Communication Circuits

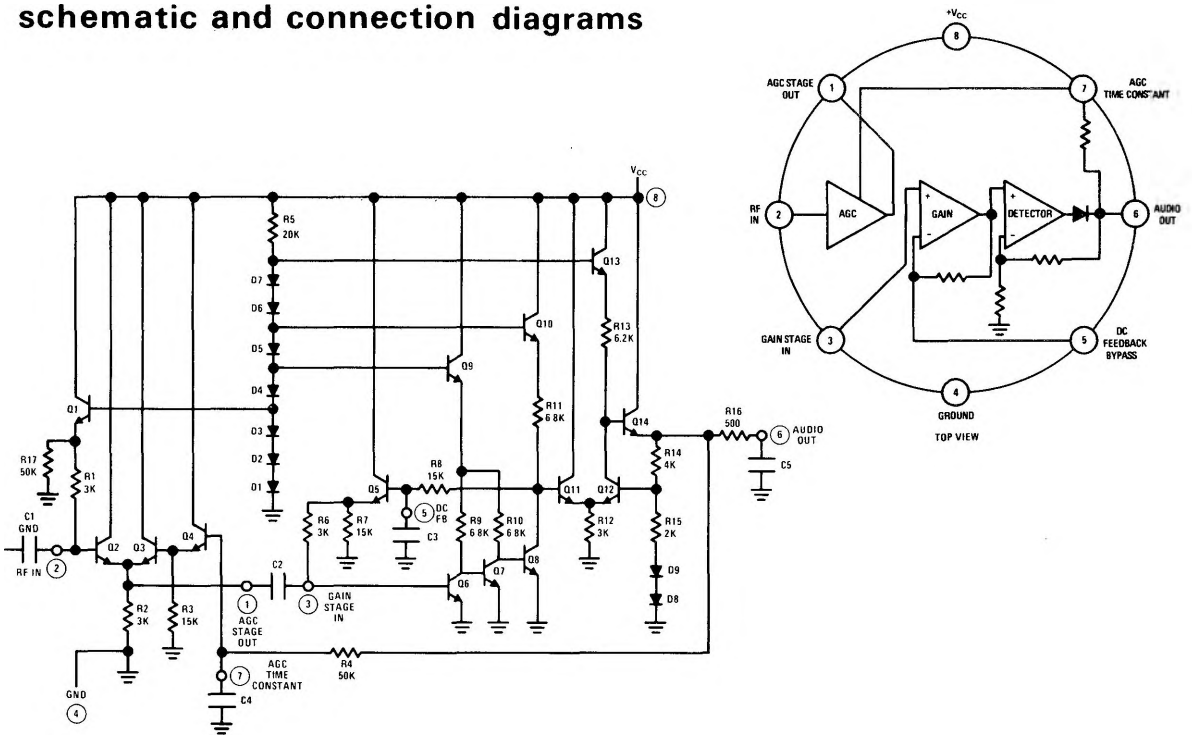
LM172/LM272/LM372 am if strip

general description

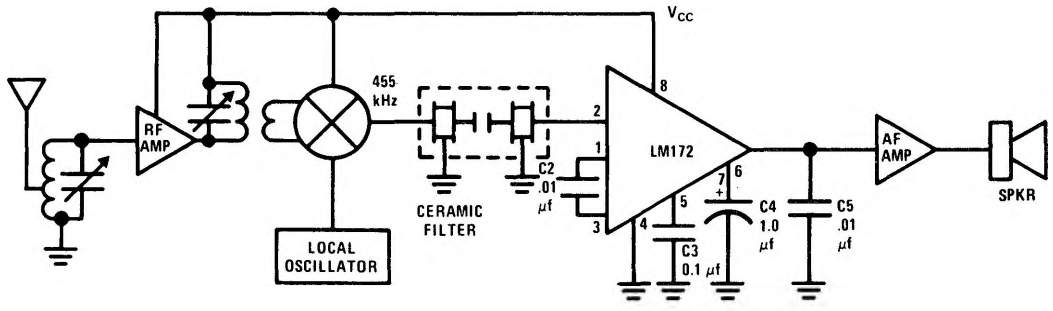
The LM172/LM272/LM372 is a broadband AM receiver subsystem, including a high gain amplifier, an active detector, and self-contained automatic gain control. It is intended for IF or TRF applications from 50 kHz to 2 MHz. Bandpass shaping is performed by a single, external filter, which may be ceramic, crystal, mechanical, or LC, having single or multiple poles. The IF strip features:

- AGC Range: 60 dB
- Audio Output of 0.8V p-p for 80% modulated inputs, at carrier levels as low as 50 μV rms.
- Total dissipation only 8.4 mW from +6V supply, usable with supply up to +15V.
- AGC time constant and audio frequency response selected by choice of external capacitors.
- Internal supply regulators eliminate individual stage decoupling.
- AGC voltage available to drive receiver "front end."

schematic and connection diagrams



typical application



absolute maxium ratings

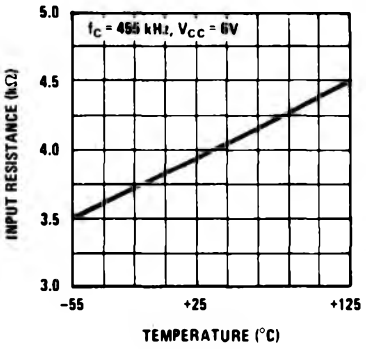
Supply Voltage Range		+6V to +15V
Storage Temperature		−65°C to +150°C
Operating Temperature	LM172	−55°C to +125°C
	LM272	−25°C to +75°C
	LM372	0°C to +70°C
RF Input Level, Pin 2		500 mV rms

electrical characteristics (T_A = 25°C)

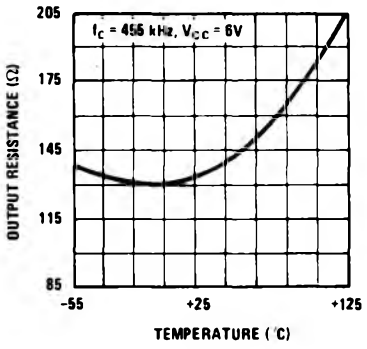
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Power Supply Drain	I_{ps}	V_{CC} = 6V, Input = 50 mV f = 455 kHz		1.4		mA
		V_{CC} = 6V, Input = 50 μV f = 455 kHz		1.7		mA
		V_{CC} = 15V, Input = 50 mV f = 455 kHz				
		LM172/272		2.5	2.65	mA
		LM372		2.5	3.2	mA
AGC Range	AGCR	V_{CC} = 6V, f = 455 kHz				
		LM172/272	50	69		dB
		LM372	47	69		dB
AGC Threshold	V_{IN}(th)	V_{CC} = 6V, f = 455 kHz		50		μV, rms
Maximum Usable Frequency	MUF	V_{CC} = 6V		2.0		MHz
Audio Output Voltage	V_{OUT}	V_{IN} Between 50 μV and 50 mV, 455 kHz, 80% modulated by 100 Hz,				
		V_{CC} = 6V				
		LM172/272	0.4	0.8		V, p-p
		LM372	0.35	0.8		V, p-p
		V_{CC} = 15V				
		LM172/272	0.45	0.9		V, p-p
		LM372	0.40	0.9		V, p-p

input-output impedances

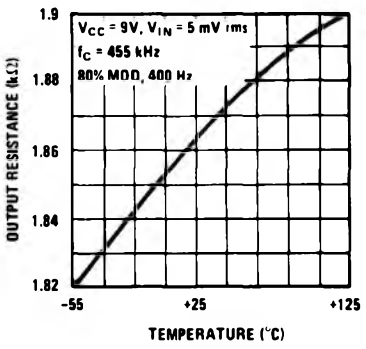
AGC Stage Input Resistance vs Temperature



