

**SANYO**

No.2780B

**LC7932, 7932M**

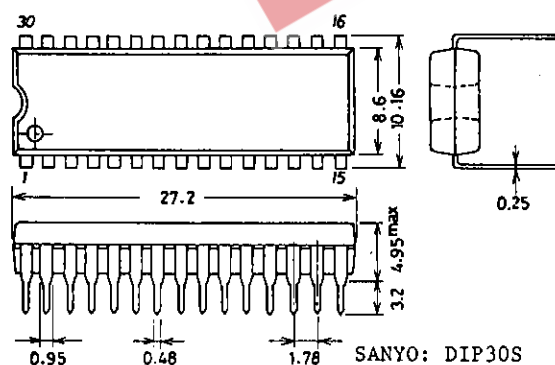
16-Bit LED Driver

The LC7932,7932M are LSIs that contain a 16-bit bidirectional shift register and are capable of direct driving a multiple lighting LED (dot matrix or dot array). The LC7932,7932M are especially suited for use in LED display panel, PPC photosensitive drum LED erase head applications.

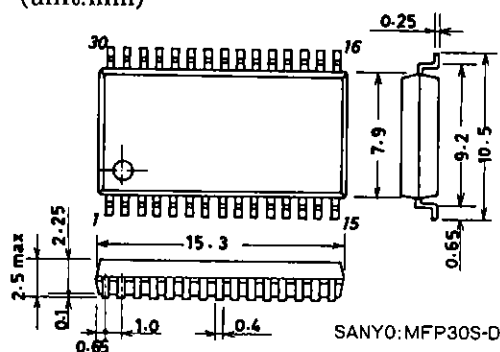
### Features

- Silicon gate C-MOS device capable of high-speed, high-current drive
- High-speed shiftable 16-bit bidirectional shift register/16-bit latch/output control circuit/16-bit N-channel transistor-open drain output transistor on chip
- Serial shift data is shifted on the positive transition of the clock (CLOCK) pulse.
- The data latch circuit outputs input data when the latch control ( $\overline{\text{LATCH}}$ ) pin is at "L" level and holds output data when the latch control ( $\overline{\text{LATCH}}$ ) pin is at "H" level.
- Maximum ratings of driver output:  $V_O = +15V$ ,  $I_{OL} = 30mA(\text{STATIC})/120mA(\text{DYNAMIC})$ .
- Operating voltage of logic unit:  $V_{DD} = 4.5V$  to  $5.5V$
- Operating clock frequency:  $f_{CLK} = DC$  to  $5MHz(\text{max})$
- Package: LC7932 : DIP30S  
LC7932M : MFP30S
- The bidirectional shift register is so designed as to cause a shift to occur in the SI to SO direction when  $L/R = "L"$  level and in the SO to SI direction when  $L/R = "H"$  level.
- When a high level is applied to the LSET pin ("latch set"), the latch data is set to the high level. The latch data does not change when the LSET pin is low or open.

Package Dimensions 3061 [LC7932]  
(unit:mm)



Package Dimensions 3073A [LC7932M]  
(unit:mm)



## LC7932,7932M

### Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Value	unit
Maximum Supply Voltage	V <sub>DD</sub> max	-0.3 to +7.0	V
Input Voltage	V <sub>I</sub>	-0.3 to V <sub>DD</sub> +0.3	V
Output Voltage	V <sub>O</sub> (1)	SOUT(SIN) output	-0.3 to V <sub>DD</sub> +0.3
	V <sub>O</sub> (2)	D1 to D16 output, output Tr OFF	15
Output Current	I <sub>O</sub>	D1 to D16 output, per output pin	30 mA
Operating Temperature	T <sub>opr</sub>		-25 to +85 °C
Storage Temperature	T <sub>stg</sub>	(Note)	-35 to +125 °C
Allowable Power Dissipation	Pd max	LC7932 Ta = 85°C	400 mW
		LC7932M Ta = 85°C	270 mW

(Note) When mounting the MFP package version, do not dip it in solder.

