

**MC3361**

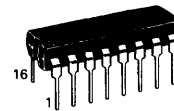
**LOW POWER  
 FM IF**

**SILICON MONOLITHIC  
 INTEGRATED CIRCUIT**

**LOW POWER NARROW BAND FM IF**

... includes Oscillator, Mixer, Limiting Amplifier, Quadrature Discriminator, Active Filter, Squelch, Scan Control, and Mute Switch. The MC3361 is designed for use in FM dual conversion communications equipment.

- Operates From 2.0 V to 8.0 V Supply
- Low Drain Current 4.2 mA Typ @  $V_{CC} = 4.0$  Vdc
- Excellent Sensitivity: Input Limiting Voltage —  
 - 3.0 dB = 2.0  $\mu$ V Typ
- Low Number of External Parts Required
- Operating Frequency Up to 60 MHz

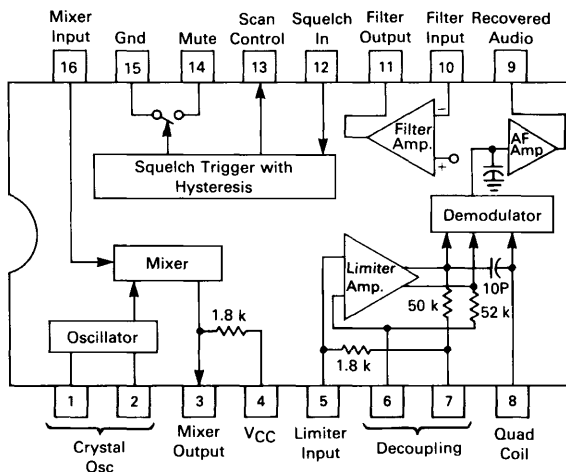


**P SUFFIX**  
 PLASTIC PACKAGE  
 CASE 648-08

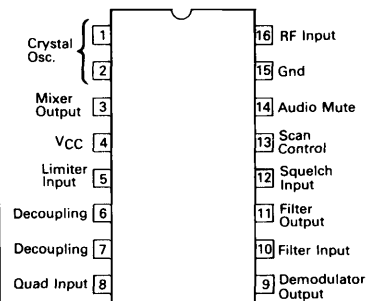


**D SUFFIX**  
 PLASTIC PACKAGE  
 CASE 751B-03  
 SO-16

**FIGURE 1 — FUNCTIONAL BLOCK DIAGRAM**



**PIN CONNECTIONS**



**MAXIMUM RATINGS** ( $T_A = 25^\circ\text{C}$ , unless otherwise noted)

Rating	Pin	Symbol	Value	Unit
Power Supply Voltage	4	$V_{CC(\text{max})}$	10	Vdc
Operating Supply Voltage Range	4	$V_{CC}$	2.0 to 8.0	Vdc
Detector Input Voltage	8	—	1.0	V <sub>p-p</sub>
Input Voltage ( $V_{CC} \geq 4.0$ Volts)	16	$V_{16}$	1.0	V <sub>rms</sub>
Mute Function	14	$V_{14}$	-0.5 to +5.0	V <sub>pk</sub>
Junction Temperature	—	$T_J$	150	$^\circ\text{C}$
Operating Ambient Temperature Range	—	$T_A$	-30 to +70	$^\circ\text{C}$
Storage Temperature Range	—	$T_{\text{stg}}$	-65 to +150	$^\circ\text{C}$

**ELECTRICAL CHARACTERISTICS** ( $V_{CC} = 4.0$  Vdc,  $f_o = 10.7$  MHz,  $\Delta f = \pm 3.0$  kHz,  $f_{\text{mod}} = 1.0$  kHz,  $T_A = 25^\circ\text{C}$ , unless otherwise noted.)

