SANYO Semiconductors
DATA SHEET

LA7138M — Monolithic Linear IC For the DVD Player Analog Video Signal I/F Driver

Overview

The LA7138M is a video output interface IC for DVD players. It is an ideal DVD player driver IC that generates analog video signals such as composite/S and component/RGB signals. Incorporating Y/C-MIX, the LA7138M can dispense with the composite output that would otherwise have to be provided by a DA converter.

Feature

- Video S/N ratio: -80dB.
- f characteristics: 10MHz flat.
- Y/C time difference: 2ns maximum.
- Signal dynamic range: 170 IRE.
- Supports all types of video signals including the composite/S, component, and base-band (RGB) signals; the internal input configuration is selected under microcontroller control (input capacitors to be used in common).
- Provides two channels of 75Ω driver outputs each of which can be muted on and off independently under microcontroller control.
- Internally generates clamp pulses that are necessary when receiving the component input signals.
- The amplifier gain is selectable from 8.5dB and 6dB.
- The on-chip regulator circuit provides stable DC voltages that are immune to V_{CC} fluctuations.

Function

- Clamp.
- Amplifier.
- 75Ω driver.
- Y/C-MIX.
- DC voltage output for S1 and S2.

Specifications

Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max		15.0	V
Allowable power dissipation	Pdmax	Ta≤75°C, Mounted on a board*	525	mW
Operating temperature	Topr		-20 to +75	°C
Storage temperature	Tstg		-40 to +150	°C

*: As mounted to the glass epoxy made board of a size 114.3×76.1×1.6mm^3

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

Recommended Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage A	V_{CC} A	*	12.0	V
Operating supply voltage range A	V_{CC}op A		9.0 to 13.0	V
Recommended supply voltage B	V_{CC} B	*	8.0	V
Operating supply voltage range B	V_{CC}op B		7.5 to 8.5	V
Input pin voltage application range	V_{IN}	V_{CC}op A, B+0.3≤13V	-0.3 to V_{CC}op A, B+0.3	V

*:A different operation circuit is recommended for recommended supply voltages A and B. An external operation circuit with a PNP transistor for voltage drop is recommended for the recommended supply voltage A.

Electrical Characteristics at Ta = 25°C, V_{CC}A = 9.0 to 13.0V,V_{CC}B = 7.5 to 8.5V

Parameter	Symbol	Input signal	Test point	Conditions	Ratings			Unit
					min	typ	max	
Current drain (1)	$I_{CC}1$		9pin	Current drain of VIDEO system.	29.6	37.0	44.4	mA
(A) Pin 10 (Y signal) input when the composite/S is selected.								
AMP-GAIN (Low)	G_YM	Sig.1	T13/15	GAIN when 996mVp-p, 100kHz is entered.	5.05	5.27	5.48	dB
AMP-GAIN (High)	G_YH	Sig.1	T13/15	GAIN when 761mVp-p, 100kHz is entered.	7.38	7.6	7.81	dB
Clamp voltage	C_{10}H	Sig.1	T10	Potential of sink chip of T10 when 761mVp-p is entered.	3.85	4.20	4.55	V
(B) Pin 6 (chroma signal) input when the composite/S is selected.								
AMP-GAIN (Low)	G_CM	Sig.2	T17/19	GAIN when 711mVp-p, 3.58MHz is entered.	5.05	5.27	5.48	dB
AMP-GAIN (High)	GCH	Sig.2	T17/19	GAIN when 544mVp-p, 3.58MHz is entered.	7.38	7.6	7.81	dB
Chroma input DC voltage	D_6H	Sig.2	T6	Offset voltage of T6 when 544 mVp-p is entered.	4.4	4.75	5.1	V
(C) Pin 3 (composite signal) input when the composite is selected.								
AMP-GAIN (Low)	G_SM1	Sig.3	T21/23	GAIN when 996mVp-p, 100kHz is entered.	5.05	5.27	5.48	dB
AMP-GAIN (High)	G_SH1	Sig.3	T21/23	GAIN when 761mVp-p, 100kHz is entered.	7.38	7.6	7.81	dB
Clamp voltage	C_3H	Sig.3	T3	Potential of sink chip of T3 when 761mVp-p is entered.	4.0	4.35	4.7	V
(D) Pins 6, 10 (S signal) input when the S is selected. To select “S”, insert a 5.1kΩ resistor in series with pin 2, (See the block diagram.)								
AMP-GAIN (Low)	G_SM2	Sig.1 Sig.2	T21/23	GAIN when 996mVp-p, 100kHz or 711mVp-p, 3.58MHz is entered.	4.92	5.27	5.61	dB
AMP-GAIN (High)	G_SH2	Sig.1 Sig.2	T21/23	GAIN when 761mVp-p, 100kHz or 544mVp-p, 3.58MHz is entered.	7.25	7.6	7.94	dB
(E) GAIN ratio of signals when the composite is selected.								
Y/chroma -AMP-GAIN ratio	ΔY_C	Sig.1 Sig.2	T13/15T 17/19	GAIN ratio between G_YH of (A) and G_CH of (B).	-3	0	3	%
Y/composite-AMP-GAIN ratio	ΔY_S1	Sig.1 Sig.3	T13/15 T21/23	GAIN ratio between G_YH of (A) and G_SH1 of (C).	-3	0	3	%
Chroma/composite -AMP-GAIN ratio	ΔC_S1	Sig.2 Sig.3	T17/19 T21/23	GAIN ratio between G_CH of (B) and G_SH1 of (C).	-3	0	3	%
(F) GAIN ratio of signals when the S signal is selected.								
Y/S-AMP-GAIN ratio	ΔY_S2	Sig.1 Sig.2	T13/15 T21/23	GAIN ratio between G_YH of (A) and G_SH2 of (D)	-4.5	0	4.5	%
Chroma/S-AMP-GAIN ratio	ΔC_S2	Sig.1 Sig.2	T17/19 T21/23	GAIN ratio between G_CH of (B) and G_SH2 of (D).	-4.5	0	4.5	%
(G) Pin 10 (Y signal) input when the component is selected.								
AMP-GAIN (Low)	G_YM	Sig.1	T13/15	GAIN when 996mVp-p, 100 kHz is entered.	5.05	5.27	5.48	dB
AMP-GAIN (High)	G_YH	Sig.1	T13/15	GAIN when 761mVp-p, 100 kHz is entered.	7.38	7.6	7.81	dB
Y input clamp voltage	C_{10}H	Sig.1	T10	Potential of sink chip of T10 when 761mVp-p is entered.	3.85	4.20	4.55	V

