ORDERING INFORMATION

Device	Temperature Range	Package
MC1358P	−20°C to +75°C	Plastic DIP

MC1358

TV SOUND IF AMPLIFIER

. . . a versatile monolithic device incorporating IF limiting, detection, electronic attenuation, audio amplifier, and audio driver capabilities.

- Direct Replacement for the CA3065
- Differential Peak Detector Requiring a Single Tuned Circuit
- Electronic Attenuator Replaces Conventional ac Volume Control – Range > 60 dB
- Excellent AM Rejection @ 4.5 and 5.5 MHz
- High Stability
- Low Harmonic Distortion
- Audio Drive Capability – 6.0 mAp-p
- Minimum Undesirable Output Signal @ Maximum Attenuation

IF AMPLIFIER, LIMITER, FM DETECTOR, AUDIO DRIVER, ELECTRONIC ATTENUATOR

SILICON MONOLITHIC INTEGRATED CIRCUIT

P SUFFIX
PLASTIC PACKAGE
CASE 646-05

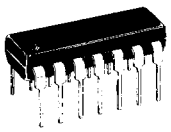
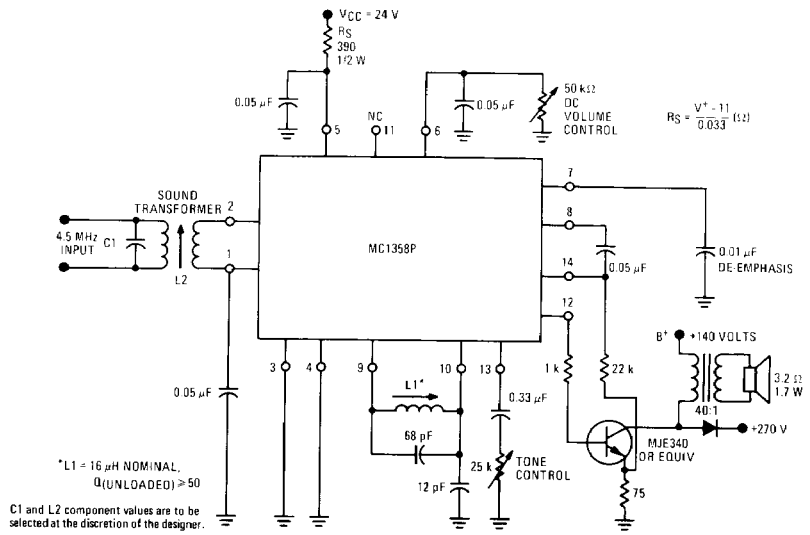


FIGURE 1 – TYPICAL TV APPLICATION CIRCUIT



MAXIMUM RATINGS (T_A = +25°C unless otherwise noted)

Rating	Value	Unit
Input Signal Voltage (Pins 1 and 2)	±3.0	Vdc
Power Supply Current	50	mA
Power Dissipation (Package Limitation) Plastic Packages Derate above T_A = +25°C	 625 5.0	 mW mW/°C
Operating Temperature Range (Ambient)	-20 to +75	°C
Storage Temperature Range	-65 to +150	°C

ELECTRICAL CHARACTERISTICS (V_{CC} = 24 Vdc, T_A = +25°C unless otherwise noted).

Characteristic	Pin	Min	Typ	Max	Unit
Regulated Voltage	5	10.3	11	12.2	Vdc
DC Supply Current (V^+ = 9 Vdc, R_S = 0)	5	10	16	24	mA
Quiescent Output Voltage	12	–	5.1	–	Vdc

DYNAMIC CHARACTERISTICS (V_{CC} = 24 Vdc, T_A = +25°C unless otherwise noted).

