

LM3075 FM Detector/Limiter and Audio Preamplifier

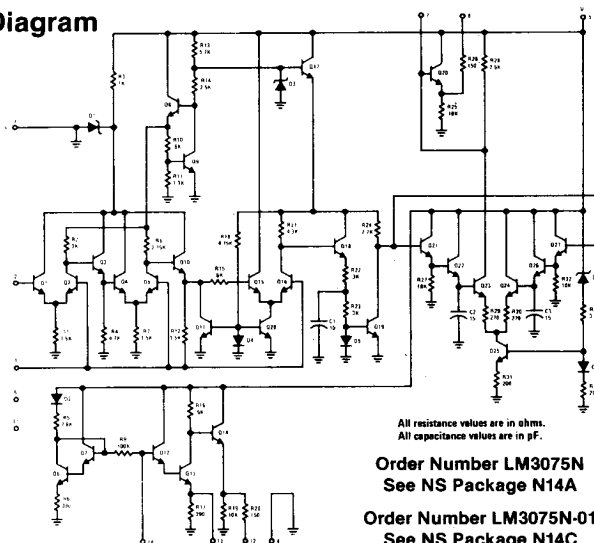
General Description

The LM3075 is a monolithic integrated circuit FM detector/limiter and audio preamplifier that requires a minimum of external components for operation. It includes three stages of IF limiting and a differential-peak-detection circuit.

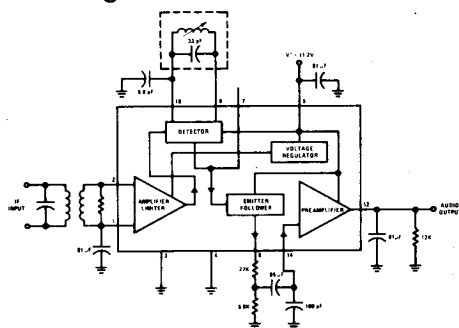
Features

- A direct replacement for the CA3075
- Simple detector alignment: one coil
- Sensitivity: 3 dB limiting voltage 250 μ V typical at 10.7 MHz
- Low harmonic distortion
- Excellent AM rejection 55 dB typ. at 10.7 MHz
- Internal audio preamplifier

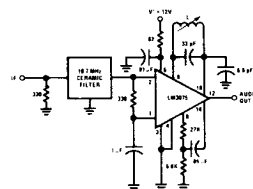
Schematic Diagram



Block Diagram



Typical Application



Absolute Maximum Ratings

Power Supply Current (Pin 5)	30 mA
Supply Voltage (Pin 5)	12.5V
Power Dissipation (Note 1)	715 mW

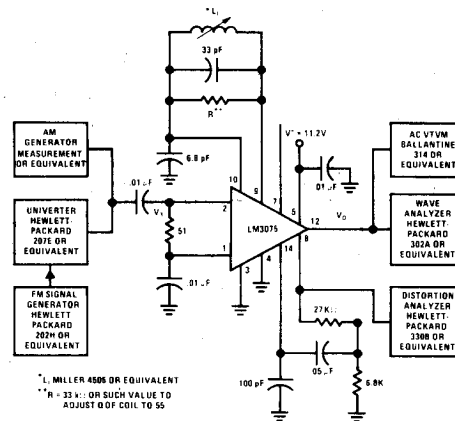
Operating Temperature Range	-40°C to +85°C
Storage Temperature Range	-65°C to +150°C
Lead Temperature (Soldering, 10 seconds)	300°C

Electrical Characteristics $T_A = 25^\circ\text{C}$

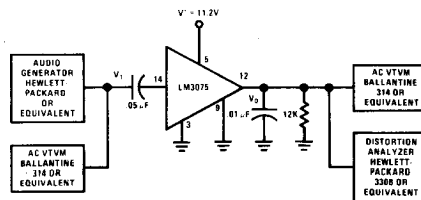
PARAMETER	SYMBOL	TEST CIRCUIT	CONDITIONS	LIMITS			UNITS
				MIN	TYP	MAX	
STATIC CHARACTERISTICS							
Supply Current	I_S		$V_{CC} = 8.5V$ $V_{CC} = 11.2V$ $V_{CC} = 12.5V$	8.5	15 17.5 19	29	mA mA mA
Detector Output Level (High)	V_7				6.1		V
Detector Output Level (Low)	V_8		$V_{CC} = 11.2V$		5.4		V
Audio Amplifier Output Level	V_{12}				5.2		V
DYNAMIC CHARACTERISTICS AT $V^+ = 11.2V$, $I_0 = 10.7\text{ MHz}$, $\Delta f = \pm 75\text{ kHz}$, $f_m = 400\text{ Hz}$							
Input Limiting Threshold	$V_{IN(LIM)}$	1			250	600	μV
AM Rejection	AMR	1	AM: 1 kHz @ 30% $V_{IN} = 100\text{ mV}$		55		dB
Recovered AF Voltage (At Terminal 12)	V_O (AF)	1			1.5		V
Total Harmonic Distortion	T_{HD}	1			1	2	%
Audio Preamplifier Voltage Gain	$A_{V(af)}$	2	$V_{IN} = 100\text{ mV}$, $f = 400\text{ Hz}$		21		dB
Total Harmonic Distortion	T_{HD}	2	$V_{OUT} = 2V$, $f = 400\text{ Hz}$		15	5	%

Note 1: For operation in ambient temperatures above 25°C , the device must be derated based on a 150°C maximum junction temperature and a thermal resistance of 175°C/W junction to ambient.

Test Circuits



TEST CIRCUIT 1



TEST CIRCUIT 2