



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

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LA73079CL

Recommended Operating Conditions at Ta = 25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|--------------------------------------|-----------------------|------------|------------|------|
| Recommended Operating supply voltage | V _{CC} STD | | 3.1 | V |
| Operating supply voltage range | V _{CC} RANGE | | 2.7 to 3.6 | V |

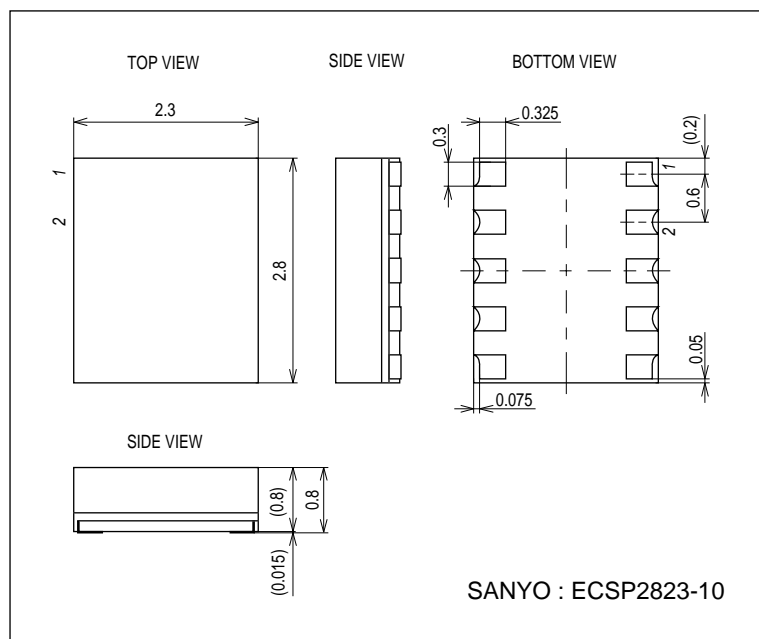
Electrical Characteristics at Ta = 25°C, V_{CC} = 3.1V

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|-------------------------------|---|----------------------|---------------|-----------------|------|
| | | | min | typ | max | |
| Current Drain Block | | | | | | |
| Current dissipation 1 (V _{IN} = White50%) | I _{CC} | 4pin = Low Input = White50% | 14 | 22 | 30 | mA |
| Current dissipation 2 (Non-signal mode) | I _{CC} ² | 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} = 1Vp-p 100% white 2pin = Low (GND) | 5.7 | 6.2 | 6.7 | dB |
| Voltage gain V12 | V _G -M | V _{IN} = 0.5Vp-p 100% white 2pin = MID (Open) | 11.7 | 12.2 | 12.7 | dB |
| Voltage gain V16 | V _G -H | V _{IN} = 317mVp-p 100% white 2pin = High (V _{CC}) | 15.7 | 16.2 | 16.7 | dB |
| Freq. Characteristics | V _f | f = 100kHz/5MHz | -1.5 | -0.5 | +0.5 | dB |
| Differential Gain | D _G | V _{OUT} = 2Vp-p (Modulated Ramp) | -2.0 | 0 | -2.0 | % |
| Differential Phase | D _P | V _{OUT} = 2Vp-p (Modulated Ramp) | -2.0 | 0 | -2.0 | deg |
| Output leak current at standby 1 | I _{OUT} ^H | 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 _{OUT} ^L | 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} ≤ 5μA | 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 |