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Parameter	Symbol	Input signal	Test point	Conditions	Ratings			Unit
					min	typ	max	
(H) Pin 6 (B-Y or R-Y signal) when the component is selected.								
AMP-GAIN (Low)	G_NM	Sig.4	T17/19	GAIN when 996mVp-p, 100 kHz is entered.	5.05	5.27	5.48	dB
AMP-GAIN (High)	G_NH	Sig.4	T17/19	GAIN when 761mVp-p, 100 kHz is entered.	7.38	7.6	7.81	dB
Input pedestal clamp voltage	P_6H	Sig.4	T6	Potential of pedestal of T6 when 761mVp-p is entered.	4.4	4.75	5.1	V
AMP-GAIN (Low)	G_NM	Sig.4	T21/23	GAIN when 996mVp-p, 100 kHz is entered.	5.05	5.27	5.48	dB
(I) Pin 3 (B-Y or R- Y signal) input when the component is selected.								
AMP-GAIN (High)	G_NH	Sig.4	T21/23	GAIN when 761mVp-p, 100 kHz is selected.	7.38	7.6	7.81	dB
Input pedestal clamp voltage	P_3H	Sig.4	T3	Potential of pedestal of T3 when 761mVp-p is entered.	4.4	4.75	5.1	V
(J) GAIN ratio of signals when the component is selected.								
Y/composite-AMP-GAIN ratio (1)	$\Delta Y1$	Sig.1 Sig.4	T13/15 T17/19	GAIN ratio between G_YH of (E) and G_NH of (F)	-3	0	3	%
Y/composite-AMP-GAIN ratio (2)	$\Delta Y2$	Sig.1 Sig.4	T13/15 T21/23	GAIN ratio between G_YH of (E) and G_NH of (G)	-3	0	3	%
Component-AMP-GAIN ratio	ΔN	Sig.4 Sig.4	T17/19 T21/23	GAIN ratio between G_NH of (F) and that of (G)	-3	0	3	%
(K) Pin 10 (RGB signal) input when the base band is selected.								
AMP-GAIN (Low)	G_BM	Sig.1	T13/15	GAIN when 996mVp-p, 100 kHz is entered.	5.05	5.27	5.48	dB
AMP-GAIN (High)	G_BH	Sig.1	T13/15	GAIN when 761mVp-p, 100 kHz is entered.	7.38	7.6	7.81	dB
Input clamp voltage	$C_{10}H$	Sig.1	T10	Potential of sink chip of T10 when 761mVp-p is entered.	3.85	4.20	4.55	V
(L) Pin 6 (RGB signal) Input when the base band is entered.								
AMP-GAIN (Low)	G_BM	Sig.1	T13/15	GAIN when 996mVp-p, 100 kHz is entered.	5.05	5.27	5.48	dB
AMP-GAIN (High)	G_BH	Sig.1	T13/15	GAIN when 761mVp-p, 100 kHz is entered.	7.38	7.6	7.81	dB
Input clamp voltage	C_6H	Sig.1	T10	Potential of sink chip of T10 when 761mVp-p is entered.	4.0	4.35	4.7	V
(M) Pin 3 (RGB signal) Input when the base band is entered.								
AMP-GAIN (Low)	G_BM	Sig.1	T13/15	GAIN when 996mVp-p, 100 kHz is entered.	5.05	5.27	5.48	dB
AMP-GAIN (High)	G_BH	Sig.1	T13/15	GAIN when 761mVp-p, 100 kHz is entered.	7.38	7.6	7.81	dB
Input clamp voltage	C_3H	Sig.1	T10	Potential of sink chip of T10 when 761mVp-p is entered.	4.0	4.35	4.7	V
(N) GAIN ratio of signals when the base band is selected.								
Base bank –AMP-GAIN ratio (1)	$\Delta B1$	Sig.1 Sig.1	T13/15 T17/19	GAIN ratio between G_BH of (I) and that of (J)	-3	0	3	%
Base band –AMP-GAIN ratio (2)	$\Delta B2$	Sig.1 Sig.1	T13/15 T21/23	GAIN ratio between G_BH of (I) and that of (K)	-3	0	3	%
Base band –AMP-GAIN ratio	$\Delta B3$	Sig.1 Sig.1	T17/19 T21/23	GAIN ratio between G_BH of (J) and that of (K)	-3	0	3	%
(O) f characteristics of GAIN (common to all modes and input signals, however, except for Y/C-MIX).								
LPF 6MHz attenuation	F_Y6	Sig.1	T13/15	Difference between GAIN and G_YH when 761mVp-p, 6MHz is entered.	-0.5	0	+0.5	dB
LPF 10MHz attenuation	F_Y10	Sig.1	T13/15	Difference between GAIN and G_YH when 761mVp-p, 10MHz is entered.	-0.5	0	+0.5	dB
(P) DC voltage for output mute (common to all modes).								
Pin 13 voltage	V_{13}		T13		3.7	4.05	4.4	V
Pin 15 voltage	V_{15}		T15		3.7	4.05	4.4	V
Pin 17 voltage	V_{17}		T17		3.9	4.25	4.6	V
Pin 19 voltage	V_{19}		T19		3.9	4.25	4.6	V
Pin 21 voltage	V_{21}		T21		3.9	4.25	4.6	V
Pin 23 voltage	V_{23}		T23		3.9	4.25	4.6	V

