



SOUND ENHANCEMENT AUDIO PROCESSOR

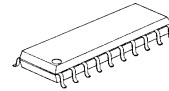
■ GENERAL DESCRIPTION

The NJM2150 is a sound enhancement audio processor which regenerates high definitive and nearly real clearness sound.

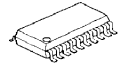
It includes BBE ON/OFF switch and two-grade boost switches in low and high band (Low Band: 2.5 or 5.5dB, High Band: 4.5dB or 7.5dB).

It is suitable for audio items such as TV, AV receiver, CD radio-cassette, speaker system, car audio, and others.

■ PACKAGE OUTLINE



NJM2150M



NJM2150V

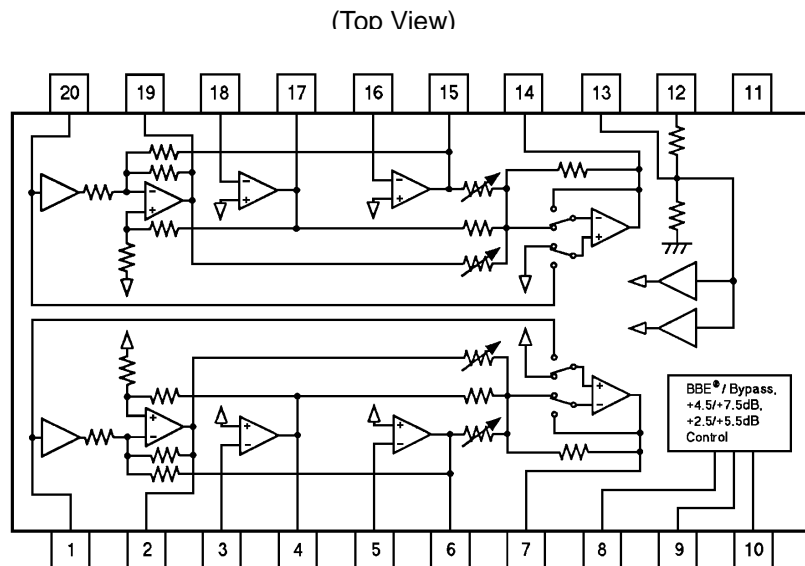
■ FEATURES

- Operating Voltage (4.5 to 13V)
- Low Operating Current (8mA typ.)
- Low Output Noise (10 μ Vrms typ. at BBE ON)
- Bypass Gain (0dB typ.)
- BBE ON/OFF Switch
- Independent High/Low Boost two-grade Switch
(Low Band:2.5 or 5.5dB, High Band:4.5 or 7.5dB)
- Bipolar Technology
- Package Outline DMP20, SSOP20

■ PIN CONFIGURATION

1. INPUT(A)
2. HPF(A)
3. CR1(A)
4. BPF(A)
5. CR2(A)
6. LPF(A)
7. OUTPUT(A)
8. PROCESS
9. LO CONTOUR
10. BBE
11. GND
12. V⁺
13. VREF
14. OUTPUT(B)
15. LPF(B)
16. CR2(B)
17. BPF(B)
18. CR1(B)
19. HPF(B)
20. INPUT(B)

■ BLOCK DIAGRAM



NJM2150

■ ABSOLUTE MAXIMUM RATINGS(Ta=25°C)

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	V ⁺	15	V
Power Dissipation	P _D	(DMP20) 350 (SSOP20)300	mW
Operating Temperature Range	T _{opr}	-40 to +85	°C
Storage Temperature Range	T _{stg}	-40 to +125	°C

