

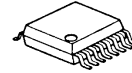
Mixer and Oscillator for TV Tuner

DESCRIPTION

The NJM2531A is mixer/oscillator especially designed for TV tuners and consists of mixers, oscillators, IF amplifier and OSC buffer for VHF,UHF and CATV band, built into one chip.

The NJM2531A packaging in SSOP16 is suitable for small-sized tuners.

PACKAGE OUTLINE

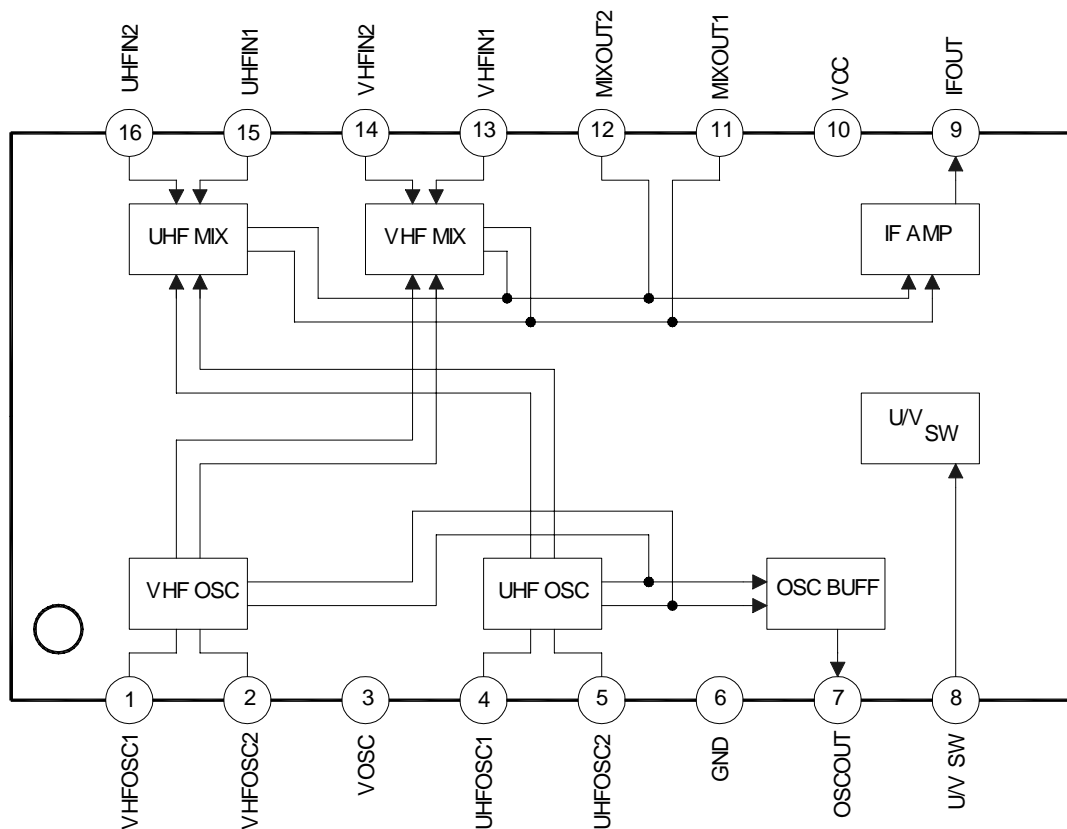


NJM2531AV

FEATURES

- Operating Voltage 5V
- Mixers, Oscillators, IF AMP and OSC buffer on chip
- Bipolar Technology
- Package Outline:SSOP16

BLOCK DIAGRAM



NJM2531A

■ ABSOLUTE MAXIMUM RATINGS

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

Parameter	Symbol	Ratings	Unit
Supply Voltage	V _{cc}	7	V
Power Dissipation	P _D	*550	mW
Operating Temperature Range	T _{opr}	-20 to +75	°C
Storage Temperature Range	T _{stg}	-40 to +125	°C

* Test IC soldered on PC board

■ RECOMMENDED OPERATING VOLTAGE RANGE

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

Parameter	Condition	Symbol	Min.	Typ.	Max.	Unit
Operating Voltage		V _{cc}	4.5	5.0	5.5	V