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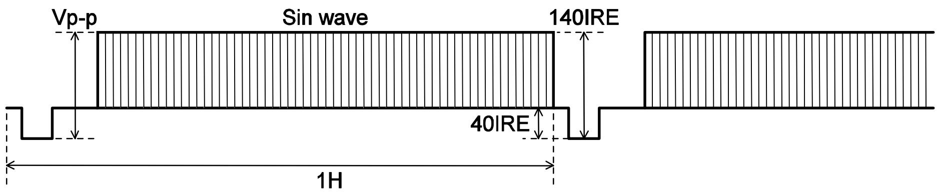
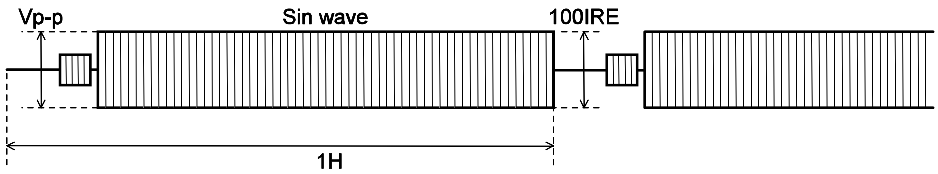
Parameter	Symbol	Input signal	Test point	Conditions	Ratings			Unit
					min	typ	max	
* Output DC voltage characteristics at Ta = 25°C, $V_{CC}A$ = 9.0 to 13.0V								
Output DC for 4: 3	V_{43}		T16	For 4:3 mode control (no load)	0	0.01	0.35	V
Output DC for Letter -Box	V_{LB}		T16	For the Letter-Box mode control (Load current 500µA to flow out)	2.05	2.2	2.35	V
Output DC for squeeze	V_{SQ}		T16	For squeeze mode control (Load current 500µA to flow out)	4.4	4.7	5.0	V
* Output DC voltage characteristics at Ta = 25°C, V_{CC} B = 7.5 to 8.5V								
Output DC for 4: 3	V_{43}		T16	For 4:3 mode control (no load)	0	0.01	0.35	V
Output DC for Letter-Box	V_{LB}		T16	For the Letter-Box mode control (Load current 500µA to flow out)	1.90	2.15	2.40	V
Output DC for squeeze	V_{SQ}		T16	For squeeze mode control (Load current 500µA to flow out)	4.15	4.60	5.00	V

Note) Each of AMP-GAIN and AMP-GAIN ratios is the value when the output pin part shown in the test circuit diagram is inserted.

