



PL-2571 Hi-Speed USB to SATA 3Gbps Bridge Controller

Product Datasheet

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Prolific Technology Inc.

7F, No. 48, Sec. 3, Nan Kang Rd.
Nan Kang, Taipei 115, Taiwan, R.O.C.

Tel: 886-2-2654-6363

Fax: 886-2-2654-6161

Email: sales@prolific.com.tw

URL: <http://www.prolific.com.tw>



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Revision History

Revision	Description	Date
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1.0 Product Overview

1.1 Overview

The PL-2571 is a single chip Hi-Speed USB-to-SATA 3Gbps bridge controller that is designed to perform seamless protocol transfer between the USB and SATA interface. The high performance USB interface can connect to any high speed or full speed USB host or USB hub and can instantly be detected as a USB mass storage device. The PL-2571 can also automatically detect and switch between 1.5Gbps and 3Gbps SATA speed to support broad range of Serial ATA devices. A high performance 8-bit microcontroller is embedded which can be used to support versatile system applications such as one button backup, power control, and others. It is also very easy to upgrade or change the internal firmware through USB interface for different applications or function upgrade by using an external EEPROM or SPI Flash. The PL-2571 is implemented according to the USB Bulk-Only Mass Storage Class specification ver1.0. The USB mass storage driver is integrated in most OSes so no additional driver is needed.

1.2 Features

- Serial ATA Revision 2.5 Specification Compliant
- Embedded SATA 3Gbps PHY and controller (SATA 1.5Gbps/3Gbps speed auto-detection)
- Universal Serial Bus Specification 2.0 Compliant
- [USB-IF Hi-Speed Logo Certified \(TID No. 40000186\)](#)
- USB Mass Storage Class Bulk-Only Transport Specification Compliant. No driver installation needed in Linux (kernel 2.4.18 or above), Mac OS 9.x or above, and Windows ME or above. Windows 98 requires additional driver installation provided by Prolific. Apple provides the USB mass storage driver download for Mac OS 8.6.
- [Windows Vista Basic Logo Certified](#)
- Integrated full speed (12Mbps) and high speed (480Mbps) transceiver
- 2K bytes data buffer for downstream and upstream optimized data transfer performance
- High performance embedded 8-bit microcontroller
- Vendor/Product related configuration information can be customized thru external SPI Serial Flash or external I2C compatible Serial EEPROM.
- Serial EEPROM or Serial Flash contents can be updated through USB interface
- Firmware can be upgraded easily through USB interface if larger external Serial EEPROM or Serial Flash is used.
- Multi-function General Purpose IO (GPIO) pins can be defined for USB speed LED, button inputs, and other special functions.
- GPIO pins can be customized by external configuration ROM or through USB interface
- Low power 1.8V core operating voltage
- On-chip 3.3V to 1.8V regulator to supply the power for core circuit
- 5V tolerant inputs, 3.3V output drive
- Single inexpensive 25-MHz crystal for clock source
- Inexpensive LQFP64 (10x10mm) and QFN64 (9x9mm) packaging available

