Ordering number : ENN8383

SANYO Semiconductors
DATA SHEET

LA76600M — Monolithic Linear IC Video Signal Y/C Separator IC

Overview

The LA76600M separates a video signal into Y and C components. It includes an on-chip 2H CCD delay line and achieves a significant reduction in flicker and noise by using a 3-line Y/C separation circuit.

Functions

- For Y/C Separate (Digital Clocked CCD 3Line Comb Filter).

Specifications

Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply rating	V_{CC} max		6.0	V
Allowable power dissipation	Pd max	Ta ≤ 65°C	400 (*1)	mW
Operating temperature	Topr		-10 to +65	°C
Storage temperature	Tstg		-40 to +125	°C

* Mounted on a 114.3×76.1×1.6mm glass epoxy 4-layer circuit board

Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V_{CC}		5.0	V
Allowable operating supply voltage range	V_{CC} opg		4.8 to 5.2	V

Electrical Characteristics at Ta = 25°C, V_{CC} = 5.0V

Parameter	Symbol	Input	Output	Conditions	Ratings			Unit
					min	typ	max	
Analog Supply Current	I_{CC}			Measure the current at 5PIN.	25	30	35	mA
Digital Supply Current	I_{DD}			Measure the current at 6PIN.	25	30	35	mA
REG Voltage	REG		T7	Measure the output voltage.	3.8	4	4.2	V
VCO Voltage	VCO		T8	Measure the output voltage.	2.1	2.3	2.5	V
RD Voltage	RD		T12	Measure the output voltage.	9	10	11	V
PLL Voltage	PLL		T13	Measure the output voltage.	3	3.5	4	V
YIN1 Input Level	$Y_{IN}1$	T14A	T14	VIN = 1Vp-p, Video signal SW2:2 Measure the input level.	0.8	1	1.2	Vp-p
YIN2 Input Level	$Y_{IN}2$	T3A	T3	VIN = 1Vp-p, Video signal SW2:1 Measure the input level.	0.8	1	1.2	Vp-p
Chroma Input Level	C_{IN}	T1A	T1	VIN = 0.7Vp-p, Chroma signal Measure the input level.	0.5	0.7	0.9	Vp-p
FSC Input Level	FSC_{IN}	T11A	T11	VIN = 0.3Vp-p, SIN Signal Measure the input level.	0.2	0.3	0.5	Vp-p
Yout Level 1 (COMB Mode)	Y_{LVC}	T14A T3A	T16	VIN = 1Vp-p, Video signal SW1:2 Measure the output level.	0.89	1	1.12	Vp-p
Yout Level 2 (THR Mode)	Y_{LVT}	T14A T3A	T16	VIN = 1Vp-p, Video signal SW1:1 Measure the output level.	0.89	1	1.12	Vp-p
Yout f-Character (COMB Mode)	$Y_{FC}1$	T14A T3A	T16	VIN = 1Vp-p, 5MHz, CW signal SW1:2 Measure the Gain between the input and the output.	-3	0	3	dB
Yout f-Character (COMB Mode)	$Y_{FC}2$	T14A T3A	T16	VIN = 1Vp-p, 7MHz, CW signal SW1:2 Measure the Gain between the input and the output.		-20	-15	dB
Yout f-Character (THR Mode)	Y_{FT}	T14A T3A	T16	VIN = 1Vp-p, 10MHz, CW signal SW1:1 Measure the Gain between the input and the output.	-3	0	3	dB
Y Signal Delay 1 (COMB Mode)	Y_{DLYC}	T14A T3A	T16	VIN = 1Vp-p, Video signal SW1:2 Measure the delay between the input and the output of Y signal.	200	400	600	ns
Y Signal Delay 2 (THR Mode)	Y_{DLYT}	T14A T3A	T16	VIN = 1Vp-p, Video signal SW1:1 Measure the delay between the input and the output of Y signal.	0	10	50	ns
Output Clamp Level 1 (COMB Mode)	Y_{CLPC}	T14A T3A	T16	VIN = 1Vp-p, Video signal SW1:2 Measure the clamp level of output signal.	1.5	2	2.5	V
Output Clamp Level 2 (THR Mode)	Y_{CLPT}	T14A T3A	T16	VIN = 1Vp-p, Video signal SW1:1 Measure the clamp level of output signal.	1.5	2	2.5	V
Y Signal S/N ratio 1 (COMB Mode)	Y_{SNC}	T14A T3A	T16	VIN = 1Vp-p, Video signal SW1:2 Measure the S/N ratio of Y signal.			-50	dB
Y Signal S/N ratio 2 (THR Mode)	Y_{SNT}	T14A T3A	T16	VIN = 1Vp-p, Video signal SW1:1 Measure the S/N ratio of Y signal.			-50	dB
Clock Leak (COMB Mode)	Y_{CLKC}	T14A T3A	T16	VIN = 1Vp-p, Video signal SW1:2 Measure the clock leak.			-40	dB
Clock Leak (THR Mode)	Y_{CLKT}	T14A T3A	T16	VIN = 1Vp-p, Video signal SW1:1 Measure the clock leak.			-60	dB
Y_Comb Depth 1	$Y_{COMB}1$	T14A T3A	T16	VIN = 1Vp-p, Video signal SW1:2 Measure the comb depth at Fsc.		-35	-30	dB
Y_Comb Depth 2	$Y_{COMB}2$	T14A T3A	T16	VIN = 1Vp-p, Video signal SW1:2 Measure the comb depth at (227.5-59)/227.5Fsc.		-15	-10	dB
Y_Comb Depth 3	$Y_{COMB}3$	T14A T3A	T16	VIN= 1Vp-p, Video signal SW1:2 Measure the comb depth at (227.5+59)/227.5Fsc.		-15	-10	dB

