



SANYO Semiconductors

DATA SHEET

LA73074CL — Monolithic Linear IC

Video Driver for DSC/Cell Phone

Overview

The LA73074CL is a low voltage drive (2.7V to 3.6V) video driver developed for portable appliances including digital still cameras and cell phones. It incorporates a minus-voltage generator that allows the LA73074CL to generate its output with the pedestal voltage set to 0V, so that no output coupling capacitor is required. This enables substantial reduction in mounting space without concerned about V-sag.

Features

- Output coupling capacity not required
- Low-voltage drive ($V_{CC} = 2.7V$ to $3.6V$)
- No V-sag
- Sextic LPF incorporated ($f_c = 7.5MHz$)
- Current drain of $0\mu A$ in the standby mode
- Amplifier gain selectable from three options (6, 12, and 9dB) (Pin control (GND/Open/ V_{CC}))
- Output drive capable of covering maximum 75Ω output, one channel

Specifications

Maximum Ratings at $T_a = 25^\circ C$

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max		4.0	V
Allowable power dissipation	P_d max	$T_a \leq 80^\circ C$, *Mounted on a specified board	160	mW
Operating temperature	T_{opr}		-20 to +85	$^\circ C$
Storage temperature	T_{stg}		-55 to +150	$^\circ C$

*: Mounted on a specified board: 10mm×20mm×0.8mm, Paper phenol

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Recommended Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Recommended Operating supply voltage	V_{CCSTD}		3.1	V
Operating supply voltage range	$V_{CCRANGE}$		2.7 to 3.6	V

Electrical Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 3.1\text{V}$

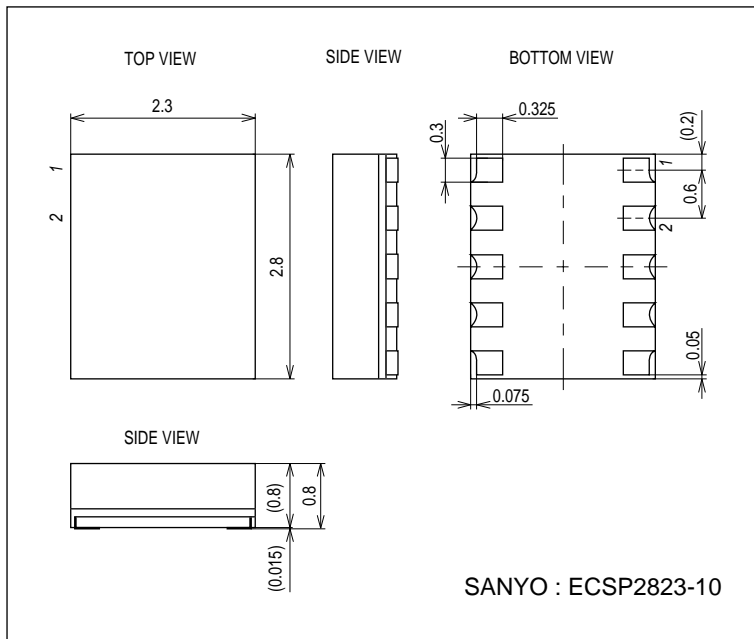
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Current Drain Block						
Current dissipation 1 ($V_{IN} = \text{White}50\%$)	I_{CC}	4pin = Low Input = White50%	14	22	30	mA
Current dissipation 2 (Non-signal mode)	I_{CC2}	4pin = Low Input = No signal	7	11.5	15	mA
Current dissipation 3 (Standby mode)	$I_{CC-STBY}$	4pin = Open (High)		0	5	μA
Video Block						
Voltage gain V6	V_{G-L}	$V_{IN} = 1\text{Vp-p}$ 100% white 2pin = Low (GND)	5.7	6.2	6.7	dB
Voltage gain V12	V_{G-M}	$V_{IN} = 0.5\text{Vp-p}$ 100% white 2pin = MID (Open)	11.7	12.2	12.7	dB
Voltage gain V9	V_{G-H}	$V_{IN} = 710\text{mVp-p}$ 100% white 2pin = High (V_{CC})	8.7	9.2	9.7	dB
Freq. Characteristics	V_f	$f = 100\text{kHz}/5\text{MHz}$	-1.5	-0.5	+0.5	dB
Differential Gain	D_G	$V_{OUT} = 2\text{Vp-p}$ (Modulated Ramp)	-2.0	0	-2.0	%
Differential Phase	D_P	$V_{OUT} = 2\text{Vp-p}$ (Modulated Ramp)	-2.0	0	-2.0	deg
Output leak current at standby 1	I_{OUTH}	Leak current when 3V is applied to pin 9, with pin 4 at H (Standby Mode) and pin 9 (V_{OUT})	-5.0	0	+5.0	μA
Output leak current at standby 2	I_{OUTL}	Leak current when 0.1V is applied to pin 9, with pin 4 at H (Standby Mode) and pin 9 (V_{OUT})	-5.0	0	+5.0	μA
Control Terminal Block						
Stand-by control pin H voltage (SET = STANDBY MODE)	$V_{TH-STBY-H}$	Pin 4 pin voltage range at which $I_{CC} \leq 5\mu\text{A}$	$V_{CC}-0.5$		3.6	V
Stand-by control pin L voltage (SET = ACTIVE MODE)	$V_{TH-STBY-L}$	Pin 4 pin voltage range at which the operation mode is effective.	GND		0.3	V
Gain selection control pin H voltage (SET = 9dB)	V_{TH-G-H}	Pin 2 pin voltage range at which Amp Gain becomes 9dB.	$V_{CC}-0.3$		V_{CC}	V
Gain selection control pin M voltage (SET = 12dB)	V_{TH-G-M}	Pin 2 pin voltage range at which Amp Gain becomes 12dB.	1.0	1.2 (OPEN)	1.4	V
Gain selection control pin L voltage (SET = 6dB)	V_{TH-G-L}	Pin 2 pin voltage range at which Amp Gain becomes 6dB.	GND		0.3	V

