

<b>SANYO</b>	No.3849B	<b>LA7470M,7470V</b>
		<b>Video camera 2-channel microphone AMPs</b>

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  $T_a = 25^\circ\text{C}$**

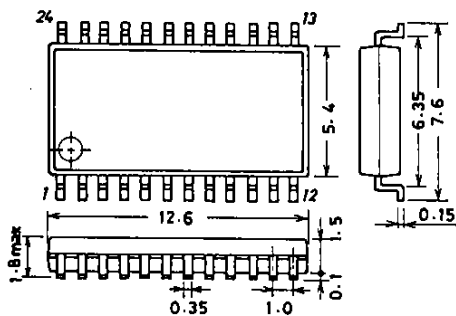
Maximum Supply Voltage	$V_{CC\text{ max}}$		7.0	V
Allowable Power Dissipation	$P_d\text{ max}$	$T_a = 65^\circ\text{C}$	300	mW
Operating Temperature	$T_{op}$		-10 to +65	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

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

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

**Package Dimensions 3112**

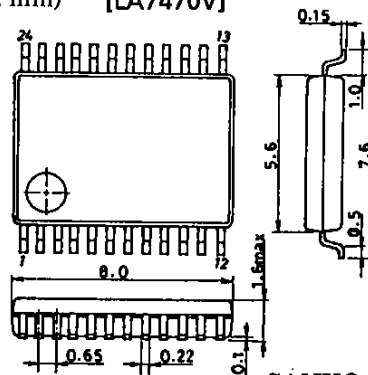
(unit: mm) [LA7470M]



SANYO : MFP24S

**Package Dimensions 3175A**

(unit: mm) [LA7470V]



SANYO : SSOP24

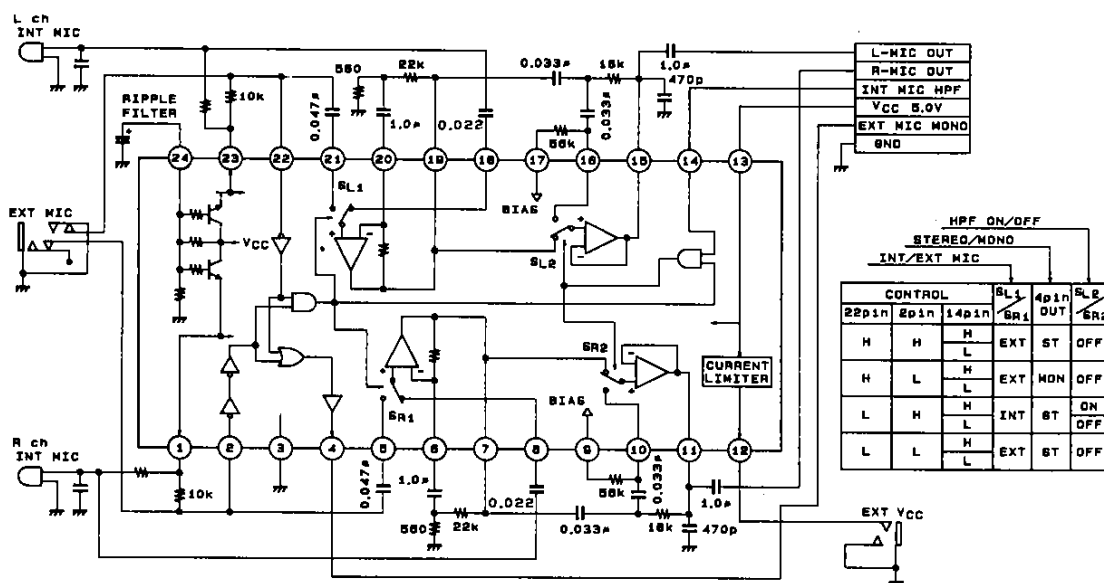
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31596TH/8301TS(KOTO) No.3849-1/5

