Ordering number : EN5570B

Monolithic Linear IC

LA7160M

VHF Band RF Modulator

Overview

The LA7160M is an RF modulator which generates, from a baseband video and audio signal, PLL frequency synthesized RF TV channel signal in VHF band.

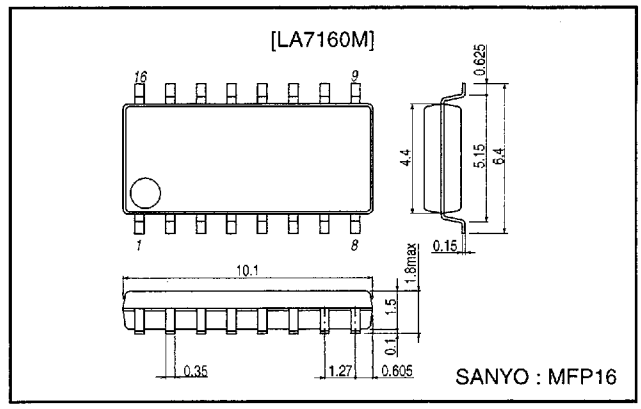
Features

- 5V operation.
- PLL synthesized RF VCO (US : 3ch, 4ch, JPN : 1ch, 2ch only), channel selection accomplished using a single pin.
- PLL synthesized and tankless audio FM.
- The 4 or 3.58MHz (color subcarrier) reference frequency for PLL can either be generated internally or input from an external source.
- Package : MFP16 (SOP16)

Package Dimensions

unit: mm

3035A-MFP16 (SOP16)



Functions

- RF VCO
- RF mixer
- RF buffer
- Video clamp
- White clip
- Audio FM
- 4V regulator
- Reference OSC

Specifications

Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max		7	V
Allowable power dissipation	Pd max		250	mW
Operating temperature	Topr		−20 to +75	°C
Storage temperature	Tstg		−55 to +150	°C

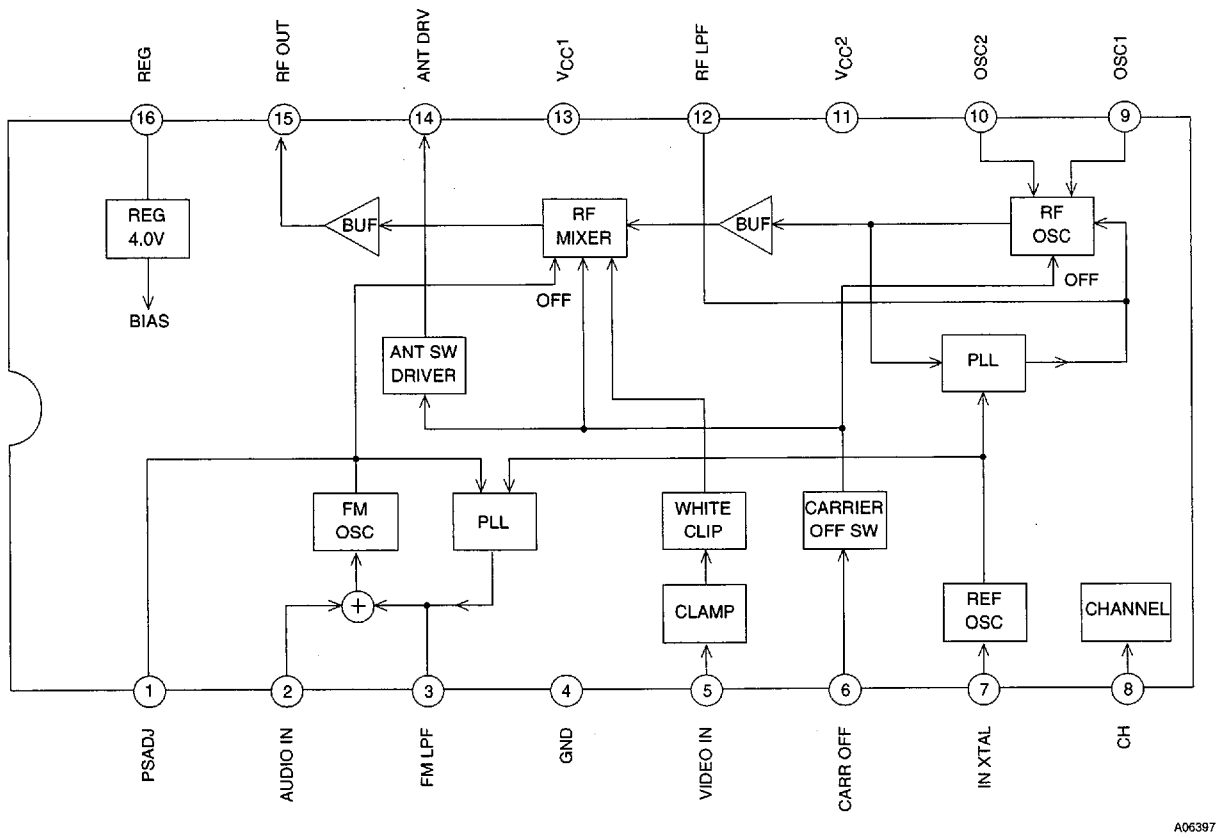
Operating Conditions at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V_{CC}		5	V
Operating voltage range	V_{CC} op		4.5 to 5.5	V

Operating Characteristics at Ta=25°C, V_{CC}=5V

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Supply current 1	$I_{CC}1$	No signal, pin 6, high	20	28	36	mA
Supply current 2	$I_{CC}2$	No signal, pin 6, low	13	18	23	mA
ANT SW driver	ANT	Pin 6, high	3.2	3.5	3.8	V
RF output US	P_{US}	No signal	89	92	95	dBμ
RF output JP	P_{JP}	No signal	89	92	95	dBμ
P/S ratio	P/S	S : fp+4.5MHz	13.5	16	18.5	dB
4.5MHz 2nd harmonics	P/S2	S2 : fp+2×4.5MHz	50	65		dB
4.5MHz 3rd harmonics	P/S3	S3 : fp+3×4.5MHz	45	55		dB
920kHz beat	P/CB	V_{IN}=3.58MHz, 0.6Vp-p CB : fp+920kHz	65	72		dB
Video harmonics	P/V2	V_{IN}=1MHz, 1Vp-p V2 : fp+2MHz	45	65		dB
Video modulation	Mp	V_{IN}=Stair step, 1Vp-p	75	80	85	%
White clip level	WCL	V_{IN}=Stair step, 1.5Vp-p	88	93	98	%
Differential gain	DG	V_{IN}=Stair step, 1Vp-p	–5		+5	%
Differential phase	DP	V_{IN}=Stair step, 1Vp-p	–5		+5	Deg
Audio modulation	M_S	A_{IN}=1kHz, 1Vp-p	90	100	110	%
Maximum audio modulation	M_S max	THD<3%	400			%
Audio THD	THD	A_{IN}=1kHz, 1Vp-p		0.4	2	%
Audio S/N	S/N	A_{IN}=1kHz, 1Vp-p V_{IN}=Color bar, 1Vp-p	45	51		dB

Equivalent Circuit Block Diagram



Test Circuit