2.0 PIN Assignment & Description

2.1 Pin Assignment for LQFP64 Package

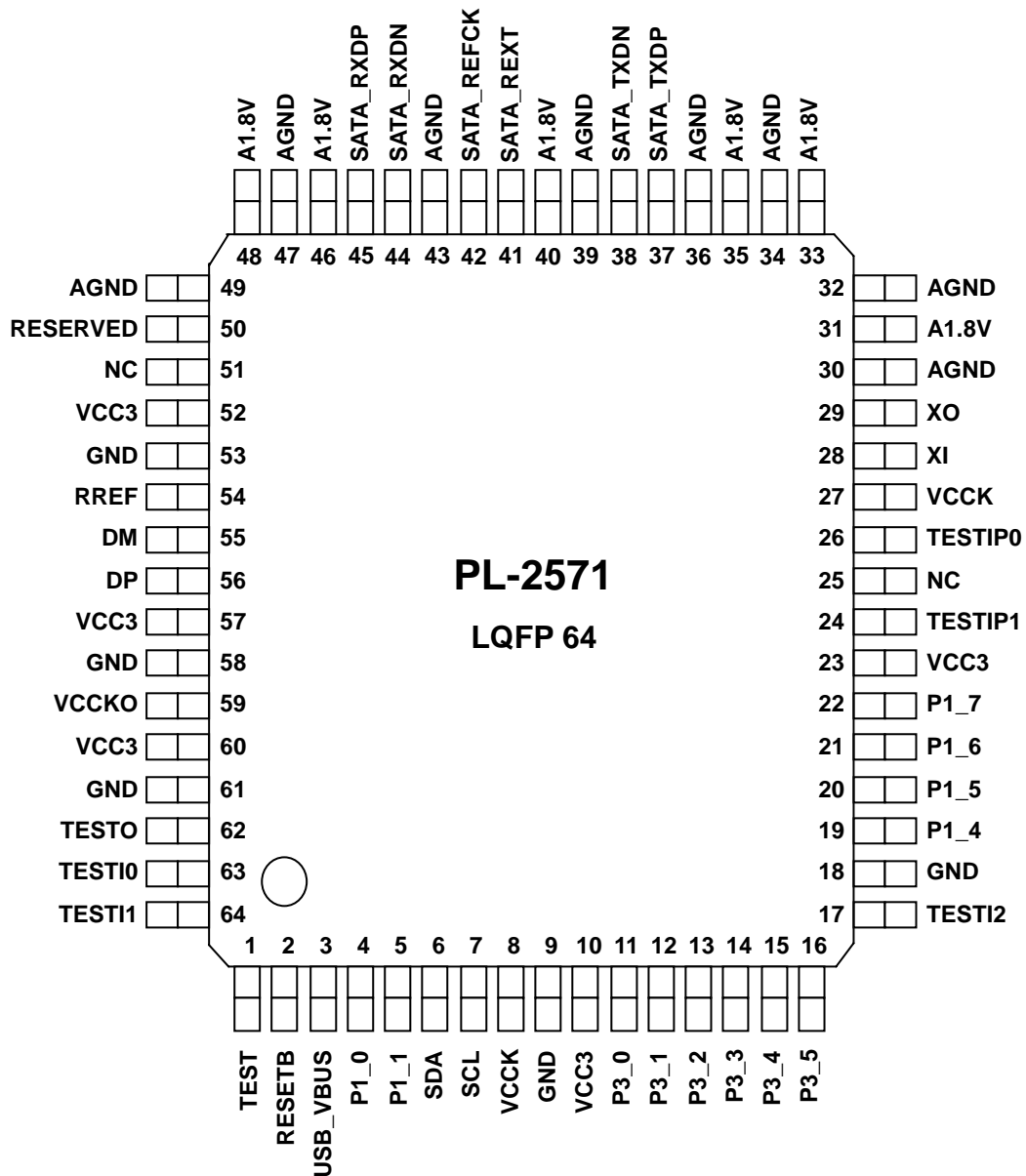


Figure 2-1 Pin Assignment Diagram of PL-2571 LQFP64

2.2 Pin Assignment for QFN32 Package

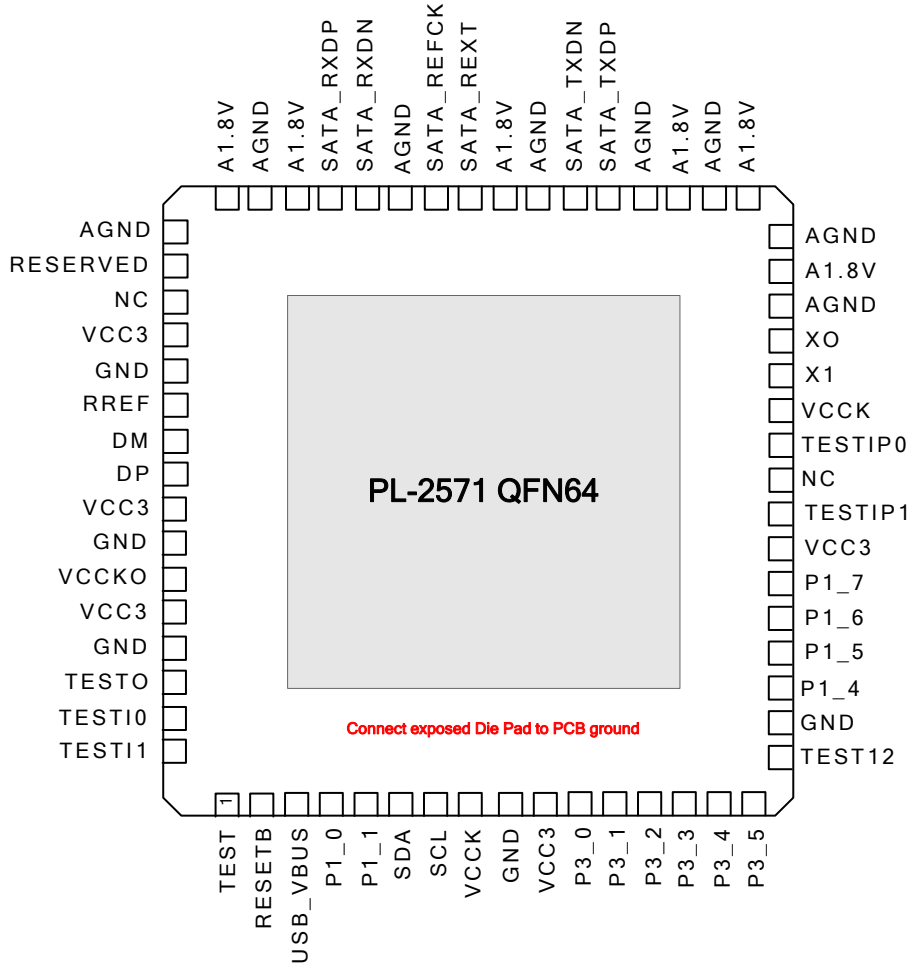


Figure 2-2 Pin Assignment Outline of PL-2571 QFN64

2.3 USB2.0 PHY Related Pins

Pin Type Abbreviation:

I: Input O: Output B: Bidirectional A: Analog P: Power/Ground

Table 2-1 USB2.0 PHY Related Pins

Symbol	Type	Pin No	Description
RREF	A	54	Connect external resistor to analog ground
DP	B	56	High speed D+ signal
DM	B	55	High speed D- signal
VCC3	P	52	Analog power 3.3v for on-chip USB PHY
GND	P	53	Analog ground for on-chip USB PHY
VCC3	P	57	Analog power 3.3v for on-chip USB PHY
GND	P	58	Analog ground for on-chip USB PHY

2.4 SATA PHY Related Pins

Table 2-2 SATA PHY Related Pins

Symbol	Type	Pin No	Description
SATA_TXDP	O	37	Transmitter positive output
SATA_TXDN	O	38	Transmitter negative output
SATA_REXT	B	41	External resistor for bias current generation
SATA_REFCK	I	42	Reference 25MHz clock input
SATA_RXDN	I	44	Receive negative input
SATA_RXDP	I	45	Receive positive input
A1.8V	P	33, 35, 40, 46, 48	Analog power 1.8v for SATA PHY
AGND	P	32, 34, 36, 39, 43, 47, 49	Analog ground for SATA PHY

2.5 System Pins

Table 2-3 System Pins

Symbol	Type	Pin No	Description
VCCKO	O	59	Regulator 1.8v voltage output for core cells
VCC3	P	60	Regulator 3.3V power input
GND	P	61	Regulator analog ground
A1.8V	P	31	PLL 1.8v analog power supply
AGND	P	30	PLL analog ground
XI	I	28	Crystal oscillator 25MHz clock input
XO	B	29	Crystal oscillator 25MHz clock output

TESTO	O	62	Test pin output, no connection
TESTI0	I	63	Test pin input 0, leave NC or tie to ground
TESTI1	I	64	Test pin input 1, leave NC or tie to ground
TESTI2	I	17	Test pin input 2, leave NC or tie to ground
TESTIP0	I	26	Test pin input, leave NC
TESTIP1	I	24	Test pin input, leave NC
RESETB	I	2	External reset pin. Active low.
USB_VBUS	B	3	USB power signal from USB VBUS
SCL	O	7	Clock pin of SPI serial Flash or two wire serial EEPROM
SDA	B	6	Data pin of SPI serial Flash or two wire serial EEPROM
TEST	I	1	Chip Test mode enable, leave NC or tie to ground
P1_1	B	5	SPI serial interface CS (chip select) signal or general purpose I/O pin.
P1_0	B	4	General Purpose I/O pin
P1_4	B	19	General Purpose I/O pin
P1_5	B	20	General Purpose I/O pin
P1_6	B	21	General Purpose I/O pin
P1_7	B	22	General Purpose I/O pin
P3_0	B	11	General Purpose I/O pin or Write Protect Function – When this function is enabled, the firmware will check P3_0. If P3_0 = 0, device cannot be written. If P3_0 = 1, device can be written.
P3_1	B	12	General Purpose I/O pin or Access LED Function – When this function is enabled, any access to media will set P3_1 to 0 to turn on LED. No need to set any flag.
P3_2	B	13	General Purpose I/O pin
P3_3	B	14	General Purpose I/O pin or One-Button Backup Function – When this function is enabled, the firmware will check this pin if button is pressed to activate OBB application.
P3_4	B	15	General Purpose I/O pin
P3_5	B	16	General Purpose I/O pin or Suspend Indicator Function – When this function is enabled, the firmware will control this pin at bus suspend, hot-plug, and bus reset conditions.
VCC3	P	10,23	3.3V Power pins
VCKK	P	8, 27	1.8V Power pins
GND	P	9,18	Digital ground pins
RESERVED	I	50	Tie to ground
NC	O	25, 51	No Connection

3.0 USB Port Descriptor for PL-2571

PL-2571 supports the following standard USB descriptors:

- Device descriptor.
- Configuration descriptor that supports one interface.
- String descriptors. Three string descriptors are implemented namely, language ID, Vendor String, and Product String.

