

ORDERING INFORMATION

Device	Temperature Range	Package
MC1351P	0°C to +75°C	Plastic DIP

MC1351

WIDE-BAND FM-AMPLIFIER; LIMITER, DETECTOR, AND AUDIO AMPLIFIER

... designed for IF limiting, detection, audio preamplifier and driver for the sound portion of a TV receiver.

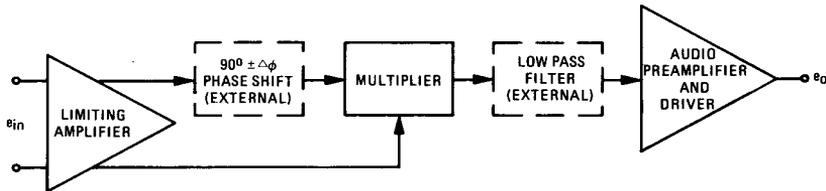
- Excellent Limiting with 80 μ V (rms) Input Signal typ
- Large Output-Voltage Swing – to 3.5 V (rms) typ
- High IF Voltage Gain – 65 dB typ
- Zener Power-Supply Regulation Built-In
- Short-Circuit Protection
- A Coincidence Discriminator that Requires Only One RLC Phase Shift Network
- Preamplifier to Drive a Single External-Transistor Class-A Audio-Output Stage

TV SOUND CIRCUIT
MONOLITHIC SILICON
INTEGRATED CIRCUIT

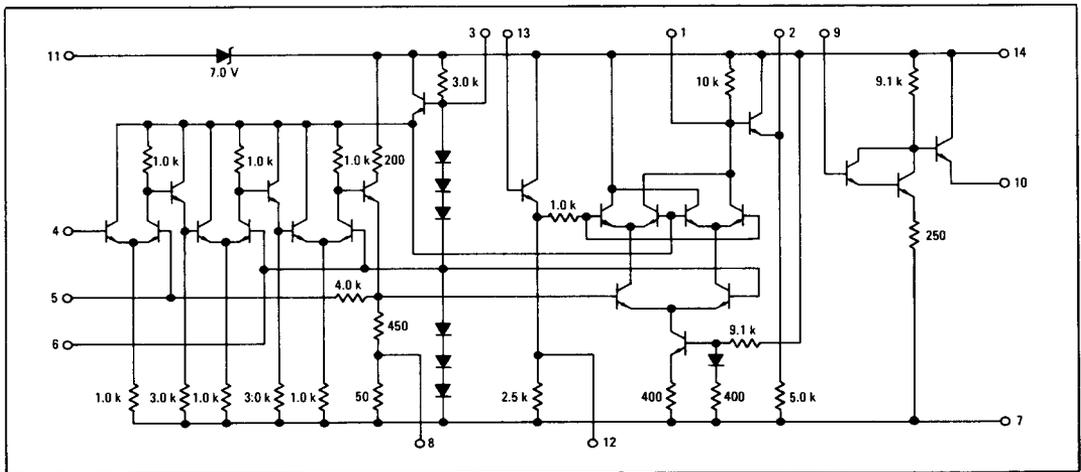


P SUFFIX
PLASTIC PACKAGE
CASE 646

BLOCK DIAGRAM



CIRCUIT SCHEMATIC



MAXIMUM RATINGS ($T_A = +25^\circ$ unless otherwise noted)