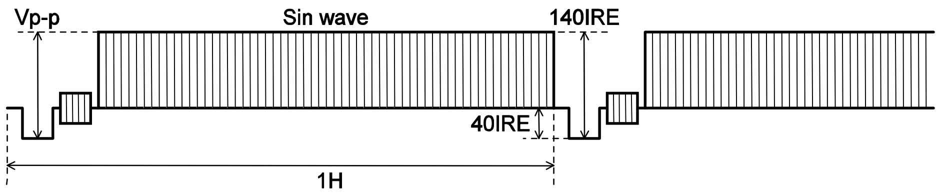
Sig.1



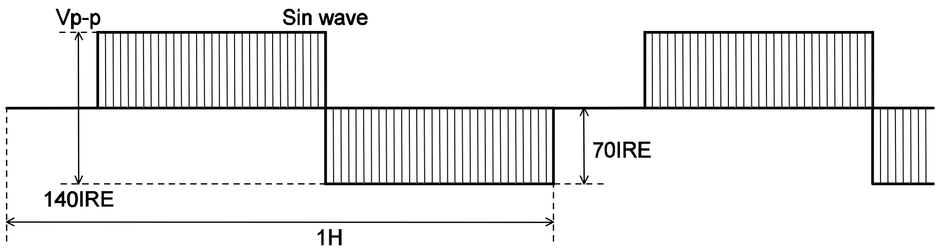
Sig.2



Sig.3



Sig.4



Design Guarantee Items at Ta = 25°C

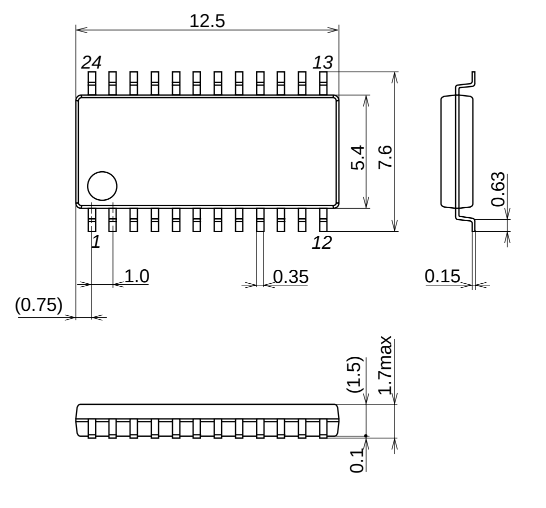
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Except for Y/C-MIX ($V_{CC}A$ = 9.0 to 13.0V, $V_{CC}B$ = 7.5 to 8.5V)						
Channel crosstalk	CT	The signal which becomes 1Vp-p at f = 4MHz and with the output in C connection is entered in other channels. Measure the magnitude of monitor channel output pins at 4MHz and specify the ratings as a ratio relative to the magnitude of output pin of other channels at 4MHz.		-65	-60	dB
Video S/N ratio	SN	Enter the Y signal with 100% white and apply 3.3V to pin 11. Measure S/N of the output signal. * Refer to Note 1.		-80	-78	dB
Differential gain	DG	Enter the 1Vp-p standard stair step signal (color) to obtain pin 11 = OPEN. Measure the differential gain of the output signal, with the output pin part shown in the measuring circuit diagram inserted.		0.5	2	%
Differential phase	DP	Enter the 1Vp-p standard stair step signal (color) to obtain pin 11 = OPEN. Measure the differential phase of the output signal, with the output pin part shown in the measuring circuit diagram inserted.	-1	0	1	dB
For Y/C-MIX ($V_{CC}B$ = 7.5 to 8.5V)						
Channel crosstalk	CT	The signal which becomes 1Vp-p at f = 4MHz and with the output in C connection is entered in other channels. Measure the magnitude of monitor channel output pins at 4MHz and specify the ratings as a ratio relative to the magnitude of output pin of other channels at 4MHz.		-65	-60	dB
Video S/N ratio	SN	Enter the Y signal with 100% white and add pin 11 = 3.3V. Measure S/N of the output signal. * Refer to Note 1.		-74	-72	dB
Differential gain	DG	Enter the 761mVp-p standard stair step signal (color) to obtain pin 11 = 3.3V. Measure the differential gain of the output signal, with the output pin part shown in the measuring circuit diagram inserted.		4	5.5	%
Differential phase	DP	Enter the 761mVp-p standard stair step signal (color) to obtain pin 11 = 3.3V. Measure the differential phase of the output signal, with the output pin part shown in the measuring circuit diagram inserted.	-1	0.5	1.5	dB

* Note 1) Since the noise in IC is dependent on the stability of regulator, it is recommended to connect a 470µF capacitor when the S/N ratio of –80dB is to be secured for controls other than Y/C-MIX. To secure the S/N ratio of -74dB for Y/C-MIX, set the supply voltage to 8V ($V_{CC}B$) and apply 8V also to this pin. (See the test circuit B.)

