Ordering number : ENA0911

LA73076V

Monolithic Linear IC

Video Driver for DVC/DSC, Cell Phone

ON Semiconductor®

http://onsemi.com

Overview

The LA73076V is a low voltage drive (2.7V to 3.6V) video driver developed for portable appliances including digital video cameras, digital still cameras and cell phones. It incorporates a minus-voltage generator that allows the LA73076V 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 (fc = 10MHz)
- 6dB amplifier
- Current drain of 0μA in the standby mode
- Output drive capable of covering maximum 75Ω output, one channel

Specifications

Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max		4.0	V
Allowable power dissipation	Pd max	Ta ≤ 80°C, *Mounted on a specified board	220	mW
Operating temperature	Topr		-20 to +80	°C
Storage temperature	Tstg		-55 to +150	°C

*: Mounted on a specified board: 114.3mm×76.1mm×1.6mm, glass epoxy

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Semiconductor Components Industries, LLC, 2013

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

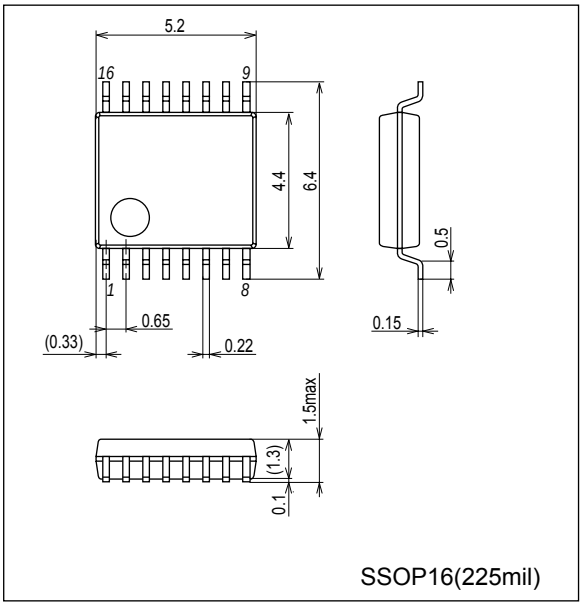
Electrical Characteristics at Ta = 25°C, V_{CC} = 3.1V

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Current dissipation part						
Current dissipation 1 (Non-signal active mode)	I_{CC}	2pin = Low, Input = White50%	25	37	44	mA
Current dissipation 2 (Non-signal active mode)	$I_{CC}2$	2pin = Low, Input = No signal	10.0	14	17.5	mA
Current dissipation 3 (Standby mode)	I_{CC}-STBY	2pin = High		0	5.0	μA
Control terminal part						
Stand-by control pin H voltage (SET = STANDBY MODE)	$V_{TH-STBY-H}$	2 pin voltage range at which $I_{CC} \leq 5\mu A$	V_{CC}-0.5		V_{CC}	V
Stand-by control pin L voltage (SET = ACTIVE MODE)	$V_{TH-STBY-L}$	2 pin voltage range at which $I_{CC} \geq 5\mu A$	GND		0.5	V
Output control pin H voltage range (SET=MIX_OUT)	V_{OUT_M}	Voltage in which only output of MIX is selected	2.2		V_{CC}	V
Output control pin M voltage range (SET=Y,C_OUT)	V_{OUT_YC}	Voltage in which output of Y and C is selected	1.5		1.7	V
Output control pin L voltage range (SET=ALL_OUT)	V_{OUT_ALL}	Voltage in which all outputs are selected	GND		0.5	V
SW, MUTE control pin voltage range (SET=MUTE MODE)	V_{SW_MUTE}	As for this voltage, SW selects MUTE	V_{CC}-0.5		V_{CC}	V
SW, through control pin voltage range (SET=through MODE)	V_{SW_THR}	As for this voltage, SW selects through	GND		0.5	V
Y-in						
Voltage gain	V_{GainY}	100% white V_{YIN} = 1Vp-p	5.7	6.2	6.7	dB
Freq. characteristics	$V_{f7.2Y}$	f = 100kHz/7.2MHz	-1.0	0	+1.0	dB
	V_{f20Y}	f = 100kHz/20MHz			-30	dB
Allowable sync input level	$V_{IN-Sync}$	V_{YIN} = Black burst, Output R conditions Mix_out: 150Ω, Y_out: 150Ω	200			mVp-p
C-in						
Voltage gain	V_{gainc}	V_{CIN} = 350mVp-p	5.7	6.2	6.7	dB
Freq. characteristics	V_{f20C}	f = 4MHz/20MHz			-25	dB