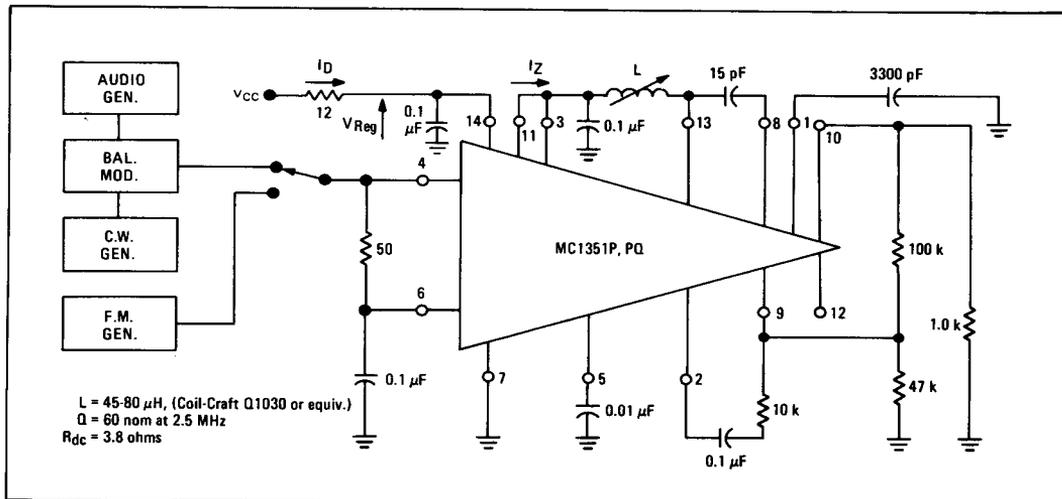
Rating	Symbol	Value	Unit
Power Supply Voltage	V_{CC}	+16	Vdc
Input Voltage	V_{in}	0.7	V(rms)
Power Dissipation (Package Limitation) Plastic Packages Derate above +25°C	P_D $1/\theta_{JA}$	625 5.0	mW mW/°C
Operating Temperature Range	T_A	0 to +75	°C
Storage Temperature Range	T_{stg}	-65 to +150	°C

ELECTRICAL CHARACTERISTICS ($V_{CC} = 12$ Vdc, $T_A = +25^\circ$ C, $f = 4.5$ MHz, Deviation = ± 25 kHz unless otherwise noted.)

Characteristic	Min	Typ	Max	Unit
Input Voltage (-3.0 dB Limiting)	-	80	160	μ V(rms)
AM Rejection ($V_{in} = 20$ mV(rms), AM = 30%) (See Note 1)	-	45	-	dB
AMR = 20 log $\frac{V_{OFM}}{V_{OAM}}$ { $f = 4.5$ MHz, Deviation = ± 25 kHz, $Q_L = 24$ $f = 5.5$ MHz, Deviation = ± 50 kHz, $Q_L = 30$.	-	45	-	dB
Total Harmonic Distortion ($Q_L = 24$) (See Note 1) (7.5 kHz Deviation)	-	1.0	-	%
Maximum Undistorted Audio Output Voltage (Pin 10) (See Note 1) (Audio Gain Adjusted Externally) ($Q = 24$)	-	3.5	-	V(rms)
Recovered Audio (Pin 2) (See Note 1) ($f = 4.5$ MHz, Deviation = ± 25 kHz, $Q_L = 24$) ($f = 5.5$ MHz, Deviation = ± 50 kHz, $Q_L = 30$)	0.35 -	0.50 0.80	- -	V(rms)
Audio Preampifier Open Loop Gain	-	25	-	dB
IF Voltage Gain	-	65	-	dB
Parallel Input Resistance	-	9.0	-	k Ω
Parallel Input Capacitance	-	6.0	-	pF
Nominal Zener Voltage ($I_Z = 5.0$ mAdc)	-	11.6	-	Vdc
Power Supply Current ($I_Z = 5.0$ mAdc)	-	31	-	mAdc
Power Dissipation ($I_Z = 5.0$ mAdc)	-	300	375	mW

Note 1: Q_L is loaded circuit Q.