Package Dimensions

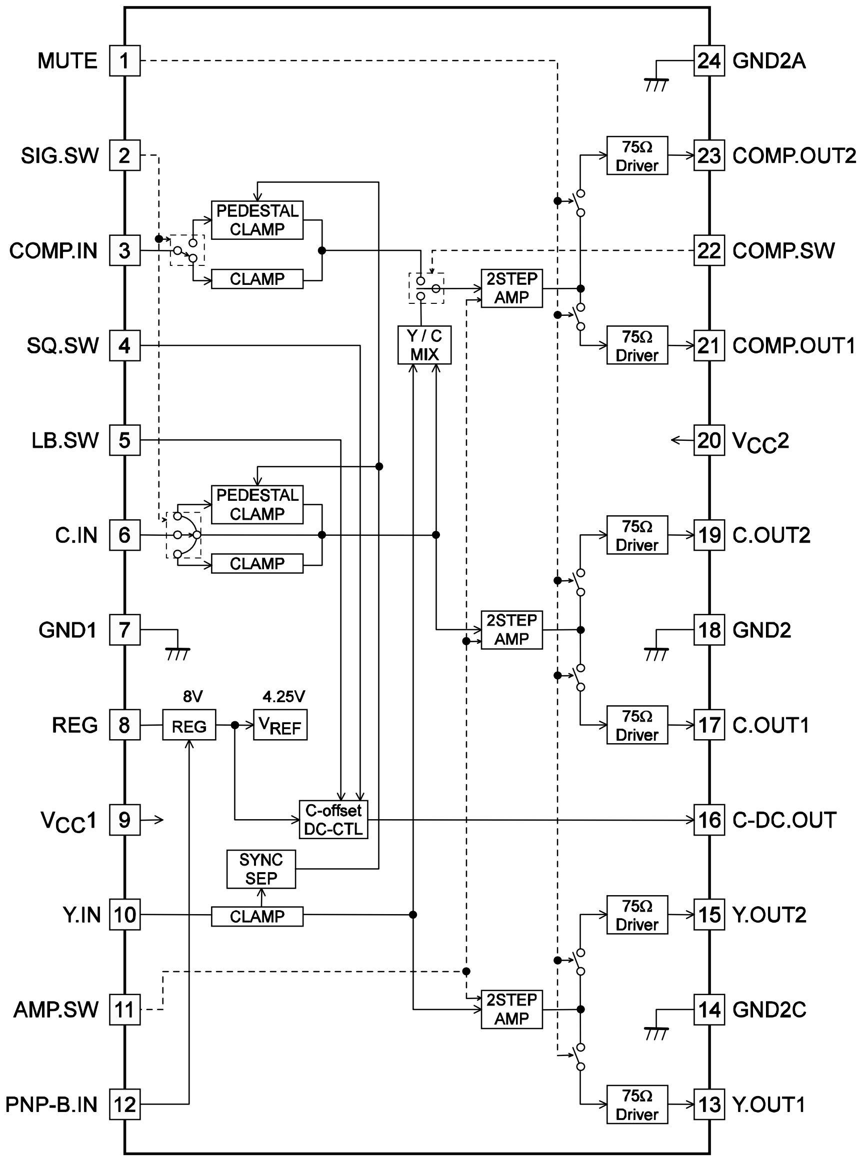
unit : mm

3112B

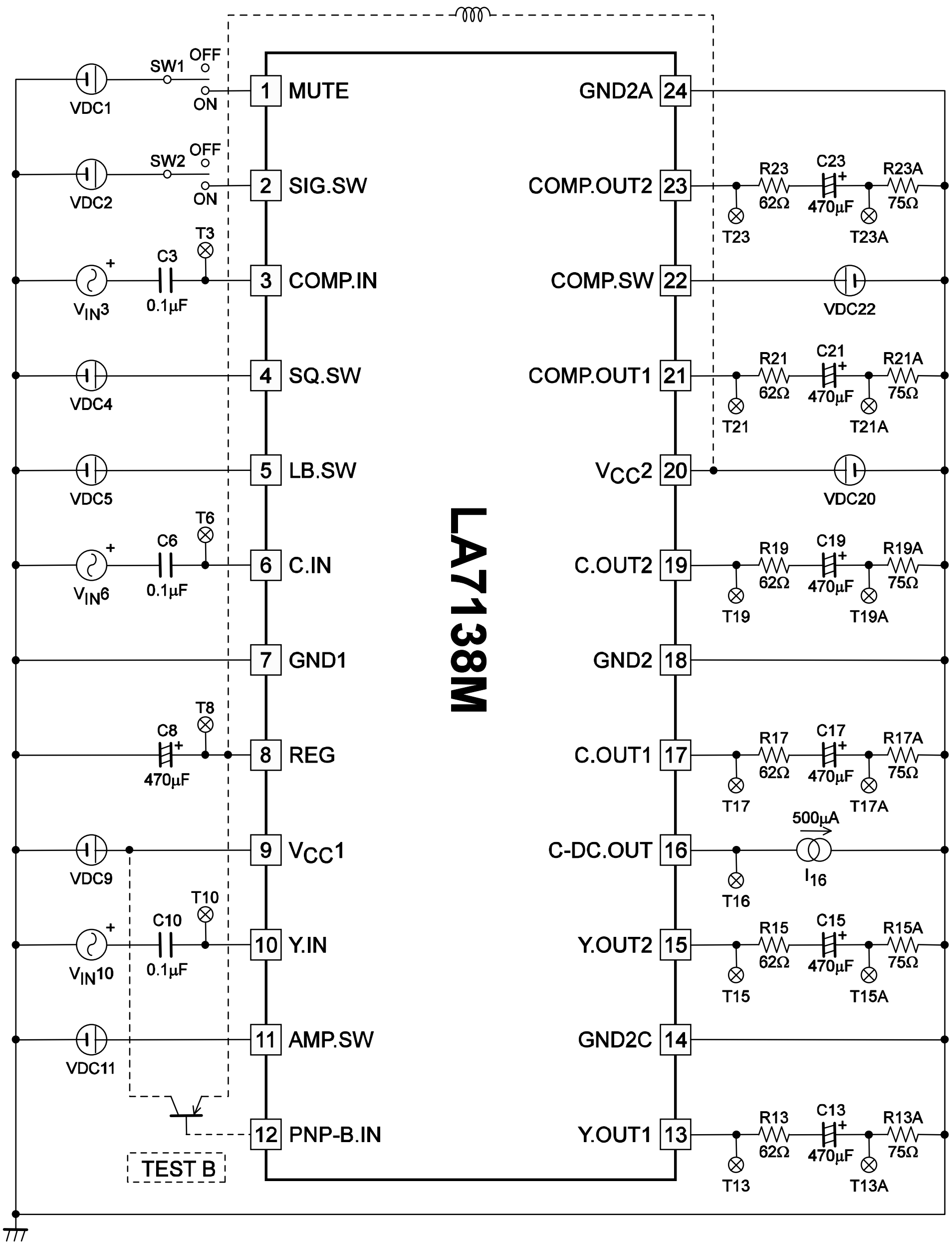


SANYO : MFP24S(300mil)

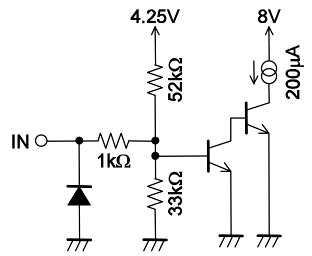
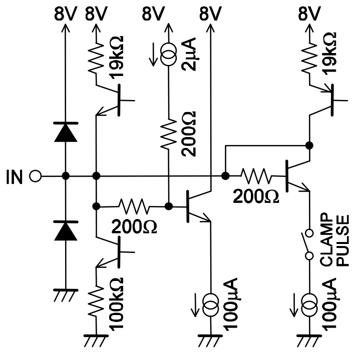
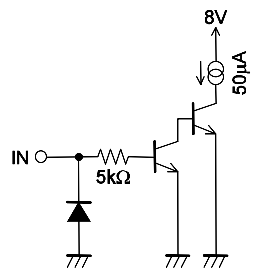
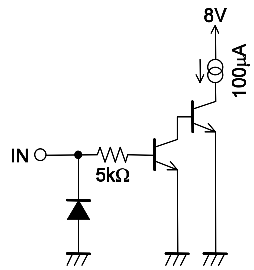
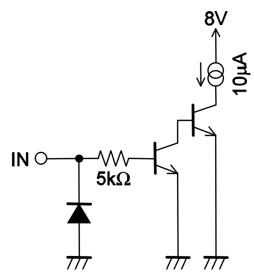
Block Diagram



