

BA4112

FM-IF detector

The BA4112 IC is a narrow band FM-IF detection IC that is designed to be used in FM transceivers.

Features

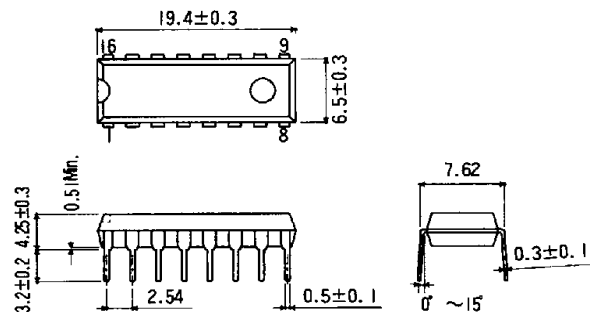
- available in a DIP16 package that is compatible with Motorola part no. MC3357P
- low power consumption (typically 3.0 mA)
- limiting sensitivity is typically -3 dB at $5.0 \mu\text{V}$
- circuit between 2nd mixer and detector output requires few external components, which allows smaller transceiver sizes

Applications

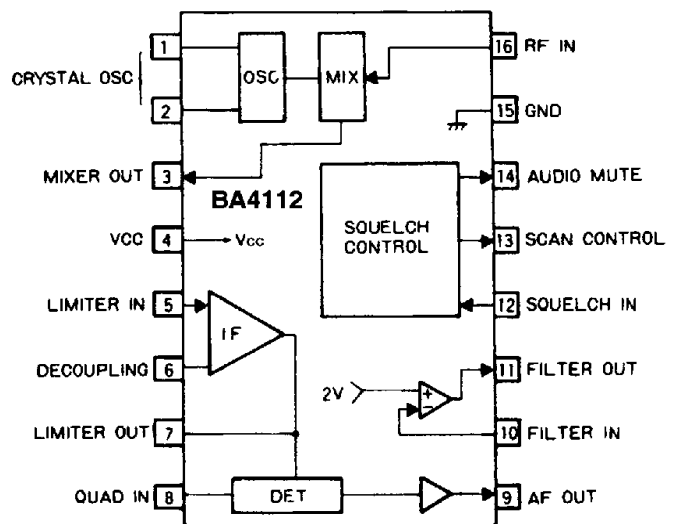
- VHF-band FM transceivers
- cordless telephones

Dimensions (Units : mm)

BA4112 (DIP16)



Block diagram



BA4112 Communications equipment: FM-IF detector

Absolute maximum ratings ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Limits	Unit	Conditions
Power supply voltage	V_{CC}	12	V	
Power dissipation	P_d	500	mW	Reduce power by 5 mW/ $^\circ\text{C}$ for each degree above 25 $^\circ\text{C}$.
Operating temperature	T_{opr}	-10 ~ +60	$^\circ\text{C}$	
Storage temperature	T_{stg}	-25 ~ +75	$^\circ\text{C}$	

Electrical characteristics (unless otherwise noted, $T_a = 25^\circ\text{C}$, $V_{CC} = 6.0\text{ V}$, $f_{IN} = 10.7\text{ MHz}$, $\Delta f = \pm 3\text{ kHz}$, $f_m = 1\text{ kHz}$)

Parameter	Symbol	Min	Typical	Max	Unit	Conditions
Quiescent current	I_Q	2.0	3.0	5.0	mA	No signal, squelch on
20 dB signal/noise sensitivity	20 dB S/N	15	-20	25	dB μV	
Detector output level	V_{ODC}	250	350	500	mV	$V_{IN} = 80\text{ dB}\mu\text{V}$
Detector output distortion	THD		1.8	3.0	%	$V_{IN} = 80\text{ dB}\mu\text{V}$
Detector output DC voltage	V_{ODC}	2.0	3.0	4.0	V	$V_{IN} = 0\text{ V}$
Detector output impedance	Z_{OUT}	280	400	520	Ω	
Filter amplifier gain	G_V	41	46		dB	$V_{IN} = 1\text{ mV } 10\text{ kHz}$
Filter output DC voltage	V_{ODC-f}	1.5	2.0	2.5	V	
Squelch hysteresis	Hys	50	100	150	mV	
Mute low resistance	R_{mL}		10	50	Ω	$V_{12} = \text{GND}$
Mute high resistance	R_{mH}	1.0	10		M Ω	$V_{12} = 2.0\text{ V}$
Scan low voltage	V_{ScL}		0	0.5	V	$V_{12} = 2.0\text{ V}$
Scan high voltage	V_{ScH}	3.0	5.0	5.9	V	$V_{12} = \text{GND}$
Mixer conversion gain	A_{vm}	17	20		dB	$f_{IN} = 10.7\text{ MHz}$

Note: For the test circuit, see Figure 1

Figure 1 Test circuit

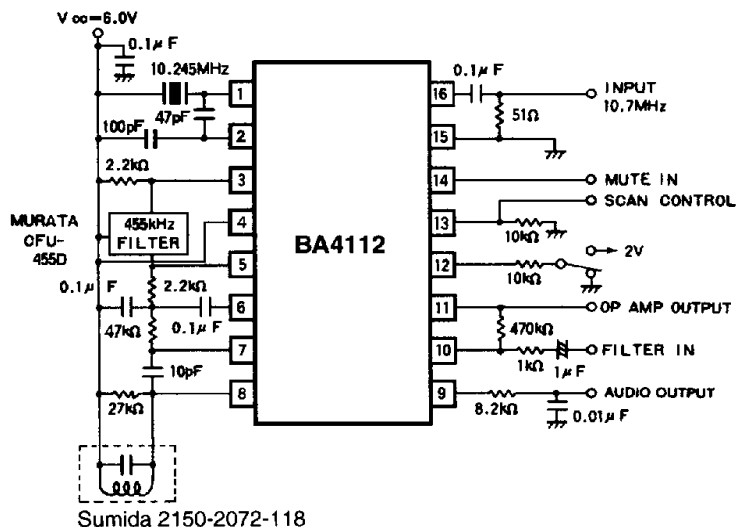


Figure 2 Application example

