



SANYO Semiconductors

DATA SHEET

LA73079CL — Monolithic Linear IC

Video Driver for DSC

Overview

The LA73079CL 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 LA73079CL 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 ($f_c = 9MHz$)
- Current drain of $0\mu A$ in the standby mode
- Amplifier gain selectable from three options (6, 12, and 16dB) (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

- Any and all SANYO Semiconductor Co.,Ltd. products described or contained herein are, with regard to "standard application", intended for the use as general electronics equipment (home appliances, AV equipment, communication device, office equipment, industrial equipment etc.). The products mentioned herein shall not be intended for use for any "special application" (medical equipment whose purpose is to sustain life, aerospace instrument, nuclear control device, burning appliances, transportation machine, traffic signal system, safety equipment etc.) that shall require extremely high level of reliability and can directly threaten human lives in case of failure or malfunction of the product or may cause harm to human bodies, nor shall they grant any guarantee thereof. If you should intend to use our products for applications outside the standard applications of our customer who is considering such use and/or outside the scope of our intended standard applications, please consult with us prior to the intended use. If there is no consultation or inquiry before the intended use, our customer shall be solely responsible for the use.
- Specifications of any and all SANYO Semiconductor Co.,Ltd. products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.

SANYO Semiconductor Co., Ltd.

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

LA73079CL

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

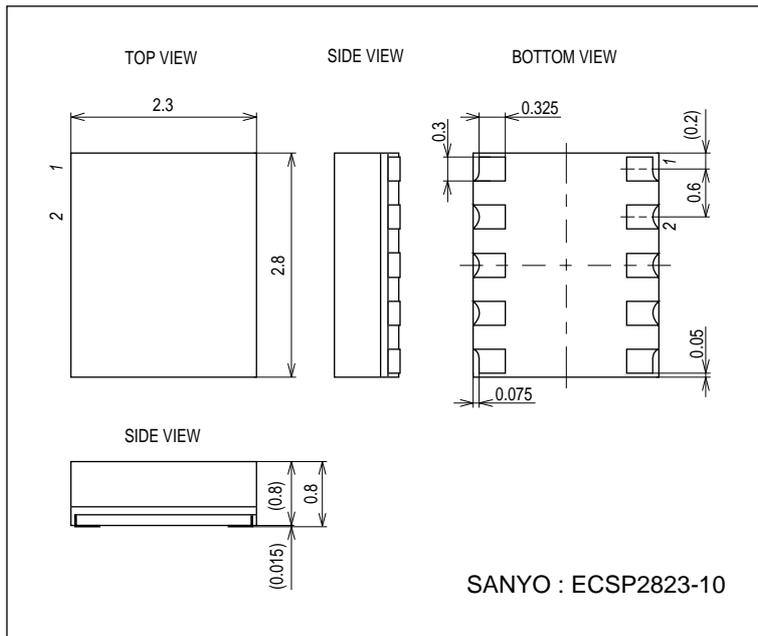
Parameter	Symbol	Conditions	Ratings	Unit
Recommended Operating supply voltage	V_{CCSTD}		3.1	V
Operating supply voltage range	$V_{CCRANGE}$		2.7 to 3.6	V

