MCS7705
USB 1.1 to Single Parallel Controller

Features

- Single 5V Operation
- Low Power
- USB Specification 1.1 compliant
- Operation over the extended USB Bus voltage range (4.5 to 5.5V)
- On-Chip 3.3V Voltage Regulator
- Internal Power-On Reset
- Single Printer Port Interface
- 2KV In-Circuit ESD protection for lower cost of external components
- Available in 48-Pin QFP Package

Applications

- Printer Server
- Printer Interface

Application Note

- AN-7705

Evaluation Board

- MCS7705-EVB

General Description

The MCS7705 controller provides bridging between the Universal Serial Bus (USB) port, and a Parallel Printer port. This device contains all the necessary logic to communicate with the host computer via the USB Bus. It supports Printers with hardware accelerated SPP mode.

In addition, the MCS7705 contains a 3.3V regulator and operates in Bus-Powered mode.

The MCS7705 has a reduced frequency (6MHz) crystal oscillator. This combination of features allows significant cost savings in system design along with straightforward implementation of Parallel Printer port functionality into PC peripherals using the host's USB port.

Ordering Information		
Commercial Grade (0° C to +70° C)		
MCS7705CQ-GR	48-LQFP	RoHS

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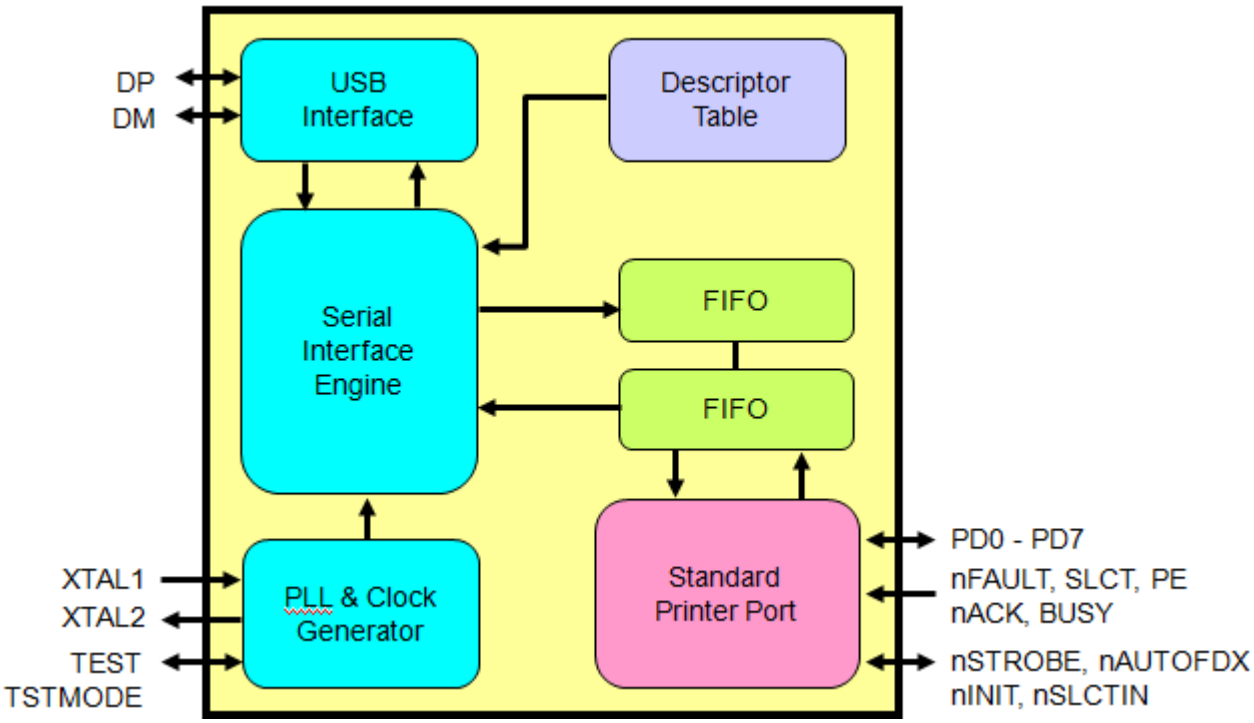
Block Diagram