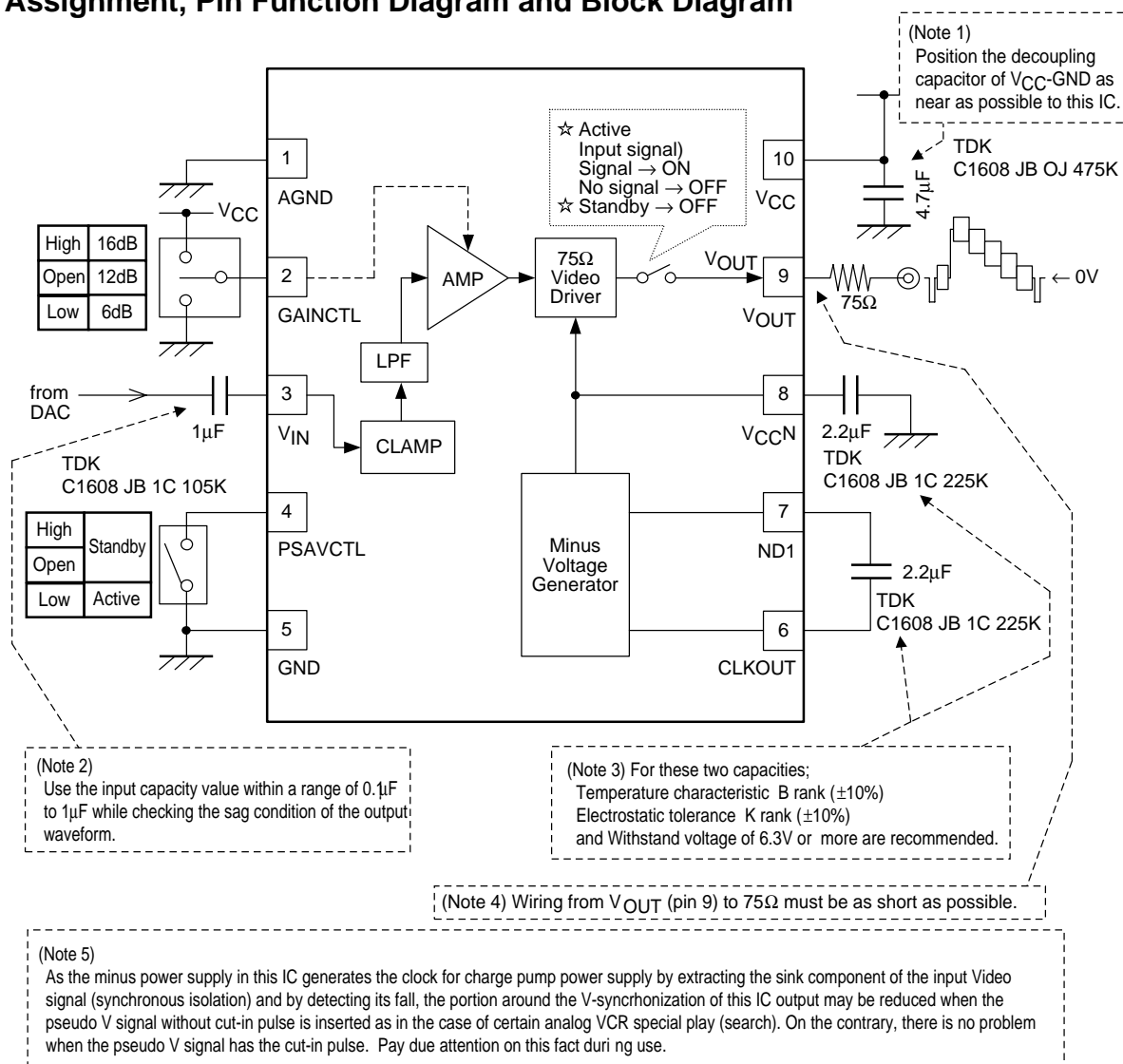
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unit : mm (typ)

