges of the open drain signal. Rise times are dependent on the external pull-up resistor.

### 12.3.2 MEMCKOUT Referenced Input Timing

All timings below are with respect to MEMCKOUT, which is a delayed version of MClk.

Parameter	TSu Min	TH Min	Units	Notes
MDAT[63:0]	0.5	0.5	ns	

### 12.1.5 MEMCKOUT Referenced Output Timing

All timings below are with respect to MEMCKOUT, which is a delayed version of MClk.

Parameter	T <sub>Val</sub>		T <sub>On</sub>		T <sub>Off</sub>		Units	Notes
	Min	Max	Min	Max	Min	Max		
All memory control, data and address lines		8.5					ns	