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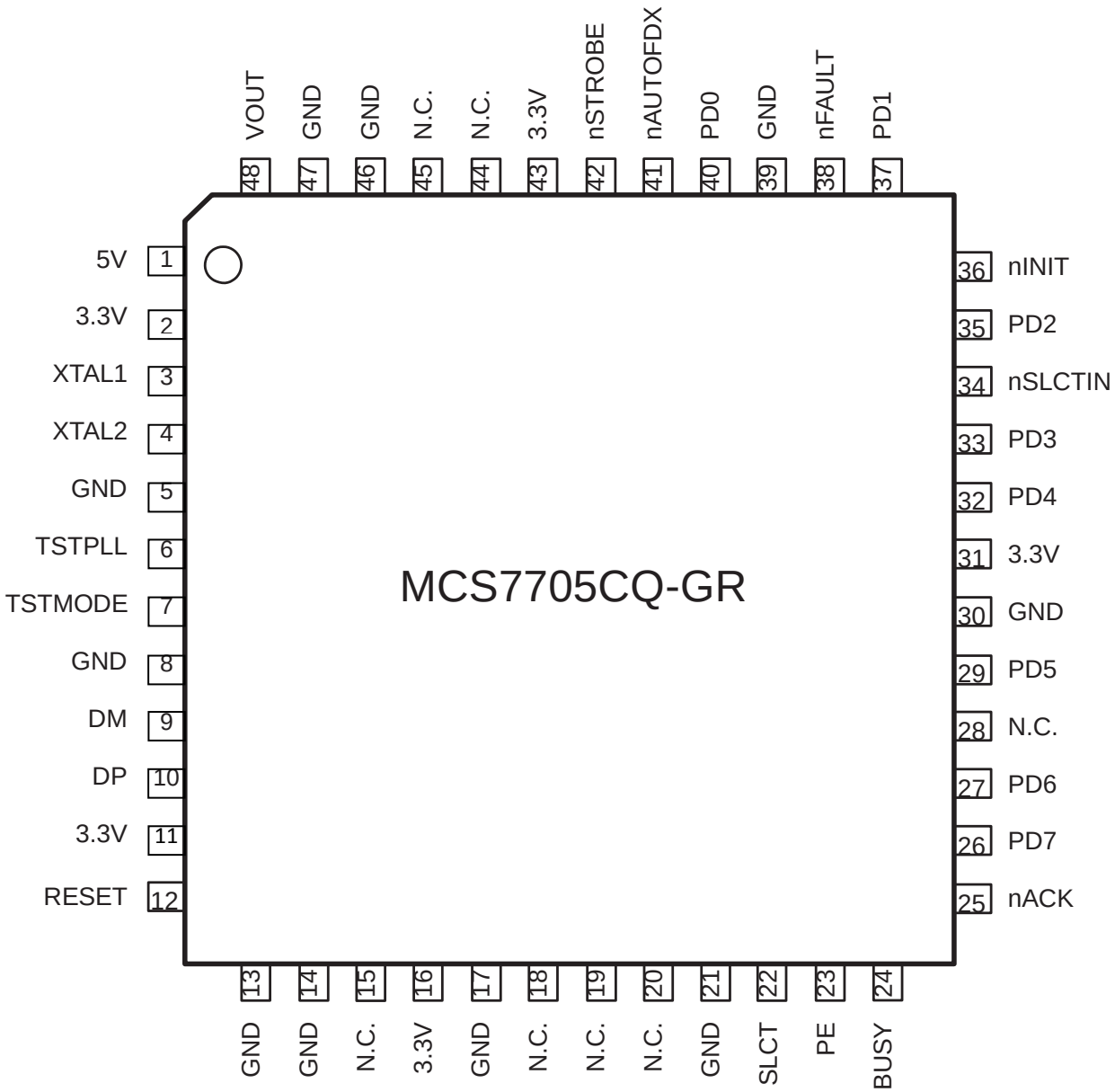
Pin-out