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

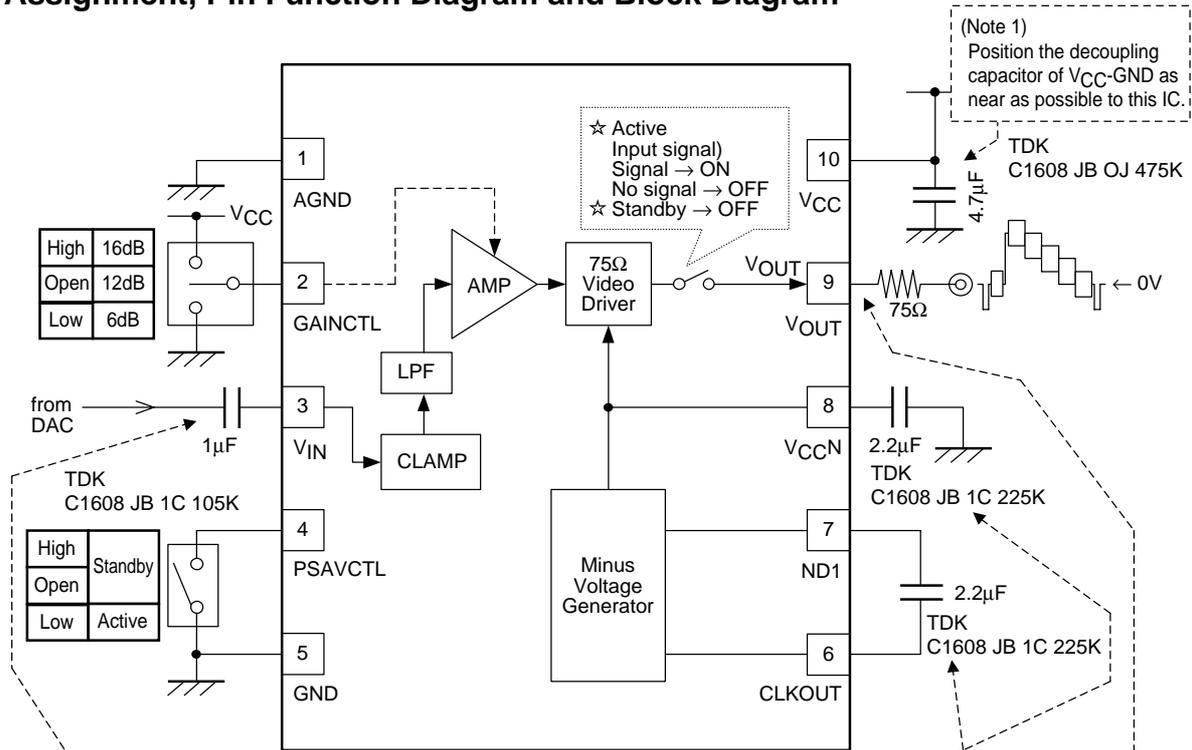
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Current Drain Block						
Current dissipation 1 ($V_{IN} = \text{White}50\%$)	I_{CC}	4pin = Low Input = White50%	14	22	30	mA
Current dissipation 2 (Non-signal mode)	I_{CC2}	4pin = Low Input = No signal	7	11.5	15	mA
Current dissipation 3 (Standby 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 V16	V_{G-H}	$V_{IN} = 317\text{mVp-p}$ 100% white 2pin = High (V_{CC})	15.7	16.2	16.7	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}	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}	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 = 16dB)	V_{TH-G-H}	Pin 2 pin voltage range at which Amp Gain becomes 16dB.	$V_{CC}-0.3$		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

Package Dimensions

unit : mm (typ)
3334



Pin Assignment, Pin Function Diagram and Block Diagram



(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.

