

SO14 IC

Serial Output IC For 14 Bits of Output

General Description

The SO14 IC is designed to provide 14 bits of output data to connect to RS-232, RS-485, USB, Ethernet or directly to your UART. Outputs can be used to drive relay contacts, logic, optocouplers or a transistors. The SO14 also provides a pulse output when the OB data bits are received. The serial input to the SO14 is standard asynchronous format, using 8 bits, 1 stop and no parity at 9600 BPS. Other formats and encoding are available, contact the factory. A .1 uF bypass capacitor is suggested across the VDD and VSS pins. The part uses the standard 20 pin .3 inch width SOIC package. This part may be paired with the SI14 chip to achieve 14 bits of input and output, except on RS-485 interfaces.

Features

- Asynchronous serial control for up to 14 bits of data.
- Output control using RS-232, RS-485, USB or Ethernet or UART.
- Can drive be used to drive relays, optocouplers, and logic.
- No external parts required.
- Low power consumption 5 mA typical.
- Supply voltage 2.4 to 5.25 volts.
- All timing internally generated.
- TTL and CMOS compatible outputs.
- Part is in full production.
- SOIC and DIP 20 Pin Package.
- ROHS Compliant
- Low EMI

Applications

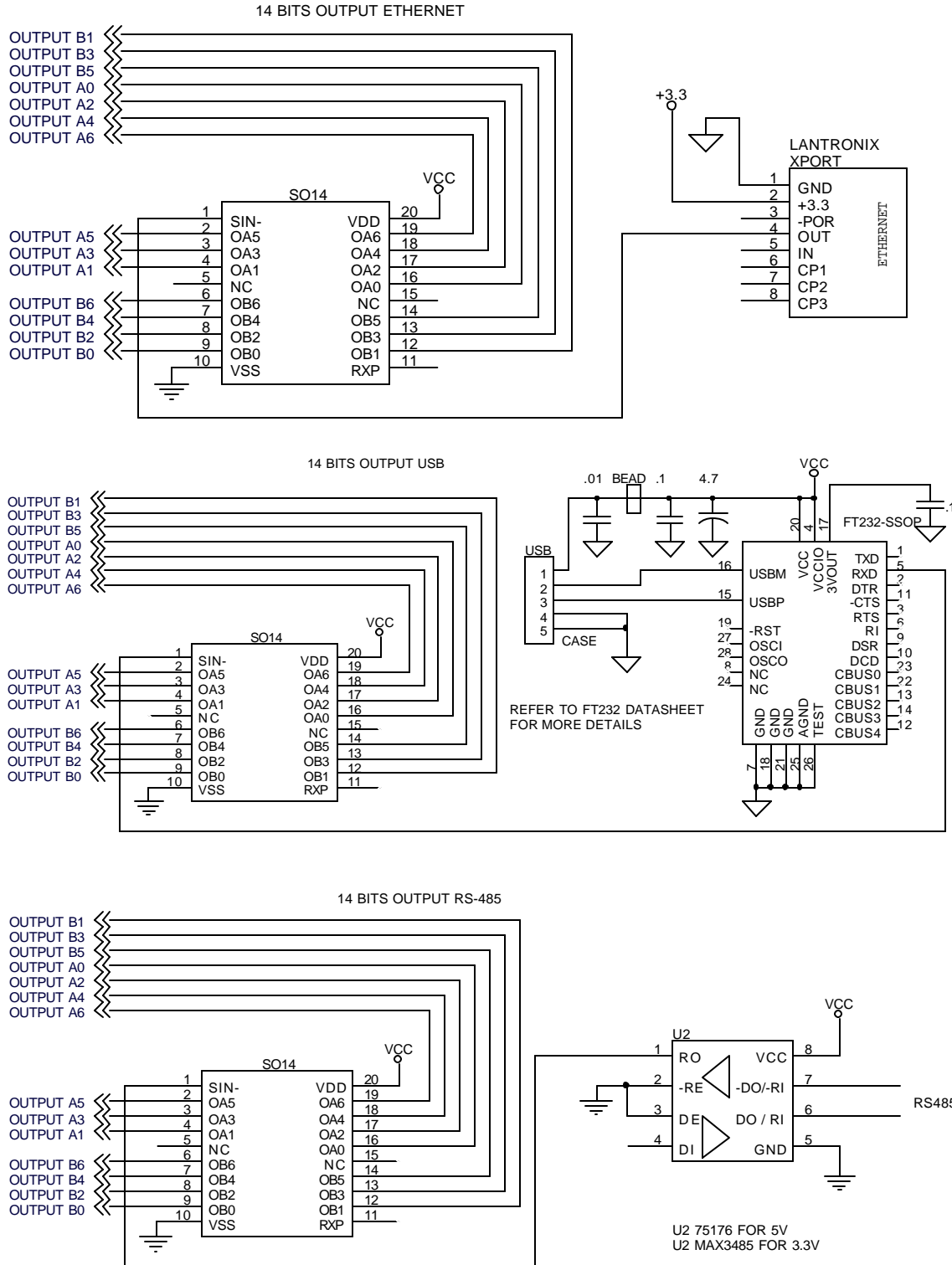
- Output Expansion
- Remote control
- Process control
- Building Automation
- Off site monitoring
- Security systems
- Internet of things
- Machine control