Test Circuit



Input/Output form Diagram

Pin No.	Pin name	I/O	Pin voltage	Input/ Output impedance	Function	Equivalent circuit
1	MUTE	I	1.7V	21kΩ	Mute control pin for video signal outputs (Pins 13, 15, 17, 19 and 21). Control can be made with a microcontroller operating on 3.3 to 5.0V power supply.	
2	SIG.SW	I	1.7V	21kΩ	Pin to select the input form of pins 3 and 6 according to the type of input signal (composite/s/component/ base band). Control can be made with a microcontroller operating on 3.3 to 5.0V power supply. Add a 5.1kΩ resistor in series externally.	
3	COMP.IN	I	4.5V	Clamp form	Video signal input pin. Enter the composite signal for input of the composite/S signal. Enter the B-Y or R-Y signal for input of the component signal. For input of the base band, enter any of RGB signals that have a sync signal. (This pin is connected to GND when the S signal is entered.)	
4	SQ.SW	I	2.4V	9.0GΩ	Pin to enter the squeeze information. Control can be made with a microcontroller that operates on 3.3 to 5.0V power supply.	
5	LB.SW	I	2.43V	8.1GΩ	Pin to enter the Letter-Box information. Control can be made with a microcontroller that operates on 3.3 to 5.0V power supply.	
22	COMP.SW	I	2.4V	9.0GΩ	Y/C-MIX ON/OFF control pin. Be sure to set this pin HIGH in cases other than composite/S control of pin 2. Control is possible with a microcontroller operating on 3.3 to 5.0V power supply or through selection of V_{CC}/GND on the substrate.	

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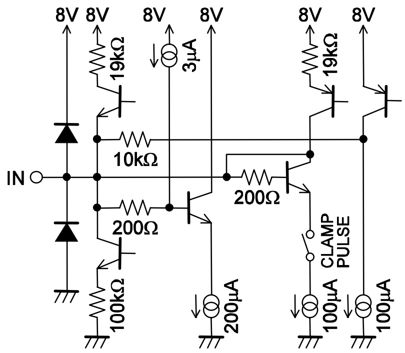
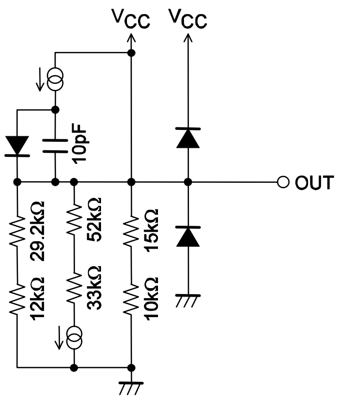
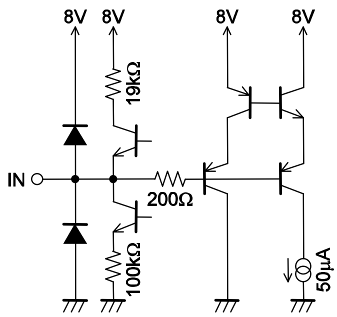
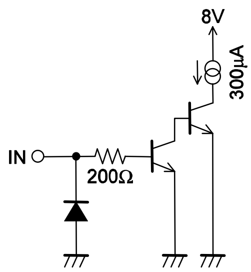
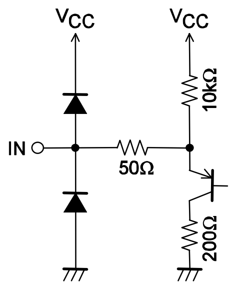
Pin No.	Pin name	I/O	Pin voltage	Input/ Output impedance	Function	Equivalent circuit
6	C.IN	I	4.8V	10kΩ	Video signal input pin. Enter the chroma signal for input of composite/S signal. Enter the B-Y or R-Y signal for input of the component signal input. For input of the base band signal, enter any of RGB signals that have a sync signal.	
8	REG	O	8V	1.5kΩ	Pin for the regulator that generates an 8V supply voltage in IC. To use the supply voltage of 12V, connect a collector of the external PNP transistor (see the test circuit A). Since the noise in IC is dependent on the stability of regulator, it is recommended to connect a 470µF capacitor when the S/N ratio of –80dB is to be secured for controls other than Y/C-MIX. To secure the S/N ratio of –74dB for Y/C-MIX, set the supply voltage to 8V (V_{CC}B) and apply 8V also to this pin. (See the test circuit B.)	
10	Y.IN	I	4.2V	Clamp form	Video signal input pin. Enter the Y signal for input of composite/S and component signal. For input of the base band signal, enter any of RGB signals that have a sync signal.	
11	AMP.SW	I	2.4V	9.0GΩ	Control pin to select the AMP gain according to the input signal amplitude. Control is possible with a microcontroller that operates on 3.3 to 5.0V power supply as well as through selection of V_{CC}/GND on a substrate.	
12	PNP-B-IN	O	3.4V	4.0GΩ	Base input pin of the external PNP transistor for the 8V regulator. Connect to the transistor in case of the supply voltage of 12V (see the test circuit A). To use the supply voltage of 8V, keep this pin open (see the test circuit B).	

