

	No.3849B	Monolithic Linear IC
		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 $0.75\mu\text{Vrms}$, JIS-A filter, $R_g = 1\text{k}\Omega$)
- 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 $1.0\mu\text{F}$ (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 $T_a = 25^\circ\text{C}$

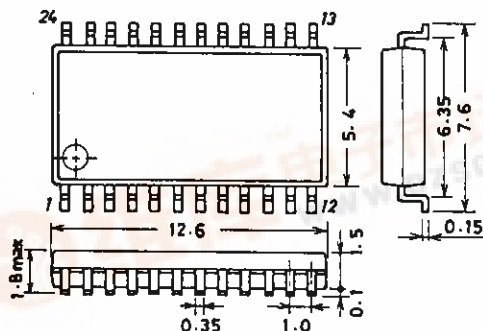
			unit
Maximum Supply Voltage	$V_{CC\text{ max}}$	7.0	V
Allowable Power Dissipation	$P_{d\text{ max}}$	300	mW
Operating Temperature	T_{op}	-10 to +65	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

Operating Conditions at $T_a = 25^\circ\text{C}$

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

Package Dimensions 3112

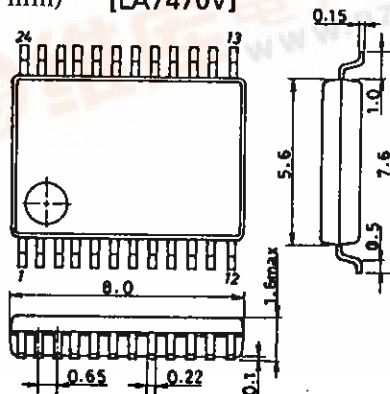
(unit: mm) [LA7470M]



SANYO: MFP24S

Package Dimensions 3175A

(unit: mm) [LA7470V]



