



# LB8902M

## 3-Channel Clock Driver

### Overview

- The LB8902M is designed to drive a capacitive load at a high speed.
- Suited for horizontal clock drive of CCD image sensor.

### Functions and Features

- 3-channel inverter buffer amplifier.
- Fast propagation time (10ns typ. for 100pF load).
- Low-voltage operation available (5V min).
- Low quiescent current (10μA max).

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V <sub>CC</sub> max		-0.3 to +12.0	V
Input supply voltage	V <sub>IN</sub>		-0.3 to +6.0	V
Maximum output current	I <sub>OUT</sub>		150	mA
Allowable power dissipation	Pd max		900	mW
Operating temperature	Topr		-10 to +70	°C
Storage temperature	Tstg		-40 to +125	°C

#### Allowable Operating Ranges at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Operating voltage			5 to 11	V

#### Electrical Characteristics (DC Characteristics) at Ta = 25°C, V<sub>CC1</sub>=V<sub>CC2</sub>=11V

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[Leakage Current]						
Across V <sub>CC</sub> and GND	I Leak1				10	μA
Across IN and V <sub>CC</sub>	I Leak2	V <sub>IN</sub> =0V			10	μA
Across IN and GND	I Leak3	V <sub>IN</sub> =6V			10	μA
Across OUT and V <sub>CC</sub>	I Leak4	V <sub>OUT</sub> =0V			10	μA
Across OUT and GND	I Leak5	V <sub>OUT</sub> =11V			10	μA

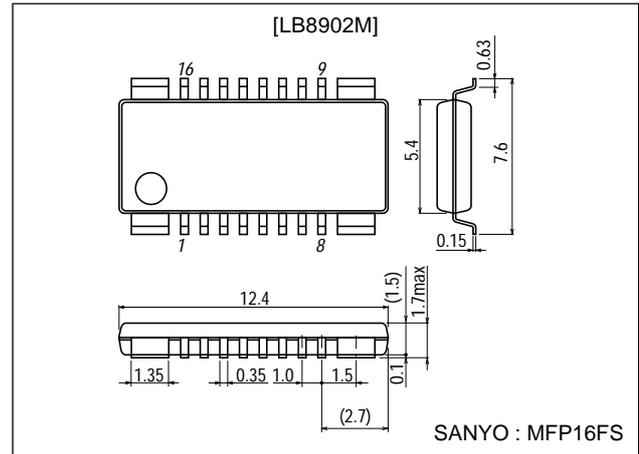
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### Package Dimensions

unit:mm

3097A-MFP16FS

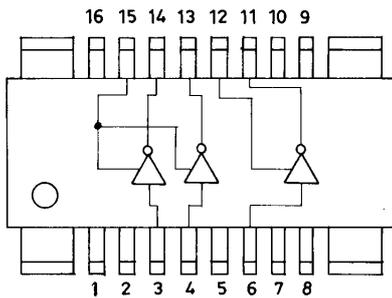


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**Switching Characteristics** at  $T_a = 25^\circ\text{C}$ ,  $V_{CC1}=V_{CC2}=9\text{V}$ ,  $V_{in}=5\text{V}_{p-p}$  ( $f=14.3\text{MHz}$ ),  $t_r, t_f \leq 6\text{ns}$ , load conditions :  $R_L=25\Omega$ ,  $C_L=100\text{pF}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Propagation time	$t_{PLH1-3}$	See Fig.A.		10	15	ns
	$t_{PHL1-3}$	See Fig.A.		8	15	ns
Transient time	$t_r1-3$	See Fig.A.		8	15	ns
	$t_f1-3$	See Fig.A.		8	15	ns
Output amplitude	$V_{OP-P}$	See Fig.A.	$V_{CC-0.8}$		$V_{CC}$	Vp-p
Current drain	$I_{CC1}$	See Fig.A.		32		mA
	$I_{CC2}$	See Fig.A.		32		mA
	$I_{CC3}$	See Fig.A.		32		mA

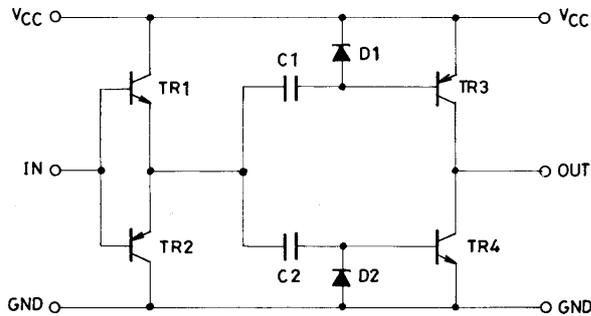
## Pin Assignment



Pin No.	Function	Pin No.	Function
1	Frame GND	9	Frame GND
2	GND	10	N.C.
3	IN1	11	OUT3
4	IN2	12	$V_{CC2}$
5	GND	13	OUT2
6	IN3	14	OUT1
7	N.C.	15	$V_{CC1}$
8	Frame GND	16	Frame GND

Note) Do not use the N.C. pin.