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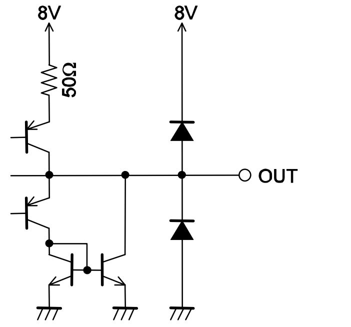
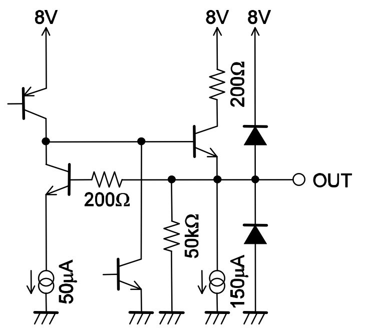
Pin No.	Pin name	I/O	Pin voltage	Input/ Output impedance	Function	Equivalent circuit
13	Y.OUT1	O	2.7V	11.6Ω	Video signal output pin. Drives the video signal entered in pin 10 by 75Ω. Mute possible with pin 1.	
15	Y.OUT2	O	2.7V	11.6Ω		
17	C.OUT1	O	3.9V	11.6Ω	Video signal output pin. Drives the video signal entered in pin 6 by 75Ω. Mute possible with pin 1.	
19	C.OUT2	O	3.9V	11.6Ω		
21	COMP.OUT1	O	3.57V	11.6Ω	Video signal output pin. Drives the video signal entered in pin 3 by 75Ω. Mute possible with pin 1.	
23	COMP.OUT2	O	3.57V	11.6Ω		
16	C-DC.OUT	O	4.7V	4.1Ω	S1/S2 DC voltage output pin. Outputs 0V for the 4: 3 mode, 2.2V for the Letter-Box mode, and 5V for the squeeze mode. Connect with a 10kΩ resistor after capacitive coupling of chroma signal output.	
9	V_{CC}1	P	12V OR 8.0V		V_{CC} for a signal processing circuit. To use the supply voltage of 12V, connect an emitter of external PNP transistor (see the test circuit A). Insert a capacitor of around 47μF between this V_{CC} and pin 7.	
20	V_{CC}2	P	8V		V_{CC} for the 75Ω drive circuit. Insert a capacitor of around 47μF between this V_{CC} and GND of the 75Ω drive circuit. Pay due attention to the layout because the output signal has a substantial amplitude.	
7	GND1	P	0V		GND for the signal processing circuit.	
14	GND2	P	0V		GND of the 75Ω drive circuit (pins 13 and 15). Pay due attention on the layout because the output signal has a substantial amplitude.	
18	GND2B	P	0V		GND of the 75Ω drive circuit (pins 17 and 19). Pay due attention to the layout because the output signal has a substantial amplitude.	
24	GND2A	P	0V		GND of the 75Ω drive circuit (pins 21 and 23). Pay due attention on the layout because the output signal has a substantial amplitude.	

Control Pin Function Table

Pin No.	Pin condition	LOW	OPEN	HIGH
Pin 1	Pin voltage	0 to 0.6V	1.55 to 1.75V	2.7 to 5V
	Mute of 75Ω driver	13,17,21 mute	No mute	15,19,23 mute
Pin 2 (Y point)	Pin voltage	0 to 0.6V	1.55 to 1.75V	2.7 to 5V
	Signal input mode select	Composite/S	Base band	Component
Pin 11	Pin voltage	0 to 1V		2.7 to 8V (Note)
	AMP–GAIN select	6dB		8.5dB
Pin 22	Pin voltage	0 to 1V		2.7 to 8V (Note)
	Y/C-MIX Control	Y/C-MIX		Composite

Note: Do not apply to pins 11 and 22 a voltage higher than the REG & $V_{CC}2$ voltages of pins 8 and 20.

* Do not use Y/C-MIX for cases other than composite/S.

* For composite, the chroma signal is entered with pin 6 in C connection, the composite signal is entered with pin 3 clamped, and the Y signal is entered with pin 9 clamped. However, for S, Pin 3 has no input.

For component, the B-Y/R-Y signal is entered with pins 3 and 6 clamped to pedestal and the Y signal is entered with pin 10 clamped.

For base band, the RGB signal is entered with pins 3, 6, and 10 clamped.

Do not use Pins 11 and 22 in the OPEN state.

Pin 4	Pin 5	Pin 16 output DC
0 to 1V	0 to 1V	LOW (0V) → 4:3Mode
0 to 1V	2.6 to 5V	MIDDLE (2.5V) → Letter-Box mode
2.6 to 5V	0 to 1V	HIGH (5V) → Squeeze mode
2.6 to 5V	2.6 to 5V	Not allowed