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Pin Assignments

Pin Name	Pin	Type	Description
XTAL1	3	I	Crystal Oscillator input, or External Clock input pin (6 MHz). This signal input is used in conjunction with XTAL2 to form a feedback circuit for the internal timing. Two (10 pF) external capacitors connected from each side of the crystal to GND are required to form a Crystal Oscillator.
XTAL2	4	O	Crystal Oscillator output. See XTAL1 description.
TSTPLL	6	I	Test Mode (active low, internal pull-up). When this pin is tied to GND, the internal PLL is bypassed and an external 48 MHz clock is used as the reference clock.
TSTMODE	7	I	Internal Test Mode (active low, internal pull-up). When this pin is tied to GND, the Internal Test Mode is enabled.
DM	9	I/O	Upstream USB port differential Data Minus (D-), analog.
DP	10	I/O	Upstream USB port differential Data Plus (D+), analog.
RESET	12	I	System Reset (active high). Resets all internal registers, sequencers, and signals to a consistent state. Connect to GND to use the internal Power-On-Reset circuit.
SLCT	22	I	Peripheral/Printer Selected (internal pull-up). This pin is set high by the peripheral/printer when it is selected.
PE	23	I	Paper Empty (internal pull-up). This pin is set high by the peripheral/printer when printer paper is empty.
BUSY	24	I	Peripheral/Printer Busy (internal pull-up). This pin is set high by the peripheral/printer when the printer or peripheral is not ready to accept data.
nACK	25	I	Peripheral/Printer data Acknowledge (internal pull-up). This pin is set low by the peripheral/printer to indicate a successful data transfer has taken place.
PD7	26	I/O	Parallel printer port Data bit 7.
PD6	27	I/O	Parallel printer port Data bit 6.
PD5	29	I/O	Parallel printer port Data bit 5.
PD4	32	I/O	Parallel printer port Data bit 4.
PD3	33	I/O	Parallel printer port Data bit 3.

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Pin Name	Pin	Type	Description
nSLCTIN	34	I/O	Peripheral/Printer Select (open-drain). Selects the peripheral/printer when it is set low.
PD2	35	I/O	Parallel printer port Data bit 2.
nINIT	36	I/O	Initialize the peripheral/printer (open drain). When set low, the peripheral/printer starts its initialization routine.
PD1	37	I/O	Parallel printer port Data bit 1.
nFAULT	38	I	Peripheral/Printer data error (internal pull-up). This pin is set low by the peripheral/printer during an error condition.
PD0	40	I/O	Parallel printer port Data bit 0.
nAUTOFDX	41	I/O	Peripheral/Printer Auto Feed (open-drain). Continuous autofed paper is selected when this pin is set low.
nSTROBE	42	I/O	Peripheral/Printer data Strobe (open drain). Data is latched into the peripheral/printer when the nSTROBE is low.
VOUT	48	PWR	+3.3V Voltage Regulator output.
GND	5,8,13,46, 14, 17,21, 30, 39,47	PWR	Power and Signal Ground.
3.3V	2, 11, 16, 31, 43	PWR	Device Supply Inputs. All should be connected to the VOUT pin. VOUT voltage is gated by RESET.
5V	1	PWR	Main Power Input. Connect to USB VBUS or local VDD.

Note: All names with “n” prefix are active low.

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USB Description

Analog Transceivers
The on-chip transceivers are connected directly to USB cables through external series resistors. They transmit and receive serial data at both full-speed (12Mbit/s) and low-speed (1.5Mbit/s) data rates. Slew rates are automatically adjusted according to the speed of the device connected and lie within the range defined in the *USB Specification Rev. 1.1*.

Serial Interface Engine
This engine implements the complete USB protocol layer including: parallel /serial conversion, synchronization pattern recognition, CRC checking/generation, bit (de)stuffing, packet identifier (PID) verification/generation, address recognition and handshake evaluation/generation.

Bit Clock Recovery
The bit clock recovery circuit recovers the clock from the incoming USB data stream using 4x over sampling. It is able to track in the presence of jitter and frequency drift as specified by the USB Specification Rev. 1.1.

3.3V Source
A 5V to 3.3V DC-DC regulator is integral to the chip relieving the need for a +3.3V source. It supplies the analog transceivers and internal logic and can be used to supply the 1.5kΩ pull-up resistor on the DP line of the upstream connection.

PLL Clock Multiplier
An integral Phase-Locked Loop (PLL) performs 6 to 48MHz clock multiplication and requires no external components except the crystal. This allows for the use of low-cost 6MHz crystals which reduce high frequency radiated Electro-Magnetic Interference (EMI).

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Host Requests

All standard USB requests from the host are handled via Control Endpoint-0. The Control Endpoint can handle a maximum of 8 Bytes per transfer.

This table shows the supported standard USB requests.
Note: the USB data transmission order is Least Significant Bit (LSB) first. In the following tables Multi-Byte variables are displayed least significant Byte first.