Package Dimensions

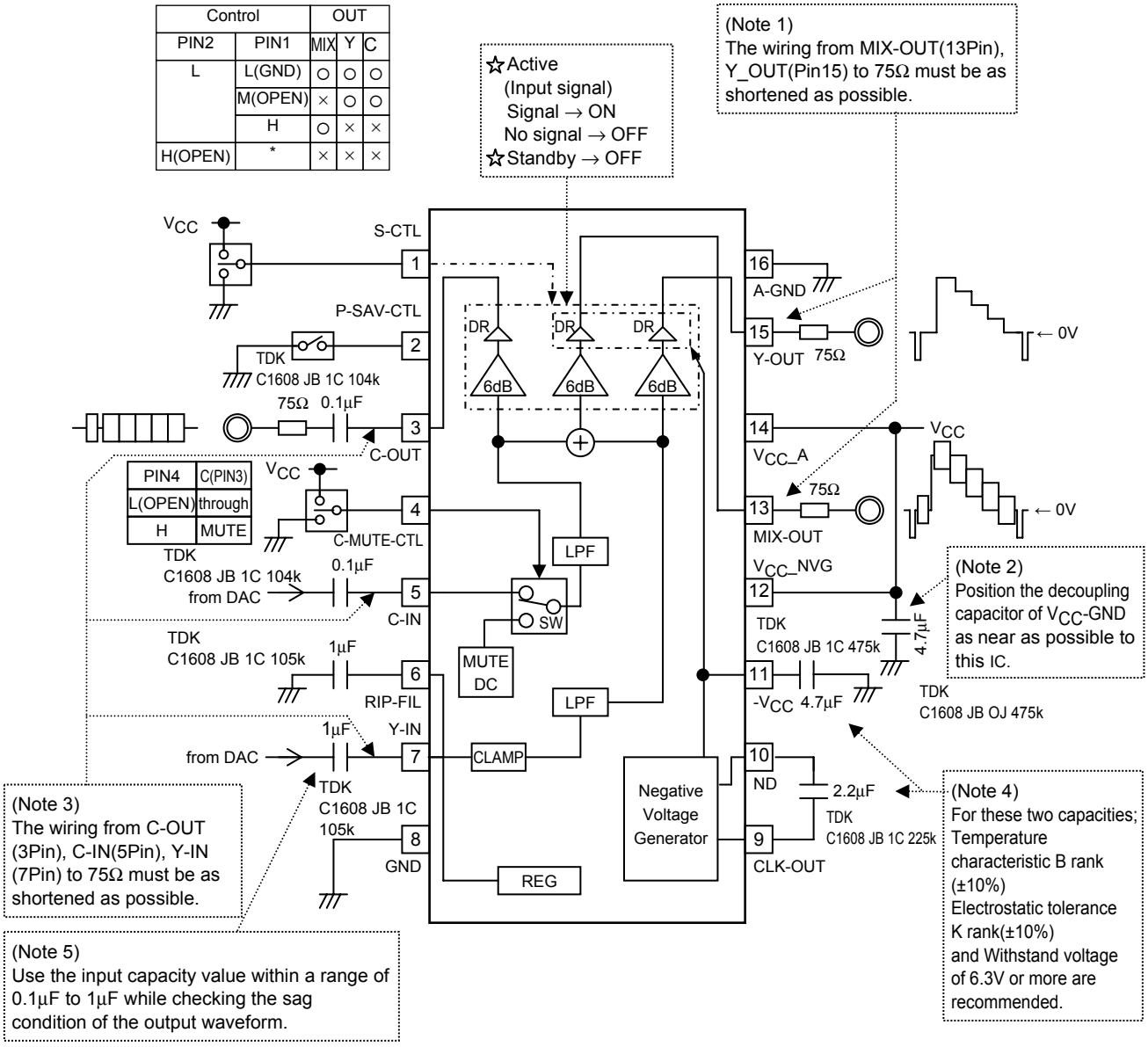
unit : mm (typ)

