



LV3400M

FM Multiplex Filter

Overview

The LV3400M is a filter IC designed for FM multiplex broadcast reception and is used in combination with the Sanyo LC72700 demodulation/error correction IC. The adoption of switched capacitor (SCF) technology means that frequency adjustment is not required and that the LV3400M provides stable operation.

Functions

- 76 kHz band-pass filter (Gaussian filter)
- 54 kHz high-pass filter
- 125 kHz low-pass filter
- Anti-aliasing filter
- Limiter circuit

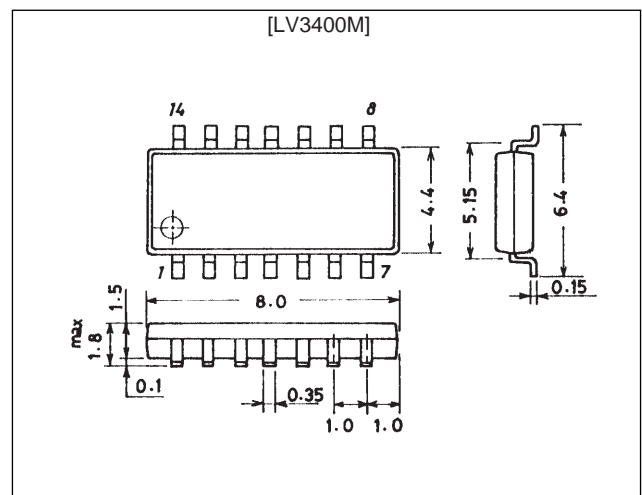
Features

- Adjustment-free, due to the use of SCF technology.
- Few external components are required.

Package Dimensions

unit: mm

3111-MFP14S



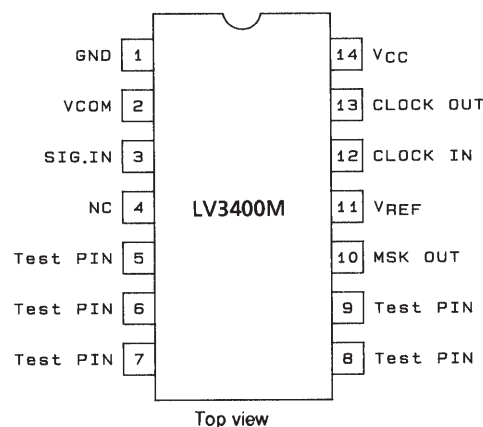
SANYO: MFP14S

Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V _{CC} max		6	V
Maximum input voltage	V ₃ , V ₇ , V ₁₂		-0.3 to V _{CC} + 0.3	V
Allowable power dissipation	Pd max		180	mW
Operating temperature	T _{opr}		-40 to +85	°C
Storage temperature	T _{stg}		-55 to +125	°C

Pin Assignment



A05604

LV3400M

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

Parameter	Symbol	Conditions	Ratings	Unit
Operating supply voltage range	V_{CC}		4.5 to 5.5	V
Input signal voltage range	V_{IN}	A composite signal corresponding to a 100% FM modulation level	200 to 300	mVrms
		$f_{IN} = 76\text{ kHz, CW}$	8 to 30	mVrms
Clock frequency	f_{CK}		3.60	MHz
Clock input voltage	V_{CK}		1.0 to V_{CC}	Vp-p

Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 5\text{ V}$, $f_{CK} = 3.6\text{ MHz}$, $V_{CK} = 1\text{ Vp-p}$

Parameter	Symbol	Conditions	min	typ	max	Unit
Current drain	I_{CCO}	The pin 14 current for a no-signal input to V_{IN}	3.8	6	8	mA
SCF block common voltage	V_2	The pin 2 voltage for a no-signal input to V_{IN}	2.1	2.3	2.5	V
Signal input resistance	R_{in3}	The pin 3 input resistance		36		k Ω
Clock input resistance	R_{in12}	The pin 12 input resistance		100		k Ω
[MSK Output]						
MSK input sensitivity	V_{3S}	The input level such that an MSK output with the same frequency is acquired when a 76-kHz CW is applied as V_{IN} .			4	mVrms
MSK output high level	V_{10H}	$V_{IN} = 76\text{ kHz, } 4\text{ mVrms, CW}$	4			V
MSK output low level	V_{10L}				0.4	V

