Ordering number: EN 3849B

Monolithic Linear IC

SANYO

No.3849B

LA7470M,7470V

Video camera 2-channel microphone AMPs

The LA7470M and the LA7470V are ICs with on-chipped microphone amplification peripherals for stereo video camera applications. They show excellent characteristics in space design.

Features

- Low-noise (Input 0.75μVrms, JIS-A filter, Rg = 1kΩ)
- 2 inputs (internal/external microphones)
- On-chip HPF (with a through switch) for internal MIC wind noise elimination
- On-chip external power supply (with a current limiter)
- Capacitors = less than 1.0μF (excluding ripple filters)
- Stereo/monoral detect output pin for external MICs

Functions

- 2-channel microphone AMPs
- Internal MIC power supply (2 channels)
- Internal/external MIC select switch
- External power supply (with a current limiter)
- HPF (with a through switch)
- External MIC stereo/monoral detector
- Ripple filter

Maximum Ratings at Ta = 25°C

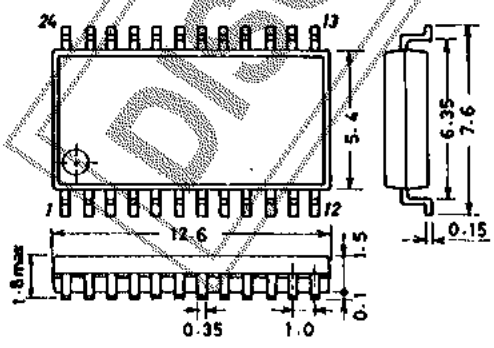
				unit
Maximum Supply Voltage	V_{CC} max		7.0	V
Allowable Power Dissipation	Pd max	Ta = 65°C	300	mW
Operating Temperature	Topr		−10 to +65	°C
Storage Temperature	Tstg		−55 to +150	°C

Operating Conditions at Ta = 25°C

			unit
Recommended Supply Voltage	V_{CC}	5.0	V
Operating Voltage Range	V_{CC} op	4.5 to 5.5	V

Package Dimensions 3112

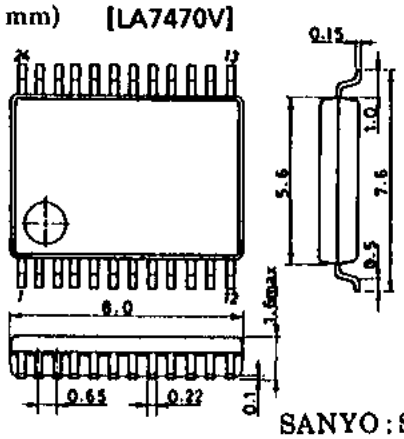
(unit : mm) [LA7470M]



SANYO : MFP24S

Package Dimensions 3175A

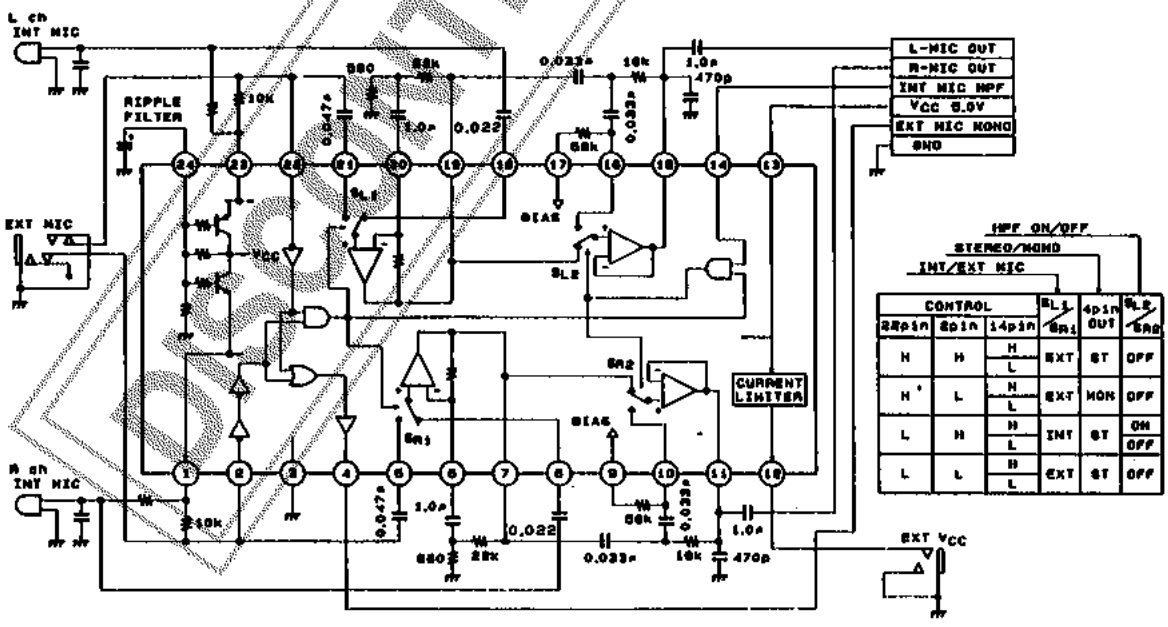
(unit : mm) [LA7470V]