■ ELECTRICAL CHARACTERISTICS (Note 1)

(V_{cc}=5V, $T_A=25^\circ\text{C}$, IF=45.75MHz)

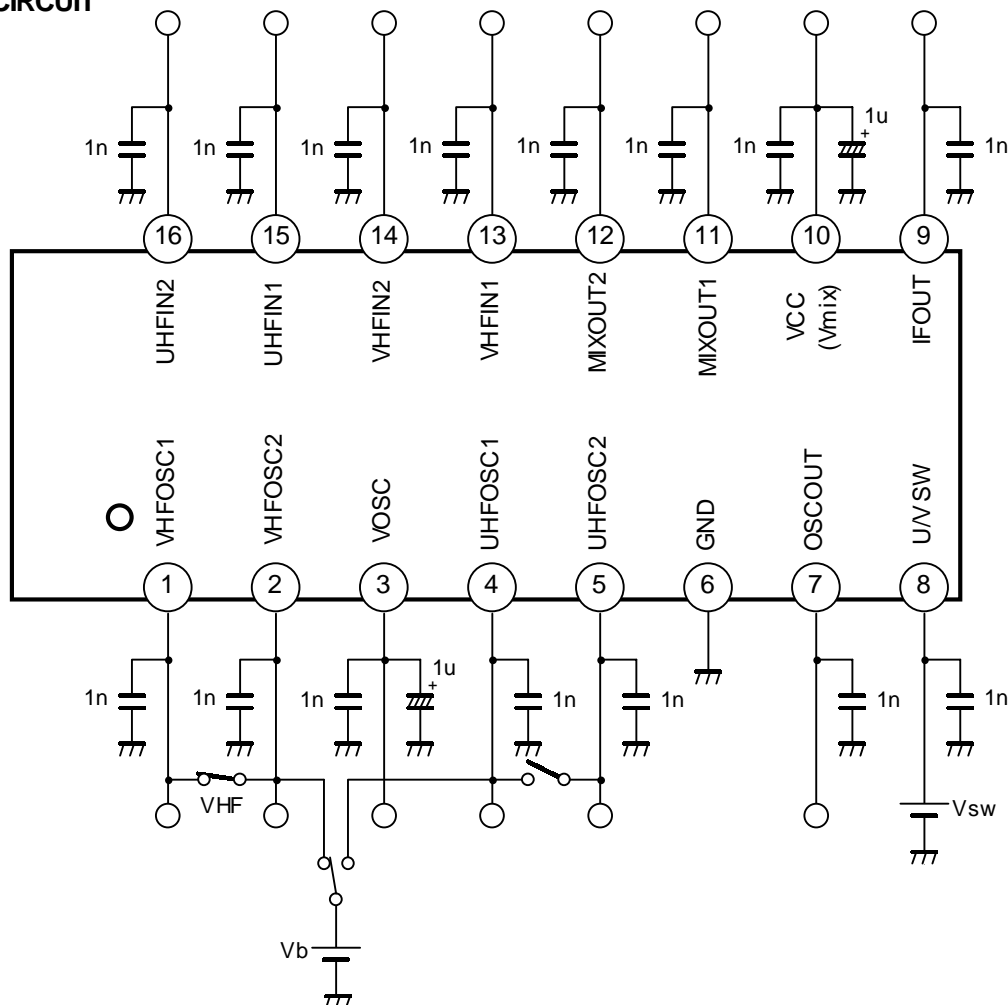
Parameter	Condition	Symbol	Min.	Typ.	Max.	Unit
Operating Current	VHF OSC only, No RF input	I _{cc1}	35	41	56	mA
Operating Current	UHF OSC only, No RF input	I _{cc2}	37	43	58	mA
Conversion Gain	VHF OSC only f _{RF} =55.25 to 361.25MHz, -50dBm	Ga1	-	26	-	dB
Conversion Gain	VHF OSC only f _{RF} =55.25 to 361.25MHz, -50dBm	Ga2	-	30	-	dB
1% Cross Modulation 1	VHF OSC only f _{RF} =55.25 to 361.25MHz, 75dBuV f _{UD} =f _{RF} +1MHz, 75dBuV	CM1	-	78	-	dB
1% Cross Modulation 2	UHF OSC only f _{RF} =367.25 to 801.25MHz, 75dBuV f _{UD} =f _{RF} +1MHz, 75dBuV	CM2	-	70	-	dB
Noise Figure 1	VHF OSC only f _{RF} =55.25 to 361.25MHz f _{IF} =46MHz	NF1	-	13	-	dB
Noise Figure 2	VHF OSC only f _{RF} =55.25 to 361.25MHz f _{IF} =46MHz	NF2	-	10	-	dB
OSC Output Power	f _{local} =101 to 847MHz	OUT _{osc}	-	-10	-	dBm
Maximum IF Output Level	f _{local} =55.25 to 801.25MHz	OUT _{if}	-	10	-	dBm