Reference Characteristics

Parameter	Symbol	Conditions	Ratings	Unit
AAF cutoff frequency			300	kHz
HPF corner frequency			54	kHz
LPF cutoff frequency			125	kHz
BPF center frequency			76	kHz
BPF -3 dB frequency			19	kHz
Maximum in-band group delay time difference			± 5	μs

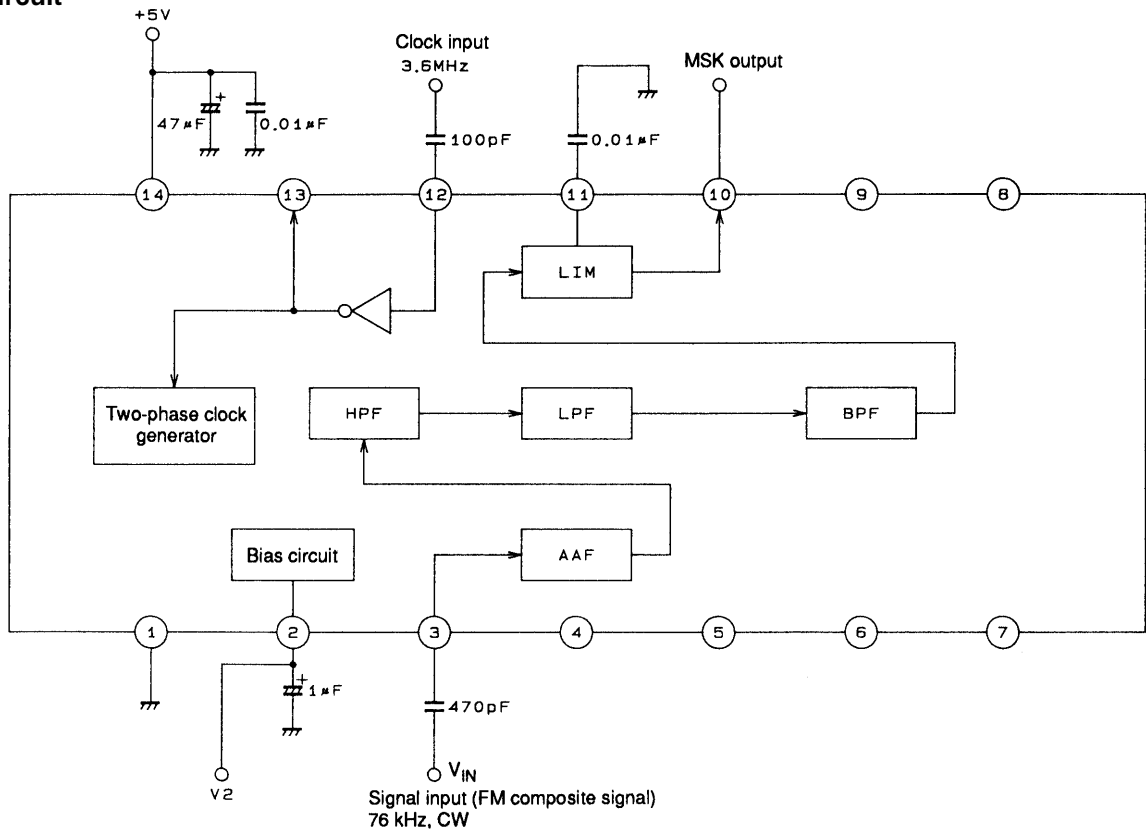
Pin Functions

PinNo.	Symbol	Description
1	GND	Ground
2	VCOM	SCF block common. A decoupling capacitor must be used.
3	SIG. IN	Signal input. Input an FM modulated signal (composite signal). A modulated signal between 200 and 300 mVrms should be input. The input sensitivity for a pure 76-kHz signal is 4 mVrms or lower.
10	MSK OUT	MSK output (CMOS output)
11	V_{REF}	Limiter reference voltage. A low-pass filter is formed by the internal resistance (which is about 10 k Ω) and an external capacitor.
