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LOW POWER NARROW BAND FM IF

■ GENERAL DESCRIPTION

The **NJM3359** is a low power narrow band FM detector integrated circuit. for FM dual conversion of communication equipment. The **NJM3359** includes oscillator, limiting amplifier, AFC circuit, quadrature detect, operational amplifier, squelch circuit, scan-control and muting switch.

The **NJM3359** is a circuit of **NJM3357** plus one stage limiting IF amplifier and AFC output terminal.

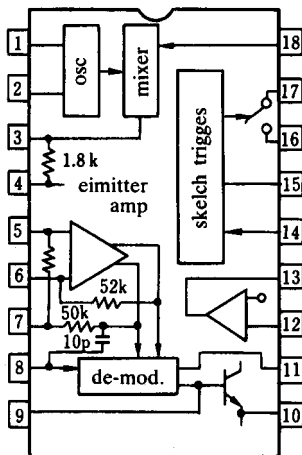
■ FEATURES

- Low Operating Current (3.6mA typ@V⁺=6V)
- Input Limiting Voltage (2.0μVrms typ@-3dB)
- Minimum other parts.
- Package Outline DIP18
- Bipolar Technology

■ RECOMMENDED OPERATIONAL CODITION

- Operating Voltage 4 to 9V

■ PIN CONFIGURATION



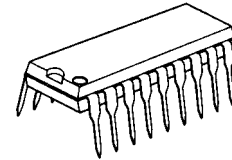
NJM3359D

PIN FUNCTION

Pin No.

- | | |
|-----------------------|-------------------------|
| 1. crystal | 10. de-modulator output |
| 2. crystal | 11. AFC |
| 3. mixer output | 12. filter input |
| 4. V ⁺ | 13. filter output |
| 5. limiter input | 14. skelch input |
| 6. de-coupling | 15. scan, control |
| 7. de-coupling | 16. audio muting |
| 8. detector input | 17. GND |
| 9. de-modulator input | 18. RF input |

■ PACKAGE OUTLINE



NJM3359D

NJM3359

■ ABSOLUTE MAXIMUM RATINGS

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

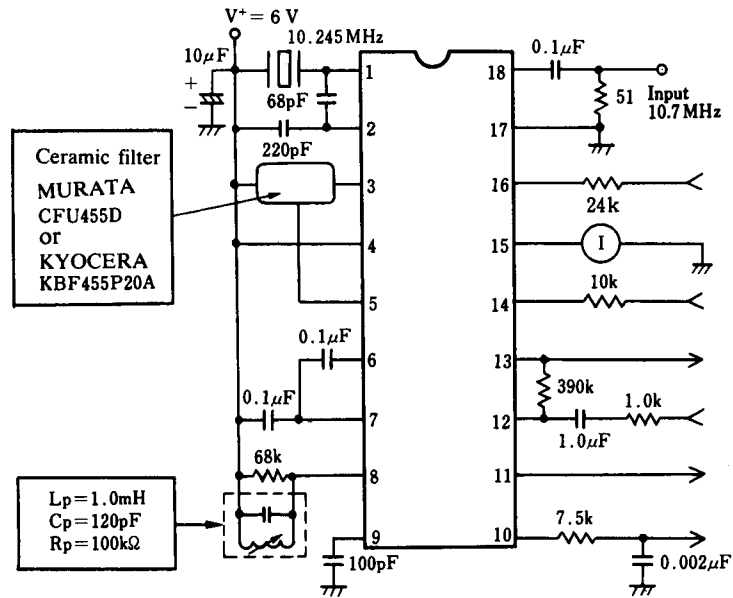
PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	12	V
Input Voltage	V18	1.0	V _{rms}
Muting Function	V16	-0.7 to 12	V _{PK}
Operating Temperature Range	T_{opr}	-40 to 85	$^{\circ}\text{C}$
Storage Temperature Range	T_{stg}	-40 to 125	$^{\circ}\text{C}$

