



No. ※ 5571

LA7172M

**UHF Band RF Modulator**

**Preliminary**

**Overview**

The LA7172M is a monolithic IC for an RF modulator which generates RF TV channel signal in UHF band, from a baseband video and audio signal.

Audio FM carrier is controlled by PLL system and generated without L/C tank.

**Features**

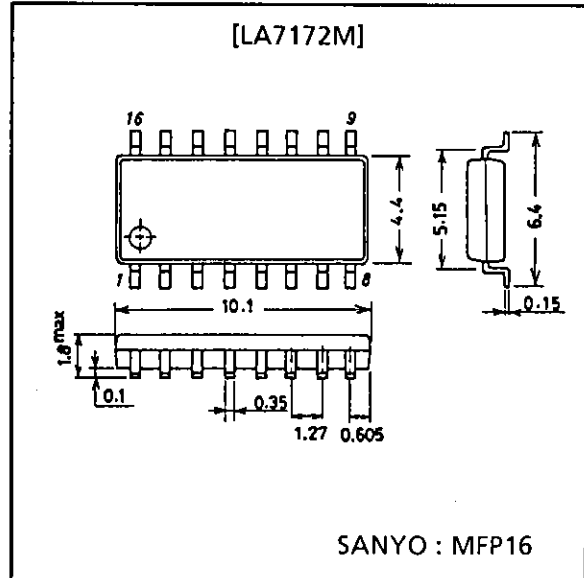
- 5 V operation
- Less supply current
- Balanced RF VCO
- Wide bandwidth
- PLL controlled and tankless audio FM ( 4 sound intercarrier frequency capability )
- Small package
- Package : MFP16 ( SOP16 )

**Functions**

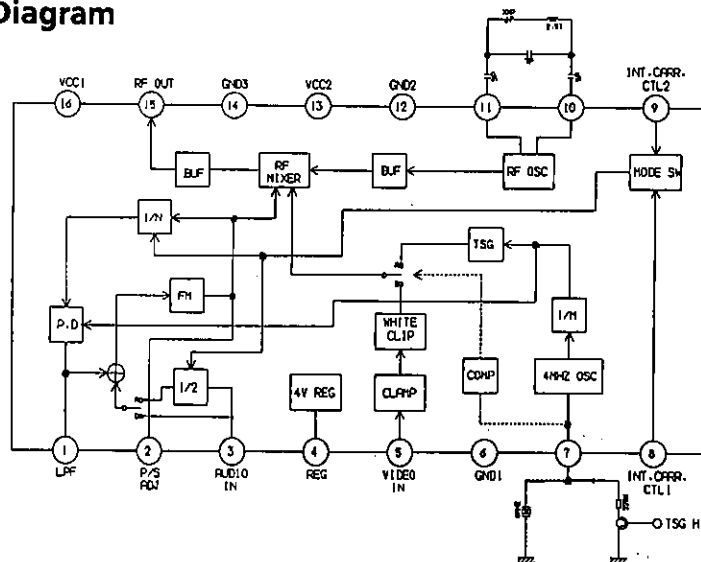
- RF VCO
- Video modulator
- Sound carrier converter
- RF buffer
- Video clamp
- White clip
- Audio FM
- 4 V regulator
- Reference oscillator
- TSG ( test signal generator )

**Package Dimensions**

unit : mm  
3035A-SOP16



**Equivalent Circuit Block Diagram**



# LA7172M

## Specifications

### Maximum Ratings at $T_a = 25^\circ\text{C}$ Unit

Maximum supply voltage	$V_{CCmax}$		7	V
Allowable power dissipation	$P_{dmax}$	$T_a \leq 75^\circ\text{C}$	250	mW
Operating temperature	$T_{opr}$		-20 to +75	$^\circ\text{C}$
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	V
Operating voltage range	$V_{CCop}$		4.5 to 5.5	V