12	CLK IN	3.6-MHz clock input. The DC bias at the CMOS inverter input, to which a 100-k Ω feedback resistor is connected, is about $V_{CC}/2$. The clock signal is input through a capacitor.
13	CLK OUT	The clock output that was wave-shaped by an inverter. This pin is normally left open.
14	V_{CC}	Power supply
4 to 9	NC, Test PIN	This pin must be left open.

Usage Notes

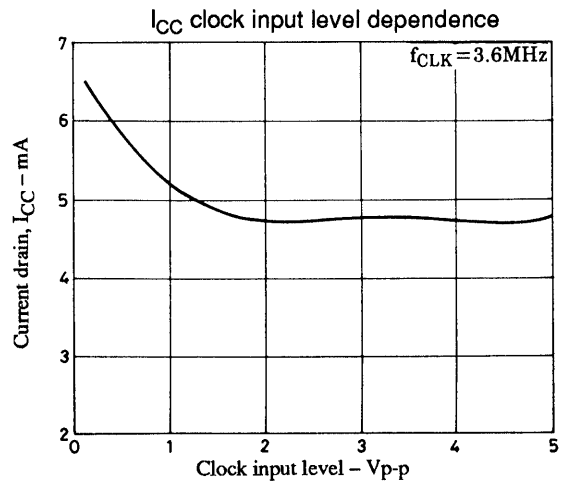
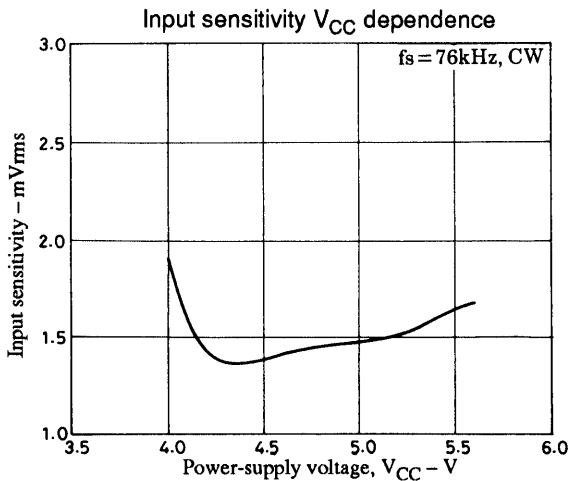
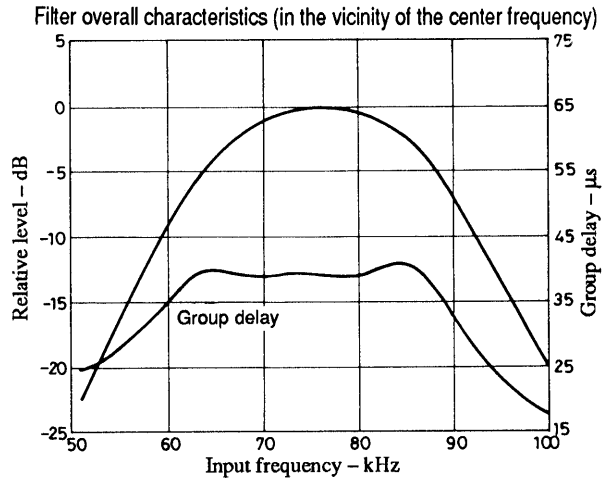
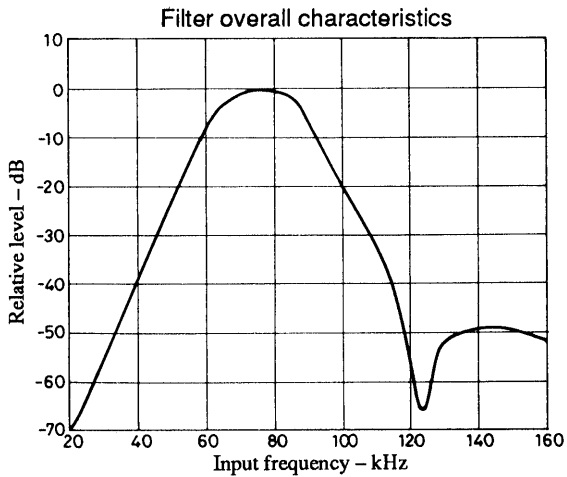
- Pins 4 to 9 and pin 13 are left open in normal use.
- The clock should be taken from the decoder (LC72700) clock output pin and input to pin through a capacitor of about 100 pF. Spurious radiation from the clock line can be reduced by inserting a resistor in the line and thus smoothing the rising and falling edges. This signal is then input to pin 12 through a capacitor.

