



# MC3361C

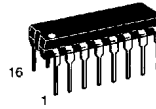
## Low Power Narrowband FM IF

The MC3361C includes an Oscillator, Mixer, Limiting Amplifier, Quadrature Discriminator, Active Filter, Squelch, Scan Control and Mute Switch. This device is designed for use in FM dual conversion communications equipment.

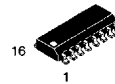
- Operates from 2.0 to 8.0 V Supply
- Low Drain Current 2.8 mA Typical @  $V_{CC} = 4.0$  Vdc
- Excellent Sensitivity: Input Limiting Voltage –  
– 3.0 dB = 2.6  $\mu$ V Typical
- Low Number of External Parts Required
- Operating Frequency Up to 60 MHz
- Full ESD Protection

### LOW POWER NARROWBAND FM IF

#### SEMICONDUCTOR TECHNICAL DATA

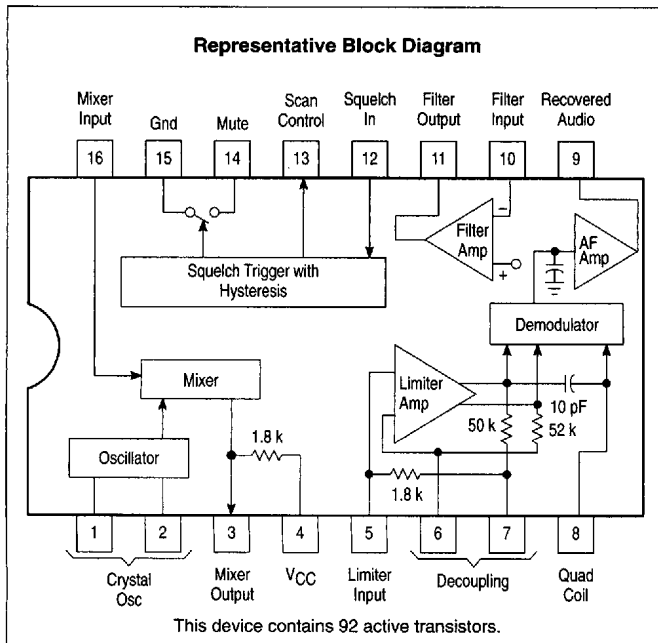


**P SUFFIX**  
PLASTIC PACKAGE  
CASE 648

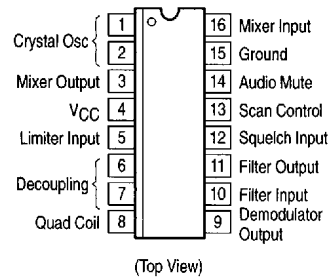


**D SUFFIX**  
PLASTIC PACKAGE  
CASE 751B  
(SO-16)

8



#### PIN CONNECTIONS



#### ORDERING INFORMATION

Device	Operating Temperature Range	Package
MC3361CD	$T_A = -30$ to $+70^\circ\text{C}$	SO-16
MC3361CP		Plastic DIP

6367253 0098007 T84

## MC3361C

### MAXIMUM RATINGS (T<sub>A</sub> = 25°C, unless otherwise noted.)

Rating	Pin	Symbol	Value	Unit
Power Supply Voltage	4	V <sub>CC(max)</sub>	10	Vdc
Operating Supply Voltage Range	4	V <sub>CC</sub>	2.0 to 8.0	Vdc
Detector Input Voltage	8	–	1.0	Vp-p
Input Voltage (V <sub>CC</sub> ≥ 4.0 V)	16	V <sub>16</sub>	1.0	V <sub>RMS</sub>
Mute Function	14	V <sub>14</sub>	–0.5 to +5.0	V <sub>pk</sub>
Junction Temperature	–	T <sub>J</sub>	150	°C
Operating Ambient Temperature Range	–	T <sub>A</sub>	–30 to +70	°C
Storage Temperature Range	–	T <sub>stg</sub>	–65 to +150	°C

### ELECTRICAL CHARACTERISTICS (V<sub>CC</sub> = 4.0 Vdc, f<sub>o</sub> = 10.7 MHz, Δf = ± 3.0 kHz, f<sub>mod</sub> = 1.0 kHz, T<sub>A</sub> = 25°C, unless otherwise noted.)