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Example Circuits



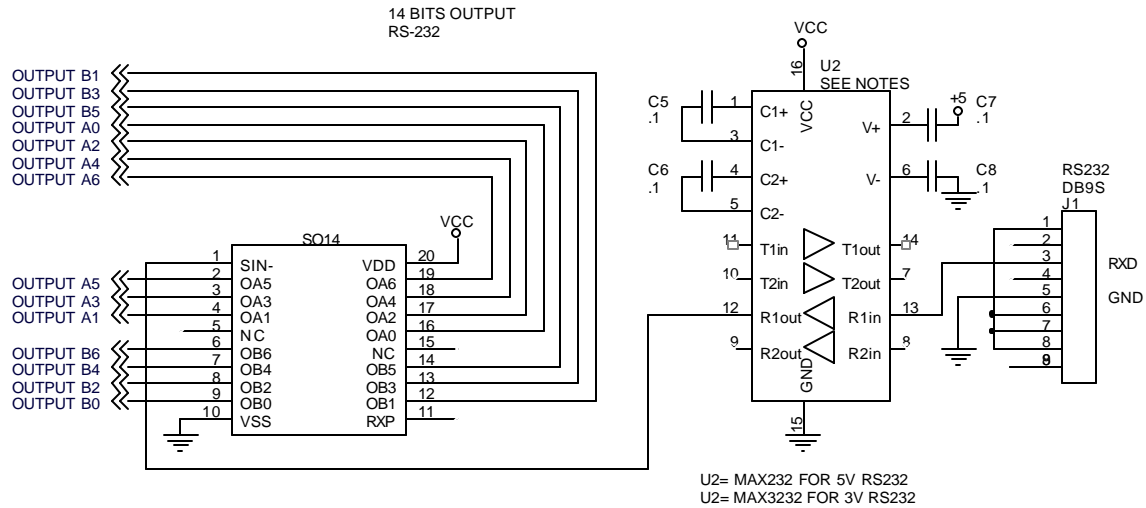
Part Number SO14

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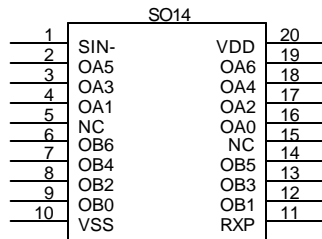
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Connection Diagram



Pin Description

Pin #	Description	Pin #	Description
1	SIN-	20	VDD
2	OA5	19	OA6
3	OA3	18	OA4
4	OA1	17	OA2
5	NC	16	OA0
6	OB6	15	NC
7	OB4	14	OB5
8	OB2	13	OB3
9	OB0	12	OB1
10	VSS	21	RXP

OA0-6 and OB0-6

These bits are set when a byte is received. If bit 8 is zero, the OA0-6 pins will be set. If bit 8 is a one, the OB0-6 pins will be set. Output drivers may be required for high power loads.

RXP

This pin outputs a positive pulse after a byte is received with bit 8 set to a one and the bits are placed on the OB pins. If bit 8 is zero, no pulse is generated on the RXP pin.