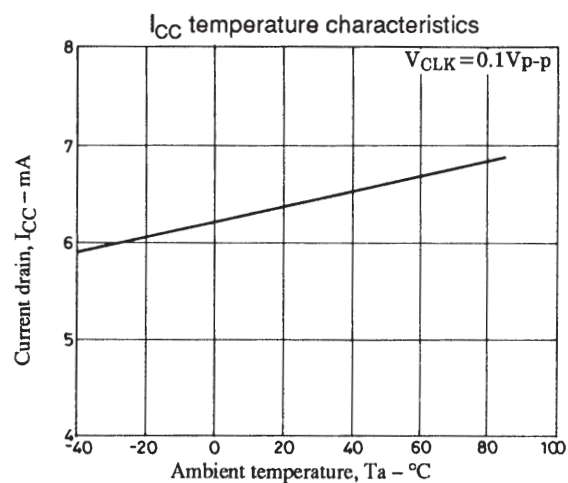
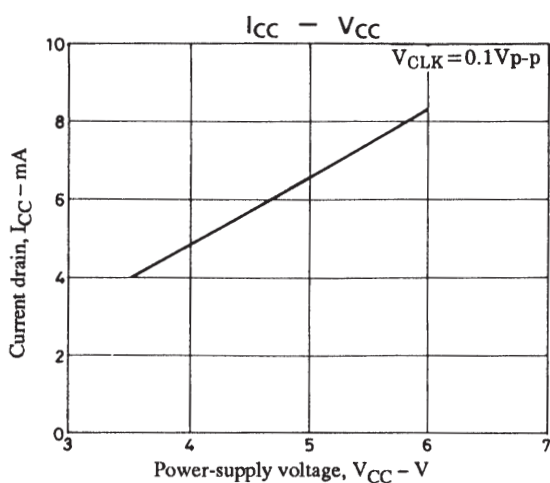
Test Circuit



A04451

Note: Pins 4 to 9 are left open.





- No products described or contained herein are intended for use in surgical implants, life-support systems, aerospace equipment, nuclear power control systems, vehicles, disaster/crime-prevention equipment and the like, the failure of which may directly or indirectly cause injury, death or property loss.
- Anyone purchasing any products described or contained herein for an above-mentioned use shall:
 - ① Accept full responsibility and indemnify and defend SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors and all their officers and employees, jointly and severally, against any and all claims and litigation and all damages, cost and expenses associated with such use:
 - ② Not impose any responsibility for any fault or negligence which may be cited in any such claim or litigation on SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors or any of their officers and employees jointly or severally.
- Information (including circuit diagrams and circuit parameters) herein is for example only; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

This catalog provides information as of December, 1997. Specifications and information herein are subject to change without notice.