Standard USB Requests

RequestName	bmRequestType Byte 0 [7:0] (bin)	bRequest Byte 1 (hex)	wValue Byte 2, 3 (hex)	wIndex Byte 4, 5 (hex)	wLength Byte 6, 7 (hex)	Data
Address						
Set Address	X000 0000	05	address**	00,00	00,00	none
Configuration						
Get Configuration	1000 0000	08	00,00	00,00	01,00	Configuration Value = 0x01
Set Configuration-0	X000 0000	09	00,00	00,00	00,00	none
Set Configuration-1	X000 0000	09	01,00	00,00	00,00	none
Descriptor						
Get Configuration Descriptor	1000 0000	06	00,02	00,00	length***	Configuration, Interface, and Endpoint Descriptors
Get Device Descriptor	1000 0000	06	00,01	00,00	length***	Device Descriptor
Feature						
Clear Feature (REMOTE_WAKEUP)	X000 0000	01	01,00	00,00	00,00	none
Clear Endpoint (1) Feature (HALT/STALL)	X000 0010	01	00,00	81,00	00,00	none
Status						
Get Device Status	1000 0000	00	00,00	00,00	02,00	Device Status
Get Interface Status	1000 0001	00	00,00	00,00	02,00	zero
Get Endpoint (0) Status	1000 0010	00	00,00	00/80, 00*	02,00	Endpoint-0 Status
Get Endpoint (1) Status	1000 0010	00	00,00	81,00	02,00	Endpoint-1 Status

* The MSB specifies endpoint direction: 0 = OUT, 1 = IN. Either value is accepted.
** Device Address: 0 to 127
*** Returned Value (in Bytes)

Standard USB Descriptors

These are the supported Standard USB Descriptors:

- Device
- Configuration
- Interface
- Endpoint

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Device Descriptors

Offset (Bytes)	Field Name	Size (Bytes)	Value (hex)	Comments
0	bLength	1	12	Descriptor Length = 18 Bytes
1	bDescriptorType	1	01	Type = DEVICE
2	bcdUSB	2	10,01	USB Specification Rev-1.1
4	bDeviceClass	1	FF	Vendor Class
5	bDeviceSubClass	1	00	n/a
6	bDeviceProtocol	1	FF	Vendor Class
7	bMaxPacketSize0	1	08	Packet Size = 8 Bytes
8	idVendor	2	10,97	the Vendor-ID (9710)
10	idProduct	2	05,77	the MCS7705 Product-ID
12	bcdDevice	2	00,01	the silicon revision (1.0)
14	iManufacturer	1	00	no manufacturer string
15	iProduct	1	00	no product string
16	iSerialNumber	1	00	no serial number string
17	bNumConfigurations	1	01	one configuration

Configuration Descriptors

Offset (Bytes)	Field Name	Size (Bytes)	Value (hex)	Comments
0	bLength	1	09	Descriptor Length = 9 Bytes
1	bDescriptorType	1	02	Type = CONFIGURATION
2	wTotalLength	2	27,00	Combined Length of Configuration, + Interface, + all Endpoint Descriptors (39 Bytes)
4	bNumInterfaces	1	01	one Interface
5	bConfiguration	1	01	Configuration Value = 1
6	iConfiguration	1	00	no configuration string
7	bmAttributes	1	A0	Bus-Powered with remote wake-up
8	MaxPower	1	32	100mA default

Interface Descriptors

Offset (Bytes)	Field Name	Size (Bytes)	Value (hex)	Comments
0	bLength	1	09	Descriptor Length = 9 Bytes
1	bDescriptorType	1	04	Type = INTERFACE
2	bInterfaceNumber	1	00	n/a
3	bAlternateSetting	1	00	no alternate setting
4	bNumEndpoints	1	03	Three Endpoints
5	bInterfaceClass	1	FF	Vendor Class
6	bInterfaceSubClass	1	00	n/a
7	bInterfaceProtocol	1	FF	Vendor Class
8	bInterface	1	00	no interface string

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Endpoint Descriptions

There are three end points apart from the Control Endpoint

Endpoint	Type	Function	Size
0	Control Endpoint	Default Functionality	
1	Bulk-In	Parallel Printer Port	32Bytes
2	Bulk-Out	Parallel Printer Port	32 Bytes
3	Interrupt	Status Endpoint	4 Bytes

Endpoint Descriptor #1 Bulk-In (Parallel Port)

Offset (Bytes)	Field Name	Size (Bytes)	Value (hex)	Comments
0	bLength	1	07	Descriptor Length = 7 Bytes
1	bDescriptorType	1	05	Type = ENDPOINT
2	bEndpointAddress	1	81	Endpoint-1, direction: IN
3	bmAddress	1	02	Bulk Endpoint
4	wMaxPacketSize	2	20,00	Packet Size = 32 Bytes
6	bInterval	1	FF	Polling Interval (255mS)