3.1 Device Descriptor

Table 3-1 Device Descriptor

Offset	Field	Size	Value	Description
0	bLength	Byte	12h	Size of this descriptor in bytes.
1	bDescriptorType	Byte	01h	DEVICE descriptor type.
2	bcdUSB	Word	0200h	USB Specification version 2.0
4	bDeviceClass	Byte	00h	Interface Specific.
5	bDeviceSubclass	Byte	00h	Interface Specific.
6	bDeviceProtocol	Byte	00h	Interface Specific.
7	wMaxPacketSize0	Byte	40h	Maximum packet size for endpoint 0 is 64.
8	idVendor	Word	067Bh	Vendor ID for Prolific Technologies. ⁽¹⁾
10	idProduct	Word	2571h	Product ID for PL-2571. ⁽¹⁾
12	bcdDevice	Word	0100h	Device Release 1.0. ⁽¹⁾
14	iManufacturer	Byte	01h	String index 1 describes manufacturer. ⁽²⁾
15	iProduct	Byte	02h	String index 2 describes product. ⁽³⁾
16	iSerialNumber	Byte	03h	String index 3 describes the serial number ⁽⁴⁾
17	bNumConfigurations	Byte	01h	One possible configuration

Notes:

⁽¹⁾ – These default values shown here could be modified by external EEPROM;

⁽²⁾ – The default string is “Prolific Technology Inc.” in UNICODE format and could be replaced by the contents of external EEPROM;

⁽³⁾ – The default string is “Mass Storage Device” in UNICODE format and could be replaced by the contents of external EEPROM.

⁽⁴⁾ – The default string is “0” in UNICODE format and could be replaced by the contents of external EEPROM.

3.2 Configuration Descriptor

Table 3-2 Configuration Descriptor

Offset	Field	Size	Value	Description
0	bLength	Byte	09h	Size of this descriptor in bytes.
1	bDescriptorType	Byte	02h	CONFIGURATION descriptor type.
2	bTotalLength	Word	0020h	32 bytes of all INTERFACE & ENDPOINT.
4	bNumInterfaces	Byte	01h	The PL-2571 has one interface.
5	bConfigurationValue	Byte	01h	Value to write to the Device Configuration Register (DCR) to select this configuration.
6	iConfiguration	Byte	00h	No string description for this.
7	bmAttributes	Byte	C0h	Configuration characteristics: ⁽⁵⁾ Self-Powered & No Remote Wakeup.
8	MaxPower	Byte	FAh	Maximum power consumption is 500 mA. ⁽⁶⁾

Notes:

⁽⁵⁾ ⁽⁶⁾ – The default value could be replaced by the contents of external EEPROM.

3.3 Interface Descriptors

Table 3-3 Interface Descriptors

Offset	Field	Size	Value	Description
0	bLength	Byte	09h	Size of this descriptor in bytes.
1	bDescriptorType	Byte	04h	INTERFACE descriptor type.
2	bInterfaceNumber	Byte	00h	Interface 0.
3	bAlternateSetting	Byte	00h	Alternate 0.
4	bNumEndpoints	Byte	02h	Supports endpoint 0, 1, and 2.
5	bInterfaceClass	Byte	08h	MASS STORAGE class. ⁽⁷⁾
6	iInterfaceSubClass	Byte	06h	SCSI transparent command set
7	bInterfaceProtocol	Byte	50h	Bulk-Only Transport protocol.
8	iInterface	Byte	00h	No String descriptor for this interface.

Notes:

⁽⁷⁾ – This value could be 02h by enabling one bit the contents of external EEPROM.

3.4 Endpoint Descriptors

3.4.1 Hi-Speed mode

Table 3-4 Hi-Speed Bulk Out Endpoint Descriptor (Endpoint 1)

Offset	Field	Size	Value	Description
0	bLength	Byte	07h	Size of this descriptor in bytes.
1	bDescriptorType	Byte	05h	ENDPOINT descriptor type.
2	bEndpointAddress	Byte	01h	Out Endpoint 1.
3	bmAttributes	Byte	02h	BULK Endpoint.
4	wMaxPacketSize	Word	0200h	Maximum packet size is 512.
6	bInterval	Byte	00h	N/A

Table 3-5 Hi-Speed Bulk In Endpoint Descriptor (Endpoint 2)

Offset	Field	Size	Value	Description
0	bLength	Byte	07h	Size of this descriptor in bytes.
1	bDescriptorType	Byte	05h	ENDPOINT descriptor type.
2	bEndpointAddress	Byte	82h	In Endpoint 2.
3	bmAttributes	Byte	02h	BULK Endpoint
4	wMaxPacketSize	Word	0200h	Maximum packet size is 512.
6	bInterval	Byte	00h	N/A

3.4.2 Full-Speed mode

Table 3-6 Full-Speed Bulk Out Endpoint Descriptor (Endpoint 1)