### Allowable Operating Conditions at Ta = -25°C to +85°C

Parameter	Symbol	Value	min	typ	max	unit
Supply Voltage	V <sub>DD</sub>	V <sub>DD</sub>	4.5		5.5	V
Input "H"-Level Voltage	V <sub>IH</sub>	SIN(SOUT), CLOCK, LATCH, BEO, STROBE, LSET, L/R	0.8V <sub>DD</sub>		V <sub>DD</sub>	V
Input "L"-Level Voltage	V <sub>IL</sub>	SIN(SOUT), CLOCK, LATCH, BEO, STROBE, LSET, L/R	V <sub>SS</sub> (L)		0.2V <sub>DD</sub>	V
Clock Frequency	f <sub>CLK</sub>	CLOCK			5.0	MHz
Clock Pulse Width	t <sub>wφ</sub>	CLOCK	75			ns
Clock Rise/Fall Time	t <sub>r</sub> , t <sub>f</sub>	CLOCK			200	ns
Data Setup Time	t <sub>DS</sub>	SIN(SOUT) CLOCK	100			ns
Data Hold Time	t <sub>DH</sub>	SIN(SOUT) CLOCK	50			ns
Latch Pulse Width	t <sub>wL</sub>	LATCH	100			ns

### Electrical Characteristics at Ta = 25°C

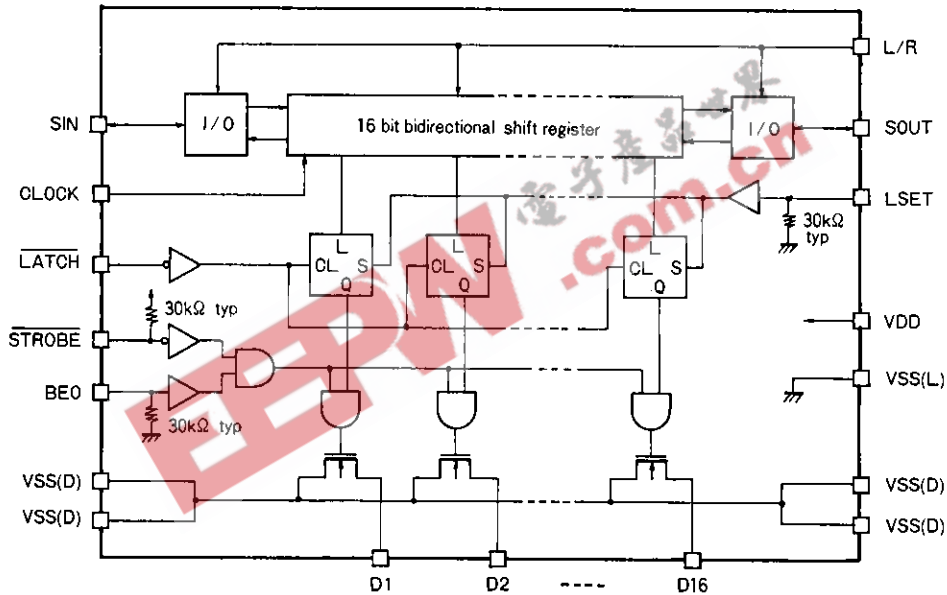
Parameter	Symbol	Value	min	typ	max	unit
Input "H"-Level Current	I <sub>IH</sub> (1)	SIN(SOUT), CLOCK, LATCH, L/R			10	μA
Input "L"-Level Current	I <sub>IH</sub> (2)	BEO, LSET		170		μA
	I <sub>IL</sub> (1)	SIN(SOUT), CLOCK, LATCH, L/R	-10			μA
Output "H"-Level Voltage	I <sub>IL</sub> (2)	STROBE		170		μA
	V <sub>OH</sub>	SOUT(SIN)	I <sub>OH</sub> = -0.5mA, V <sub>DD</sub> = 5V		V <sub>DD</sub> - 0.5	V
Output "L"-Level Voltage	V <sub>OL</sub> (1)	SOUT(SIN)	I <sub>OL</sub> = 0.5mA, V <sub>DD</sub> = 5V		0.5	V
	V <sub>OL</sub> (2)	D1 to D16	I <sub>OL</sub> = 30mA, V <sub>DD</sub> = 5V		0.5	V
Output OFF-State Leakage Current	I <sub>OFF</sub>	D1 to D16	V <sub>O</sub> = 15V		20	μA
Input Capacitance	C <sub>IN</sub>	CLOCK		5.0		pF
Operating Current	I <sub>DD</sub>	V <sub>DD</sub>	f <sub>CLK</sub> = 5MHz V <sub>DD</sub> = 5V All outputs with no load		5	mA