Endpoint Descriptor #2 Bulk-Out (Parallel Port)

Offset (Bytes)	Field Name	Size (Bytes)	Value (hex)	Comments
0	bLength	1	07	Descriptor Length = 7 Bytes
1	bDescriptorType	1	05	Type = ENDPOINT
2	bEndpointAddress	1	02	Endpoint-2, direction: OUT
3	bmAddress	1	02	Bulk Endpoint
4	wMaxPacketSize	2	20,00	Packet Size = 32 Bytes
6	bInterval	1	FF	

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Endpoint Descriptor #3 Status Endpoint

Offset (Bytes)	Field Name	Size (Bytes)	Value (hex)	Comments
0	bLength	1	07	Descriptor Length = 7 Bytes
1	bDescriptorType	1	05	Type = ENDPOINT
2	bEndpointAddress	1	87	Endpoint-7, direction: IN
3	bmAddress	1	03	Interrupt Endpoint
4	wMaxPacketSize	2	04,00	Packet Size = 4 Bytes
6	bInterval	1	01	Polling Interval (1mS)

Status Endpoint:
The Status Endpoint returns 4 Bytes every 1 millisecond. These four Bytes are status information of the Parallel Printer port.

- Byte-1: Reserved (Unused)
- Byte-2: Reserved (Unused)
- Byte-3: Device Status Register of the Parallel Printer port (DSR)
- Byte-4: FIFO status of the Parallel Printer port.

Description for Byte-4 of Status Endpoint.

Bit[7]	Bit[6]	Bit[5]	Bit[4]	Bit[3]	Bit[2]	Bit[1]	Bit[0]
Reserved	Reserved	Reserved	Reserved	ParOutFifo Empty	ParOutFifo Full	ParInFifo Empty	ParInFifo Full

Bit	Description	
ParInFifo Full	1 Indicates the Bulk-In FIFO is full.	(Parallel Printer Port)
ParInFifo Empty	1 Indicates the Bulk-In FIFO is empty.	(Parallel Printer Port)
ParOutFifo Full	1 Indicates the Bulk-Out FIFO is full.	(Parallel Printer Port)
ParOutFifo Empty	1 Indicates the Bulk-Out FIFO is empty.	(Parallel Printer Port)

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USB Vendor Specific Commands:
The purpose of the vendor commands is to configure the Parallel Printer port.
The following tables provide information for the Vendor Specific Commands.

PARALLEL PRINTER PORT

Get Application
Vendor Specific Command
(Parallel Printer Port)

BmrequestType	Brequest	Wvalue	Windex	Wlength	Register Name
0xC0	0x0D	0x01*xx*	0x0000	0x0001	PP_DPR
0xC0	0x0D	0x01*xx*	0x0001	0x0001	PP_DSR
0xC0	0x0D	0x01*xx*	0x0002	0x0001	PP_DCR
0xC0	0x0D	0x01*xx*	0x0008	0x0001	PP_C_FIFO
0xC0	0x0D	0x01*xx*	0x0008	0x0001	PP_CONF_A
0xC0	0x0D	0x01*xx*	0x0009	0x0001	PP_CONF_B
0xC0	0x0D	0x01*xx*	0x000A	0x0001	PP_ECR

Set Application
Vendor Specific Command
(Parallel Printer Port)

BmrequestType	Brequest	Wvalue	Windex	Wlength	Register Name
0x40	0x0E	0x01*xx*	0x0000	0x0000	PP_DPR
0x40	0x0E	0x01*xx*	0x0001	0x0000	PP_DSR
0x40	0x0E	0x01*xx*	0x0002	0x0000	PP_DCR
0x40	0x0E	0x01*xx*	0x0008	0x0000	PP_C_FIFO
0x40	0x0E	0x01*xx*	0x0008	0x0000	PP_CONF_A
0x40	0x0E	0x01*xx*	0x0009	0x0000	PP_CONF_B
0x40	0x0E	0x01*xx*	0x000A	0x0000	PP_ECR

Vendor Specific Command Parameters

Brequest: specifies whether to Read or Write
0x0E = write to the application register.
0x0D = read from the application register.

Wvalue: Specifies the Application Number.
0x0100 is the application number for the Parallel Printer port.
0x0200 is reserved.
0x0000 is the application number provided for accessing the other control registers to control the Parallel Printer port (i.e. Setting the clock frequency, etc.)
xx specifies the Byte value to be written into the register.

Windex: Is the offset of the register to Read/Write.