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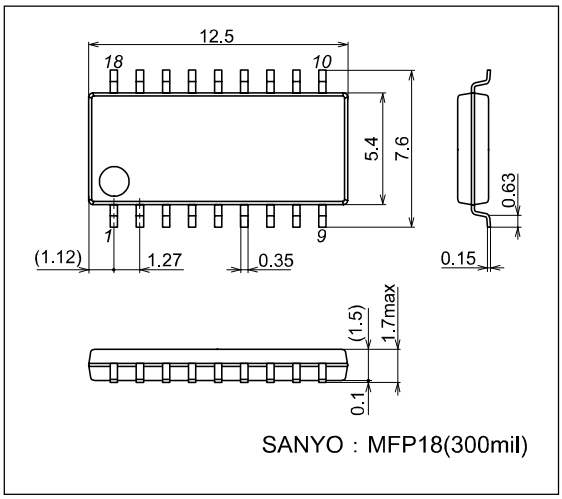
Parameter	Symbol	Input	Output	Conditions	Ratings			Unit
					min	typ	max	
Chroma Out Level (COMB Mode)	C_{LV}	T14A T3A	T18	VIN = 0.7Vp-p, Video signal SW1:2 Measure the output level.	0.5	0.7	0.9	Vp-p
Chroma Out Level (THR Mode)	C_{LV}	T1A	T18	VIN = 0.7Vp-p, Video signal SW1:1 Measure the output level.	0.5	0.7	0.9	Vp-p
Chroma f-Character 1 (COMB Mode)	$C_{FC}1$	T14A T3A	T18	VIN = 1Vp-p, 1.5MHz, CW signal SW1:2 Measure the Gain between the input and the Output.	-6	-3	0	dB
Chroma f-Character 2 (COMB Mode)	$C_{FC}2$	T14A T3A	T18	VIN = 1Vp-p, 4.5MHz, CW signal SW1:2 Measure the Gain between the input and the Output.	-6	-3	0	dB
Chroma f-Character 3 (THR Mode)	$C_{FC}3$	T1A	T18	VIN = 1Vp-p, 10MHz, CW signal SW1:1 Measure the Gain between the input and the Output.	-3	0	3	dB
Chrominance Output DC Level 1 (COMB Mode)	C_{DCC}	T14A T3A	T18	VIN = 1Vp-p, Video signal SW1:2 Measure the chrominance output DC level.	2	2.5	3	V
Chrominance Output DC Level 2 (THR Mode)	C_{DCT}	T14A T3A	T18	VIN = 1Vp-p, Video signal SW1:1 Measure the chrominance output DC level.	2	2.5	3	V
C Signal S/N ratio 1 (COMB Mode)	C_{SNC}	T14A T3A	T18	VIN = 1Vp-p, Video signal SW1:2 Measure the S/N ratio of C signal.			-50	dB
C Signal S/N ratio 2 (THR Mode)	C_{SNT}	T14A T3A	T18	VIN = 1Vp-p, Video signal SW1:1 Measure the S/N ratio of C signal.			-50	dB
Clock Leak (COMB Mode)	C_{CLKC}	T14A T3A	T18	VIN = 1Vp-p, Video signal SW1:2 Measure the clock leak.			-30	dB
Clock Leak (THR Mode)	C_{CLKT}	T14A T3A	T18	VIN = 1Vpp, Video signal SW1:1 Measure the clock leak.			-60	dB
C Signal Delay (COMB mode)	C_{DLYC}	T14A T3A	T18	VIN = 1Vp-p, Video signal SW1:2 Measure the delay between the input and the output of C signal.	200	400	600	ns
C Signal Delay (THR Mode)	C_{DLYT}	T1A	T18	VIN = 1Vp-p, Video chroma SW1:1 Measure the delay between the input and the output of C signal.	0	10	50	ns
C_Comb Depth 1	$C_{COMB}1$	T14A T3A	T18	VIN = 1Vp-p, Video signal SW1:2 Measure the comb depth at Fsc.		-35	-30	dB
C_Comb Depth 2	$C_{COMB}2$	T14A T3A	T18	VIN = 1Vp-p, Video signal SW1:2 Measure the comb depth at (227.5-59)/227.5Fsc.		-15	-10	dB
C_Comb Depth 3	$C_{COMB}3$	T14A T3A	T18	VIN = 1Vp-p, Video signal SW1:2 Measure the comb depth at (227.5+59)/227.5Fsc.		-15	-10	dB
Difference Of Delay Between Y and C	Y_{CDLY}	T14A T3A	T16 T18	VIN = 1Vp-p, Video signal SW1:2 Measure the difference of delay between the Y output and C output.	-20	0	20	ns
INPUTSEL_L (YIN1)	IN_{SELL}	T2	T2	YIN1 ON, measure the SW voltage.		0	1	V
INPUTSEL_H (YIN2)	IN_{SELH}	T2	T2	YIN2 ON, measure the SW voltage.	2.5	5		V
OUTPUTSEL_H (COMB Mode)	OUT_{SELH}	T17	T17	COMB Mode, measure the SW voltage.		0	1	V
OUTPUTSEL_L (THR Mode)	OUT_{SELL}	T17	T17	COMB Mode, measure the SW voltage.	2.5	5		V
Cross talk between Different input 1	IN_{CRS}	T14A	T16 T18	VIN = 1Vp-p, Video signal SW2:2 Measure the cross talk between different input.			-50	dB
Cross talk between Different input 2	IN_{CRS}	T3A	T16 T18	VIN = 1Vp-p, Video signal SW2:1 Measure the cross talk between different input.			-50	dB

