

**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)

Functions

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

Specifications**Maximum Ratings** at $T_a=25^\circ\text{C}$

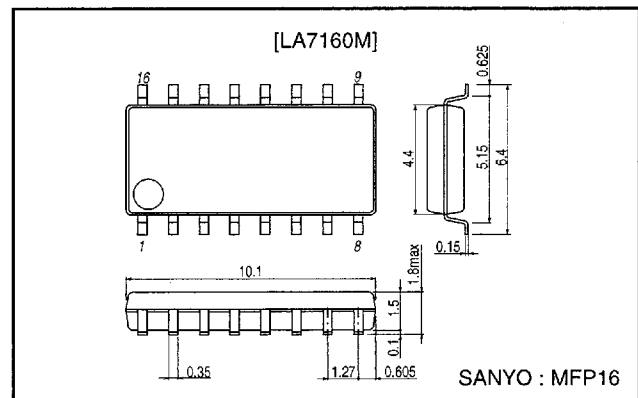
| Parameter | Symbol | Conditions | Ratings | Unit |
|-----------------------------|----------------------|------------|-------------|------------------|
| Maximum supply voltage | $V_{CC \text{ max}}$ | | 7 | V |
| Allowable power dissipation | $P_d \text{ max}$ | | 250 | mW |
| Operating temperature | T_{opr} | | -20 to +75 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | | -55 to +150 | $^\circ\text{C}$ |

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

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

Package Dimensions

unit: mm

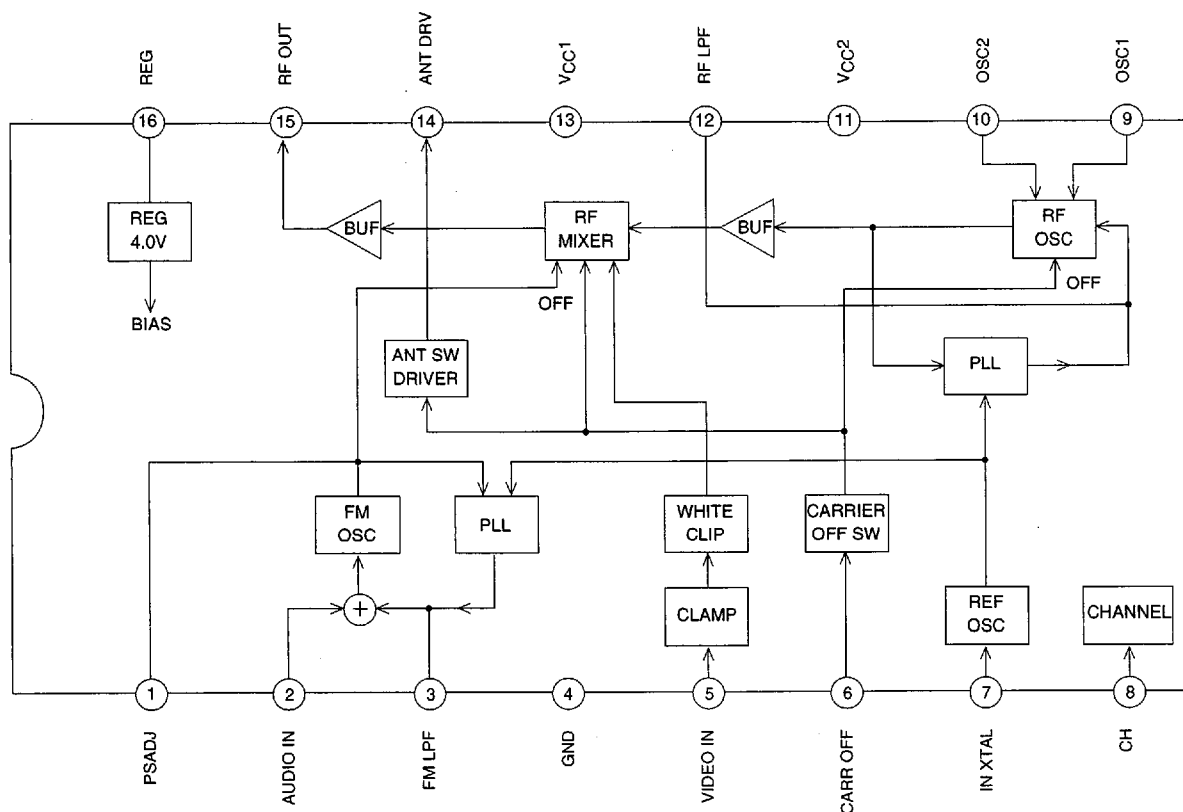
3035A-MFP16 (SOP16)