3178B



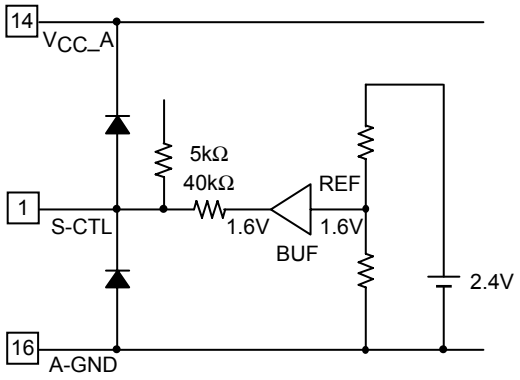
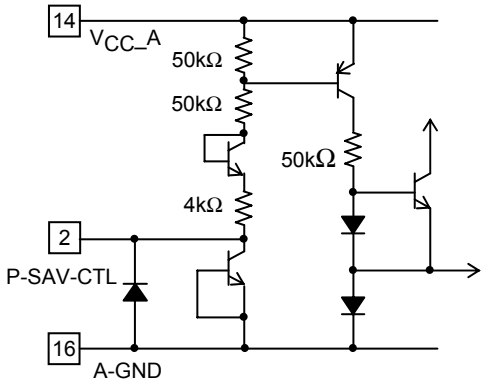
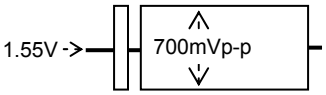
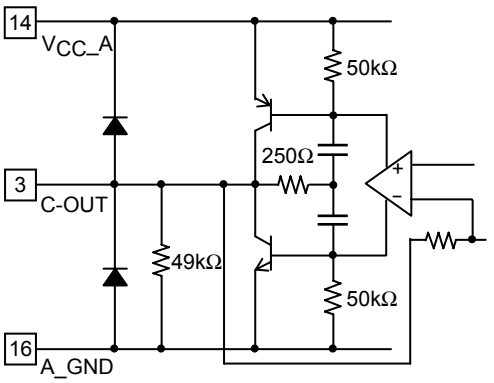
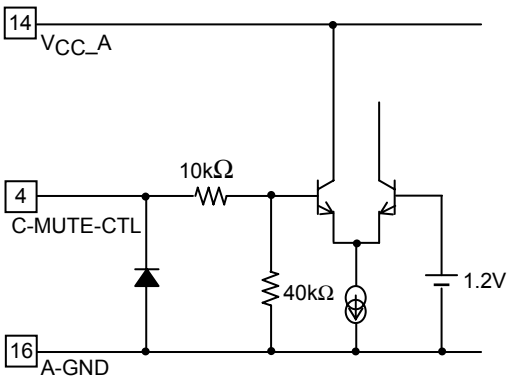
Pin Assignment, Pin Function Diagram and Block Diagram