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SIN-

This is the serial input pin. It may be tied directly to the UART transmitter output of your UART or microprocessor; to a RS-232 receiver such as the MAX232; a RS485 receiver such as the 75176; an Ethernet interface such as the Lantronix Xport; or a USB IC such as the FT232. This pin is high in the idle state, the input format is 8 bits, 1 stop, no parity at 9600 BPS. Other formats and baud rates are available, please contact the factory for information. When the bits for OA0-6 are received, bit 8 of the received byte is a zero. When the bits for OB0-6 are received, bit 8 of the received byte is a one.

You can drive this input with any hexadecimal terminal program like REALTERM for testing and development.

VSS

Connect to system ground.

VDD

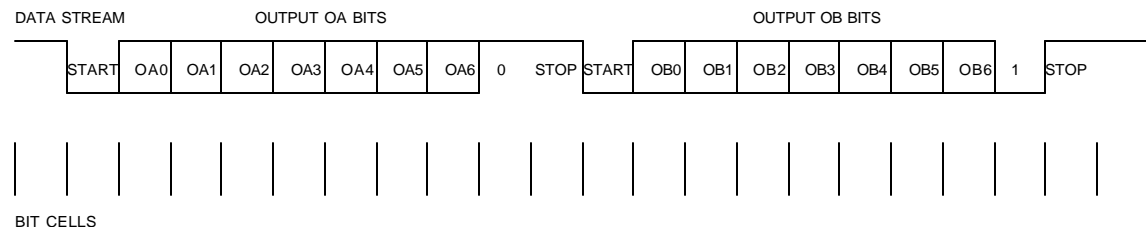
Connect to supply voltage of 2.4 to 5 volts. A .1 uF decoupling capacitor to ground is recommended.

NOTES:

Make no connection to the NC pins. Pins 5 and 15 must be left unconnected.

Serial Input Stream

When a byte is received on the SIN pin, bit 8 is tested. If the bit is a zero, the byte is placed on the OA pins. If bit 8 is a one, the byte is placed on the OB pins. The SI14 automatically removes start and stop bits from the data stream. The data is format is 9600 BPS, 8 bits, 1 stop, no parity.



Absolute Maximum Ratings

Symbol	Description	Min	Typical	Max	Units	Notes
T _{stg}	Storage Temperature	-55	25	+100	°C	
T _a	Operating Temperature	-40		+85	°C	
V _{dd}	V _{dd} - V _{ss} Voltage	-0.5		+6.0	V	
V _{io}	Input Voltage	V _{ss} - 0.5		V _{dd} +0.5	V	
I _{mio}	Maximum current into any pin	-25		+50	mA	
ESD	Electrostatic Discharge Voltage	2000			V	Human Body Model ESD
LU	Latch up current			200	mA	

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DC Electrical Characteristics

Symbol	Description	Min	Typical	Max	Units	Notes
V _{dd}	Supply Voltage	2.4		5.25	V	
I _{dd}	Supply Current		5	8	mA	Note 1
V _{oh}	High Output Level	V _{dd} - 1.0			V	I _{oh} =10 mA
V _{ol}	Low Output Voltage			0.75	V	I _{ol} =25 mA
V _{ih}	Input High Level	2.1			V	
V _{il}	Input Low Level			0.8	V	
I _{oh}	High Level Source Current			10	mA	
I _{ol}	Low Level Sink Current			25	mA	
C _{io}	Capacitive load		3.5	10	pF	
I _l	Input leakage		1		nA	
R _{pu}	Pull Up Resistors On Inputs IA, IB, and SPD	4	5.6	8	k?	