Wlength: Is the length of the data we are going to read or write.

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Parallel Printer Port Register Descriptions

Data Register

The Data Register is cleared at initialization by RESET. During a write operation, the contents of this register are buffered and output onto the PD7-PD0 ports. During a read operation PD7-PD0 ports are buffered and output to the host CPU.

Register: **PP_DPR**
Description: **Parallel Printer Data Register**
Offset: **000**
Permissions: **Read/Write**
Access Condition: **Application Number = 0x0100**

Bit[7]	Bit[6]	Bit[5]	Bit[4]	Bit[3]	Bit[2]	Bit[1]	Bit[0]
Parallel Printer Data							

Device Status Register

The bits of the status register are defined as follows:

Register: **DSR**
Description: **Device Status Register**
Offset: **001**
Permissions: **Read**
Access Condition: **Application Number = 0x0100**

Bit[7]	Bit[6]	Bit[5]	Bit[4]	Bit[3]	Bit[2]	Bit[1]	Bit[0]
nBUSY	nACK	PE	SLCT	FAULT	Unused	Unused	Unused

Bit	Name	Description
0	Unused	Not used, set to 0
1	Unused	Not used, set to 0
2	Unused	Not used, set to 0
3	FAULT	Logic 0 = Printer reports error condition Logic 1 = Normal operation.
4	SLCT	Logic 0 = Printer is off line. Logic 1 = Printer is on line.
5	PE	Logic 0 = Normal operation Logic 1 = Paper end/empty is detected
6	nACK	Logic 0 = State of the nACK pin (ACK = High). Logic 1 = State of the nACK pin (ACK = Low).
7	nBUSY	Logic 0 = nBUSY pin is high, printer is not ready to take data. Logic 1 = nBUSY pin is low, printer is ready to take data.

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Device Control Register

Register: **DCR**
Description: **Device Control Register**
Offset: **002**
Permissions: **Read/Write**
Access Condition: **Application Number = 0x0100**

Bit[7]	Bit[6]	Bit[5]	Bit[4]	Bit[3]	Bit[2]	Bit[1]	Bit[0]
Unused	Unused	DIR	Unused	nSLCTIN	INIT	nAUTOFD	nSTROBE

Bit	Name	Description
0	nSTROBE	Logic 0 = Sets the nSTROBE pin to high. Logic 1 = Sets the nSTROBE pin to low. PD7-PD0 data are latched into printer
1	nAUTOFD	Logic 0 = Sets the nAUTOFD pin to high. Printer generates auto line feed after each line is printed. Logic 1 = Sets the nAUTOFD pin to low. No auto feed function.
2	INIT	Logic 0 = Sets the INIT pin to high. Logic 1 = Sets the INIT pin to low. Peripheral/printer starts its initialization routine.
3	nSLCTIN	Logic 0 = Sets the nSLCTIN pin to high. Selects the printer. Logic 1 = Sets the nSLCTIN pin to low. Printer is not selected.
4	Unused	Not uset set to 0
5	DIR	Logic 0 = PD7-PD0 pins are configured for output mode. Logic 1 = PD7-PD0 pins are configured for input mode.
6	Unused	Not used, set to 0.
7	Unused	Not used, set to 0.

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Extended Control Register (ECR)
This register controls the Parallel Port mode selection operation.

Register: **PP_ECR**
Description: **Parallel Printer Port Extended Control Register**
Offset: **0x0A**
Permissions: **Read/Write**
Access Condition: **Application Number = 0x0100**

Bit[7]	Bit[6]	Bit[5]	Bit[4]	Bit[3]	Bit[2]	Bit[1]	Bit[0]
Parallel Port Mode			Reserved	Reserved	Reserved	Reserved	Reserved

Bit-7	Bit-6	Bit-5	Operating Mode
0	0	0	SPP
0	0	1	Nibble
0	1	0	CB-FIFO mode
0	1	1	Not Used
1	0	0	Not Used
1	0	1	Not used
1	1	0	Not Used
1	1	1	Not Used

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Mode Changes
After a hardware reset Nibble Mode is selected as the default mode. It is required to select mode 000 or 001 before any other mode configuration.

Mode "000"
SPP/Centronics/Compatible Mode
Forward direction only. The direction bit is forced to "0" and PD7-PD0 are set to the output direction. The Parallel Port is under software control. This mode defines the protocol used by most PCs to transfer data to a printer. It is commonly called the "Centronics" mode and is the method utilized with the Standard Parallel Printer port. Data is placed on the PD7-PD0 ports, and the printer status is checked via the DSR register. If no error condition is flagged and the printer is not busy, software toggles the nSTROBE pin to latch the PD7-PD0 data into the printer. This operating cycle continues when the printer/peripheral issues the data acknowledge signal (pulses the ACK and nBUSY pins).