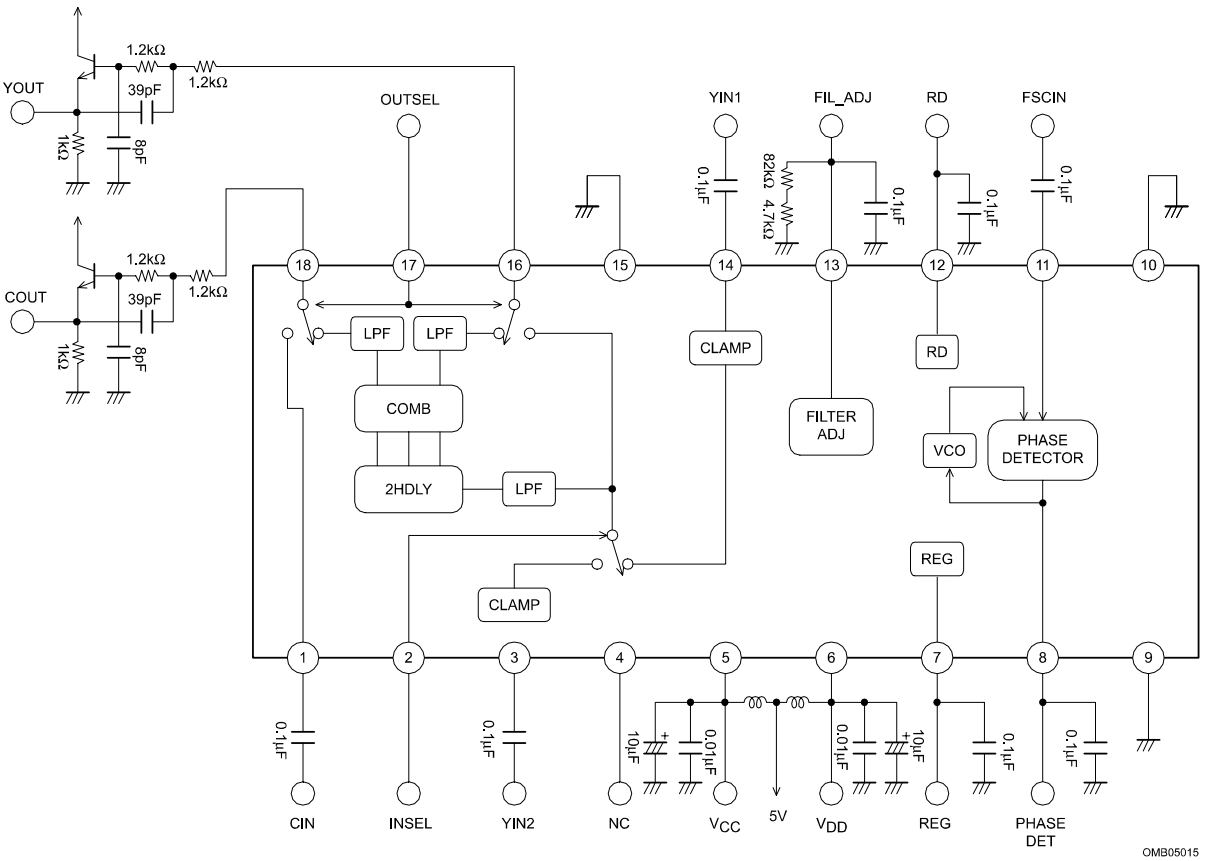
Package Dimensions

unit: mm

3095A

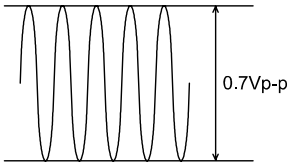
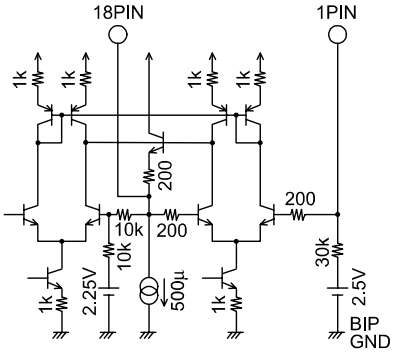
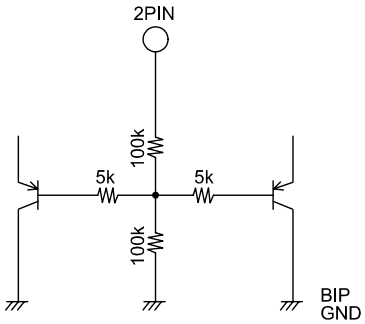
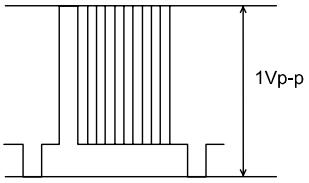
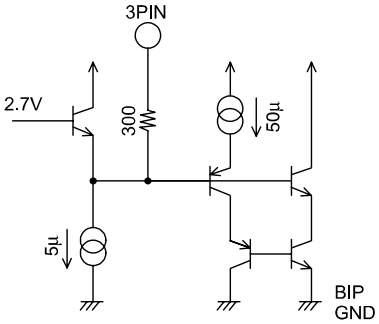
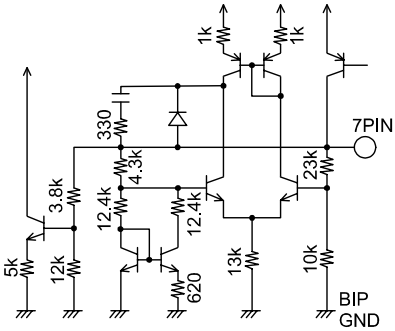


Block Diagram



Pin Function

(unit: Ω)

Pin No.	Pin name	DC voltage	Signal waveform	Input/Output form
1	CIN	2.5V	CHROMA-SIGNAL 	
2	INSEL		GND: YIN2 V_{CC}: YIN1	
3	YIN2	2.5V	VIDEO-SIGNAL 	
5	BIP-V_{CC}	5V	DC	
6	CCD-V_{CC}	5V	DC	
7	REG	4V	DC	