### Operating Characteristics at $T_a = 25^\circ\text{C}$ , $V_{CC} = 5\text{V}$

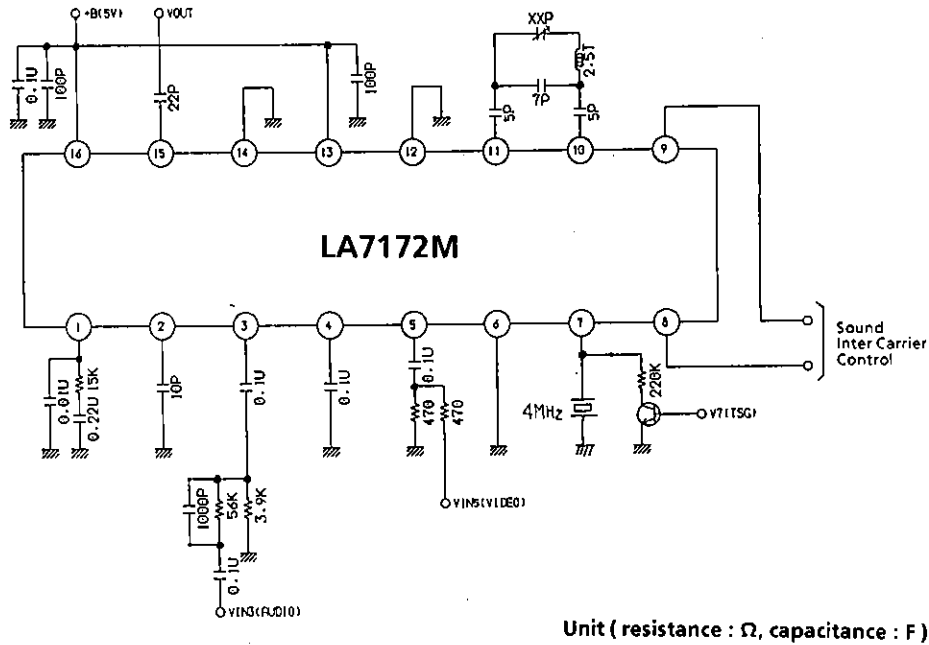
			min	typ	max	Unit
Supply current	$I_{CC}$	No signal	24	30	36	mA
Regulator voltage	$V_{reg}$	No signal	3.7	3.9	4.1	V
RF output	P	No signal	77	79.5	82	dB $\mu$
P/S ratio	P/S	S : fp + 4.5 MHz	12.5	15	17.5	dB
Sound 2nd harmonics	P/S2	S2 : fp + 2 $\times$ fs MHz	*	*	-	dB
Sound 3rd harmonics	P/S3	S3 : fp + 3 $\times$ fs MHz	*	*	-	dB
Chrominance beat	P/CB	$V_{IN5} = f_{sc}$ , 0.4 Vp-p CB : fp + fs - fsc	65	75	-	dB
Video harmonics	P/V2	$V_{IN5} = 1\text{ MHz}$ , 1 Vp-p V2 : fp + 2 MHz	50	62	-	dB
Video modulation	$M_p$	$V_{IN5} = \text{Stair step}$ , 1 Vp-p	73	80	87	%
White clip level	WCL	$V_{IN5} = \text{Stair step}$ , 1.5 Vp-p	88	93	98	%
Differential gain	DG	$V_{IN5} = \text{Stair step}$ , 1 Vp-p	-5	-	5	%
Differential phase	DP	$V_{IN5} = \text{Stair step}$ , 1 Vp-p	-6	-	6	Deg
TSG modulation	$M_p$ TSG	V7 : high	70	80	90	%
TSG VS ratio	V/S	V7 : high, video/sync.	6.3/ 3.7	6.8/ 3.2	7.3/ 2.7	
TSG period	TS	V7 : high	63.7	64.0	64.3	$\mu\text{s}$
TSG sync. width	HS	V7 : high	3.6	4.0	4.4	$\mu\text{s}$
TSG white width	HV	V7 : high	3.6	4.0	4.4	$\mu\text{s}$
TSG 1st white rise	TV1	V7 : high, Width between sync. and 1st white rise	22	24	26	$\mu\text{s}$
TSG 2nd white rise	TV2	V7 : high, Width between sync. and 2nd white rise	38	40	42	$\mu\text{s}$
Audio FM modulation	$M_{sFM}$	$V_{IN3} = 1\text{ kHz}$ , 1.66 Vp-p $\pm 50\text{ kHz DEV} : 100\%$	90	100	110	%
Max audio modulation	$M_{smx}$	THD < 3%	400	-	-	%
Audio FM THD	THDFM	$V_{IN3} = 1\text{ kHz}$ , 1Vp-p	-	0.5	2	%
Audio FM S/N	S/NFM	$V_{IN3} = 1\text{ kHz}$ , 1Vp-p $V_{IN5} = \text{Color bar}$ , 1Vp-p	43	55	-	dB

\* :TBD

#### Note

fp : picture RF carrier, fs : sound intercarrier ( B/G 5.5 MHz ), fsc : sub carrier ( 4.43 MHz )

## Sample Application Circuit



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