Offset	Field	Size	Value	Description
0	bLength	Byte	07h	Size of this descriptor in bytes.
1	bDescriptorType	Byte	05h	ENDPOINT descriptor type.
2	bEndpointAddress	Byte	01h	Out Endpoint 1.
3	bmAttributes	Byte	02h	BULK Endpoint.
4	wMaxPacketSize	Word	0040h	Maximum packet size is 64.
6	bInterval	Byte	00h	N/A

Table 3-7 Full-Speed Bulk In Endpoint Descriptor (Endpoint 2)

Offset	Field	Size	Value	Description
0	bLength	Byte	07h	Size of this descriptor in bytes.
1	bDescriptorType	Byte	05h	ENDPOINT descriptor type.
2	bEndpointAddress	Byte	82h	In Endpoint 2.
3	bmAttributes	Byte	02h	BULK Endpoint
4	wMaxPacketSize	Word	0040h	Maximum packet size is 64.
6	bInterval	Byte	00h	N/A

3.5 Device_Qualifier Descriptors

Table 3-8 Device Qualifier Descriptors

Offset	Field	Size	Value	Description
0	bLength	Byte	0Ah	Size of this descriptor in bytes.
1	bDescriptorType	Byte	06h	DEVICE Qualifier descriptor type.
2	bcdUSB	Word	0200h	USB Specification version 2.0
4	bDeviceClass	Byte	00h	Interface Specific.
5	bDeviceSubclass	Byte	00h	Interface Specific.
6	bDeviceProtocol	Byte	00h	Interface Specific.
7	wMaxPacketSize0	Byte	40h	Maximum packet size for endpoint 0 is 64.
8	bNumConfigurations	Byte	01h	Number of other-speed configurations.
9	bReserved	Byte	00h	Reserved for future use, must be zero

3.6 Other_Speed_Configuration Descriptors

Table 3-9 Other Speed Configuration Descriptors

Offset	Field	Size	Value	Description
0	bLength	Byte	09h	Size of this descriptor in bytes.
1	bDescriptorType	Byte	07h	CONFIGURATION descriptor type.
2	bTotalLength	Word	0020h	32 bytes of all INTERFACE & ENDPOINT.
4	bNumInterfaces	Byte	01h	Number of interface supported, one interface.
5	bConfigurationValue	Byte	01h	Value to write to the Device Configuration Register (DCR) to select this configuration.
6	iConfiguration	Byte	00h	No string description for this.
7	bmAttributes	Byte	C0h	Configuration characteristics: Self-Powered & No Remote Wakeup.
8	MaxPower	Byte	FAh	Maximum power consumption is 500 mA

4.0 External Configuration ROM

4.1 External Configuration ROM

The PL-2571 uses external serial memory (EEPROM or Flash) to store the Vendor ID, Product ID, Device Release Number in device descriptor, Attributes and Max Power setting in configuration descriptor, Strings of String Descriptor and some chip operation mode configuration. A new version firmware can be stored in this memory when this memory size is large enough. If the external configuration ROM is not present, PL-2571 will use settings in the internal ROM. Two types of serial interface are supported, the one is SPI (Serial Peripheral Interface) and the other is I2C compatible interface. Both interface support master mode only.

The PL-2571 can be used as below:

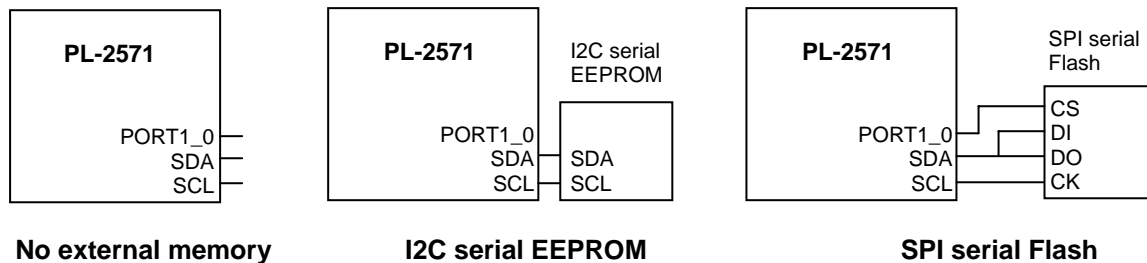


Figure 4-1 External Serial Memory Implementation

- **No external memory:** This case is not recommended. The chip will use the default configuration in the internal ROM and run the firmware in the internal ROM. Firmware upgrade is not possible. The chip will send default Vendor ID, Product ID, chip operation settings, and other default configuration. Product serial number will not be sent.
- **I2C serial EEPROM:** This case uses I2C serial EEPROM to store chip configuration data or configuration data with new firmware. If the I2C serial EEPROM size (like 24C256) is large enough, a new version firmware can be stored therefore new firmware upgrade is possible. If new version firmware is stored in the EEPROM, new firmware will be loaded while system startup.
- **SPI serial Flash:** This is the recommended case. It behaves the same as the I2C serial memory with this chip. But the transfer speed of SPI interface is faster than I2C interface. The device like 25C256 is suitable. The SPI interface is a four-pin interface but this chip uses only three pins to communicate with. Therefore, the DI and DO are shorted or short by a serial 240-ohm resistor is better.