Mode "001"
Nibble Mode
The Nibble Mode is the most common way to get reverse channel data from the printer or peripheral. This mode is usually combined with the SPP Mode or a proprietary forward channel mode to create a Bi-Directional channel. In this mode printer status bits are used as Nibble bits.

Pin	Data Bit
nBUSY	Bit-7
PE	Bit-6
SLCT	Bit-5
nFAULT	Bit-4
nBUSY	Bit-3
PE	Bit-2
SLCT	Bit-1
nFAULT	Bit-0

Bit Order for Nibble Mode

Mode "010"
FIFO Output Mode
In this mode, Bytes written to the FIFO are transmitted automatically using the SPP/Centronics standard protocol.

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PP_REGISTER:
This register is used for internal debugging of UDC controller & bridge circuitry. There is a bit which resets the Parallel Printer port. There are bits which control the input clock fed to the Parallel Printer port.

Register: **PP_REG**
Description: **Parallel Printer Port Register**
Offset: **0x04**
Permissions: **Read/Write**
Access Condition: **Application Number = 0x0000**

Bit[7]	Bit[6]	Bit[5]	Bit[4]	Bit[3]	Bit[2]	Bit[1]	Bit[0]
pp_reset	clk_freq_select			pp_bi_clear	pp_bo_clear	Reserved	udc_loop

Bit	Description
udc_loop	When enabled, loops the data from the Bulk-Out FIFO to the Bulk-In FIFO.
Reserved	Reserved
pp_bo_clear	Reset the Bulk-Out FIFO
pp_bi_clear	Reset the Bulk-In FIFO
clk_freq_select	Changes the clock fed to the Parallel Printer port.
pp_reset	Resets the Parallel Printer port

pp reset: This bit will reset the Parallel Printer port. When this bit is a 1 the Parallel Printer port is under the Reset process. Whenever the frequency is to be changed, first set the Reset bit, change the clk_ frequency, and finally clear the Reset bit to 0.

clk_freq_select: Changes the clock fed to the Parallel Printer port as shown in the table below.

Option	Input Clock Frequency
3'b000	12 MHz
3'b001	6 MHz
3'b010	3 MHz
3'b011	1.5 MHz
3'b100	0.75 MHz

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Electrical Characteristics

Absolute Maximum Ratings

Supply Voltage	6 Volts
Input Voltage (I/O)	-0.3 to V_{CC} +0.3
Storage Temperature	-60° C to +150° C

Recommended Operating Conditions

Supply Voltage	4.5 to 5.5 Volts
Input Voltage (I/O)	0 to 5.5 Volts
Ambient Operating Temperature (free air)	0° C to +70° C
Junction Operating Temperature	0° C to +115° C

Static Characteristics (Supply Pins)

V_{CC} = 4.5V to 5.5V; GND = 0V; Temp = 0 to +70° C; unless otherwise specified

Symbol	Parameter	Conditions	Min	Typical	Max	Unit
V_{reg} (3.3V)	Regulated Supply Voltage		3.0	3.3	3.6	V
I_{CC}	Operating Supply Current		-	18	-	mA

Static Characteristics

V_{CC} = 4.5V to 5.5V; GND = 0V; Temp = 0 to +70° C; unless otherwise specified

Symbol	Parameter	Conditions	Min	Typical	Max	Unit
V_{IL}	LOW Level Input Voltage		-	-	0.3*Vcc	V
V_{IH}	HIGH Level Input Voltage		0.7*Vcc	-	-	V
V_{th}(LH)	Positive going Threshold Voltage		-	3.22	-	V
V_{th}(HL)	Negative going Threshold Voltage		-	1.84	-	V
I_{LI}	Input Leakage Current		-	-	±1	µA
I_{OZ}	Tri-State Leakage Current		-	-	±10	µA
V_{OL}	Output Voltage (Low)		-	-	0.4	V
V_{OH}	Output Voltage (High)		3.5	-	-	V