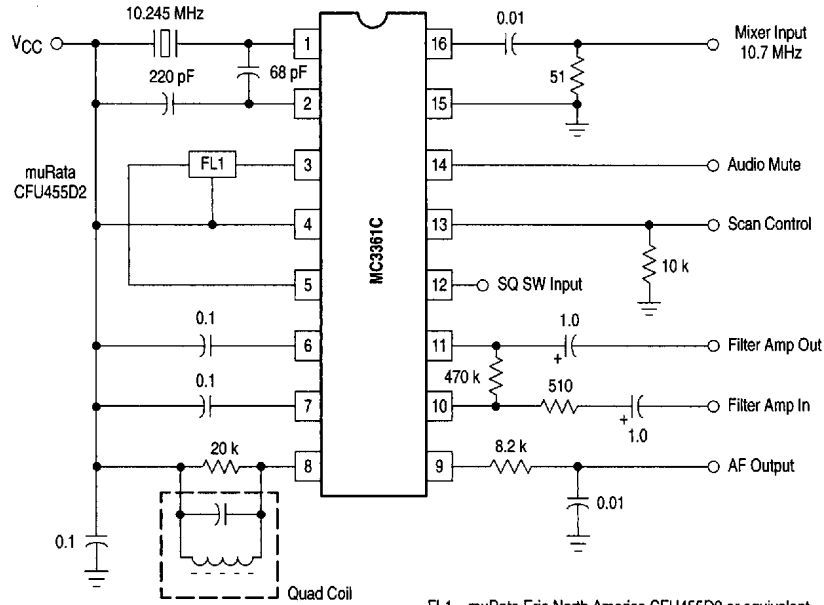
Characteristic	Pin	Min	Typ	Max	Unit	
Drain Current (No Signal)	4	Squelch "Off"	2.0	2.8	3.5	mA
		Squelch "On"	3.7	5.2	6.3	
Recovered Audio Output Voltage (V <sub>in</sub> = 10 mVrms)	9	130	170	210	mVrms	
Input Limiting Voltage (–3.0 dB Limiting)	16	–	2.6	6.0	μV	
Total Harmonic Distortion	9	–	0.86	–	%	
Recovered Output Voltage (No Input Signal)	9	60	190	350	mVrms	
Drop Voltage AF Gain Loss	9	–3.0	–0.6	–	dB	
Detector Output Impedance	–	–	450	–	Ω	
Filter Gain (10 kHz) (V <sub>in</sub> = 0.3 mVrms)	–	40	50	–	dB	
Filter Output Voltage	11	0.5	0.7	0.9	Vdc	
Mute Function Low	14	–	30	50	Ω	
Mute Function High	14	1.0	11	–	MΩ	
Scan Function Low (Mute "Off") (V <sub>12</sub> = 1.0 Vdc)	13	–	0	0.4	Vdc	
Scan Function High (Mute "On") (V <sub>12</sub> = Gnd)	13	3.0	3.9	–	Vdc	
Trigger Hysteresis	–	–	45	100	mV	
Mixer Conversion Gain	3	–	28	–	dB	
Mixer Input Resistance	16	–	3.3	–	kΩ	
Mixer Input Capacitance	16	–	9.0	–	pF	