AGC Stage Output Resistance vs Temperature

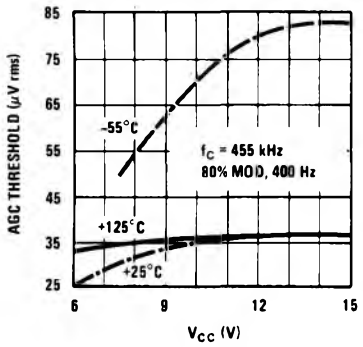


Detector Output Resistance vs Temperature

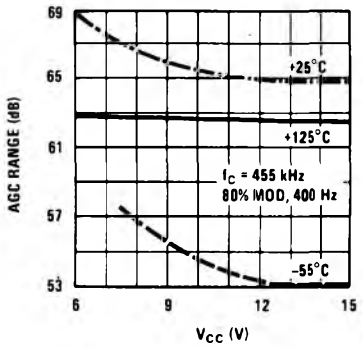


typical characteristics

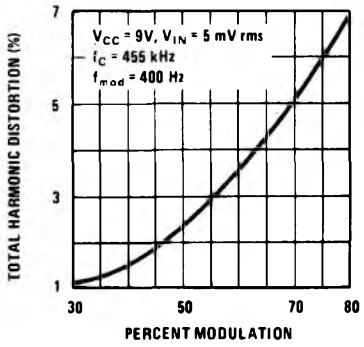
AGC Threshold vs V_{CC}



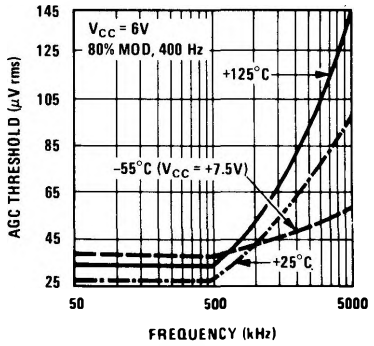
AGC Range vs V_{CC}



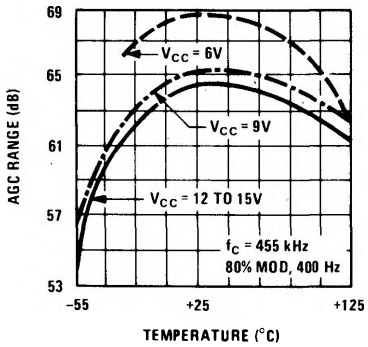
Audio Distortion vs % Modulation



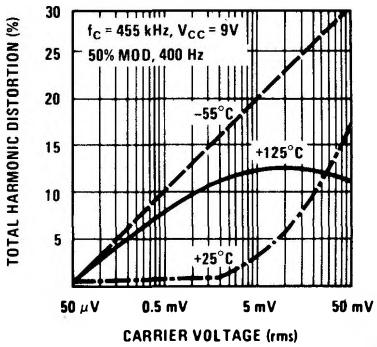
AGC Threshold vs Carrier Frequency



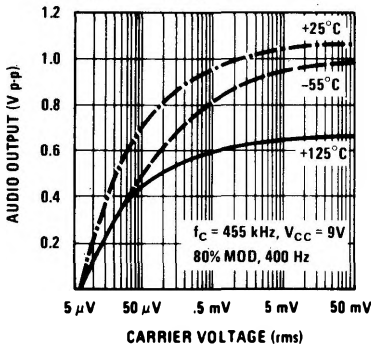
AGC Range vs Temperature



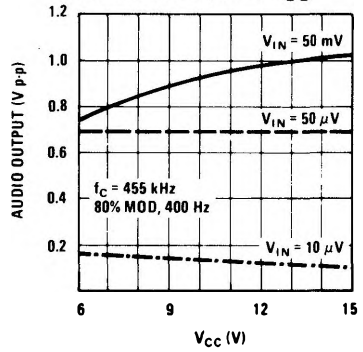
Audio Distortion vs Input Carrier Voltage