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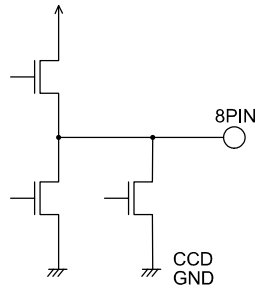
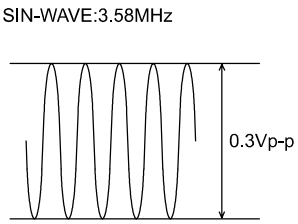
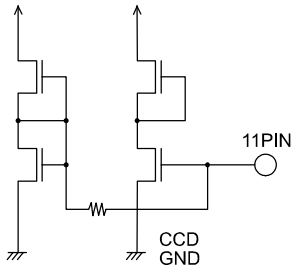
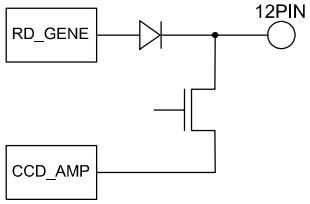
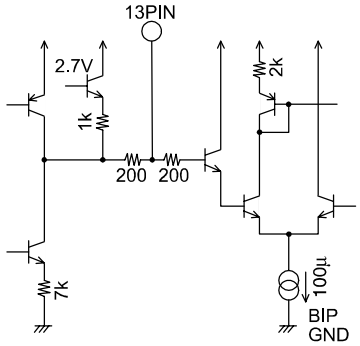
(unit: Ω)

Pin No.	Pin name	DC voltage	Signal waveform	Input/Output form
8	PHASEDET	2.3V	DC	
9	CCD-GND	GND		
10	CCD-GND	GND		
11	FSC_IN	0.8V		
12	RD	10V	DC	
13	AFC	3.5V	DC	

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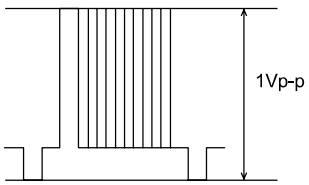
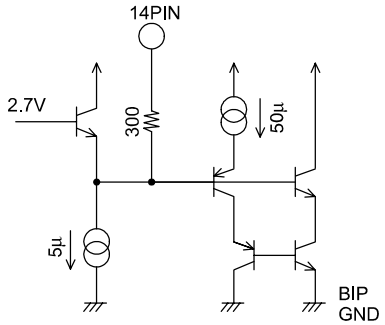
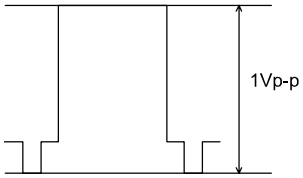
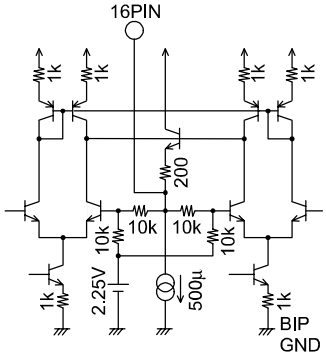
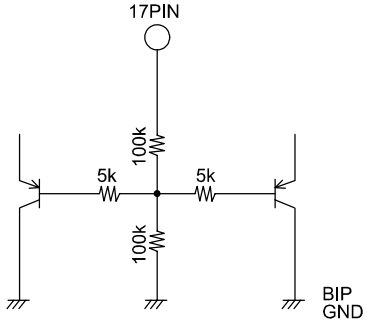
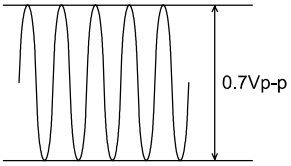
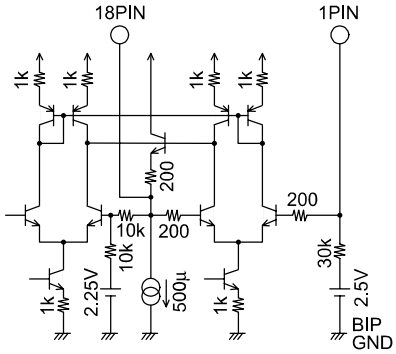
(unit: Ω)

Pin No.	Pin name	DC voltage	Signal waveform	Input/Output form
14	YIN1		VIDEO-SIGNAL 	
15	BIP-GND	GND		
16	YOUT	2.5V	Y-SIGNAL 	
17	OUTSEL		GND: COMB V_{CC}: THROUGH	
18	COUT	2.5V	CHROMA-SIGNAL 	

Test Circuit