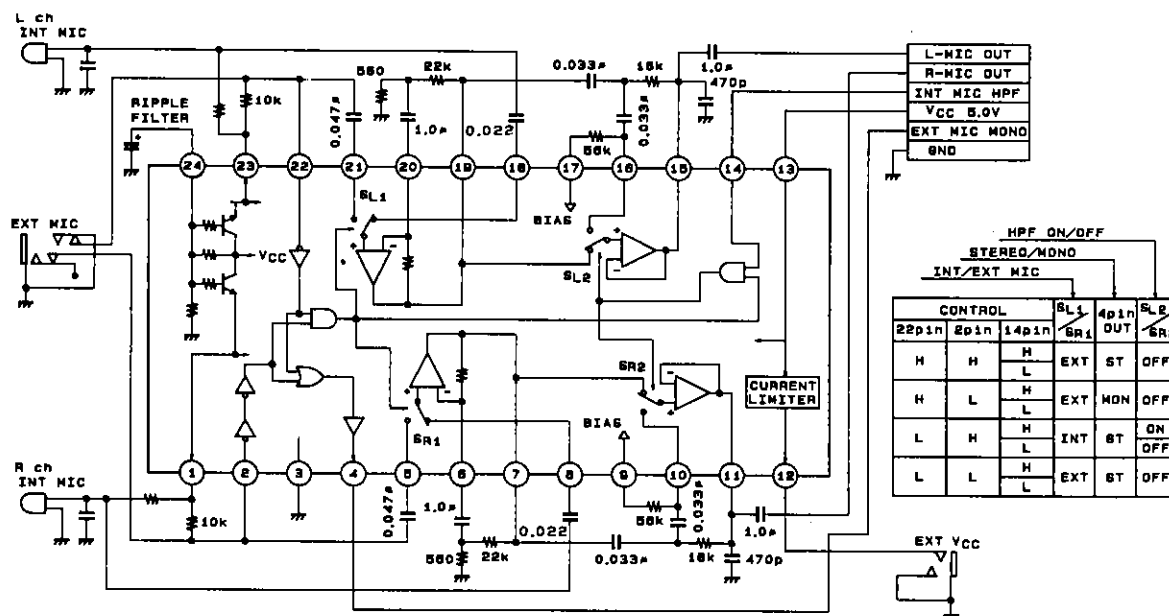
SANYO: SSOP24



LA7470M,7470V

Operating Characteristics at Ta=25°C, VCC=5.0V, f=1.0kHz, RL=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	VOM	INT/EXT MIC IN, L/Rch HPF-ON/OFF, THD=1.0%		1.0	1.4		Vrms
Output Noise Voltage 1	VNO1	INT MIC IN, Rg=1.0kΩ HPF-ON/OFF, JIS-A Filter			30	42	μVrms
Output Noise Voltage 2	VNO2	EXT MIC IN, Rg=1.0kΩ JIS-A Filter			25	40	μVrms
Input Switch Cross Talk	SWCR	INT MIC IN→EXT MIC IN (Rg=1kΩ) f=10kHz, L/Rch			76	70	dB
Inter-channel Cross Talk	CHCR	INT/EXT MIC, HPF-ON/OFF Lch→Rch, Rch→Lch, f=10kHz			76	70	dB
Internal MIC Power	VINM	pin1/pin23 DC, 30kΩ load		2.7	2.85	3.0	V
Supply Output Voltage	VEXM	Pin12 Output Current=25mA, Pin12 DC		4.0	4.5		V
External Power	ILIM	Pin12 Grounded, Pin12 Output Current				30	mA
Supply Limiter Current	CTLIN	H level, pin2/pin22 DC L level, pin2/pin22 DC		1.3		VCC	V
HPF Switching Control Voltage	CTLHP	H level, pin14 DC L level, pin14 DC		0		0.7	V
				1.6		VCC	V
				0		1.0	V
Input Impedance	ZIN	INT/EXT MIC IN, L/Rch		70	85	100	kΩ
Output Impedance	ZO	HPF-ON/OFF, L/Rch			100		Ω
AMP Open Gain	VG0			60	65		dB

Application circuit (Equivalent Circuit Block Diagram and Peripheral Circuit)

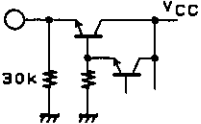
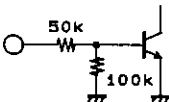
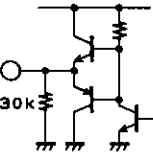
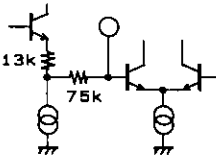
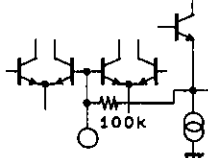
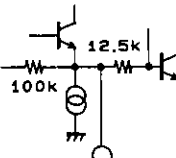
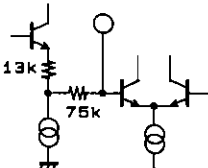
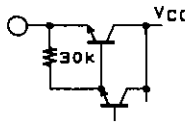


Unit (resistance : Ω, capacitance : F)

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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

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Unit (resistance : Ω)

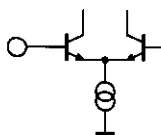
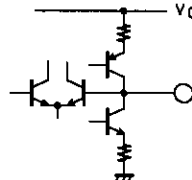
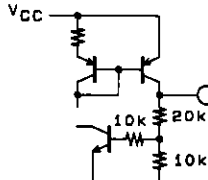
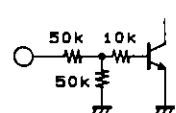
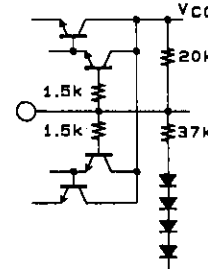
Pin No.	Pin Name	Standard DC Voltage	I/O circuit type	Remarks
10, 16	High Pass Filter Input	2.83V		
11, 15	High Pass Filter and Buffer Output	2.81V		Output Impedance = 100Ω
12	External Power Supply Output	4.5V (25mA Source Current)		
13	V _{CC}			
14	HPF Control	2.85V		
24	Ripple Filter	4.18V		Should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

Fig. 1. Frequency characteristics

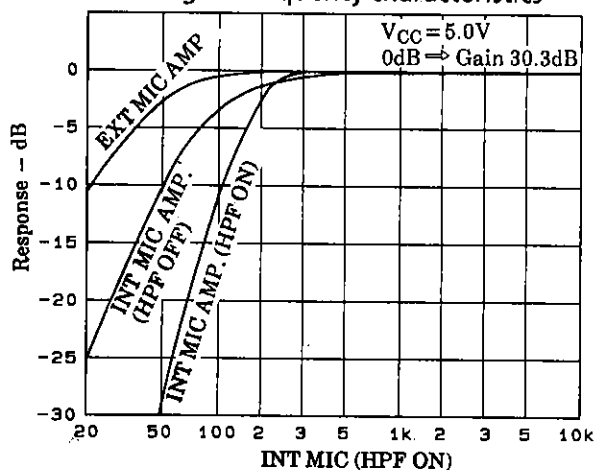
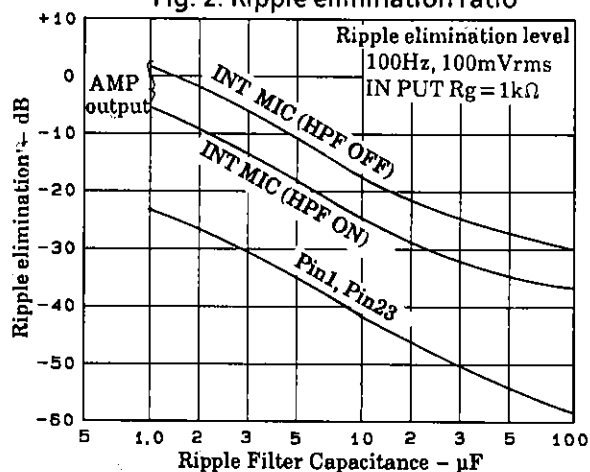


Fig. 2. Ripple elimination ratio



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