Characteristic	Pin	Min	Typ	Max	Unit
Drain Current (No signal)	4	—	—	—	mA
Squelch Off		—	4.2	7.0	
Squelch On		—	5.2	9.0	
Recovered Audio Output Voltage ( $V_{iN} = 10$ mV <sub>rms</sub> )	9	100	150	270	mV <sub>rms</sub>
Input Limiting Voltage (-3.0 dB Limiting)	16	—	2.0	6.0	$\mu\text{V}$
Total Harmonic Distortion	9	—	0.8	—	%
Recovered Output Voltage (No Input Signal)	9	60	150	—	mV <sub>rms</sub>
Drop Voltage AF Gain Loss	9	-8.0	-0.5	—	dB
Detector Output Impedance	—	—	450	—	$\Omega$
Filter Gain (10 kHz) ( $V_{iN} = 0.3$ mV <sub>rms</sub> )	—	40	49	—	dB
Filter Output Voltage	11	—	1.7	—	Vdc
Mute Function Low	14	—	10	50	$\Omega$
Mute Function High	14	1.0	10	—	M $\Omega$
Scan Function Low (Mute Off) ( $V_{12} = 1.0$ Vdc)	13	—	0	0.5	Vdc
Scan Function High (Mute On) ( $V_{12} = \text{Gnd}$ )	13	3.0	3.5	—	Vdc
Trigger Hysteresis	—	—	45	100	mV
Mixer Conversion Gain	3	—	28	—	dB
Mixer Input Resistance	16	—	3.3	—	k $\Omega$
Mixer Input Capacitance	16	—	2.2	—	pF