■ ELECTRICAL CHARACTERISTICS (V⁺=9V,Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	FUNCTION		MIN.	TYP.	MAX.	UNIT
			BBE	Boost Level				
Operating Voltage	V ⁺	No Signal			4.5	9.0	13.0	V
Supply Current	I _{cc}				-	8.0	12.0	mA
Reference Voltage	VREF				4.0	4.5	5.0	V
SW Control Voltage Threshold	VthH				2.0	-	V ⁺	V
	VthL				0	-	0.5	V
Boost Level	Boost1	f=20Hz	ON	Low	1.5	2.5	3.5	dB
	Boost2	f=20Hz	ON	High	4.5	5.5	6.5	dB
	Boost3	f=1kHz	ON		-1.2	-0.2	0.8	dB
	Boost4	f=20kHz	ON	Low	3.5	4.5	5.5	dB
	Boost5	f=20kHz	ON	High	6.5	7.5	8.5	dB
Bypass Gain	G _{BYP}	f=1kHz	Bypass		-1	0	1	dB
Maximum Input Voltage	V _{inmax}	f=1kHz,R _L =10kΩ THD=10%	Bypass		2.8	-	-	V _{rms}
Total Harmonic Distortion	THD	f=1kHz,V _{in} =0.1V _{rms}	ON	Low	-	0.04	0.1	%
Output Noise	V _{no}	V _{in} =GND A-Weighting	ON	Low	-	-100 (10)	-90 (32)	dBV (μV _{rms})

■ SWITCH FUNCTION

Switch Terminal	Control Voltage Level	FUNCTION
BBE	High	BBE ON
	Low	BYPASS
PROCESS	High	+7.5dB
	Low	+4.5dB
LO CONTOUR	High	+5.5dB
	Low	+2.5dB

■ TERMINAL DESCRIPTION

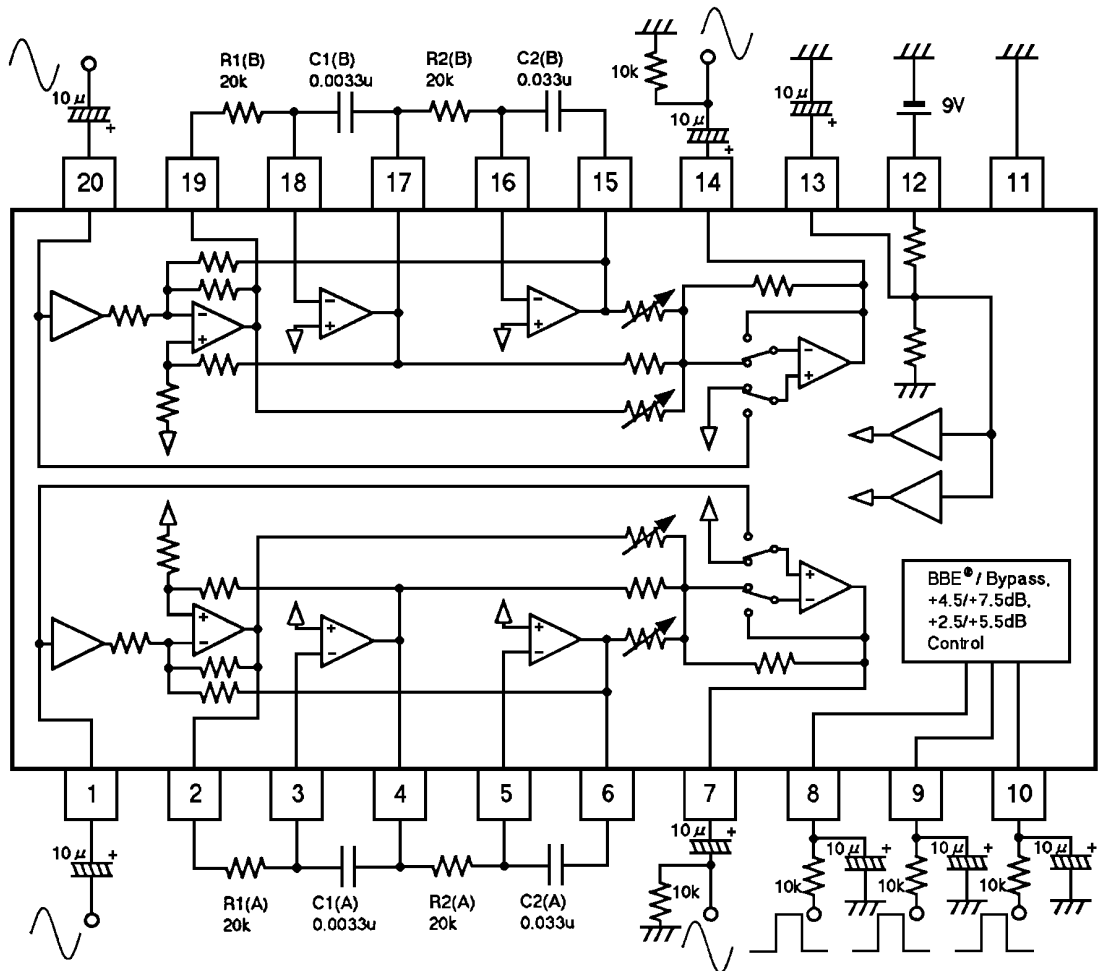
No.	SYMBOL	FUNCTION	EQUIVALENT CIRCUIT
1 20	INPUT(A) INPUT(B)	Signal Input	
3 5 16 18	CR1(A) CR2(A) CR2(B) CR1(B)	Filter	
2 4 6 7 14 15 17 19	HPF(A) BPF(A) LPF(A) OUTPUT(A) OUTPUT(B) LPF(B) BPF(B) HPF(B)	Filter Output Signal Output	

