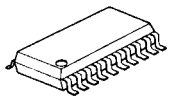
NARROW BAND FM IF IC

■ GENERAL DESCRIPTION

The **NJM2292** is a narrow band FM IF IC designed for use in cordless telephones and amature radios, etc...It contains almost all blocks of the narrow band FM IF system-a mixer, an IF amplifier, an RSSI and a Quadrature detector, for example. It features low supply current to make a sharp reduction of total power consumption possible.

■ PACKAGE OUTLINE



NJM2292V

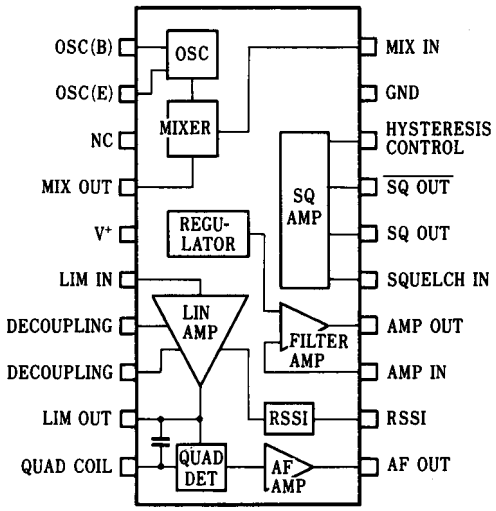
■ FEATURES

- Low Operating Voltage (1.8 to 7.0V)
- Low Operating Current (20mA typ. @V^+=2.4V)
- Maximum input frequency (100MHz)
- A ceramic discriminator is available
- Package Outline SSOP20
- Bipolar Technology

■ APPLICATIONS

- Amature radios
- Cordless telephones, etc.

■ PIN CONFIGURATION



NJM2292V

■ ABSOLUTE MAXIMUM RATINGS

(T_a=25°C)

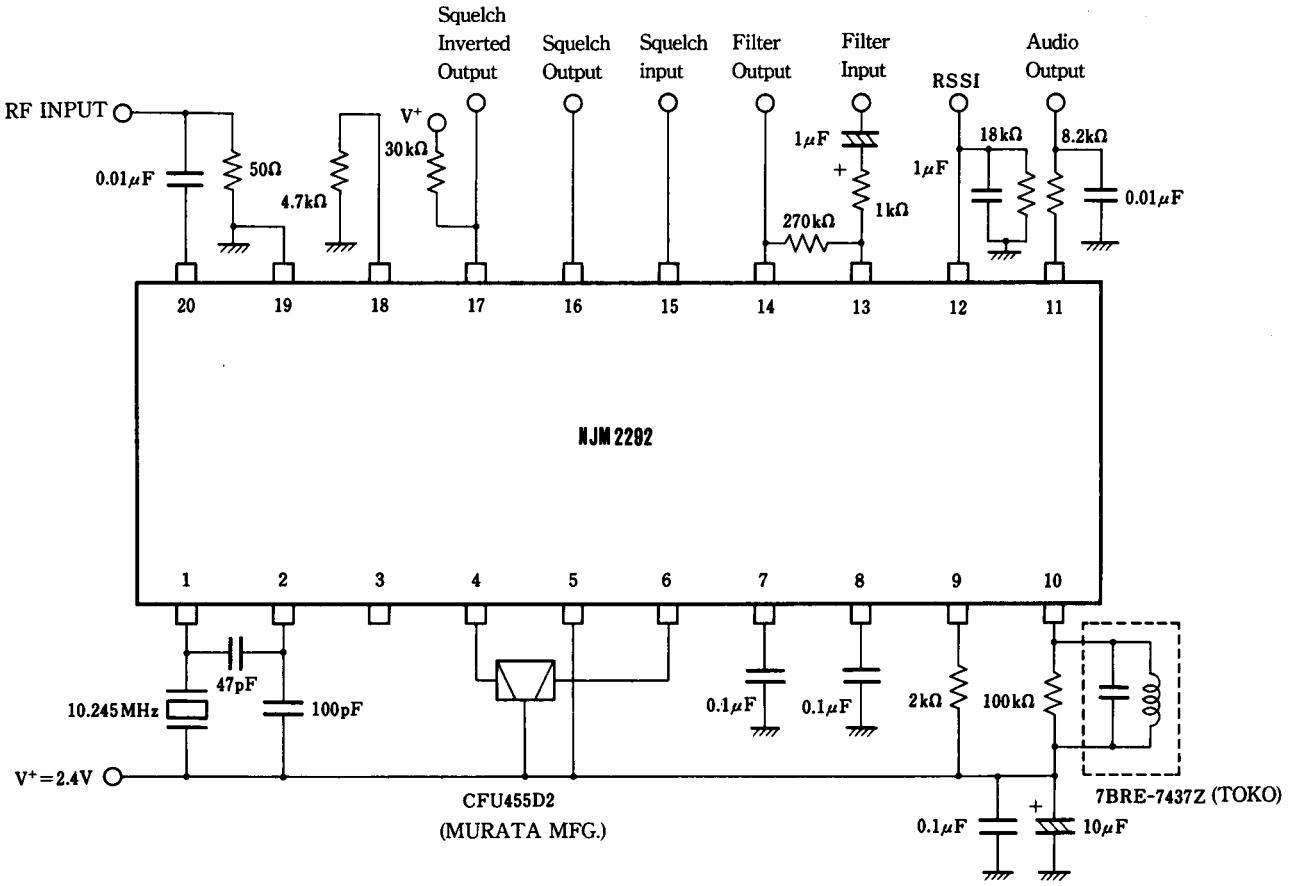
PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	10	V
Power Dissipation	P_d	300	mW
Operating Temperature Range	T_{opr}	-30 to +85	°C
Storage Temperature Range	T_{stg}	-40 to +125	°C