(Note 1) Because AC characteristics largely depends on application circuit, these parameters are specified by the DC characteristics as shown in next page.

■ DC ELECTRICAL CHARACTERISTICS ($V_{CC}=V_{osc}=V_{mix}=5V, T_A=25^{\circ}C, UHF:V_b=2.97V, VHF:V_b=2.98V$)

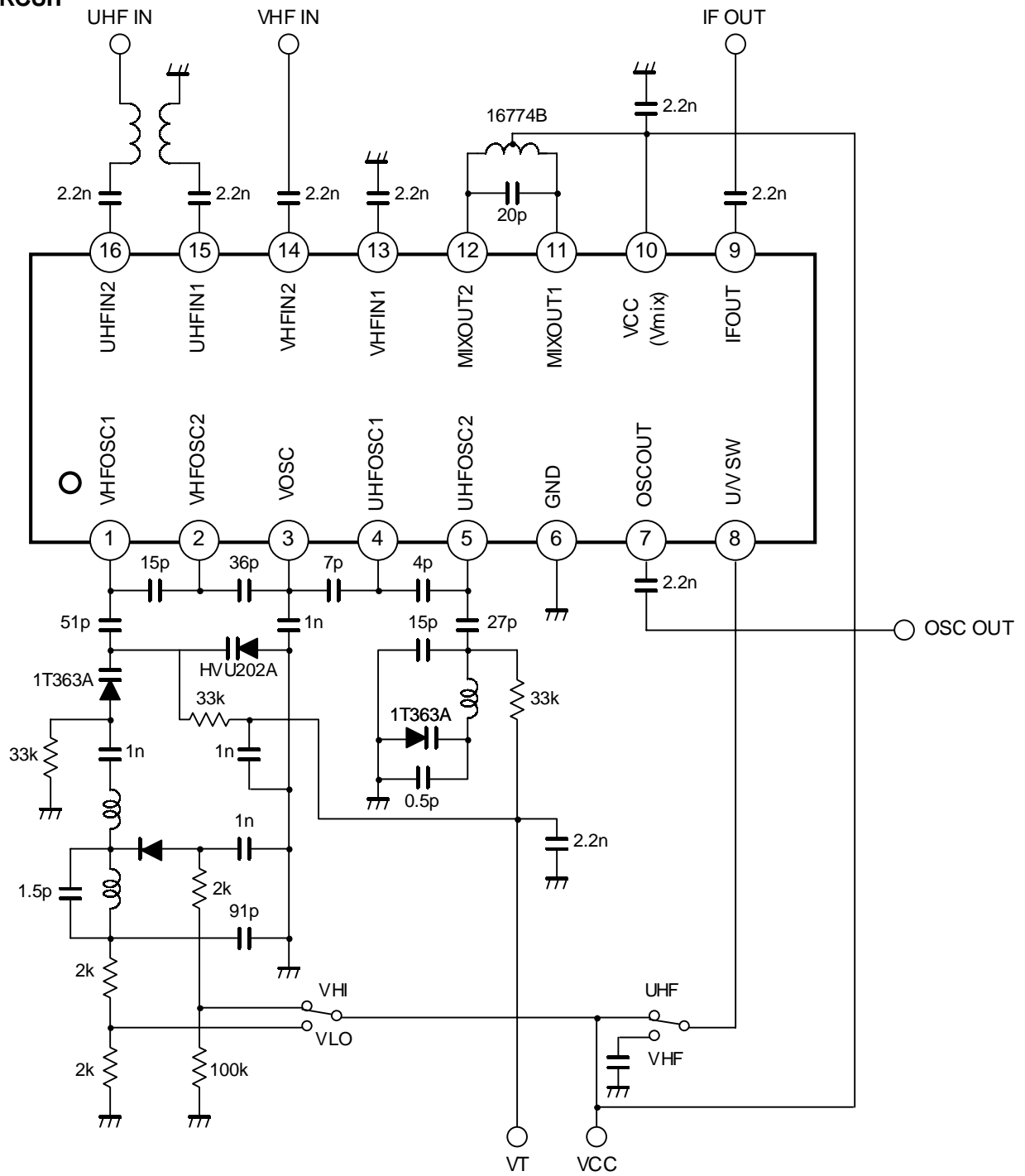
Parameter	Condition	Symbol	Min.	Typ.	Max.	Unit
Pin3 Current 1:UHF	$V_{sw}=2v$	I_{osc1}	4.35	-	9.70	mA
Pin3 Current 2:VHF	$V_{sw}=0.5v$	I_{osc2}	3.75	-	8.60	mA
Pin7 Voltage 1:UHF	$V_{sw}=2v$	$V_{oscout1}$	3.15	-	4.00	V
Pin7 Voltage 2:VHF	$V_{sw}=0.5v$	$V_{oscout2}$	3.15	-	3.85	V
Pin9 Voltage	$V_{sw}=2v$	V_{ifout}	1.50	-	2.85	V
Pin10 Current	$V_{sw}=2v$	I_{cc}	17	-	47.5	mA
Pin11 Current 1:UHF	$V_{sw}=2v$	$I_{mixouta1}$	1.65	-	3.80	mA