Control		OUT		
PIN2	PIN1	MIX	Y	C
L	L(GND)	○	○	○
	M(OPEN)	×	○	○
	H	○	×	×
H(OPEN)	*	×	×	×



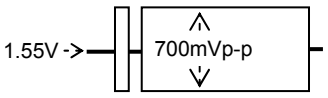
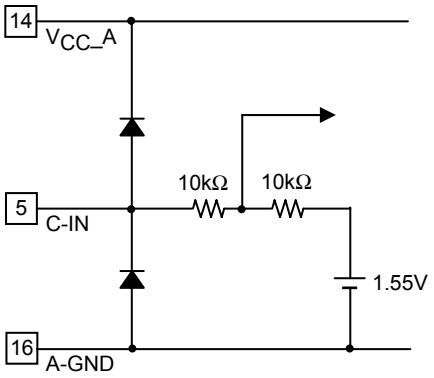
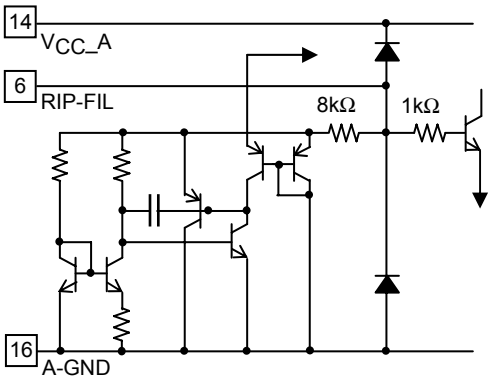
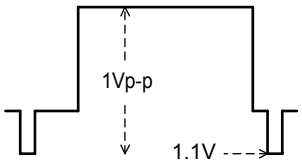
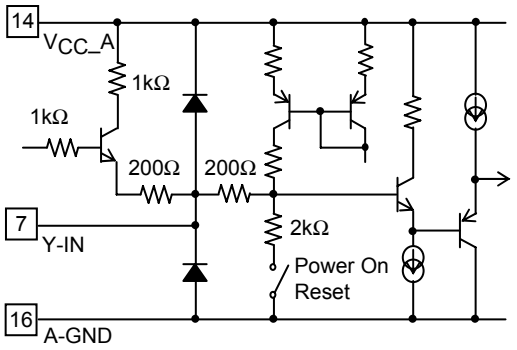
(Note 6)
As the minus power supply in this IC generates the clock for charge pump power supply by extracting the sink component of the input video signal (synchronous isolation) and by detecting its fall, the portion around the V-syncrhonization of this IC output may be reduced when the pseudo V signal 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.

Pin Functions

<table>
<tr><th>Pin No</th><th>Symbol</th><th>Voltage</th><th>Description</th><th>Equivalent Circuit</th></tr>
<tr><td>1</td><td>S-CTL</td><td>V_{CC}
or
OPEN
or
0V</td><td>Output select pin
<table>
<tr><th colspan="2" rowspan="2">Control of Pin1</th><th rowspan="2"></th><th colspan="3">OUT</th></tr>
<tr><th>MIX</th><th>Y</th><th>C</th></tr>
<tr><td>L(GND)</td><td>0V to 0.5V</td><td>⇒</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>M(OPEN)</td><td>OPEN
or
1.6V±0.1V</td><td>⇒</td><td>×</td><td>○</td><td>○</td></tr>
<tr><td>H(V_{CC})</td><td>2.2V to
V_{CC}</td><td>⇒</td><td>○</td><td>×</td><td>×</td></tr>
</table></td><td>
</td></tr>
<tr><td>2</td><td>P-SAV-CTL</td><td>V_{CC}
or
0V</td><td>Power save mode select pin
<table>
<tr><th colspan="2">Control of Pin2</th><th></th><th>Mode</th></tr>
<tr><td>L(GND)</td><td>0V to 0.5V</td><td>⇒</td><td>Active</td></tr>
<tr><td>H(V_{CC})</td><td>OPEN
or
V_{CC}±0.5V</td><td>⇒</td><td>Standby</td></tr>
</table></td><td>
</td></tr>
<tr><td>3</td><td>C-OUT</td><td>1.55V</td><td>Video output terminal
(Push-pull output low-impedance)