■ ELECTRICAL CHARACTERISTICS

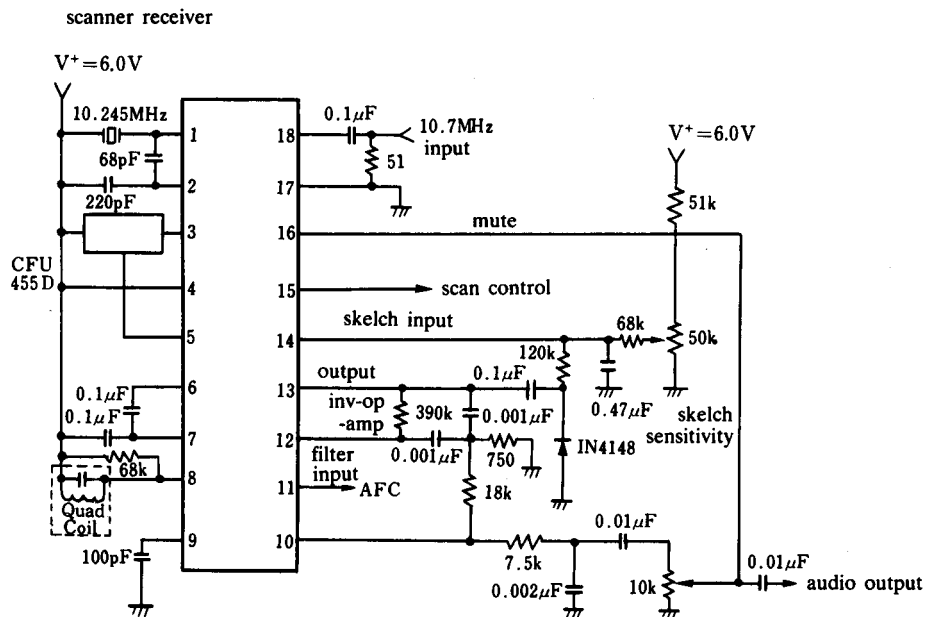
($V^+=6\text{V}$, $f_o=10.7\text{MHz}$, $\Delta f=\pm 3.0\text{kHz}$, $f_{mod}=1.0\text{kHz}$, $T_a=25^{\circ}\text{C}$)

PARAMETER	PIN	MIN.	TYP.	MAX.	UNIT
Operating Current	PIN 4,8				
Squelch OFF		-	3.6	6.0	mA
Squelch ON		-	5.4	7.0	mA
Input Sensitivity (S / N : 20dB)		-	8.0	-	μVrms
Input Limiting Voltage (-3dB)		-	2.0	-	μVrms
Mixer Voltage Gain	PIN 18 - PIN 3 Open	-	33	-	dB
Mixer Intercept Point	50 Ω input	-	-1.0	-	dBm
Mixer Input Resistance		-	3.6	-	k Ω
Mixer Input Capacitance		-	2.2	-	pF
Recovered Audio Output Voltage	PIN 10, $V_{IN}=1.0\text{mVrms}$	450	700	-	mVrms
Detector Center Frequency Slope	PIN 10	-	0.3	-	V / kHz
AFC Center Frequency Slope	PIN 11, $R_L=\infty$	-	12	-	V / kHz
Filter Gain	$f_{IN}=10\text{kHz}$, $V_{IN}=5\text{mV}$	40	51	-	dB
Squelch Threshold Voltage	PIN 14, 10k Ω	-	0.62	-	Vdc
Scan Control Current	PIN 15				
	PIN 14 - High	-	0.01	1.0	μA
	- Low	2.0	2.4	-	mA
Mute Switch Impedance	PIN 16 - GND				
	PIN14 - High	-	5.0	10	Ω
	- Low	-	1.5	-	M Ω