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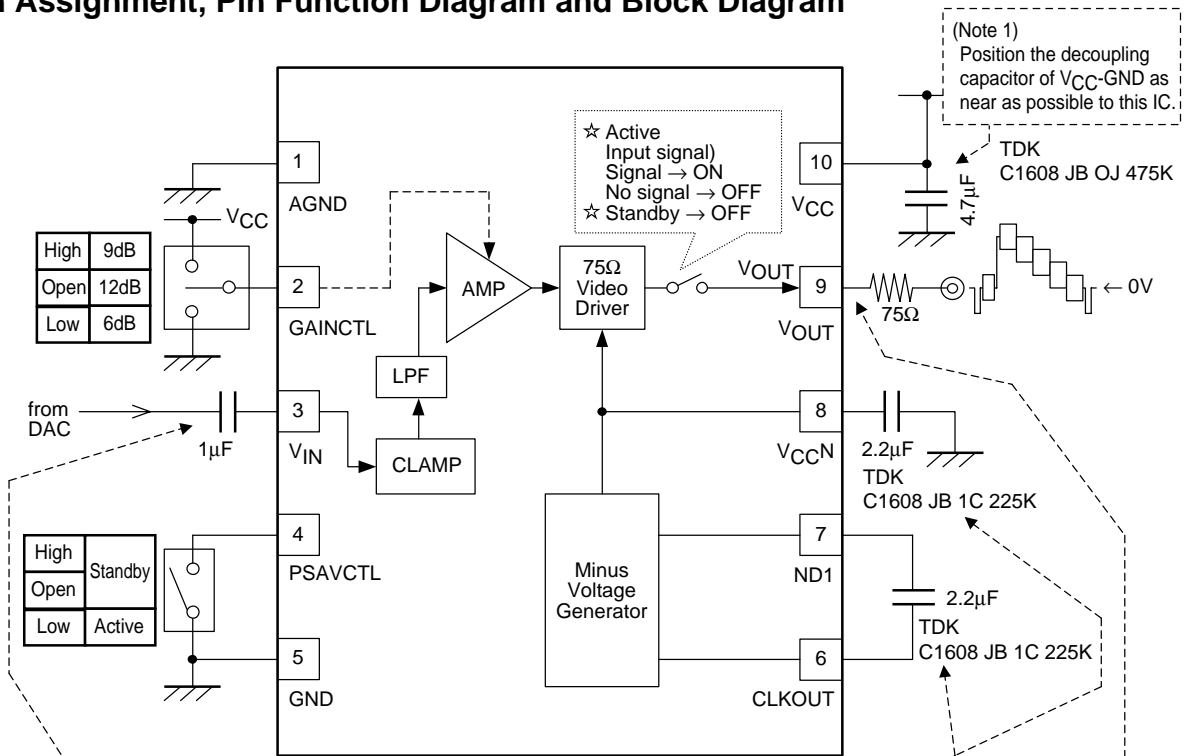
Package Dimensions

unit : mm (typ)

3334



Pin Assignment, Pin Function Diagram and Block Diagram



(Note 1)
Position the decoupling capacitor of V_{CC}-GND as near as possible to this IC.

(Note 2)
Use the input capacity value within a range of 0.1μF to 1μF while checking the sag condition of the output waveform.