8

6367253 0098008 910

# MC3361C

Figure 1. Test Circuit



FL1 – muRata Erie North America CFU455D2 or equivalent

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

C –  $\mu\text{F}$ , unless noted

8

Figure 2. Audio Output, Distortion versus Supply Voltage

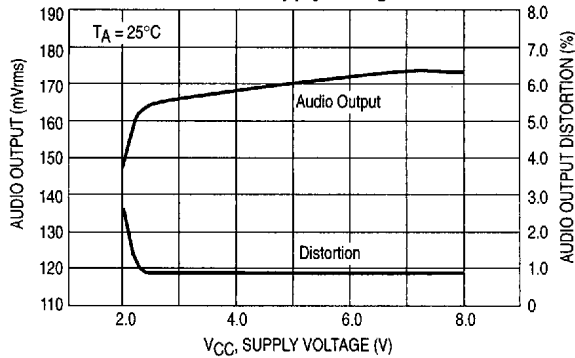
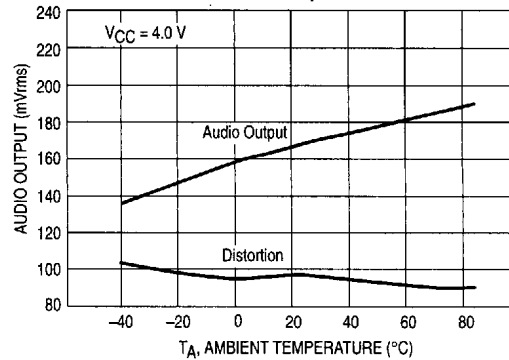


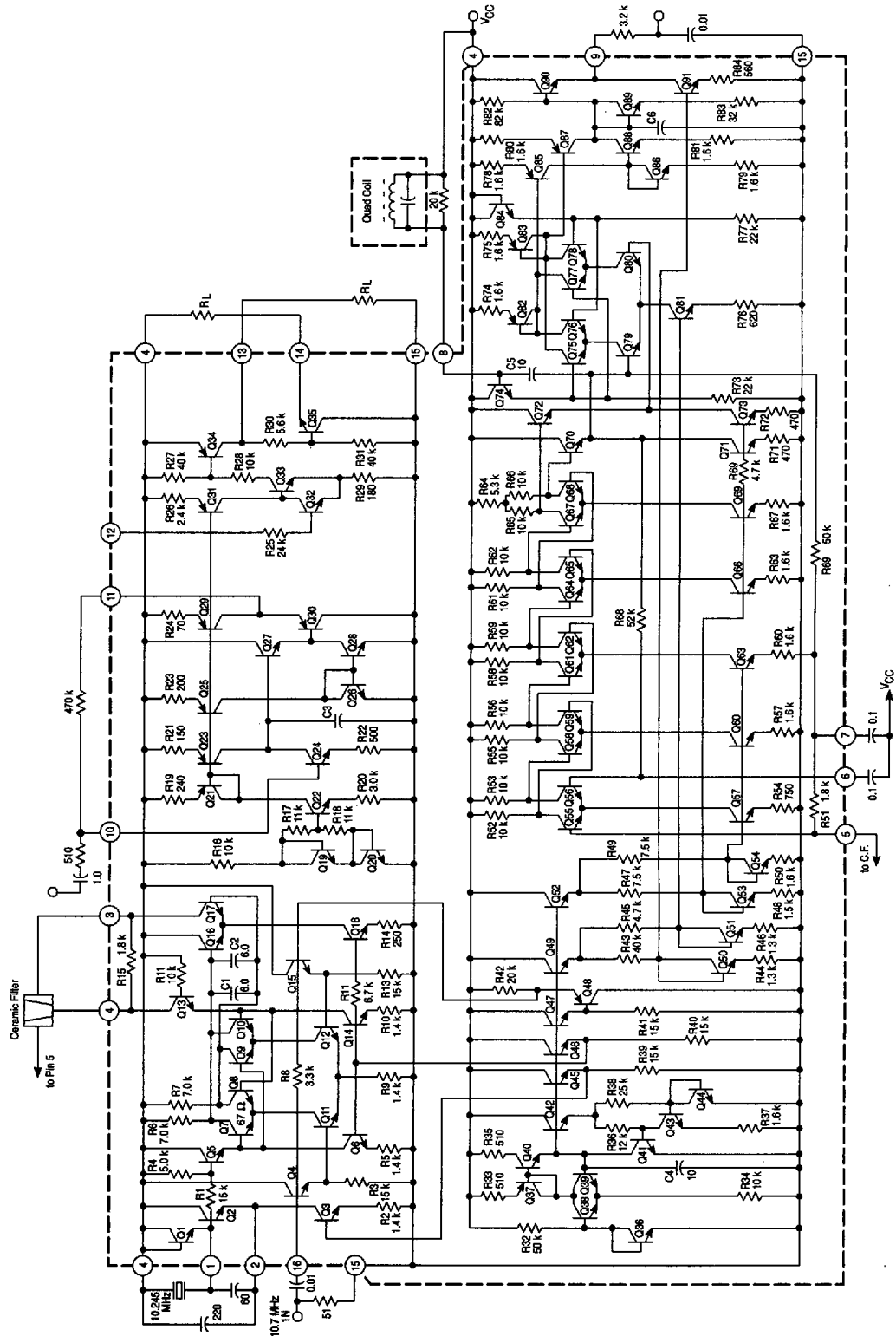
Figure 3. Audio Output, Distortion versus Temperature