Pin11 Current 2:VHF	$V_{sw}=0.5v$	$I_{mixouta2}$	1.45	-	3.30	mA
Pin12 Current 1:UHF	$V_{sw}=2v$	$I_{mixoutb1}$	1.65	-	3.80	mA
Pin12 Current 2:VHF	$V_{sw}=0.5v$	$I_{mixoutb2}$	1.45	-	3.30	mA
Pin2 Current	$V_{sw}=0.5v, V_b=2.98v, 1-2PinShort$	I_{vosc}	-	-	4.60	mA
Pin4 Current	$V_{sw}=2v, V_b=2.97v, 4-5PinShort$	I_{uosc}	1.30	-	5.70	mA
Pin13 Voltage	$V_{sw}=0.5v$	V_{vmixa}	2.23	-	2.83	V
Pin14 Voltage	$V_{sw}=0.5v$	V_{vmixb}	2.23	-	2.83	V
Pin15 Voltage	$V_{sw}=2v$	V_{umixa}	2.22	-	2.82	V
Pin16 Voltage	$V_{sw}=2v$	V_{umixb}	2.22	-	2.82	V
Pin1 Voltage	$V_{sw}=0.5v$	V_{vosc1}	2.70	-	3.30	V
Pin2 Voltage	$V_{sw}=0.5v$	V_{vosc2}	2.00	-	2.60	V
Pin4 Voltage	$V_{sw}=2v$	V_{uosc1}	2.00	-	2.60	V
Pin5 Voltage	$V_{sw}=2v$	V_{uosc2}	2.70	-	3.30	V