LA7160M

Operating Characteristics at Ta=25°C, VCC=5V

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--------------------------|--------------------|---|---------|-----|------|------|
| | | | min | typ | max | |
| Supply current 1 | I _{CC1} | No signal, pin 6, high | 20 | 28 | 36 | mA |
| Supply current 2 | I _{CC2} | 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 | M _p | 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 |

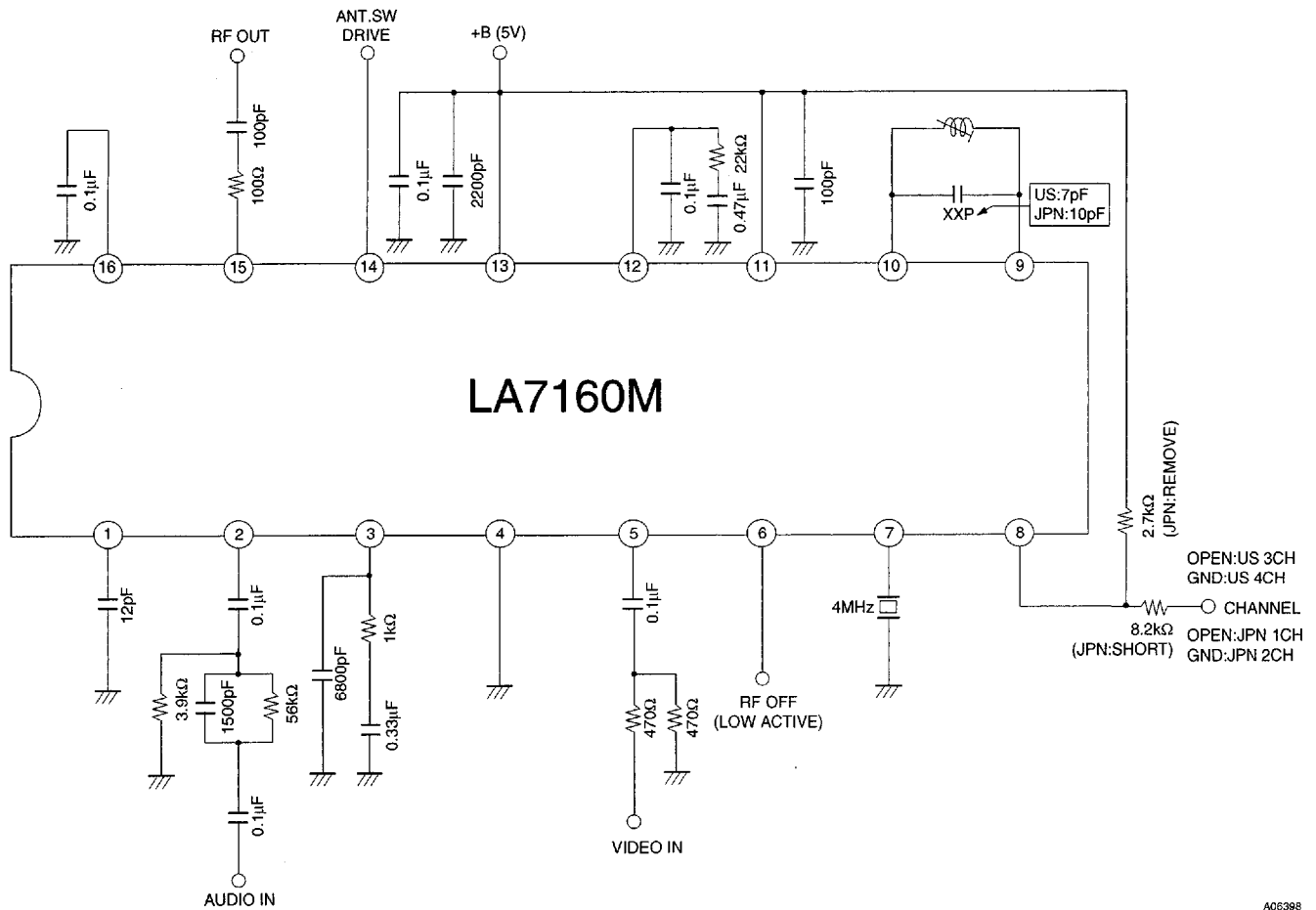
Equivalent Circuit Block Diagram



A06397

LA7160M

Test Circuit



A05398

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