Note 1: V_{dd}=5VDC, all inputs and outputs open

Theory Of Operation

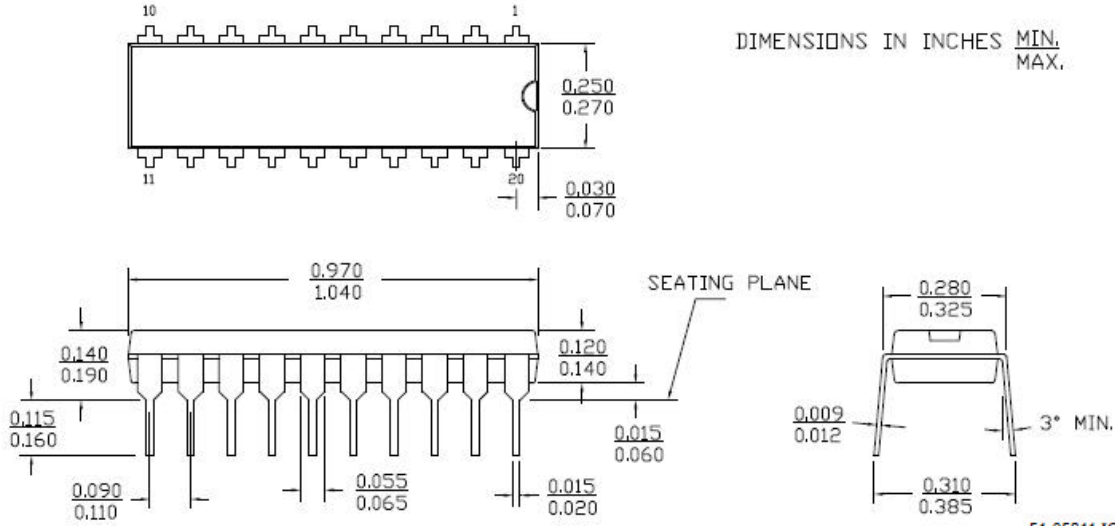
The SO14 IC is a custom programmed microprocessor designed to monitor a serial input stream and control outputs. When a byte is received, bit 8 is tested. If bit 8 is zero, the byte is placed on the OA pins. If bit 8 is one, the byte is placed on the OB pins and positive pulse is generated on the RXP pin. The data is standard asynchronous format 8 data bits, 1 stop bit and no parity. Baud rate is 9600 BPS. The OB and OA bytes may be sent in any order. It is recommended that the OA and OB bytes be sent periodically even if there is no change, to recover from power failure or serial data errors.

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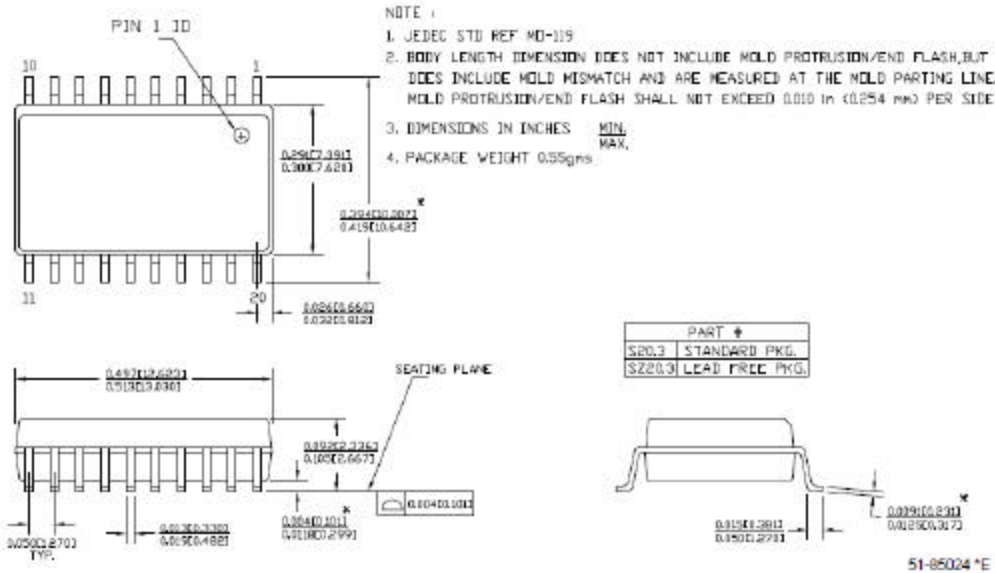
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Physical Dimensions – 20 Pin DIP (-DIP Suffix)



Physical Dimensions – 20 Pin SOIC



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Part Number SO14

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