■ TEST CIRCUIT



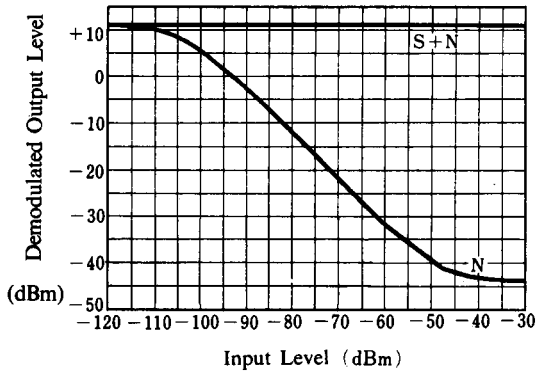
■ APPLICATION EXAMPLE



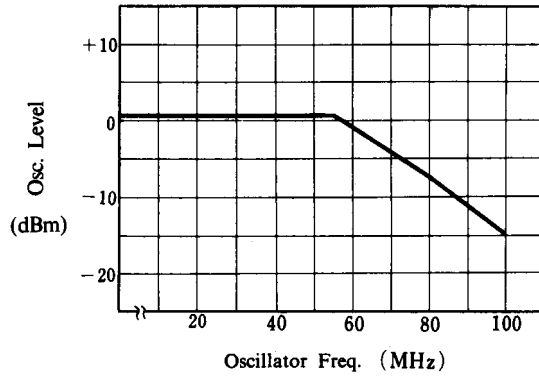
■ TYPICAL CHARACTERISTICS

Input - Output

($V^+ = 6.0V$, $f_{in} = 10.7MHz$, $\Delta f = \pm 3kHz$,
 $f_{mod} = 1kHz$)

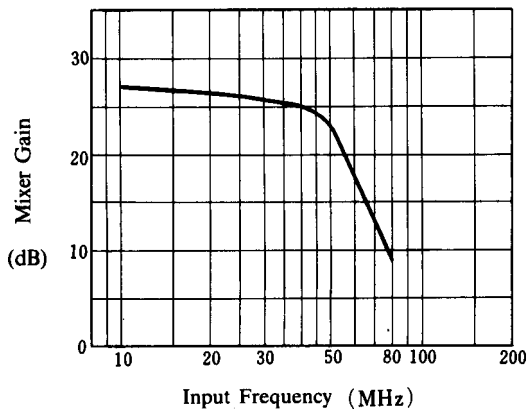


Local OSC Frequency

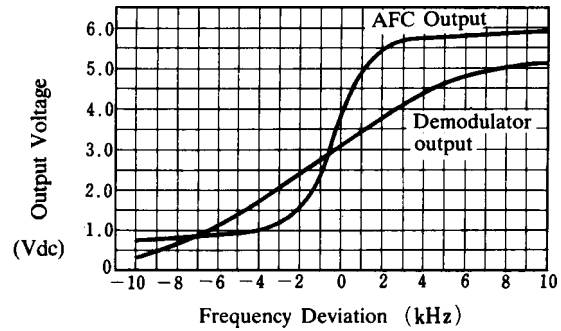


Mixer Gain vs. Input Frequency

(2nd IF = 455kHz, adjust Local OSC
frequency)

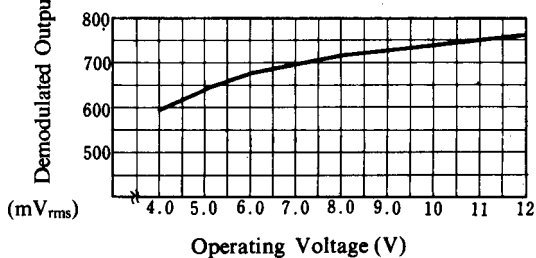


AFC Characteristics



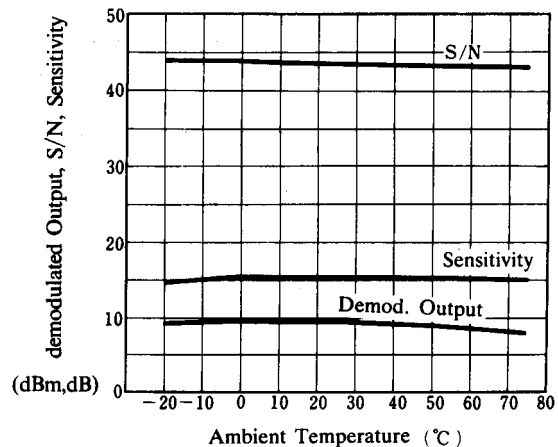
Demodulator Output

($f_{in} = 10.7MHz$, $f_{mod} = 1kHz$, $\Delta f = \pm 3kHz$,
 $V_{in} = 1mV_{rms}$)



Temperature Characteristics

($V^+ = 6.0V$, $f_{in} = 10.7MHz$, $f_{mod} = 1kHz$,
 $\Delta f = \pm 3kHz$, $S/N : V_{in} = 1mV_{rms}$,
Sensitivity : $V_{in} = 8.0\mu V_{rms}$)



[CAUTION]

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