3334



Pin Assignment, Pin Function Diagram and Block Diagram



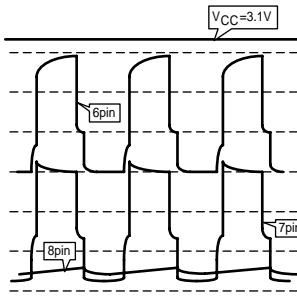
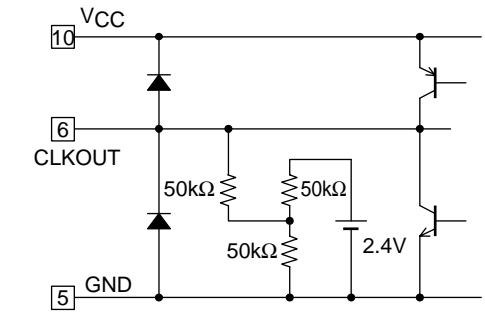
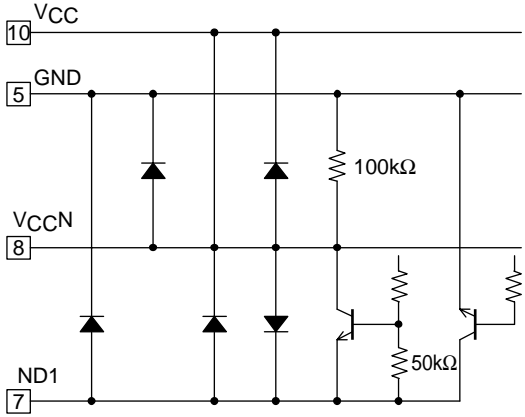
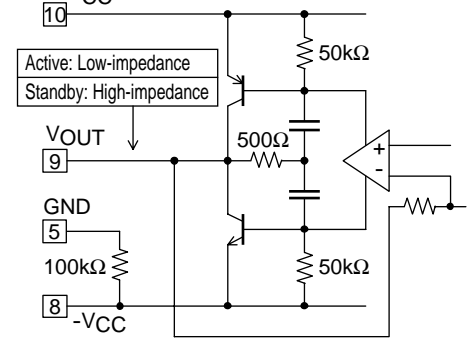
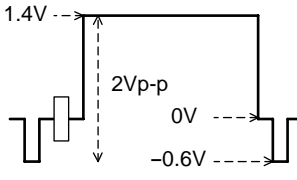
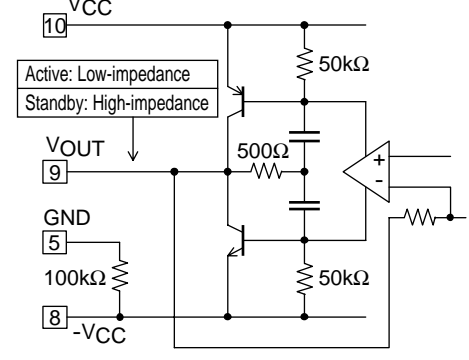
[Pin Functions](#)