FIGURE 2 — TEST CIRCUIT

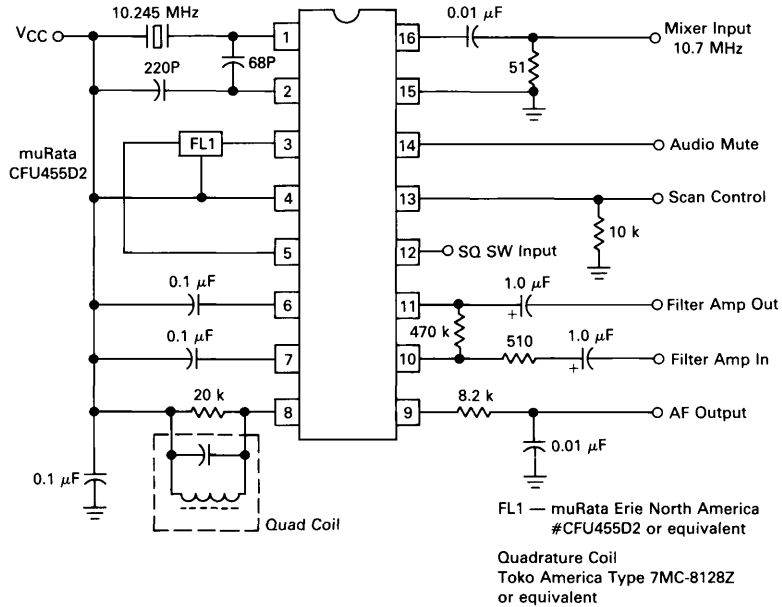


FIGURE 3 — AUDIO OUTPUT, DISTORTION

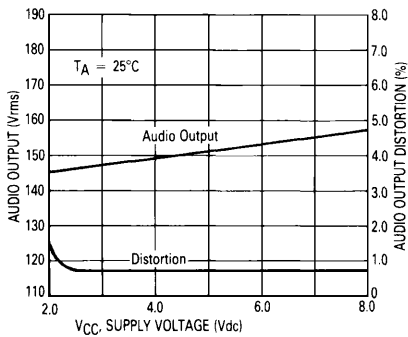