Characteristic	Min	Typ	Max	Unit
IF AMPLIFIER AND DETECTOR				
f_o = 4.5 MHz, Δf = ±25 kHz				
AM Rejection* (V_{in} = 10 mV [rms])	40	51	–	dB
Input Limiting Threshold Voltage	–	200	400	μV(rms)
Recovered Audio Output Voltage (V_{in} = 10 mV [rms])	0.5	0.70	–	V(rms)
Output Distortion (V_{in} = 10 mV [rms])	–	0.4	2.0	%
f_o = 5.5 MHz, Δf = ±50 kHz				
AM Rejection* (V_{in} = 10 mV [rms])	40	53	–	dB
Input Limiting Threshold Voltage	–	200	400	μV(rms)
Recovered Audio Output Voltage (V_{in} = 10 mV [rms])	0.5	0.91	–	V(rms)
Output Distortion (V_{in} = 10 mV [rms])	–	0.9	–	%
Input Impedance Components (f = 4.5 MHz, measurement between Pins 1 and 2) Parallel Input Resistance Parallel Input Capacitance	 – –	 17 4.0	 – –	 kΩ pF
Output Impedance Components (f = 4.5 MHz, measurement between Pin 9 and Gnd) Parallel Output Resistance Parallel Output Capacitance	 – –	 3.25 3.6	 – –	 kΩ pF
Output Resistance, Detector Pin 7 Pin 8	 – –	 7.5 250	 – –	 kΩ Ω
ATTENUATOR				
Volume Reduction Range (See Figure 8) (dc Volume Control = ∞)	60	–	–	dB
Maximum Undesirable Signal (See Note 1) (dc Volume Control = ∞)	–	0.07	1.0	mV
AUDIO AMPLIFIER				
Voltage Gain (V_{in} = 0.1 V(rms), f = 400 Hz)	17.5	20	–	dB
Total Harmonic Distortion (V_o = 2.0 V(rms), f = 400 Hz)	–	2.0	–	%
Output Voltage (THD = 5%, f = 400 Hz)	2.0	3.0	–	V(rms)
Input Resistance (f = 400 Hz)	–	70	–	kΩ
Output Resistance (f = 400 Hz)	–	270	–	Ω

*100% FM, 30% AM Modulation.

Note 1. Undesirable signal is measured at pin 8 when volume control is set for minimum output.

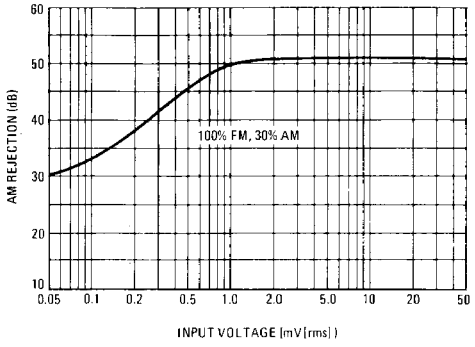
10

TYPICAL CHARACTERISTICS

(V_{CC} = 24 Vdc, T_A = +25°C unless otherwise noted)

(f_o = 4.5 MHz)

FIGURE 2 – AM REJECTION



(f_o = 5.5 MHz)