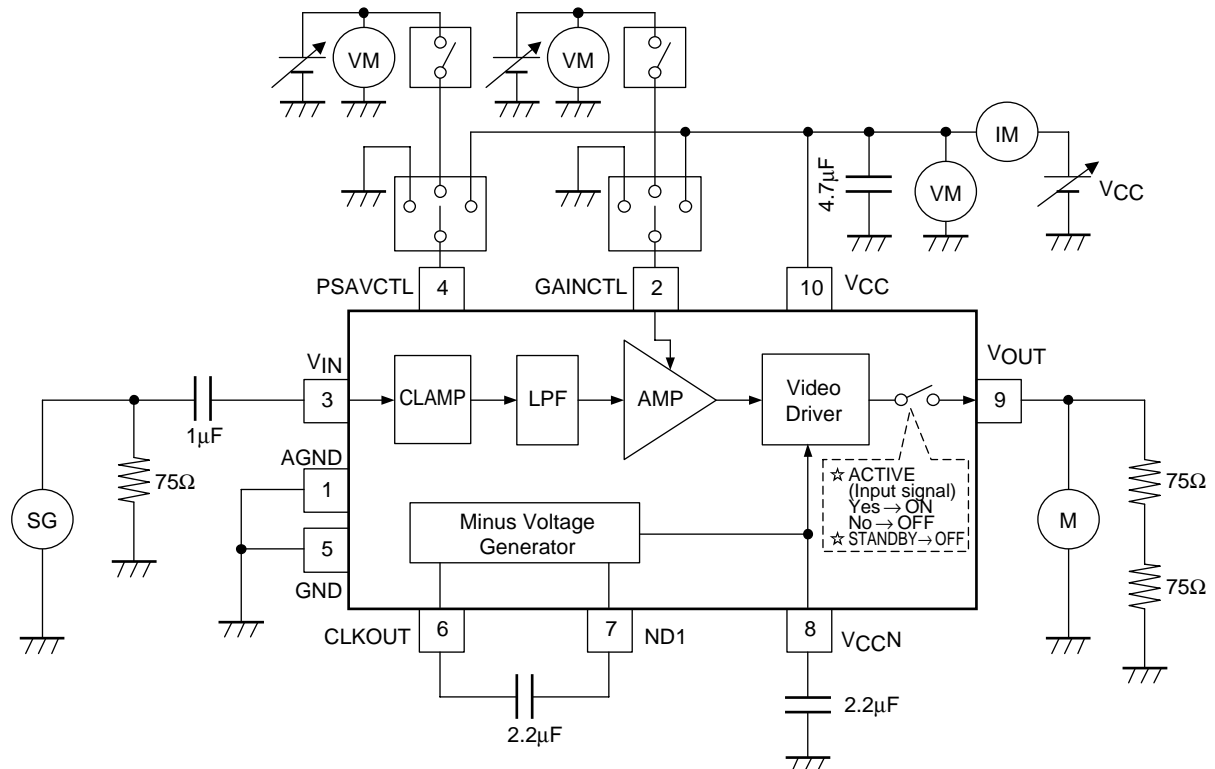
| Pin No | Symbol | Voltage | Description | Equivalent Circuit | | | | | | | | | | | | | | | | |
|---------------------|-------------------------------------|-----------------------------|---|--------------------|--|--|------|---------------------|-------------------------------------|---|---------|---------|------------|---|--------|--------|---|--|-----|--|
| 1 | AGND | 0V | Analog GND | | | | | | | | | | | | | | | | | |
| 2 | GAINCTL | 1.2V | Gain select pin <table><tr><td colspan="2">Control of Pin2</td><td></td><td>GAIN</td></tr><tr><td>H(V_{CC})</td><td>⇒</td><td></td><td>16dB</td></tr><tr><td>M(OPEN)</td><td>⇒</td><td></td><td>12dB</td></tr><tr><td>L(GND)</td><td>⇒</td><td></td><td>6dB</td></tr></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)) <div><div>GAIN SET: 6dB⇒1.0Vp-p GAIN SET: 12dB⇒500mVp-p GAIN SET: 16dB⇒317mVp-p</div></div> | | | | | | | | | | | | | | | | | |
| 4 | PSAVCTL | V _{CC} or 0V | Power save mode select pin <table><tr><td colspan="2">Control of Pin4</td><td></td><td>MODE</td></tr><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></table> | Control of Pin4 | | | MODE | H(V _{CC}) | OPEN or V _{CC} ±0.5V | ⇒ | STANDBY | L(GND) | 0V to 0.3V | ⇒ | ACTIVE | | | | | |
| Control of Pin4 | | | MODE | | | | | | | | | | | | | | | | | |
| H(V _{CC}) | OPEN or V _{CC} ±0.5V | ⇒ | STANDBY | | | | | | | | | | | | | | | | | |
| L(GND) | 0V to 0.3V | ⇒ | ACTIVE | | | | | | | | | | | | | | | | | |
| 5 | GND | 0V | | | | | | | | | | | | | | | | | | |

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LA73079CL

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| 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](#)


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