FIGURE 4 — AUDIO OUTPUT, DISTORTION

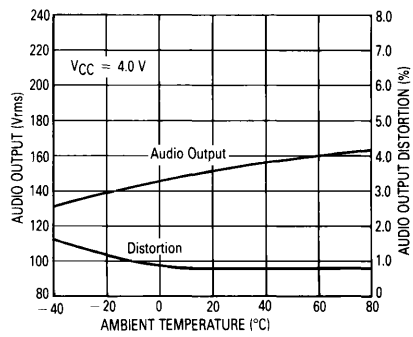
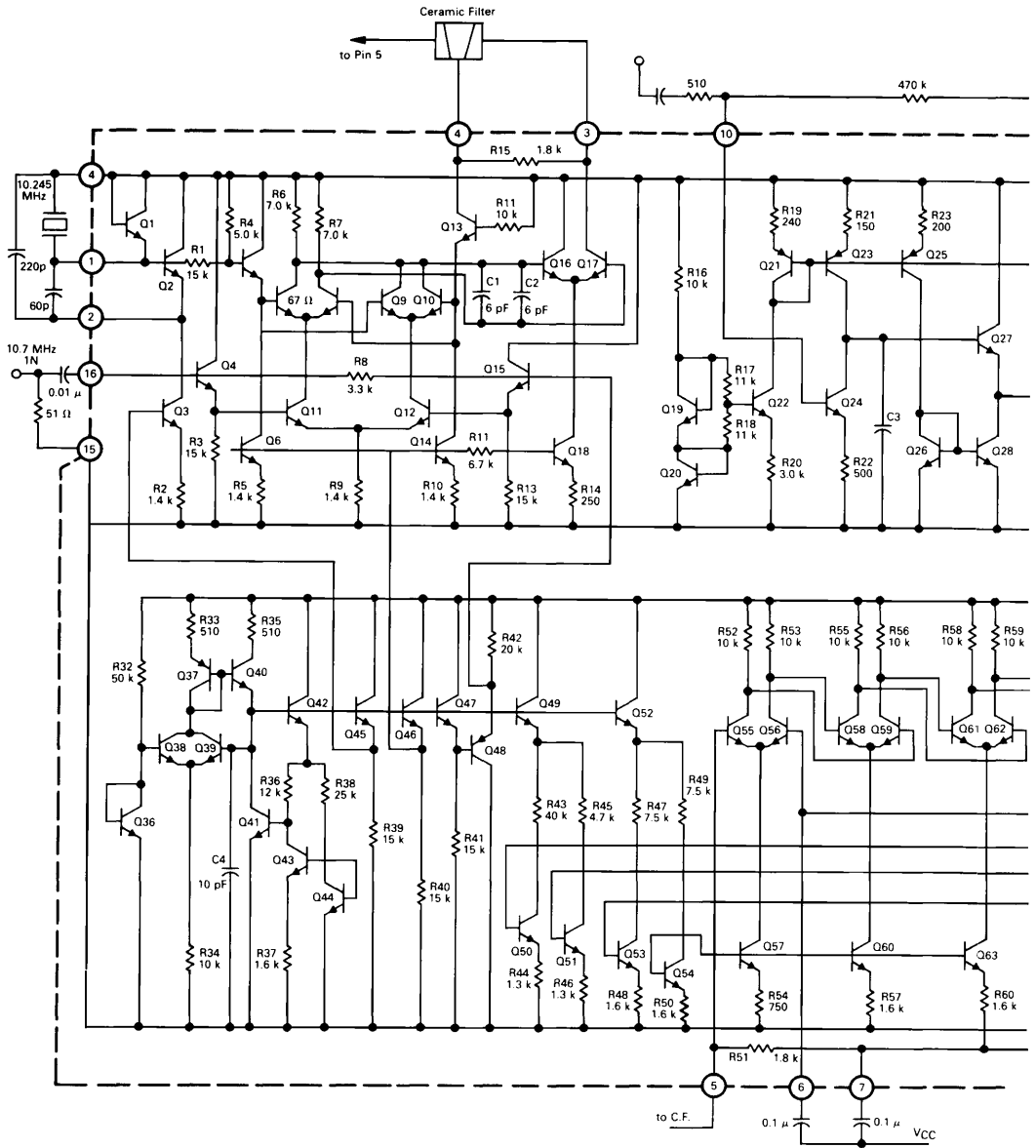
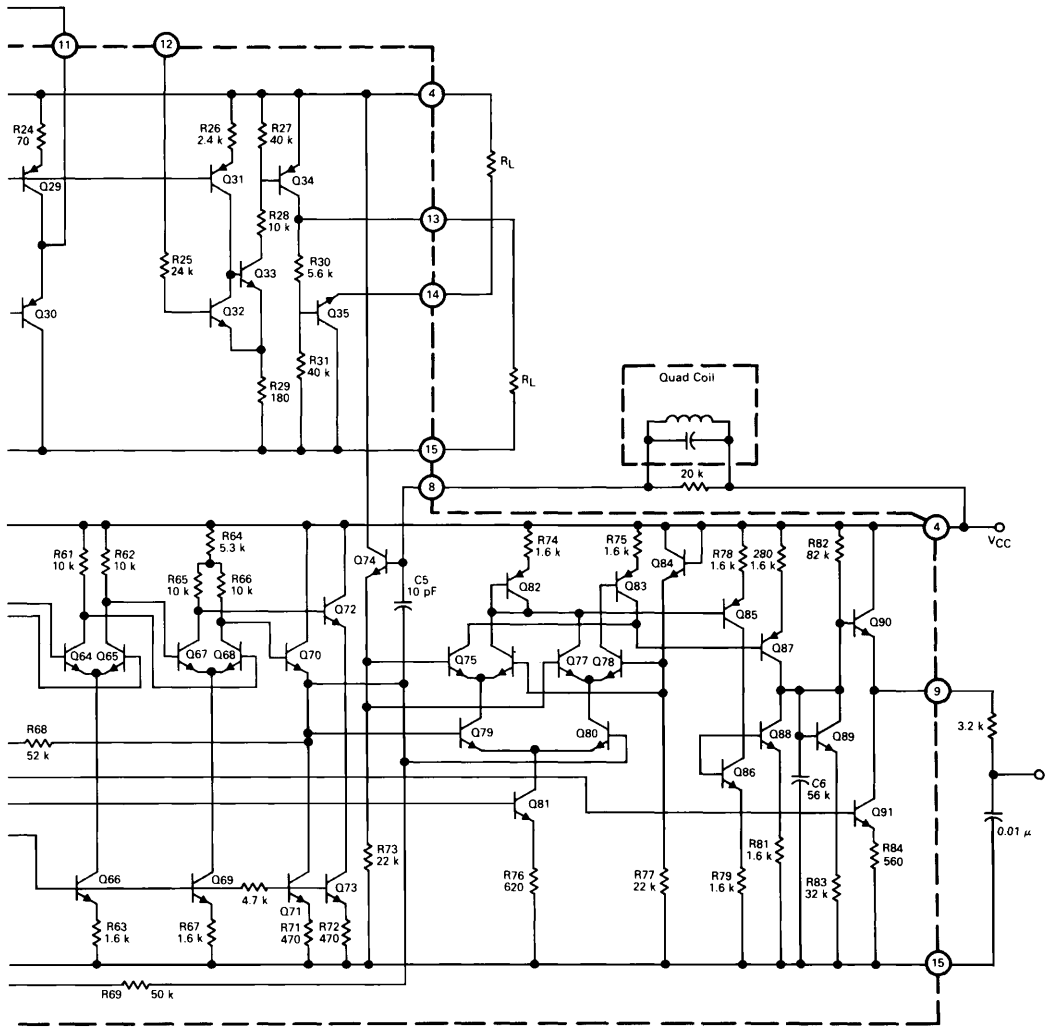