FIGURE 3 – AM REJECTION

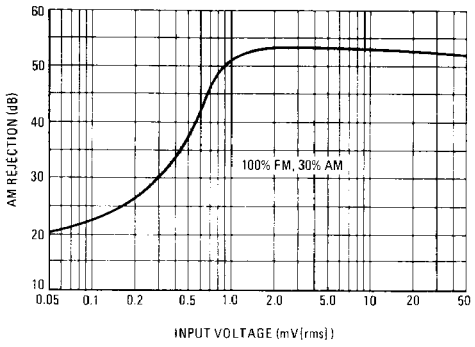


FIGURE 4 – DETECTED AUDIO OUTPUT

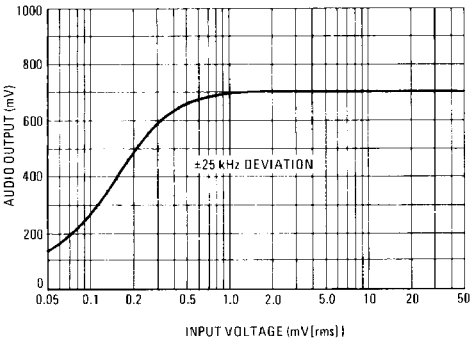


FIGURE 5 – DETECTED AUDIO OUTPUT

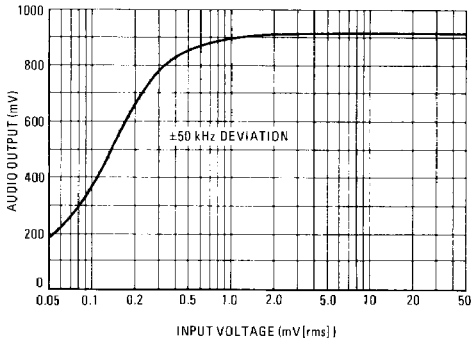


FIGURE 6 – IF AMPLIFIER AND DETECTOR THD

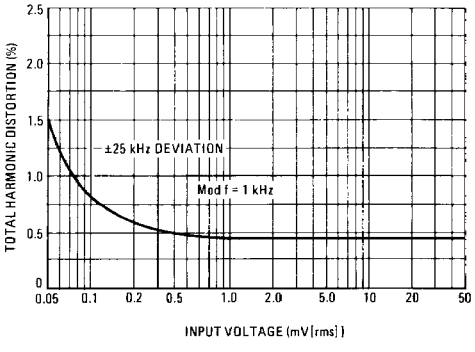
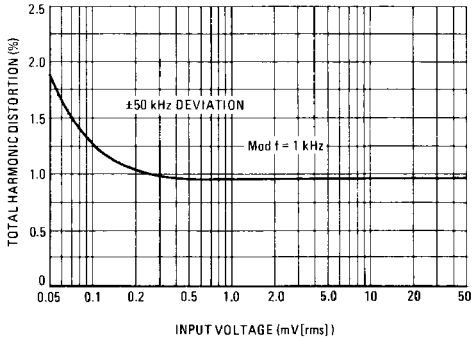


FIGURE 7 – IF AMPLIFIER AND DETECTOR THD



TYPICAL CHARACTERISTICS (continued)

FIGURE 8 – GAIN REDUCTION OF ATTENUATOR

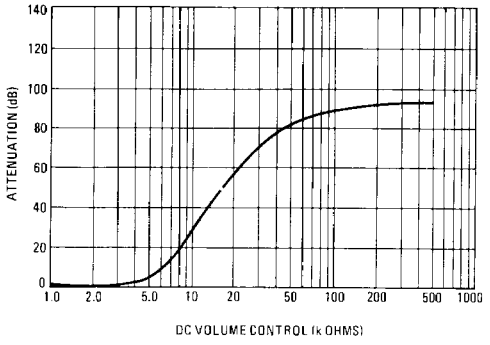


FIGURE 9 – AUDIO AMPLIFIER THD

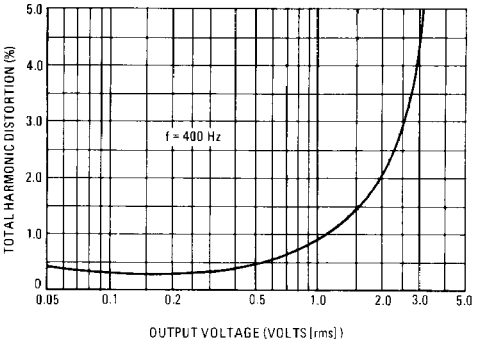


FIGURE 10 – IF FREQUENCY RESPONSE

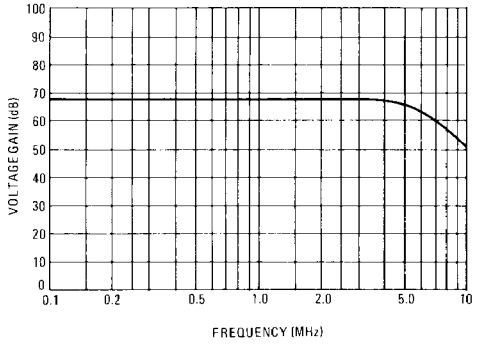


FIGURE 11 – IF FREQUENCY RESPONSE TEST CIRCUIT

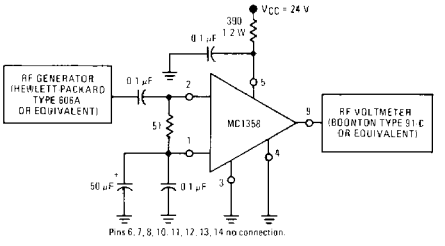


FIGURE 12 – AM REJECTION, DETECTED AUDIO, THD, ATTENUATION TEST CIRCUIT

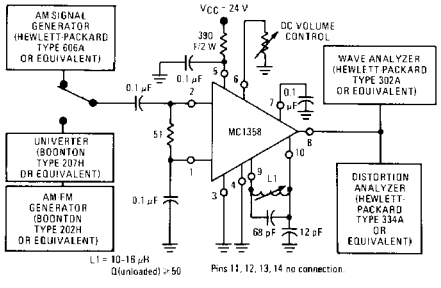
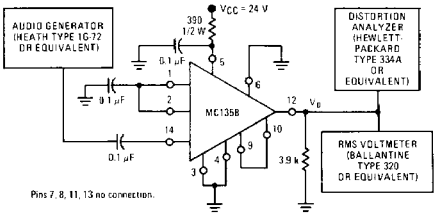


FIGURE 13 – AUDIO VOLTAGE GAIN, AUDIO THD TEST CIRCUIT



10

FIGURE 14 – CIRCUIT SCHEMATIC