(Note 3) For these two capacities;
Temperature characteristic B rank (±10%)
Electrostatic tolerance K rank (±10%)
and Withstand voltage of 6.3V or more are recommended.

(Note 4) Wiring from V_{OUT} (pin 9) to 75Ω must be as short as possible.

(Note 5)
As the minus power supply in this IC generates the clock for charge pump power supply by extracting the sink component of the input Video signal (synchronous isolation) and by detecting its fall, the portion around the V-synchronization of this IC output may be reduced when the pseudo V signal without cut-in pulse is inserted as in the case of certain analog VCR special play (search). On the contrary, there is no problem when the pseudo V signal has the cut-in pulse. Pay due attention on this fact during use.

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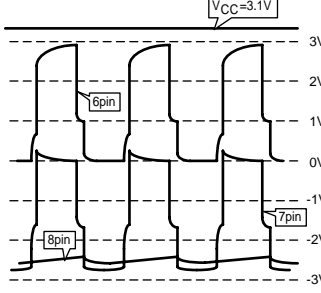
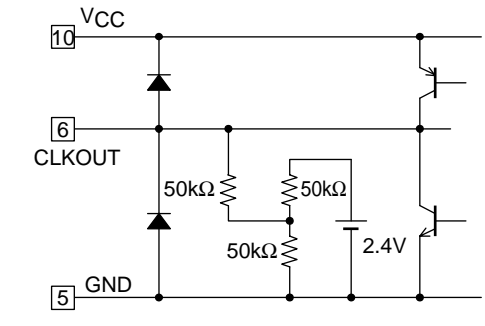
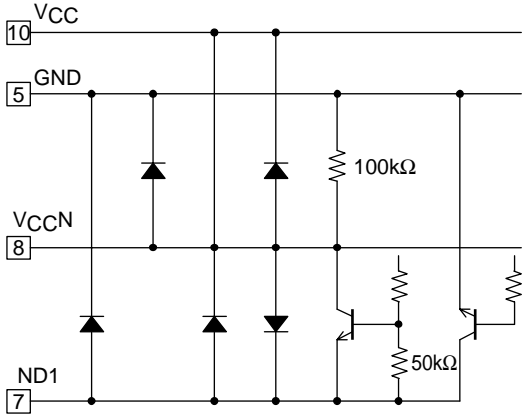
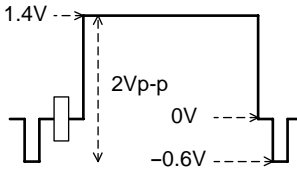
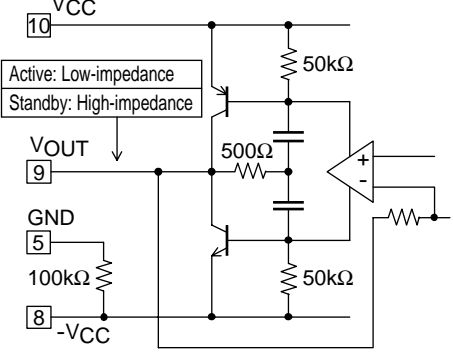
Pin Functions

Pin No	Symbol	Voltage	Description	Equivalent Circuit												
1	AGND	0V	Analog GND													
2	GAINCTL	1.2V	Gain select pin <table border="1" style="margin-top: 10px;"> <thead> <tr> <th>Control of Pin2</th> <th></th> <th>GAIN</th> </tr> </thead> <tbody> <tr> <td>H(V_{CC})</td> <td>⇒</td> <td>9dB</td> </tr> <tr> <td>M(OPEN)</td> <td>⇒</td> <td>12dB</td> </tr> <tr> <td>L(GND)</td> <td>⇒</td> <td>6dB</td> </tr> </tbody> </table>	Control of Pin2		GAIN	H(V _{CC})	⇒	9dB	M(OPEN)	⇒	12dB	L(GND)	⇒	6dB	
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3	V _{IN}	1.1V	Video input pin (Sync-chip clamp (input High-impedance)) <table border="1" style="margin-top: 10px;"> <thead> <tr> <th>GAIN SET:</th> <th>6dB ⇒</th> <th>1.0Vp-p</th> </tr> </thead> <tbody> <tr> <td>GAIN SET:</td> <td>12dB ⇒</td> <td>500mVp-p</td> </tr> <tr> <td>GAIN SET:</td> <td>9dB ⇒</td> <td>710mVp-p</td> </tr> </tbody> </table>	GAIN SET:	6dB ⇒	1.0Vp-p	GAIN SET:	12dB ⇒	500mVp-p	GAIN SET:	9dB ⇒	710mVp-p				
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4	PSAVCTL	V _{CC} or 0V	Power save mode select pin <table border="1" style="margin-top: 10px;"> <thead> <tr> <th>Control of Pin4</th> <th></th> <th>MODE</th> </tr> </thead> <tbody> <tr> <td>H(V_{CC})</td> <td>OPEN or V_{CC}±0.5V</td> <td>⇒</td> <td>STANDBY</td> </tr> <tr> <td>L(GND)</td> <td>0V to 0.3V</td> <td>⇒</td> <td>ACTIVE</td> </tr> </tbody> </table>	Control of Pin4		MODE	H(V _{CC})	OPEN or V _{CC} ±0.5V	⇒	STANDBY	L(GND)	0V to 0.3V	⇒	ACTIVE		
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H(V _{CC})	OPEN or V _{CC} ±0.5V	⇒	STANDBY													
L(GND)	0V to 0.3V	⇒	ACTIVE													
5	GND	0V														

