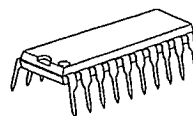


**BBE®****SOUND ENHANCEMENT AUDIO PROCESSOR****■ GENERAL DESCRIPTION**

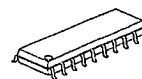
The NJM2150A is a sound enhancement audio processor which regenerates high definitive and nearly real clearness sound.

It includes BBE ON/OFF switch and two-grade boost switches in low and high band (Low Band: 6.0 or 9.0dB, High Band: 6.0dB or 9.0dB).

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

**■ PACKAGE OUTLINE**

NJM2150AD



NJM2150AM



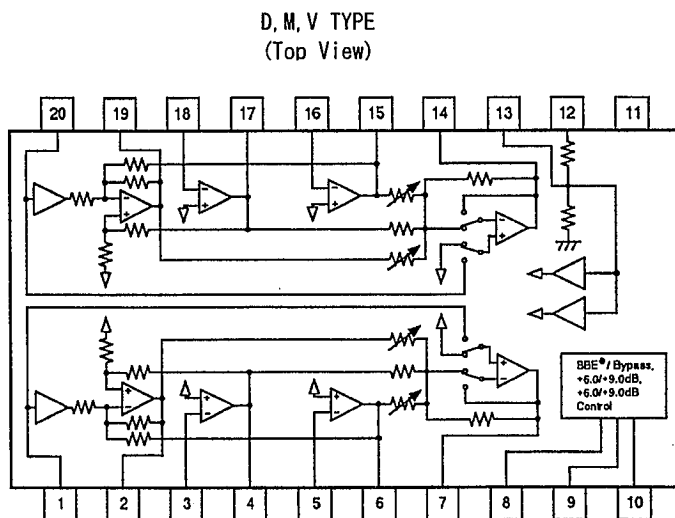
NJM2150AV

**■ FEATURES**

- Operating Voltage (4.5 to 13V)
- Low Operating Current (8mA typ.)
- Low Output Noise (14  $\mu$ Vrms typ. at BBE ON)
- Bypass Gain (0dB typ.)
- BBE ON/OFF Switch
- Independent High/Low Boost two-grade Switch  
(Low Band: 6.0 or 9.0dB, High Band: 6.0 or 9.0dB)
- Bipolar Technology
- Package Outline DIP20, 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<sup>+</sup>
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**

## ■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	V <sup>+</sup>	15	V
Power Dissipation	P <sub>D</sub>	(DIP20) 700 (DMP20) 350 (SSOP20) 300	mW
Operating Temperature Range	T <sub>opr</sub>	-40~+85	°C
Storage Temperature Range	T <sub>stg</sub>	-40~+125	°C

## ■ ELECTRICAL CHARACTERISTICS (V<sup>+</sup>=9V, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	FUNCTION		MIN.	TYP.	MAX.	UNIT
			BBE	Boost Level				
Operating Voltage	V <sup>+</sup>	No Signal			4.5	9.0	13.0	V
Supply Current	I <sub>cc</sub>				—	8.0	12.0	mA
Reference Voltage	VREF				4.0	4.5	5.0	V
SW Control Voltage Threshold	VthH				2.0	—	V <sup>+</sup>	V
	VthL				0	—	0.5	V
Boost Level	Boost1	f=20Hz	ON	Low	5.0	6.0	7.0	dB
	Boost2	f=20Hz	ON	High	8.0	9.0	10.0	dB
	Boost3	f=1kHz	ON		-1.2	-0.2	0.8	dB
	Boost4	f=20kHz	ON	Low	5.0	6.0	7.0	dB
	Boost5	f=20kHz	ON	High	8.0	9.0	10.0	dB
Bypass Gain	G <sub>BYP</sub>	f=1kHz	BYPASS		-1	0	1	dB
Maximum Input Voltage	V <sub>inmax</sub>	f=1kHz, R <sub>L</sub> =10kΩ THD=10%	BYPASS		2.8	—	—	V <sub>rms</sub>
Total Harmonic Distortion	THD	f=1kHz, V <sub>in</sub> =0.1V <sub>rms</sub>	ON	Low	—	0.05	0.11	%
Output Noise	V <sub>no</sub>	V <sub>in</sub> =GND A-Weighting	ON	Low	—	-97 (14)	-87 (45)	dBV (μV <sub>rms</sub> )