</td><td>
</td></tr>
<tr><td>4</td><td>C-MUTE-CTL</td><td>V_{CC}
or
0V</td><td>Mute select pin
<table>
<tr><th colspan="2">Control of Pin</th><th></th><th>OUT</th></tr>
<tr><td>L(GND)</td><td>0V to 0.5V
or
OPEN</td><td>⇒</td><td>through</td></tr>
<tr><td>H(V_{CC})</td><td>V_{CC}±0.5V</td><td>⇒</td><td>Pin4:
H→MUTE</td></tr>
</table></td><td>
</td></tr>
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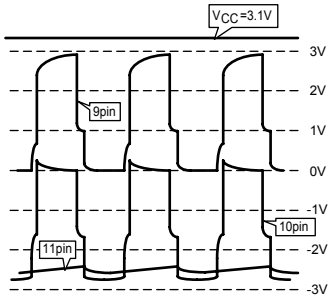
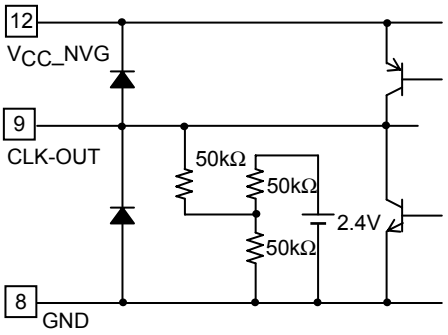
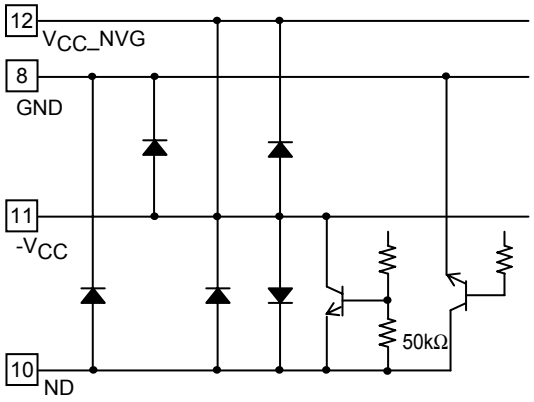
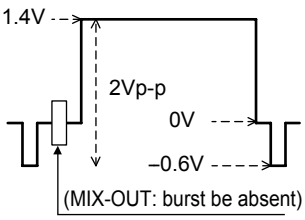
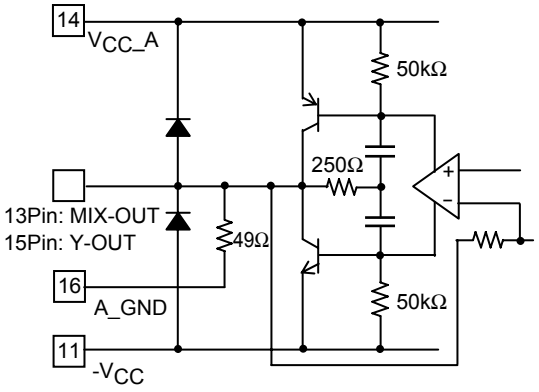
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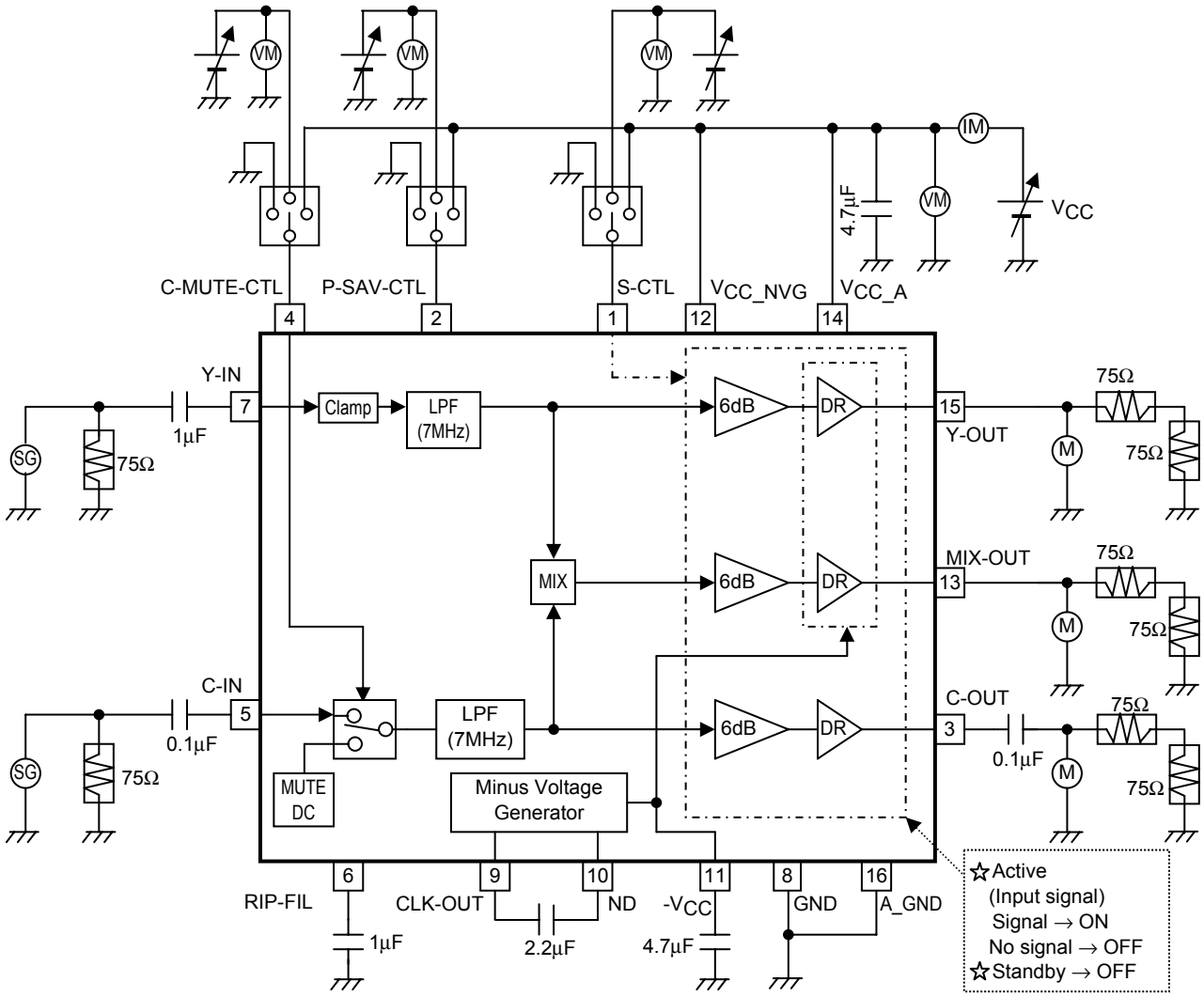
Pin No	Symbol	Voltage	Description	Equivalent Circuit
5	C-IN	1.55V	Video input terminal (Input high-impedance) 	
6	RIP-FIL	1.2V		
7	Y-IN	1.1V	Video input terminal (Sync-chip clamp (Input high-impedance)) 	
8	GND	0V		

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Pin No	Symbol	Voltage	Description	Equivalent Circuit
9	CLK-OUT	V_{CC} ↑↓ 0V	Pin 9: Clock output terminal 	
10	ND	+0.5V ↑↓ -2.5V ($-V_{CC}$)	Pin 10: The terminal which transmits an electric charge Pin 11: $-V_{CC}$	
11	$-V_{CC}$	0V ↑↓ -2.2V ($-V_{CC}$)		
12	V_{CC}_NVG	2.7V to 3.6V		
13 15	MIX-OUT Y-OUT	0V	Video output terminal (Push-pull output low-impedance) 	
14	V_{CC}_A	2.7V to 3.6V	Analog V_{CC}	
16	A-GND	0V	Analog GND	

Test Circuit Diagram



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