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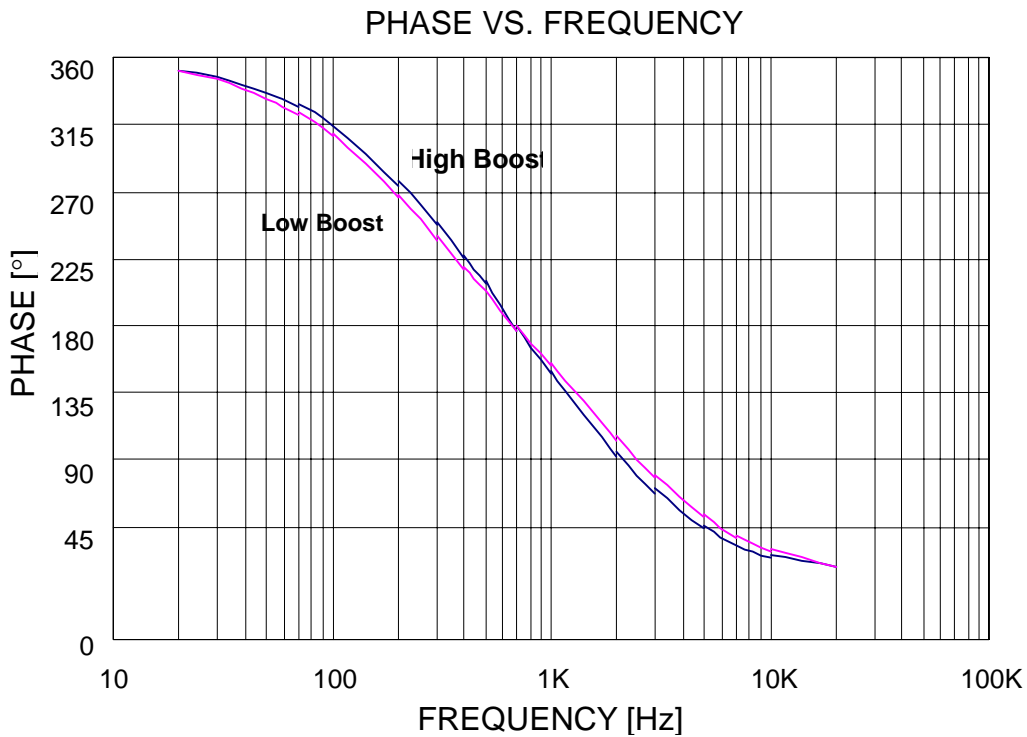
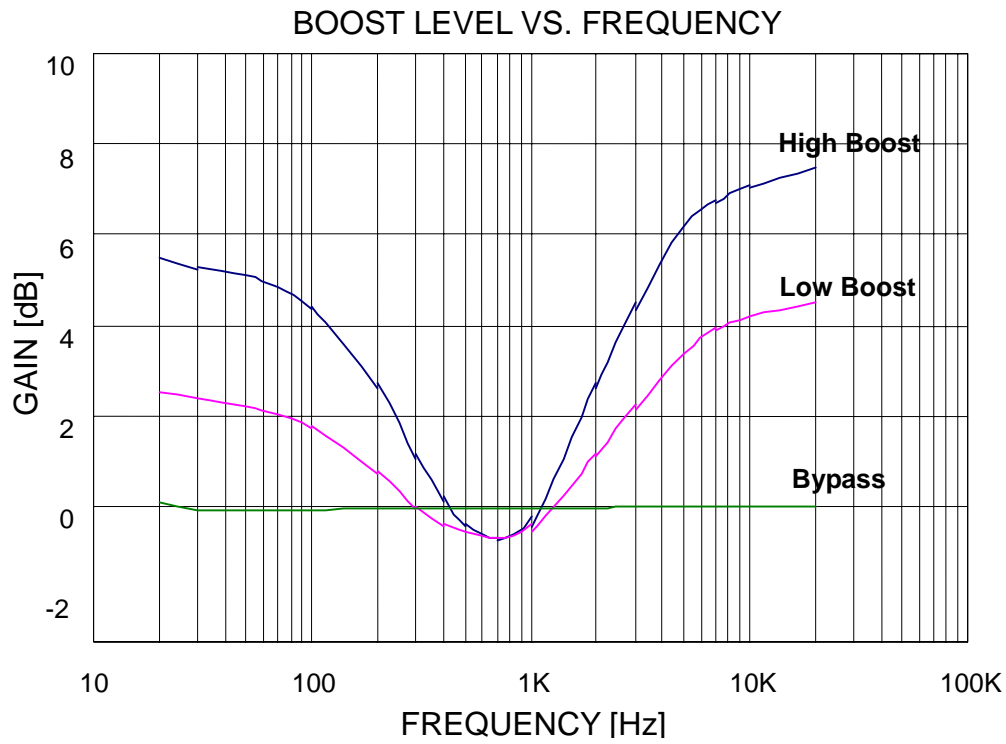
■ TERMINAL DESCRIPTION