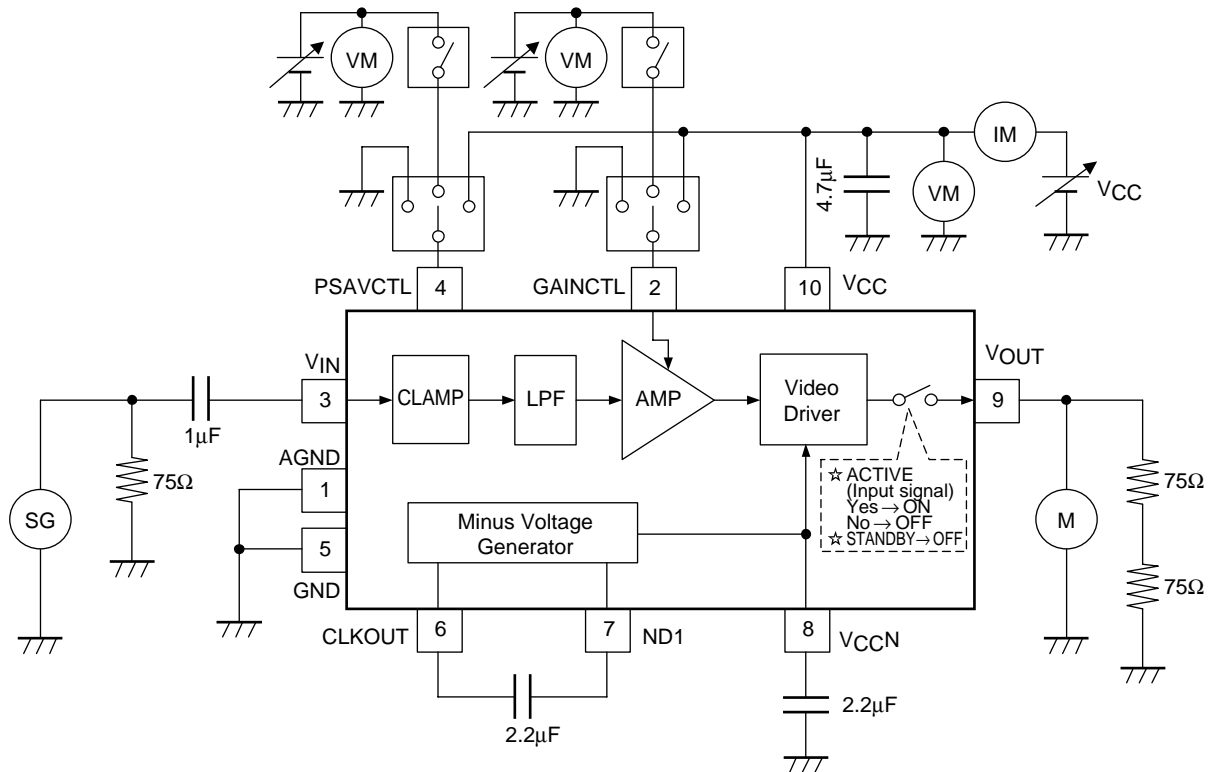
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Pin No	Symbol	Voltage	Description	Equivalent Circuit
6	CLKOUT	+3.0V ↑↓ 0V	Pin : Clock output terminal 	
7	ND1	+0.5V ↑↓ -2.6V (-VCC)	Pin7 : The terminal which transmits an electric charge	
8	VCCN	0V ↑↓ -2.5V (-VCC)	Pin8 : Negative VCC	
9	VOUT	0V	Video output terminal (Push-pull output Low-impedance) 	
10	VCC	2.9V to 3.6V		

Test Circuit Diagram



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