FIGURE 5 — LOW VOLTAGE LOW POWER  
NARROW BAND FM IF

CIRCUIT SCHEMATIC





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FIGURE 6 — INPUT LIMITING VOLTAGE

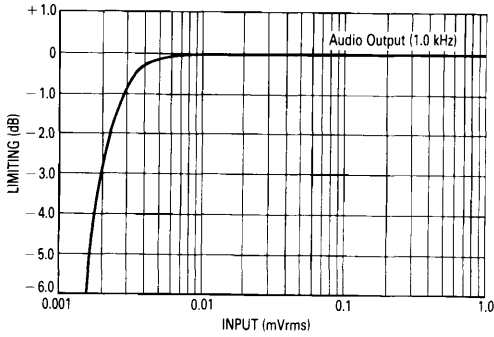


FIGURE 7 — OVERALL GAIN, NOISE, AND A.M. REJECTION

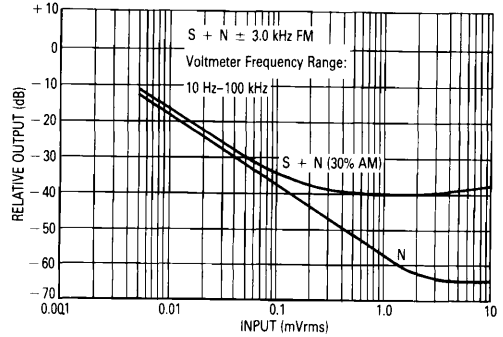


FIGURE 8 — FILTER AMP RESPONSE

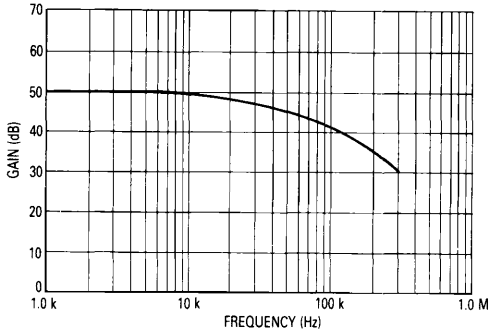


FIGURE 9 — FILTER AMP GAIN

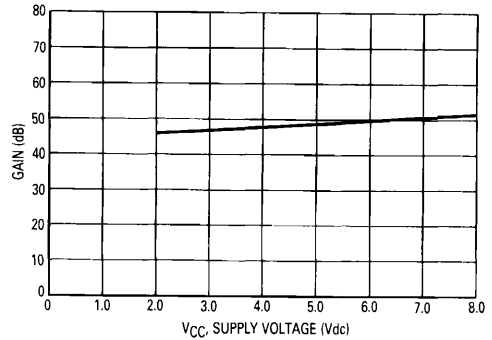


FIGURE 10 — SUPPLY CURRENT

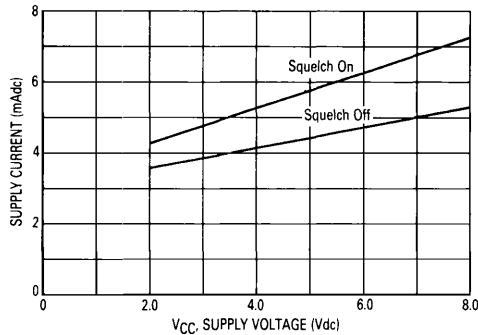
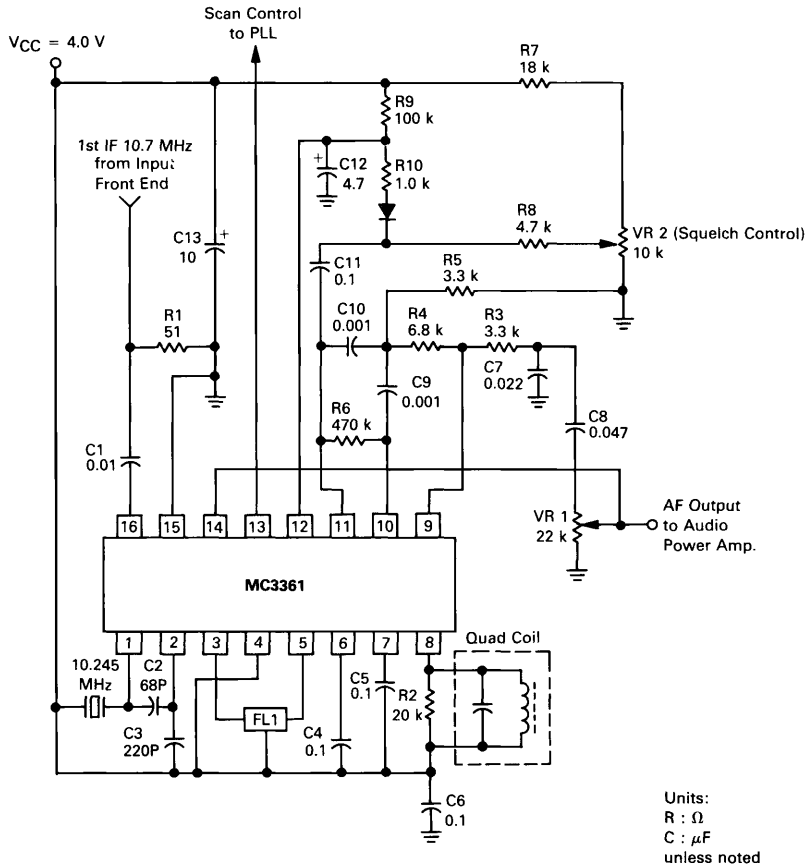


FIGURE 11 — TYPICAL APPLICATION



FL1 muRata Erie North America  
 Type CFU455D2 or  
 equivalent

Quadrature Coil  
 Toko America  
 Type 7MC-8128Z  
 or equivalent

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