Switch conditions

Symbol	Control voltage (Unit: V)						Switch conditions	
	VDC1	VDC2	VDC4	VDC5	VDC11	VDC22	SW1	SW2
$I_{CC}1$	0	0	3.3	0	3.3	3.3	ON	ON
$I_{CC}2$	0	0	3.3	0	3.3	3.3	ON	ON
(A) Pin 10 (Y signal) input when the composite/S is selected.								
G_YM	0/3.3	0	*	*	0	3.3	ON/OFF	ON
G_YH	0/3.3	0	*	*	3.3	3.3	ON/OFF	ON
$C_{10}H$	0/3.3	0	*	*	3.3	3.3	ON/OFF	ON
(B) Pin 6 (chorma signal) input when the composite/S is selected.								
G_CM	0/3.3	0	*	*	0	3.3	ON/OFF	ON
G_CH	0/3.3	0	*	*	3.3	3.3	ON/OFF	ON
C_6H	0/3.3	0	*	*	3.3	3.3	ON/OFF	ON
(C) Pin 3 (composite signal) input when the composite is selected.								
G_SM1	0/3.3	0	*	*	0	3.3	ON/OFF	ON
G_SH1	0/3.3	0	*	*	3.3	3.3	ON/OFF	ON
C_3H	0/3.3	0	*	*	3.3	3.3	ON/OFF	ON
(D) GAIN ratio of signals when the composite/S is selected.								
G_SM2	0/3.3	0	*	*	0	0	ON/OFF	ON
G_SH2	0/3.3	0	*	*	3.3	0	ON/OFF	ON
(E) GAIN ratio of signals when the composite is selected.								
ΔY_C	0/3.3	0	*	*	3.3	3.3	ON/OFF	ON
ΔY_S1	0/3.3	0	*	*	3.3	3.3	ON/OFF	ON
ΔC_S1	0/3.3	0	*	*	3.3	3.3	ON/OFF	ON
(F) GAIN ratio of signals when the S is selected.								
ΔY_S2	0/3.3	0	*	*	3.3	0	ON/OFF	ON
ΔC_S2	0/3.3	0	*	*	3.3	0	ON/OFF	ON
(G) Pin 10 (Y signal) input when the component is selected.								
G_YM	0/3.3	3.3	*	*	0	3.3	ON/OFF	ON
G_YH	0/3.3	3.3	*	*	3.3	3.3	ON/OFF	ON
$C_{10}H$	0/3.3	3.3	*	*	3.3	3.3	ON/OFF	ON
(H) Pin 6 (B-Y or R-Y signal) input when the component is selected.								
G_NM	0/3.3	3.3	*	*	0	3.3	ON/OFF	ON
G_NH	0/3.3	3.3	*	*	3.3	3.3	ON/OFF	ON
P_6H	0/3.3	3.3	*	*	3.3	3.3	ON/OFF	ON
(I) Pin 3 (B-Y or R-Y signal) input when the component is selected.								
G_NM	0/3.3	3.3	*	*	0	3.3	ON/OFF	ON
G_NH	0/3.3	3.3	*	*	3.3	3.3	ON/OFF	ON
P_3H	0/3.3	3.3	*	*	3.3	3.3	ON/OFF	ON
(J) GAIN ratio of signals when the component is selected.								
$\Delta Y1$	0/3.3	3.3	*	*	3.3	3.3	ON/OFF	ON
$\Delta Y2$	0/3.3	3.3	*	*	3.3	3.3	ON/OFF	ON
ΔN	0/3.3	3.3	*	*	3.3	3.3	ON/OFF	ON
(K) Pin 10 (RGB signal) input when the base band is selected.								
G_BM	0/3.3	*	*	*	0	3.3	ON/OFF	OFF
G_BH	0/3.3	*	*	*	3.3	3.3	ON/OFF	OFF
$C_{10}H$	0/3.3	*	*	*	3.3	3.3	ON/OFF	OFF
(L) Pin 6 (RGB signal) input when the base band is selected.								
G_BM	0/3.3	*	*	*	0	3.3	ON/OFF	OFF
G_BH	0/3.3	*	*	*	3.3	3.3	ON/OFF	OFF
C_6H	0/3.3	*	*	*	3.3	3.3	ON/OFF	OFF
(M) Pin 3 (RGB signal) input when the base band is selected.								
G_BM	0/3.3	*	*	*	0	3.3	ON/OFF	OFF
G_BH	0/3.3	*	*	*	3.3	3.3	ON/OFF	OFF
C_3H	0/3.3	*	*	*	3.3	3.3	ON/OFF	OFF

*: Any condition

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Symbol	Control voltage (Unit: V)						Switch conditions	
	VDC1	VDC2	VDC4	VDC5	VDC11	VDC22	SW1	SW2
(N) GAIN ratio of signals when the base band is selected								
ΔB1	0/3.3	*	*	*	3.3	3.3	ON/OFF	OFF
ΔB2	0/3.3	*	*	*	3.3	3.3	ON/OFF	OFF
ΔB3	0/3.3	*	*	*	3.3	3.3	ON/OFF	OFF
(O) f characteristics of GAIN (common to all modes and input signals, however, except for Y/C-MIX)								
F_Y6	0/3.3	0	*	*	3.3	3.3	ON/OFF	ON
F_Y10	0/3.3	0	*	*	3.3	3.3	ON/OFF	ON
(P) DC voltage for output mute (common to all modes)								
V_{13}	0	*	*	*	0/3.3	0/3.3	ON	*
V_{15}	3.3	*	*	*	0/3.3	0/3.3	ON	*
V_{17}	0	*	*	*	0/3.3	0/3.3	ON	*
V_{19}	3.3	*	*	*	0/3.3	0/3.3	ON	*
V_{21}	0	*	*	*	0/3.3	0/3.3	ON	*
V_{23}	3.3	*	*	*	O/3.3	0/3.3	ON	*
(Q) Output DC voltage characteristics								
V_{43}	*	*	0	0	0/3.3	0/3.3	*	*
V_{LB}	*	*	0	3.3	0/3.3	0/3.3	*	*
V_{SQ}	*	*	3.3	0	0/3.3	0/3.3	*	*

*: Any condition

This catalog provides information as of April, 2006. Specifications and information herein are subject to change without notice.