## Equivalent Circuit Block Diagram



## Test Circuit

Unit (resistance :  $\Omega$ , capacitance : F)

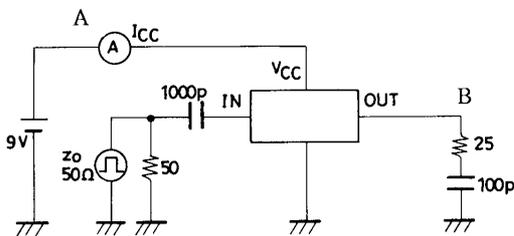
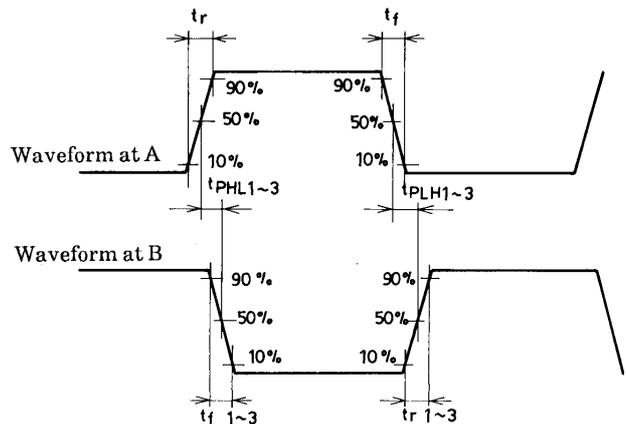
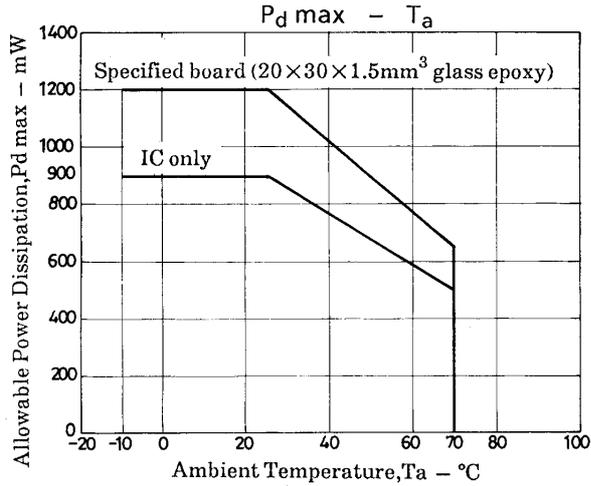


Fig. A Propagation Time, Transient Time



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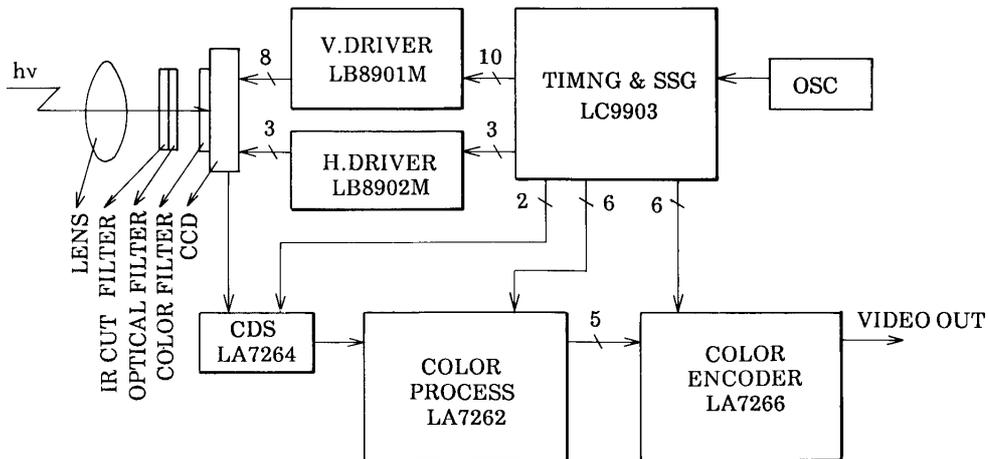
## Proper Cares to be Taken in Designing a Printed Circuit Board

The LB8902M is designed to drive a load at a very high speed. When designing a printed circuit board, keep in mind the following points.

- 1) Make the pattern of the power supply, GND lines as large as possible.
- 2) Place the bypass capacitor as close to the IC as possible (less than 1cm).
- 3) Make the wiring of the input signal line as short as possible to minimize the effect of stray capacitance.
- 4) Make the wiring of the output signal line also as short as possible, because the inductance of a long signal line may affect the output waveforms adversely.

Take such necessary measures that a small resistance is inserted in series with a load.

## Sample Application Circuit : Camera Block Diagram



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