SANYO : SSOP24

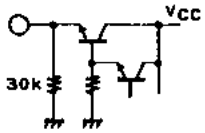
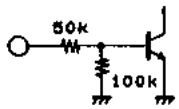
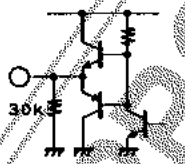
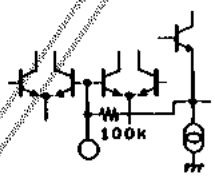
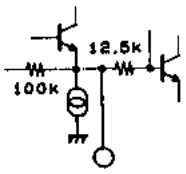
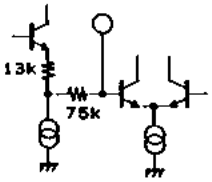
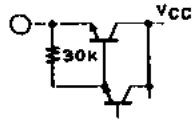
Operating Characteristics at Ta = 25°C, V_{CC} = 5.0V, f = 1.0kHz, R_L = 10kΩ			min	typ	max	unit
Current Dissipation	Icc	INT MIC HPF-ON	4.0	5.5	7.0	mA
Voltage Gain	VG	INT/EXT MIC IN, HPF-ON/OFF, L/Rch	29.8	30.3	30.8	dB
Total Harmonic Distortion	THD	INT/EXT MIC IN, L/Rch HPF-ON/OFF, Vo = 300mVrms		0.05	0.2	%
Maximum Output	V_{OM}	INT/EXT MIC IN, L/Rch HPF-ON/OFF, THD = 1.0%	1.0	1.4		Vrms
Output Noise Voltage 1	V_{NO1}	INT MIC IN, Rg = 1.0kΩ HPF-ON/OFF, JIS-A Filter		30	42	μVrms
Output Noise Voltage 2	V_{NO2}	EXT MIC IN, Rg = 1.0kΩ JIS-A Filter		25	40	μVrms
Input Switch Cross Talk	SW_{CR}	INT MIC IN→EXT MIC IN (Rg = 1kΩ) f = 10kHz, L/Rch		76	70	dB
Inter-channel Cross Talk	CH_{CR}	INT/EXT MIC, HPF-ON/OFF Lch→Rch, Rch→Lch, f = 10kHz		76	70	dB
Internal MIC Power Supply Output Voltage	V_{INM}	pin1/pin23 DC, 30kΩ load	2.7	2.85	3.0	V
External Power Supply Output Voltage	V_{EXM}	Pin12 Output Current = 25mA, Pin12 DC	4.0	4.5		V
External Power Supply Limiter Current	I_{LIM}	Pin12 Grounded, Pin12 Output Current			30	mA
Input Select Control Voltage	CTL_{IN}	H level, pin2/pin22 DC	1.3		V_{CC}	V
		L level, pin2/pin22 DC	0		0.7	V
HPF Switching Control Voltage	CTL_{HP}	H level, pin14 DC	1.6		V_{CC}	V
		L level, pin14 DC	0		1.0	V
Input Impedance	Z_{IN}	INT/EXT MIC IN, L/Rch	70	85	100	kΩ
Output Impedance	Z_O	HPF-ON/OFF, L/Rch		100		Ω
AMP Open Gain	VGo		60	65		dB

Application circuit (Equivalent Circuit Block Diagram and Peripheral Circuit)



Unit (resistance : Ω, capacitance : F)

Pin Circuit I/O Circuit (internal equivalent circuit) Unit (resistance : Ω)

Pin No.	Pin Name	Standard DC Voltage	I/O circuit type	Remarks
1, 23	Internal MIC Power Supply Output	2.85		Maximum Drive Current 10mA
2	Input Select Control			
3	GND			
4	External MIC Stereo/Monoral Detector Output	In the Stereo mode 4.28V In the Monoral mode 0V		
5, 21	Internal MIC Input	2.16V		
6, 20	Negative Feedback	2.18V		
7, 19	MIC AMP Output	2.24V		
8, 18	Internal MIC Input	2.16V		
9, 17	Bias	2.85V		Bias for High Pass Filter Input

Unit (resistance : Ω)

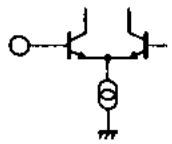
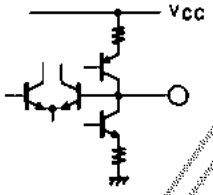
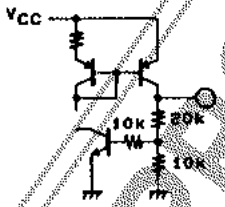
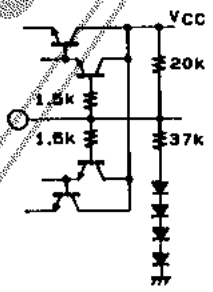
Pin No.	Pin Name	Standard DC Voltage	I/O circuit type	Remarks
10, 16	High Pass Filter Input	2.83V		
11, 15	High Pass Filter and Buffer Output	2.81V		Output Impedance = 100Ω
12	External Power Supply Output	4.5V (25mA Source Current)		
13	V_{CC}			
14	HPF Control	2.85V		
24	Ripple Filter	4.18V		Should be grounded to the GND through an electrolytic capacitor. See Fig. 2 for ripple elimination

Fig. 1. Frequency characteristics

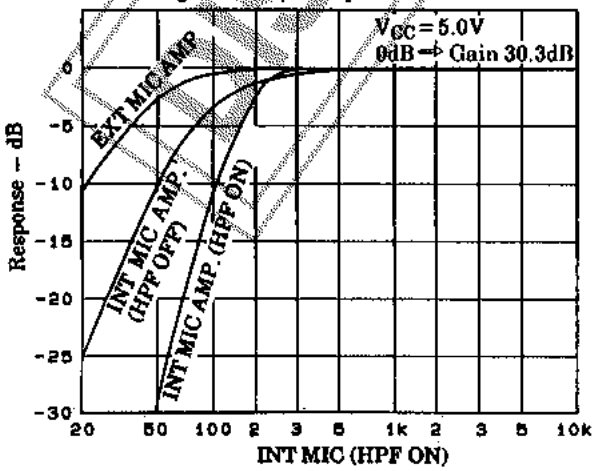


Fig. 2. Ripple elimination ratio