4.2 Data Structure of External Serial Memory Content

The Configuration ROM is organized as follows:

Table 4-1 EEPROM Address and Content

Address	Content	Note
1:0	Check Word – 0x067B (Predefined constant)	
3:2	Vendor ID (idVendor field of Device Descriptor)	
5:4	Product ID (idProduct field of Device Descriptor)	
7:6	Device Release Number (bcdDevice field of Device Descriptor)	
8	Attributes (bmAttributes field of Configuration Descriptor)	
9	Max Power (MaxPower field of Configuration Descriptor)	
10	Chip operation settings	
13:11	External firmware control	
15:14	Reserved	
249:16	USB String Descriptor Table	
253:250	GPIO Settings	
255:254	Miscellaneous	
:-256	External firmware Code	

From byte 16 to byte 230 are used for USB string descriptors. The String Descriptor table is a linked data structure that holds all string descriptors recognized by this chip in the order of its index. The first entry, String 0, represents the Language ID, as defined by the USB specification. The second entry, String 1, is the Manufacturer Descriptor, as defined by the Device Descriptor of PL-2571. The third and fourth entries, String 2 and 3, are the Product Descriptor and Serial Number, respectively, also defined by the Device Descriptor. The user has the option to define String 4, 5, and 6 for their own private use. Each of these String Descriptor Entries is of the following data structure:

Table 4-2 String Descriptor Data Structure

Offset	Field	Size	Value	Note
0	bLength	1	Length of the string plus 2, i.e. (N + 2).	
1	bDescriptorType	1	03h – STRING Descriptor type.	
2	bString	N	UNICODE encoded string.	

The last entry of this table must have a bLength of 0 to indicate the end of this table. If the host tries to access to the string descriptor beyond the last one, a zero-length data will be returned.

The following table shows one example of valid EEPROM contents:

Table 4-3 Example of Valid EEPROM Contents

Offset	Content	Note
0:1	Check Word – 0x067B	Constant
2:3	Vendor ID – 0x067B	
4:5	Product ID – 0x2571	
6:7	Device Release Number – 0x0100	
8		
9		
15:10		
16	0x04	String Index 0 (4 Bytes)
17	0x03	
19:18	0x0409	Language ID for English (United States).
20	0x32	String Index 1 (50 Bytes)
21	0x03	
69:22	'P', 0x00, 'r', 0x00, 'o', 0x00, 'l', 0x00, 'i', 0x00, 'f', 0x00, 'i', 0x00, 'c', 0x00, ' ', 0x00, 'T', 0x00, 'e', 0x00, 'c', 0x00, 'h', 0x00, 'n', 0x00, 'o', 0x00, 'l', 0x00, 'o', 0x00, 'g', 0x00, 'y', 0x00, ' ', 0x00, 'l', 0x00, 'n', 0x00, 'c', 0x00, ' ', 0x00	"Prolific Technology Inc." – manufacturer description. 0x00 is padded for UNICODE.
70	0x34	String Index 2 (52 Bytes)
71	0x03	
121:72	'M', 0x00, 'a', 0x00, 's', 0x00, 's', 0x00, ' ', 0x00, 'S', 0x00, 't', 0x00, 'o', 0x00, 'r', 0x00, 'a', 0x00, 'g', 0x00, 'e', 0x00, ' ', 0x00, 'D', 0x00, 'e', 0x00, 'v', 0x00, 'i', 0x00, 'c', 0x00, 'e', 0x00	"Mass Storage Device" – device description. 0x00 is padded for UNICODE.
122	0x0A	String Index 3 (10 bytes)
123	0x03	
131:124	'0', 0x00, '1', 0x00, '2', 0x00, '3', 0x00	"3210" – serial number,
132	0x00	End of String Descriptor Table.

The user could also define other strings, 4 to 6, to hold useful information for the drivers and/or applications, such as software authorization codes, symbolic names, just to name a few. However, the total length of this table must not exceed 256 bytes (include reserved space for chip controlling), the supported maximum size of external configuration ROM.