LA73079CL

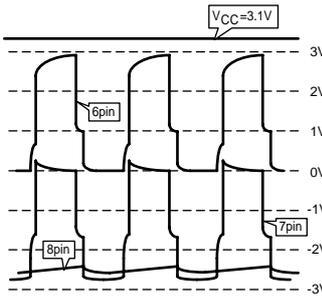
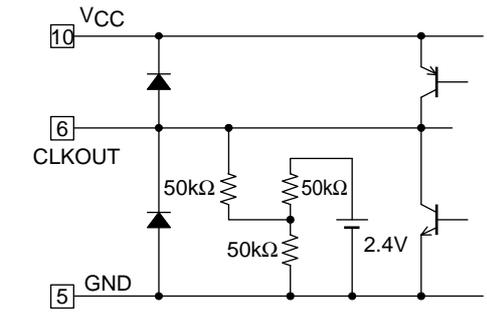
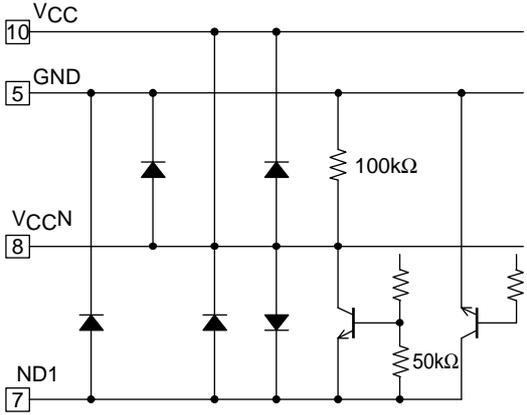
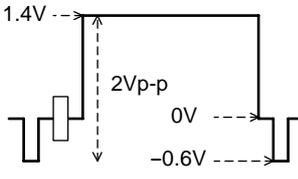
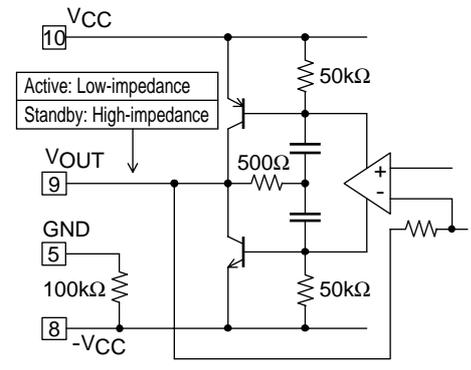
Pin Functions

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>16dB</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})	⇒	16dB	M(OPEN)	⇒	12dB	L(GND)	⇒	6dB	
Control of Pin2		GAIN														
H(V _{CC})	⇒	16dB														
M(OPEN)	⇒	12dB														
L(GND)	⇒	6dB														
3	V _{IN}	1.1V	Video input terminal (Sync-chip clamp (input High-impedance)) <table border="1" style="margin-top: 10px;"> <thead> <tr> <th>GAIN SET</th> <th></th> </tr> </thead> <tbody> <tr> <td>6dB</td> <td>⇒ 1.0Vp-p</td> </tr> <tr> <td>12dB</td> <td>⇒ 500mVp-p</td> </tr> <tr> <td>16dB</td> <td>⇒ 317mVp-p</td> </tr> </tbody> </table>	GAIN SET		6dB	⇒ 1.0Vp-p	12dB	⇒ 500mVp-p	16dB	⇒ 317mVp-p					
GAIN SET																
6dB	⇒ 1.0Vp-p															
12dB	⇒ 500mVp-p															
16dB	⇒ 317mVp-p															
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>or V_{CC}±0.5V</td> <td>⇒ STANDBY</td> </tr> <tr> <td>L(GND)</td> <td>0V to 0.3V</td> <td>⇒ ACTIVE</td> </tr> </tbody> </table>	Control of Pin4		MODE	H(V _{CC})	or V _{CC} ±0.5V	⇒ STANDBY	L(GND)	0V to 0.3V	⇒ ACTIVE				
Control of Pin4		MODE														
H(V _{CC})	or V _{CC} ±0.5V	⇒ STANDBY														
L(GND)	0V to 0.3V	⇒ ACTIVE														
5	GND	0V														