6367253 0098009 857

MC3361C

Figure 4. Low Voltage Low Power Narrowband FM IF



6367253 0098010 579

# MC3361C

Figure 5. Input Limiting Voltage

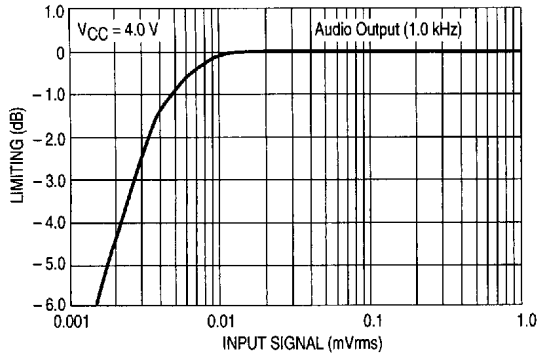


Figure 6. Overall Gain, Noise and AM Rejection

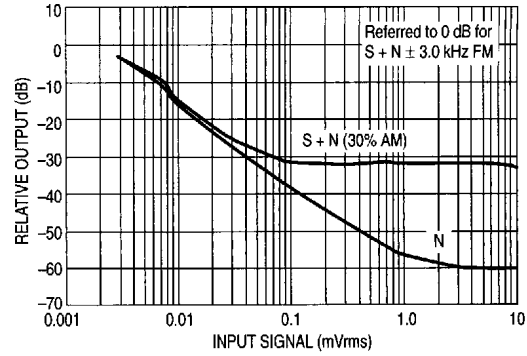


Figure 7. Filter Amp Response

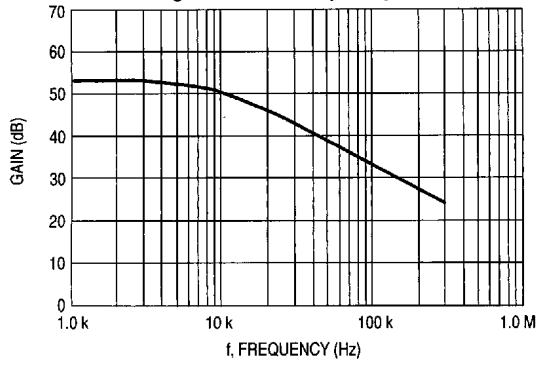
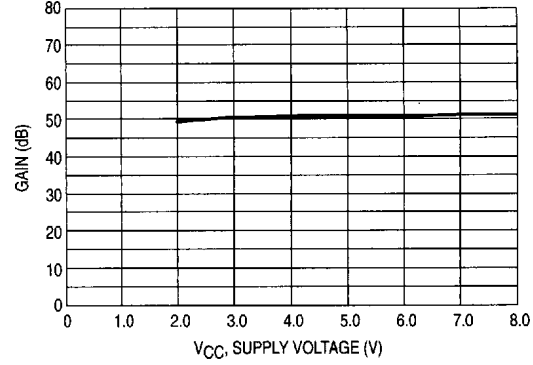
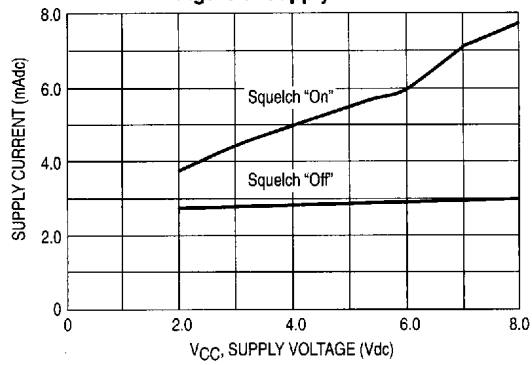