# LC7932,7932M

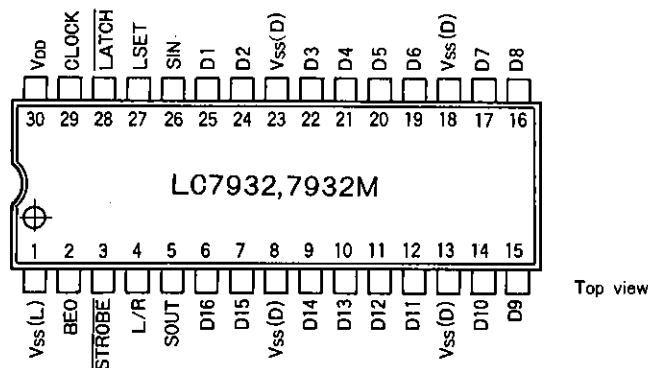
## Switching Characteristics at Ta = 25°C

				V <sub>DD</sub> = 5V	min	typ	max	unit
Clock Latch Delay Width	t <sub>CL</sub>	CLOCK, LATCH			100			ns
	t <sub>LC</sub>	CLOCK, LATCH			0			ns
Output "H"-Level Propagation Delay Time	t <sub>PLH</sub> (1)	LATCH	Dn; (RL = 1.0kΩ, CL = 15pF)	V <sub>DD</sub> = 5V			400	ns
	t <sub>PLH</sub> (2)	BEO, STROBE	D1 to D16	V <sub>DD</sub> = 5V			300	ns
	t <sub>PLH</sub> (3)	CLOCK, SOUT(SIN)	SOUT; CL = 15pF	V <sub>DD</sub> = 5V			200	ns
Output "L"-Level Propagation Delay Time	t <sub>PHL</sub> (1)	LATCH, LSET	Dn; (RL = 1.0kΩ, CL = 15pF)	V <sub>DD</sub> = 5V			200	ns
	t <sub>PHL</sub> (2)	BEO, STROBE	D1 to D16	V <sub>DD</sub> = 5V			100	ns
	t <sub>PHL</sub> (3)	CLOCK, SOUT(SIN)	SOUT; CL = 15pF	V <sub>DD</sub> = 5V			200	ns

## Equivalent Circuit



## Pin Assignment

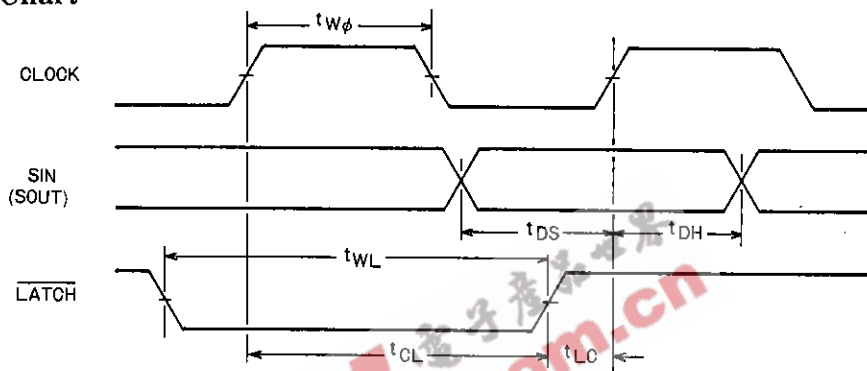


The package comes in two types - DIP30S and MFP30S.