5.0 DC Characteristics

5.1 Absolute Maximum Ratings

Table 5-1 Absolute Maximum Ratings

SYMBOL	PARAMETER	RATING	UNITS
VCC3	Power Supply of 3.3V	-0.3 to 4.0	V
V _{IN3}	Input Voltage of 3.3V I/O with 5V Tolerance	-0.3 to 5.8	V
V _{CCK}	Core Power Supply	-0.3 to 2.16	V
I _{IN}	DC input current	20	mA
I _{OUT}	Output short circuit current	20	mA
T _{STG}	Storage Temperature	-40 to 150	°C

Note: Permanent device damage may occur if the absolute maximum ratings are exceeded. These are stress rating only, and functional operation should be restricted to within the conditions. Exposure to absolute maximum rating conditions for extended periods may affect the device's reliability.

5.2 Recommended Operating Conditions

Table 5-2 Recommended Operating Conditions

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS
V _{CCK}	Core Power Supply (by built-in regulator)	1.62	1.8	1.98	V
VCC3	Power Supply of 3.3V	2.97	3.3	3.63	V
V _{IN3}	Input Voltage of 3.3V I/O with 5V Tolerance	0	3.3	5.25	V
T _j	Junction Operating Temperature	-40	25	125	°C

5.3 DC Characteristics of 3.3V Programmable I/O Cells

Table 5-3 DC Characteristics of 3.3V Programmable I/O Cells

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
V _{IL}	Input Low Voltage				0.8	V
V _{IH}	Input High Voltage		2.0			V
V _{OL}	Output low voltage	I _{ol} = 8 mA			0.4	V
V _{OH}	Output high voltage	I _{oh} = -8 mA	2.4			V
I _{oz}	Tri-state output leakage current	V _{in} = 5.5V or 0		±10		uA
I _{IN}	Input Leakage Current	V _{in} =0 or VCC3I	-10		10	uA
	Input Leakage Current with Pull-up Resistance	V _{in} =0	-15	-45	-85	uA
	Input Leakage Current with Pull-down Resistance	V _{in} =VCC3I	15	45	85	uA

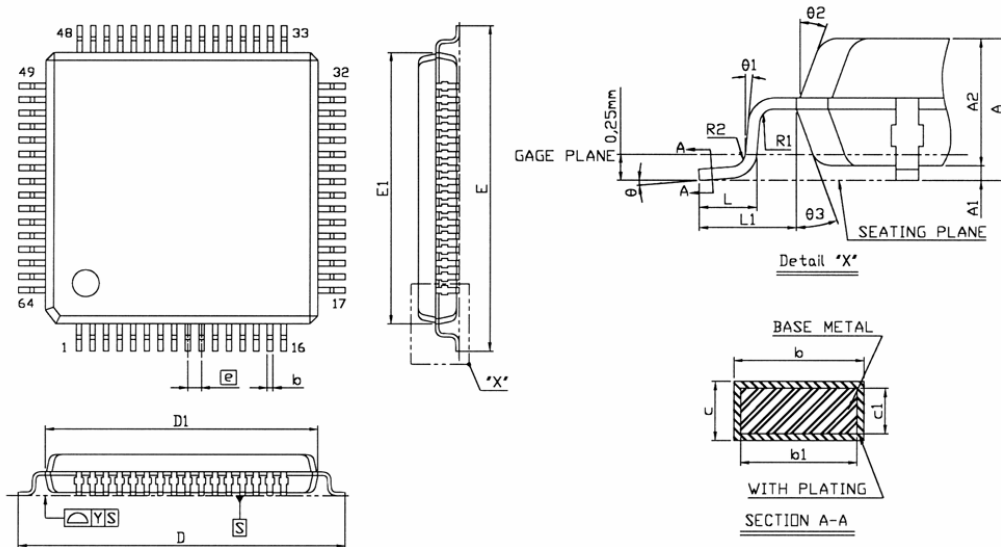
6.0 Ordering Information

Table 6-1 Ordering Information

Part Number	Package Type
PL-2571 QFN64	64-pin QFN (9x9mm)
PL-2571 LQFP64	64-pin LQFP (10x10mm)
PL-2571 QFN64 LF	64-pin QFN (9x9mm) Lead (Pb) Free
PL-2571 LQFP64 LF	64-pin LQFP (10x10mm) Lead (Pb) Free