No.	SYMBOL	FUNCTION	EQUIVALENT CIRCUIT
8 9 10	PROCESS LO CONTOUR BBE	Boost Level Control Bypass Control	<p>The diagram shows a differential pair of transistors. The top node of the pair is connected to the V+ rail through a diode. The bottom node is connected to the GND rail through a diode. A 150K resistor is connected between the two nodes of the differential pair. The output terminal is connected to the top node of the pair.</p>
11	GND	GND	<p>The diagram shows a direct connection from the terminal to the GND rail.</p>
12	V+	Power Supply	<p>The diagram shows a direct connection from the terminal to the V+ rail.</p>
13	VREF	Reference Voltage Output	<p>The diagram shows a differential pair of transistors. The top node is connected to the V+ rail through a diode. The bottom node is connected to the GND rail through a diode. A resistor is connected between the two nodes of the differential pair. The output terminal is connected to the top node of the pair.</p>

APPLICATION CIRCUIT



■ TYPICAL CHARACTERISTICS



■ **NOTE**

The **NJM2150** is manufactured by New Japan Radio Co.,Ltd under license from BBE Sound Inc.
BBE is a registered trademark of BBE Sound Inc.
A license from BBE Sound Inc. is required before the **NJM2150** can be purchased from New Japan Radio Co.,Ltd.

BBE Sound, Inc.
5381 Production Drive
Huntington Beach, CA 92649
Tel:(714)897-6766
Fax:(714)896-0736

[CAUTION]

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