LA7470M,7470V

Operating Characteristics at Ta = 25°C, VCC = 5.0V, f = 1.0kHz, RL = 10kΩ			min	typ	max	unit
Current Dissipation	I <sub>CC</sub>	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, V <sub>o</sub> = 300mVrms		0.05	0.2	%
Maximum Output	V <sub>OM</sub>	INT/EXT MIC IN, L/Rch HPF-ON/OFF, THD = 1.0%	1.0	1.4		Vrms
Output Noise Voltage 1	V <sub>NO1</sub>	INT MIC IN, R <sub>g</sub> = 1.0kΩ HPF-ON/OFF, JIS-A Filter		30	42	μVrms
Output Noise Voltage 2	V <sub>NO2</sub>	EXT MIC IN, R <sub>g</sub> = 1.0kΩ JIS-A Filter		25	40	μVrms
Input Switch Cross Talk	SW <sub>CR</sub>	INT MIC IN → EXT MIC IN (R <sub>g</sub> = 1kΩ) f = 10kHz, L/Rch	76	70		dB
Inter-channel Cross Talk	CH <sub>CR</sub>	INT/EXT MIC, HPF-ON/OFF Lch → Rch, Rch → Lch, f = 10kHz	76	70		dB
Internal MIC Power	V <sub>INM</sub>	pin1/pin23 DC, 30kΩ load	2.7	2.85	3.0	V
Supply Output Voltage	V <sub>EXM</sub>	Pin12 Output Current = 25mA, Pin12 DC	4.0	4.5		V
External Power	I <sub>LIM</sub>	Pin12 Grounded, Pin12 Output Current			30	mA
Supply Limiter Current	CTL <sub>IN</sub>	H level, pin2/pin22 DC L level, pin2/pin22 DC	1.3		V <sub>CC</sub>	V
HPF Switching Control Voltage	CTL <sub>HP</sub>	H level, pin14 DC L level, pin14 DC	1.6		V <sub>CC</sub>	V
Input Impedance	Z <sub>IN</sub>	INT/EXT MIC IN, L/Rch	70	85	100	kΩ
Output Impedance	Z <sub>O</sub>	HPF-ON/OFF, L/Rch		100		Ω
AMP Open Gain	V <sub>G0</sub>		60	65		dB

Application circuit (Equivalent Circuit Block Diagram and Peripheral Circuit)



Unit (resistance : Ω, capacitance : F)

LA7470M,7470V

Pin Circuit I/O Circuit (internal equivalent circuit) Unit (resistance :  $\Omega$ )

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 :  $\Omega$ )

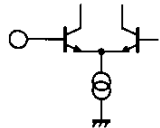
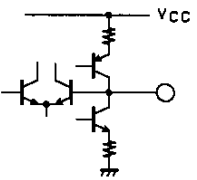
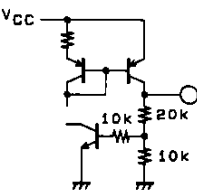
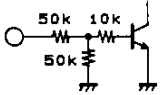
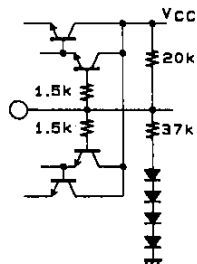
Pin No.	Pin Name	Standard DC Voltage	I/O circuit type	Remarks
10, 16	High Pass Filter Input	2.83V		
11, 15	High Pass Filter and Buffer Output	2.81V		Output Impedance = $100\Omega$
12	External Power Supply Output	4.5V (25mA Source Current)		
13	VCC			
14	HPF Control	2.85V		
24	Ripple Filter	4.18V		Should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

Fig. 1. Frequency characteristics

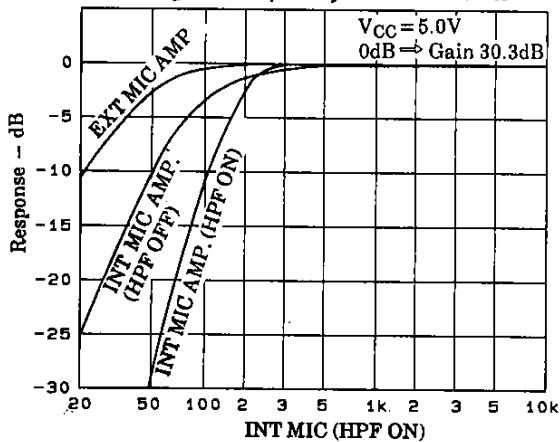
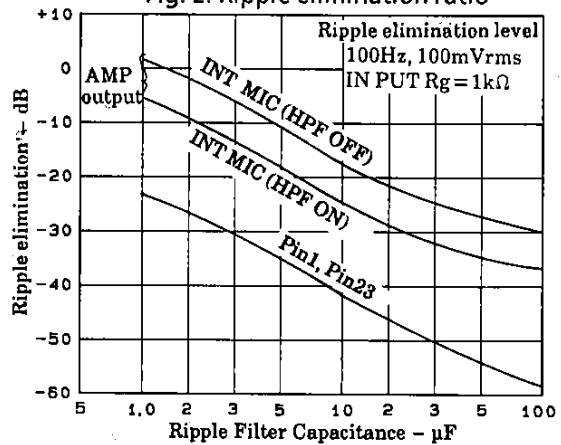


Fig. 2. Ripple elimination ratio



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