■ DC TEST CIRCUIT



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■ AC TEST CIRCUIT



■ TERMINAL CHARACTERISTICS

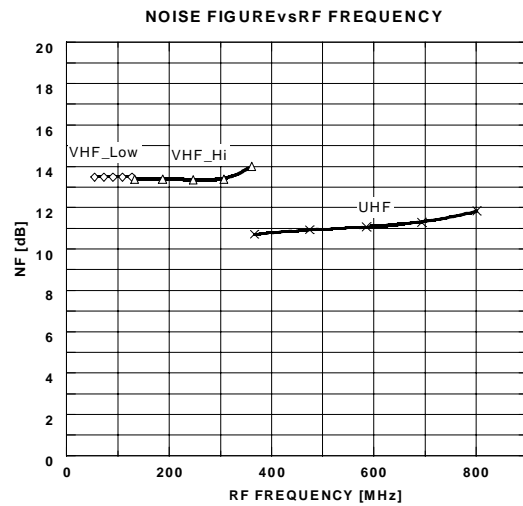
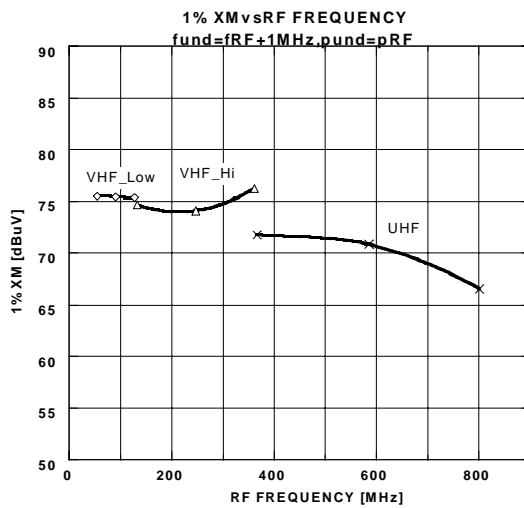
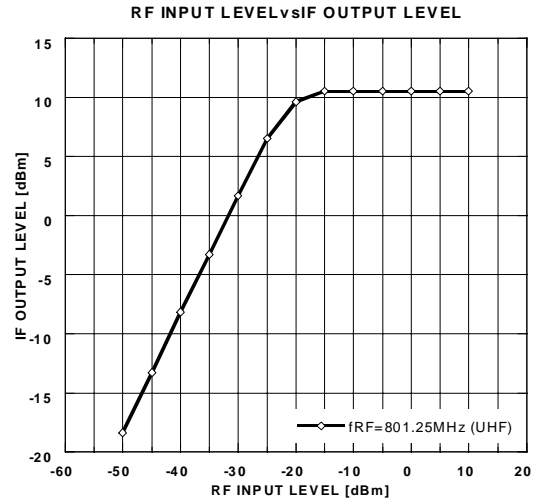
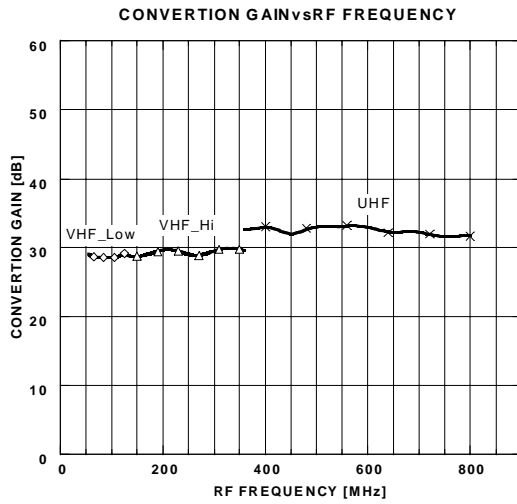
No.	Symbol	Typ.DC Voltage (V)	Equivalent Circuit	Function
1	VHFOSC1	VHF 3.0		VHF Oscillator
2	VHFOSC2	VHF 2.2		
3	VOSC	-		Oscillator Power Supply
4	UHFOSC1	UHF 2.2		UHF Oscillator
5	UHFOSC2	UHF 3.0		
6	GND	-		GND
7	OSCOUT	3.5		OSC Output
8	UV SW	-		UHF/VHF Select Switch UHF at Vcc VHF at GND
9	IFOUT	2.2		IF Output

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No.	Symbol	Typ.DC Voltage (V)	Equivalent Circuit	Function
10	VCC	-		Power Supply Except for Oscillator
11	MIXOUT1	-		Mixer Output
12	MIXOUT2	-		
13	VHFIN1	VHF 2.5		RF Input for VHF band
14	VHFIN2	VHF 2.5		
15	UHFIN1	UHF 2.5		RF Input for UHF band
16	UHFIN2	UHF 2.5		

■ TYPICAL CHARACTERISTICS

$V_{CC}=5V, f_{IF}=45.75MHz, T_A=25^{\circ}C$



MEMO

[CAUTION]

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