■ ELECTRICAL CHARACTERISTICS

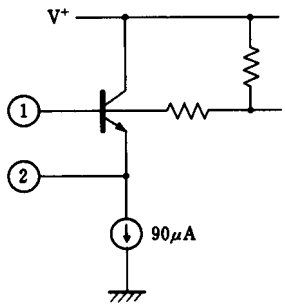
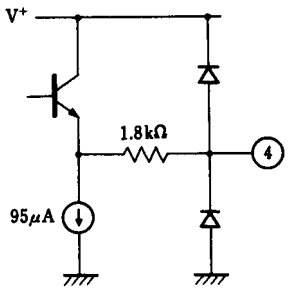
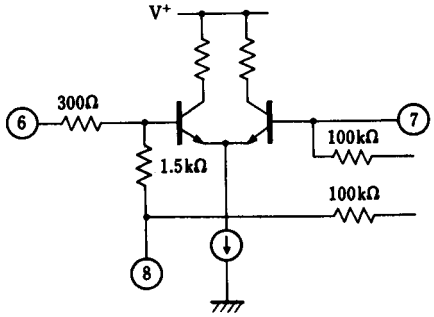
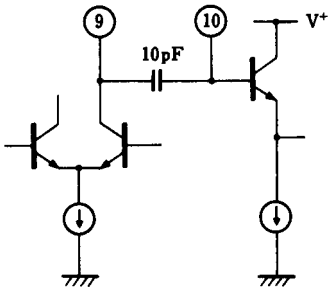
(V^+=2.4V, f_C=21.7MHz, fmod=1kHz 1mV, fdev=±3kHz, T_a=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current	I_{CC}	No signal, Squelch off		2.0	2.7	mA
Mixer						
Gain	G_{MIX}		20	25		dB
Input resistance	R_{MIX}		2.7	3.6	4.5	kΩ
Limiting sensitivity	LIMIT	-3dB limiting		3.0		μVrms
Audio output voltage	V_{OUT}		50	70		mVrms
Filter amplifier gain	A_f	V_I=1mVrmsy, 1kHz	45	48		dB
Filter amplifier output voltage	V_{ref}		0.75	0.9	1.05	V
RSSI maximum output voltage	V_{RMAX}	R_{rs}=18kΩ, IF_{in}=100mVrms	0.65	0.9	1.2	V
RSSI minimum output voltage	V_{RMIN}	R_{rs}=18kΩ, No signal			0.5	V
Squelch Hysteresis	Hys	R_{hys}=4.7kΩ	30	80	105	mV
Squelch output voltage High level	S_{PHI}		1.0	1.4	1.8	V
Low level	S_{PLO}				0,2	V
Squelch inverted output voltage High level	S_{NHI}	30kΩ pull up	2.2			V
Low level	S_{NLO}	30kΩ pull up			0.2	V