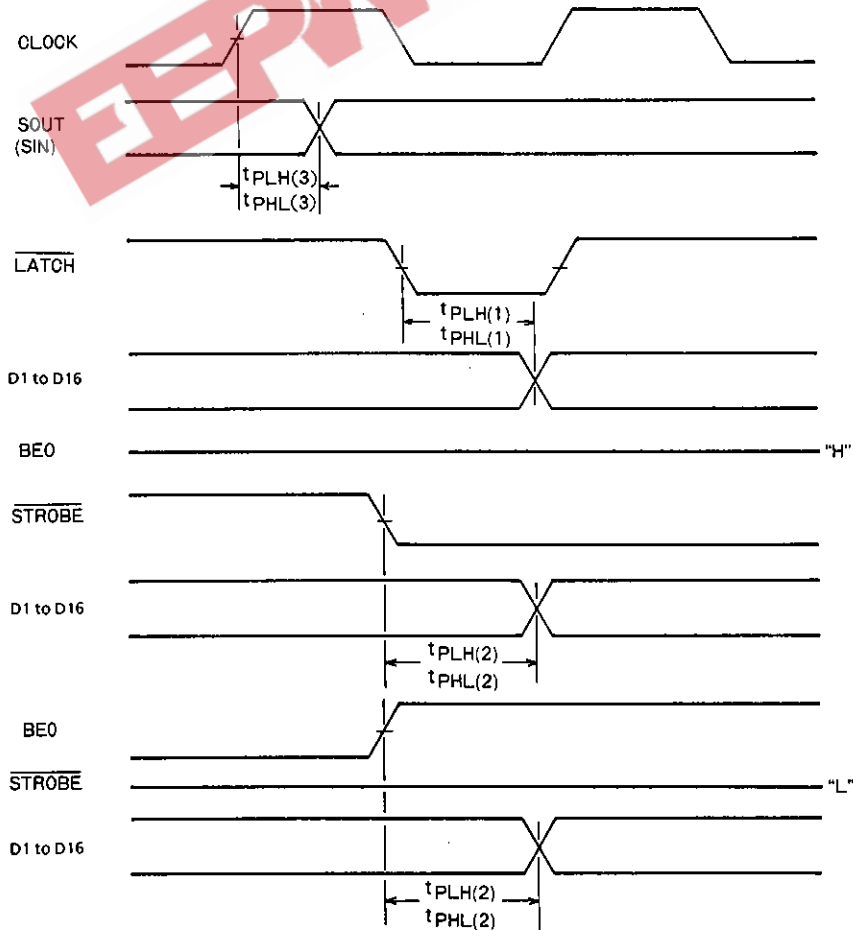
LED Driver ON/OFF Truth Table

Latch Data (Q)	BEO	STROBE	LED Driver
0	0	0	OFF
1	0	0	OFF
0	1	0	OFF
1	1	0	ON Driver ON
0	0	1	OFF
1	0	1	OFF
0	1	1	OFF
1	1	1	OFF

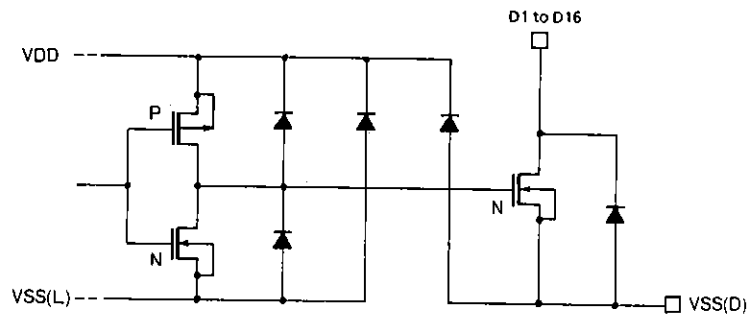
Input Data Timing Chart



Output Data Timing Chart



## Equivalent Circuit for Output Driver Section



(Note) L/R="H" level: ( )

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