Figure 8. Filter Amp Gain



8

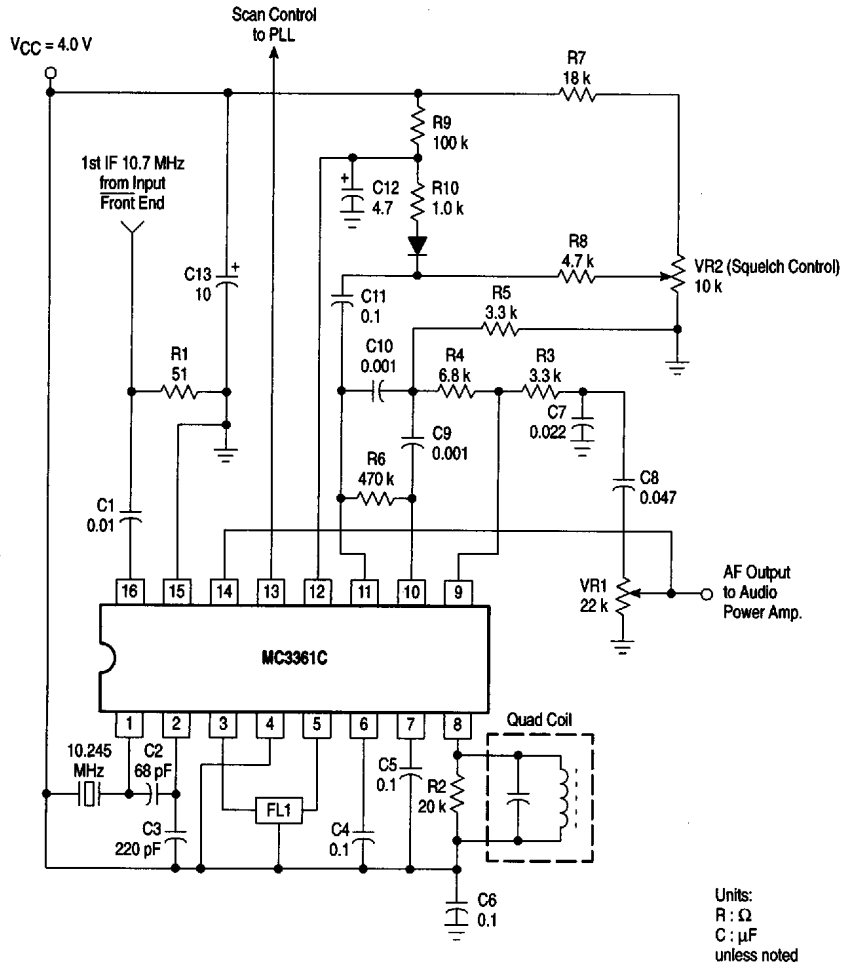
Figure 9. Supply Current



6367253 0098011 405

# MC3361C

Figure 10. Simplified Application



FL1 – muRata Erie North America Type CFU455D2 or equivalent

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

8

6367253 0098012 341