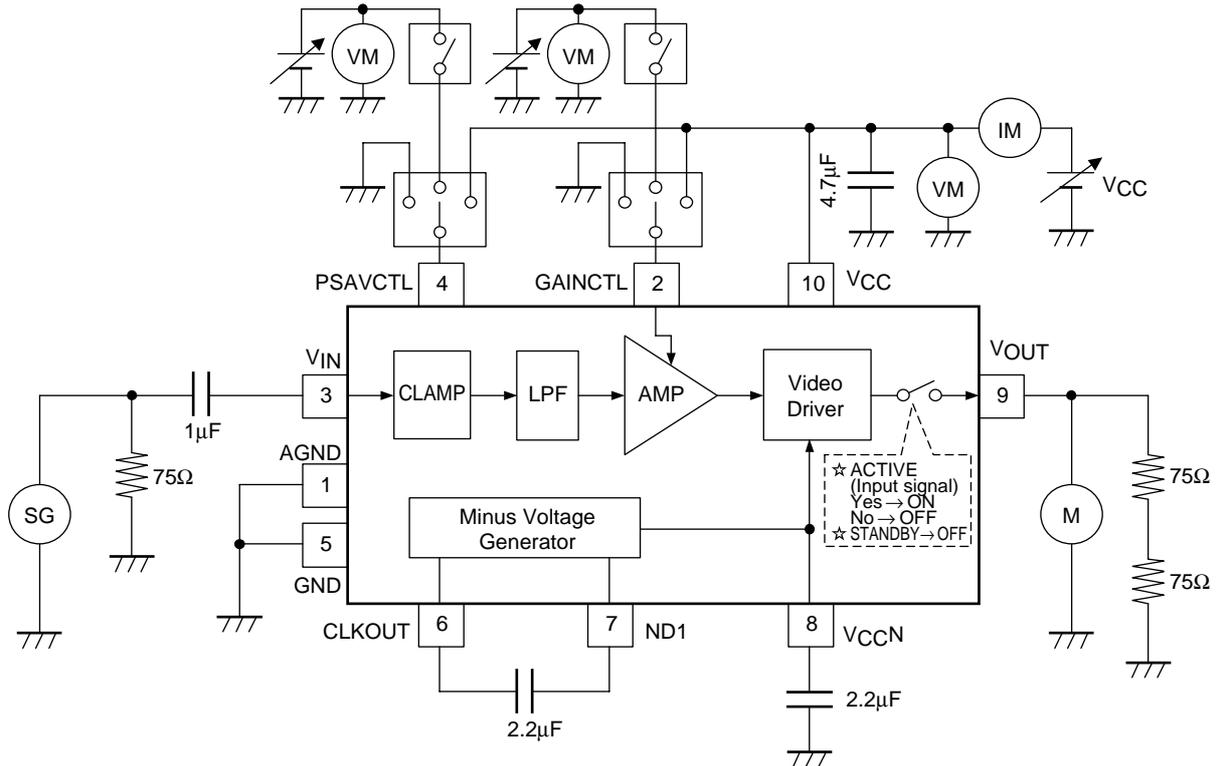
Continued on next page.

LA73079CL

Continued from preceding page.

Pin No	Symbol	Voltage	Description	Equivalent Circuit
6	CLKOUT	+3.0V ↑↓ 0V	Pin6 : 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	2.7V to 3.6V		

Test Circuit Diagram



- SANYO Semiconductor Co.,Ltd. assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all SANYO Semiconductor Co.,Ltd. products described or contained herein.
- SANYO Semiconductor Co.,Ltd. strives to supply high-quality high-reliability products, however, any and all semiconductor products fail or malfunction with some probability. It is possible that these probabilistic failures or malfunction could give rise to accidents or events that could endanger human lives, trouble that could give rise to smoke or fire, or accidents that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.
- In the event that any or all SANYO Semiconductor Co.,Ltd. products described or contained herein are controlled under any of applicable local export control laws and regulations, such products may require the export license from the authorities concerned in accordance with the above law.
- No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written consent of SANYO Semiconductor Co.,Ltd.
- Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the SANYO Semiconductor Co.,Ltd. product that you intend to use.
- Information (including circuit diagrams and circuit parameters) herein is for example only; it is not guaranteed for volume production.
- Upon using the technical information or products described herein, neither warranty nor license shall be granted with regard to intellectual property rights or any other rights of SANYO Semiconductor Co.,Ltd. or any third party. SANYO Semiconductor Co.,Ltd. shall not be liable for any claim or suits with regard to a third party's intellectual property rights which has resulted from the use of the technical information and products mentioned above.

This catalog provides information as of September, 2007. Specifications and information herein are subject to change without notice.