Dynamic Characteristics – Analog I/O Pins (DP, DM); Full-Speed Mode

V_{CC} = 4.5V to 5.5V; GND = 0V; Temp = 0 to +70° C; unless otherwise specified

Symbol	Parameter	Condition	Min	Typical	Max	Unit
T_{FR}	Rise Time	C_L = 50pF 10% to 90% of $\|V_{OH} - V_{OL}\|$	4	-	20	nS
T_{FF}	Fall Time	C_L = 50pF 10% to 90% of $\|V_{OH} - V_{OL}\|$	4	-	20	nS

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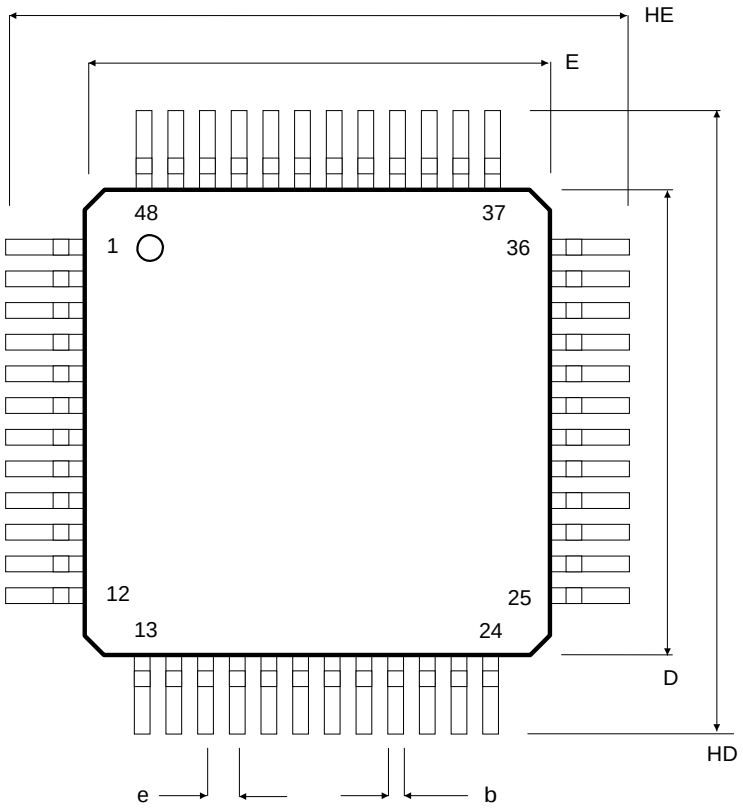

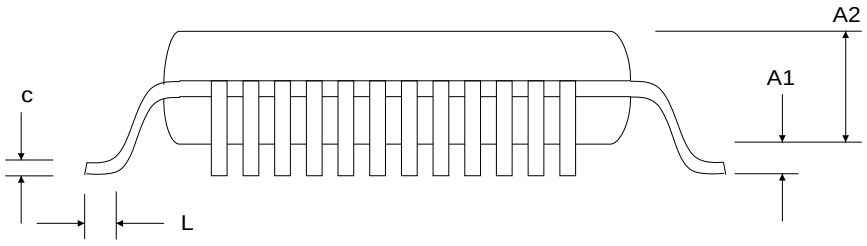

48-Pin QFP
Package Dimensions

SYMBOL	MILLIMETERS			INCHES		
	MIN	TYPICAL	MAX	MIN	TYPICAL	MAX
A1	0.05		0.15	0.002		0.006
A2	1.35		1.45	0.053		0.057
b	0.17		0.27	0.007		0.011
c	0.09		0.20	0.004		0.008
e		0.50			0.0197	
L	0.45		0.75	0.018		0.030
HD	8.80		9.20	0.346		0.362
D	7.20		6.80	0.283		0.268
HE	8.80		9.20	0.346		0.362
E	7.20		6.80	0.2.83		0.268

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Revision History

Revision	Date	Comment
1.0	6-Nov-2002	Preliminary Release
1.1	7-Feb-2005	Datasheet updated for Printer Port related details
1.2	25-Oct-2005	Revised Data Sheet
1.3	17-Nov-2005	Minor Layout Changes
1.4	29-Nov-2005	Changes to Printer Port Section
1.5	30-Nov-2005	Corrected Polling Intervals
1.6	6-Jan-2006	Corrected Electrical Characteristics and pin names
1.7	6-Aug-2007	Pin No: 46 description corrected in data sheet
2.00	2011/08/05	1. Changed to ASIX Electronics Corp. logo, strings and contact information. 2. Added ASIX copyright legal header information. 3. Modified the Revision History table format. 4. Updated the block diagram.
2.01	2011/11/01	1. Updated the ordering information.

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