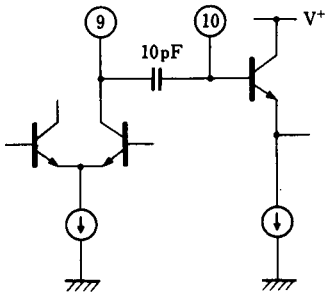
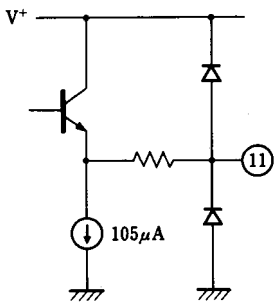
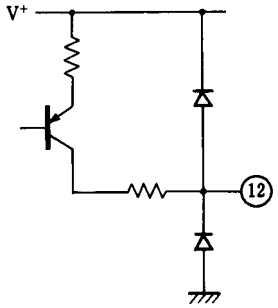
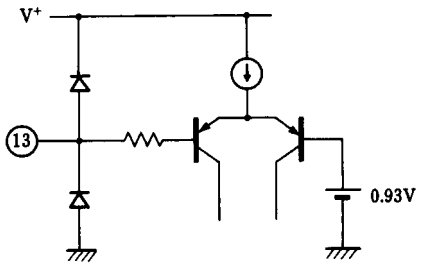
■ TEST CIRCUIT



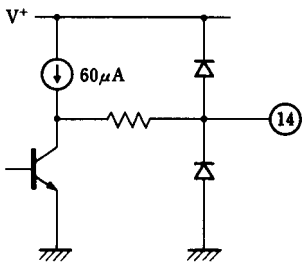
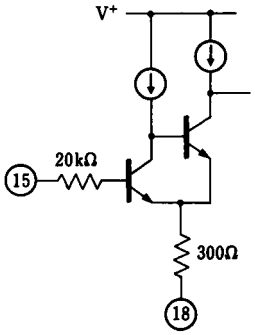
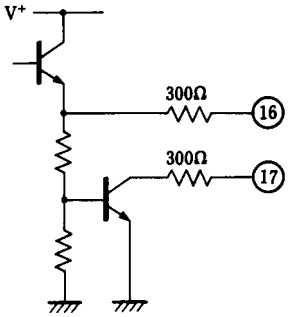
■ **TERMINAL FUNCTION** (V^+=2.4V)

PIN NO.	SYMBOL	PIN VOL-TAGE(typ.)	FUNCTION	EQUIVALENT CIRCUIT
1	OSC IN	2.4V	These terminals are connected with a crystal resonator to construct a colpitts circuit.	
2	OSC OUT	1.7V		
3	NC		No connection.	
4	MIX OUT	1.47V	Amixer output.	
5	V^+	2.4V	Supply voltage	
6	LIM IN	1.59V	A limiter input and decoupling terminals. The 7 and 8 pins are connected with about 100μF capacitors. (ESD protection diodes are connected internally with each terminal.)	
7	DEC1	1.59V		
8	DEC2	1.59V		
9	LIM OUT	-	A limiter output	

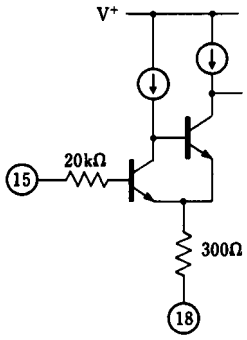
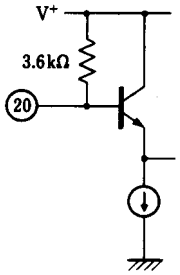
■ **TERMINAL FUNCTION** (V^+=2.4V)

PIN NO.	SYMBOL	PIN VOL-TAGE(typ.)	FUNCTION	EQUIVALENT CIRCUIT
10	QUAD COIL	-	A quadrature detector input	
11	AF OUT	1.18V	The output of the FM demodulated signal.	
12	RSSI	-	An RSSI output. The output current signal is in logarithmic proportion to the input signal.	
13	AMP IN	-	An operational amplifier inverted input.	

■ **TERMINAL FUNCTION** (V^+=2.4V)

PIN NO.	SYMBOL	PIN VOL-TAGE(typ.)	FUNCTION	EQUIVALENT CIRCUIT
14	AMP OUT	-	An operational amplifier output.	
15	SQ IN	-	A squelch amplifier input. (ESD protection diodes are connected internally with this terminal.)	
16	SQ OUT	-	A squelch amplifier input. (ESD protection diodes are connected internally with this terminal.)	
17	$\overline{\text{SQ OUT}}$	-	A squelch amplifier inverted output. (ESD protection diodes are connected internally with this terminal.)	

■ **TERMINAL FUNCTION** (V^+=2.4V)

PIN NO.	SYMBOL	PIN VOL-TAGE(typ.)	FUNCTION	EQUIVALENT CIRCUIT
18	HYSTERESIS CONTROL	-	A hysteresis control terminal. (ESD protection diodes are connected internally with this terminal.)	
19	GND	0V	Ground	
20	MIX IN	2.4V	A mixer input	

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