FIGURE 1 - TEST CIRCUIT ($V_{CC} = +12$ Vdc, $T_A = +25^\circ$ C)



TYPICAL CHARACTERISTICS

FIGURE 2 – DETECTED AUDIO OUTPUT versus INPUT LEVEL @ $f = 4.5 \text{ MHz}, \pm 25 \text{ kHz DEVIATION}$

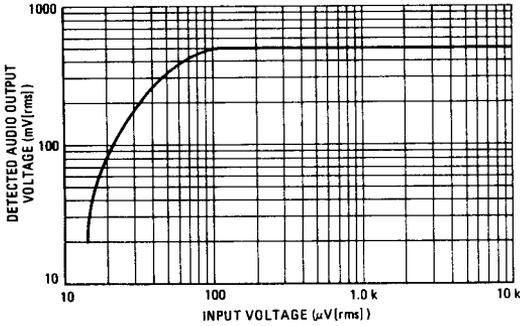


FIGURE 3 – DETECTED AUDIO OUTPUT versus INPUT LEVEL @ $f = 5.5 \text{ MHz}, \pm 50 \text{ kHz DEVIATION}$

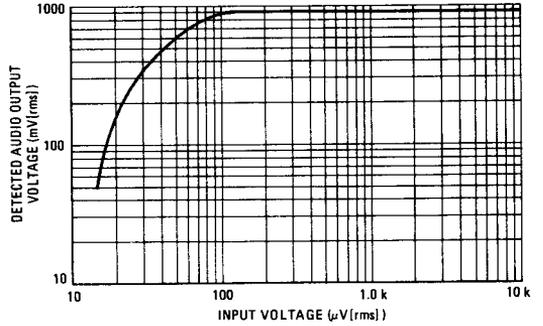


FIGURE 4 – DETECTOR "S" CURVE @ $f = 4.5 \text{ MHz}, \text{ BW} = 200 \text{ kHz}, Q = 24$

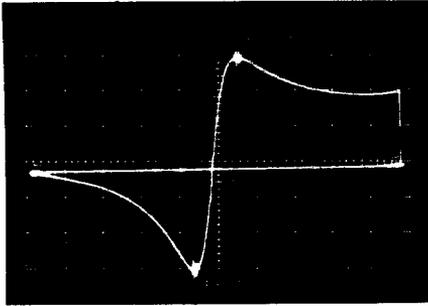
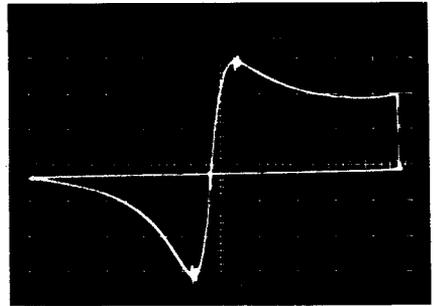


FIGURE 5 – DETECTOR "S" CURVE @ $f = 5.5 \text{ MHz}, \text{ BW} = 220 \text{ kHz}, Q = 30$



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FIGURE 6 – IF VOLTAGE GAIN versus FREQUENCY

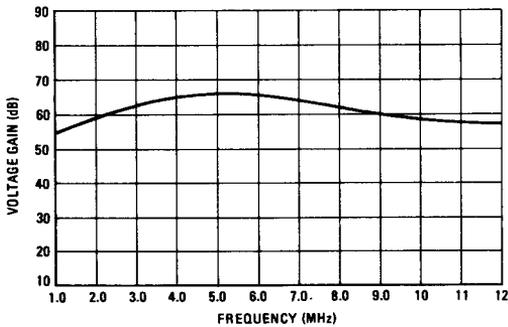


FIGURE 7 – AM REJECTION

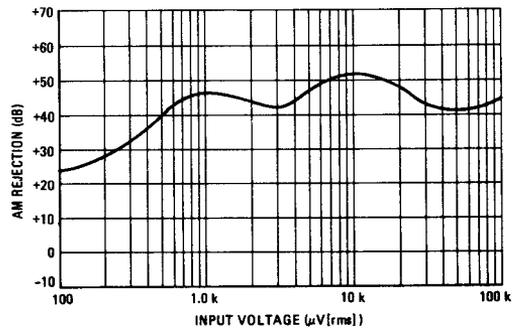


FIGURE 8 - 4.5 MHz TYPICAL APPLICATION