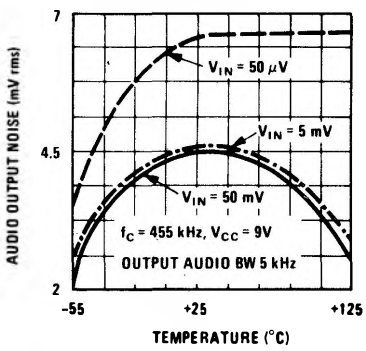
P-P Audio Output vs Input Carrier Voltage



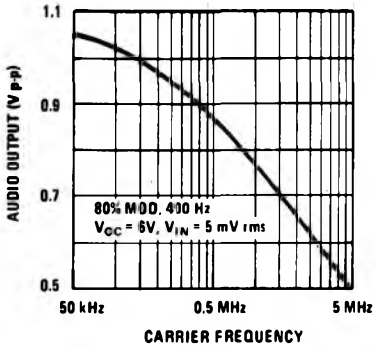
P-P Audio Output vs V_{CC}



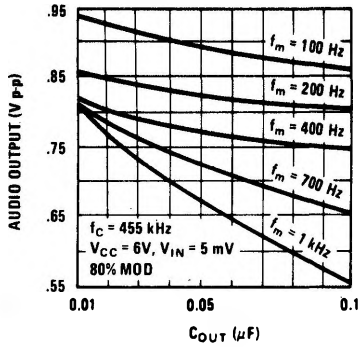
Audio Output Noise vs Temperature



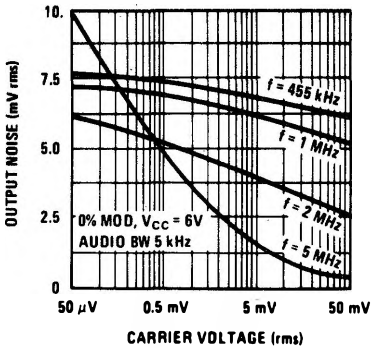
P-P Audio Output vs Carrier Frequency



P-P Audio Output vs Output Smoothing Capacitance

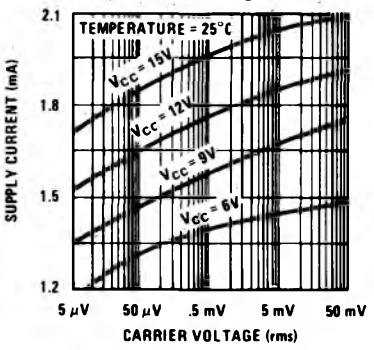


Audio Output Noise vs Input Carrier Voltage

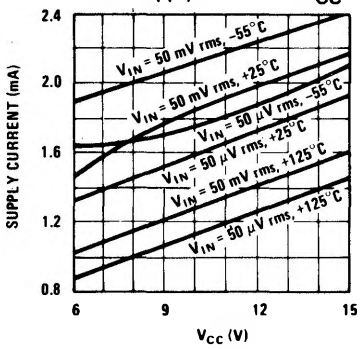


power supply characteristics

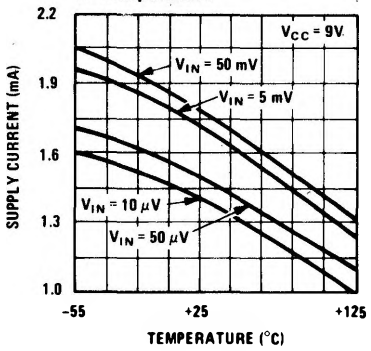
Power Supply Current vs
Input Carrier Voltage



Power Supply Current vs V_{CC}



Power Supply Current
vs Temperature



Minimum Operating V_{CC}
vs Temperature