7.0 Outline Diagram

7.1 LQFP64 Package (10x10) Outline Diagram



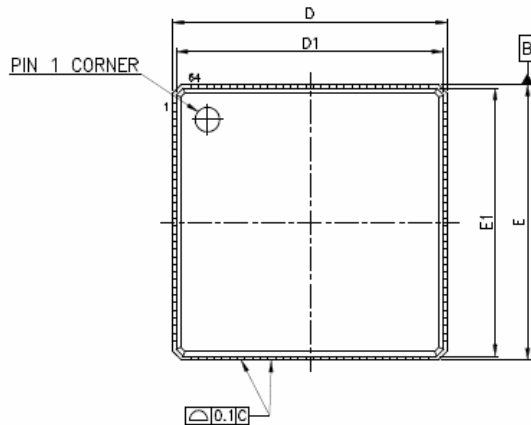
SYMBOL	DIMENSION (MM)			DIMENSION (MIL)		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A			1,60			63
A1	0,05		0,15	2		6
A2	1,35	1,40	1,45	53	55	57
b	0,17	0,22	0,27	7	9	11
b1	0,17	0,20	0,23	7	8	12
c	0,09		0,20	4		8
c1	0,09		0,16	4		6
D	12,00 BSC			472 BSC		
D1	10,00 BSC			394 BSC		
E	12,00 BSC			472 BSC		
E1	10,00 BSC			394 BSC		
\square	0,50 BSC			20 BSC		
L	0,45	0,60	0,75	18	24	30
L1	1,00 REF			39 REF		
R1	0,08			3		
R2	0,08		0,20	3		8
Y			0,075			3
θ	0°	3,5°	7°	0°	3,5°	7°
$\theta 1$	0°			0°		
$\theta 2$	11°	12°	13°	11°	12°	13°
$\theta 3$	11°	12°	13°	11°	12°	13°

NOTES:

- REFER TO JEDEC MS-026/BCD
- DIMENSION D1 AND E1 DO NOT INCLUDE MOLD PROTRUSION. ALLOWABLE PROTRUSION IS 0.25mm PER SIDE D1 AND E1 ARE MAXIMUM PLASTIC BODY SIZE DIMENSION INCLUDING MOLD MISMATCH.
- DIMENSION b DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL NOT CAUSE THE LEAD WIDTH TO EXCEED THE MAXIMUM b DIMENSION BY MORE THAN 0.08mm.
- ALL DIMENSIONS IN MILLIMETERS.

Figure 7-1 Outline Diagram of PL-2571 LQFP64 (10x10mm)

7.2 QFN64 Package (9x9) Outline Diagram



SYMBOLS	MIN.	NOM.	MAX.
A	0.80	0.90	1.00
A1	0.00	0.02	0.05
A2	0.65 REF.		
A3	0.20 REF.		
b	0.18	0.25	0.30
C	0.24	0.42	0.60
D	9.00 BSC.		
D1	8.75 BSC.		
E	9.00 BSC.		
E1	8.75 BSC.		
e	0.50 BSC.		
J	6.00	—	7.50
K	6.00	—	7.50
L	0.30	0.40	0.50

UNIT : mm

NOTES :

- JEDEC : MO-220 VMM4-4
- DIE THICKNESS ALLOWABLE IS 0.305mm MAXIMUM (0.012 INCHES MAXIMUM).
- DIMENSION "b" APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.2 AND 0.25mm FROM TERMINAL TIP.
- THE PIN #1 IDENTIFIER MUST BE PLACED ON THE TOP SURFACE OF THE PACKAGE BY USING INDENTATION MARK OR OTHER FEATURE OF PACKAGE BODY.
- THE PIN #1 IDENTIFIER EXACT SHAPE AND SIZE OF THIS FEATURE IS OPTIONAL.
- APPLIED FOR EXPOSED PAD AND TERMINALS. EXCLUDE EMBEDDING PART OF EXPOSED PAD FROM MEASURING.
- DIMENSION "A1" APPLIED ONLY TO TERMINALS.
- EXACT SHAPE OF EACH CORNER IS OPTIONAL.

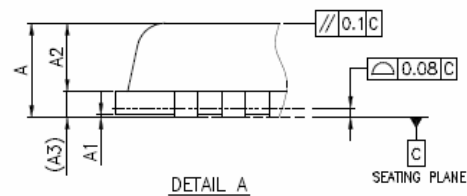
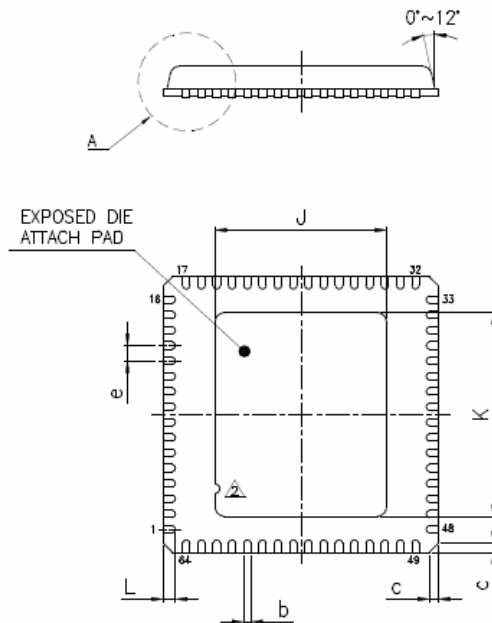


Figure 7-2 Outline Diagram of PL-2571 QFN64 (9x9mm)