## ■ SWITCH FUNCTION

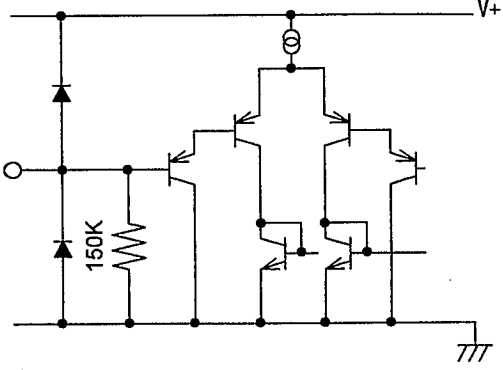
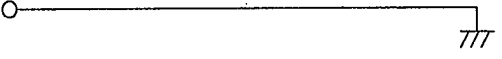
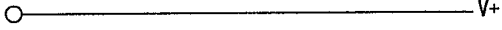
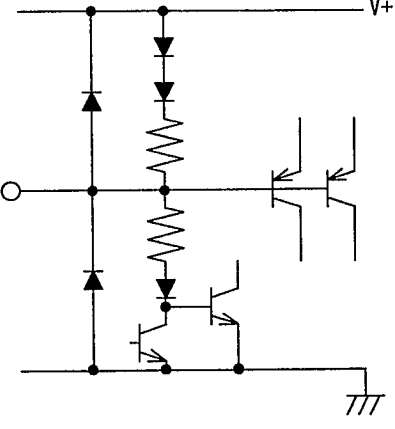
Switch Terminal	Control Voltage Level	FUNCTION
BBE	High	BBE ON
	Low	BYPASS
PROCESS	High	+9.0dB
	Low	+6.0dB
LO CONTOUR	High	+9.0dB
	Low	+6.0dB

## ■ TERMINAL DESCRIPTION

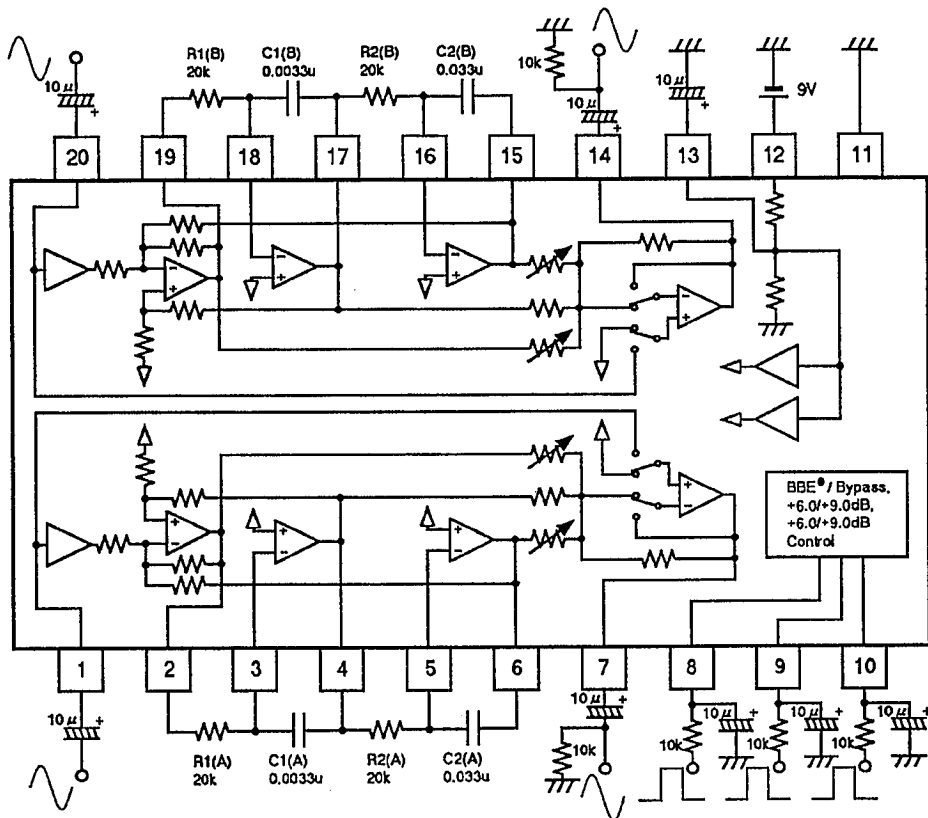
No.	SYMBOL	FUNCTION	EQUIVALENT CIRCUIT
1 20	INPUT (A) INPUT (B)	Signal Input	
3 5 16 18	CR1 (A) CR2 (A) CR2 (B) CR1 (B)	Filter	
2 4 6 7 14 15 17 19	HPF (A) BPF (A) LPF (A) OUTPUT (A) OUTPUT (B) LPF (B) BPF (B) HPF (B)	Filter Output Signal Output	

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■ TERMINAL DESCRIPTION

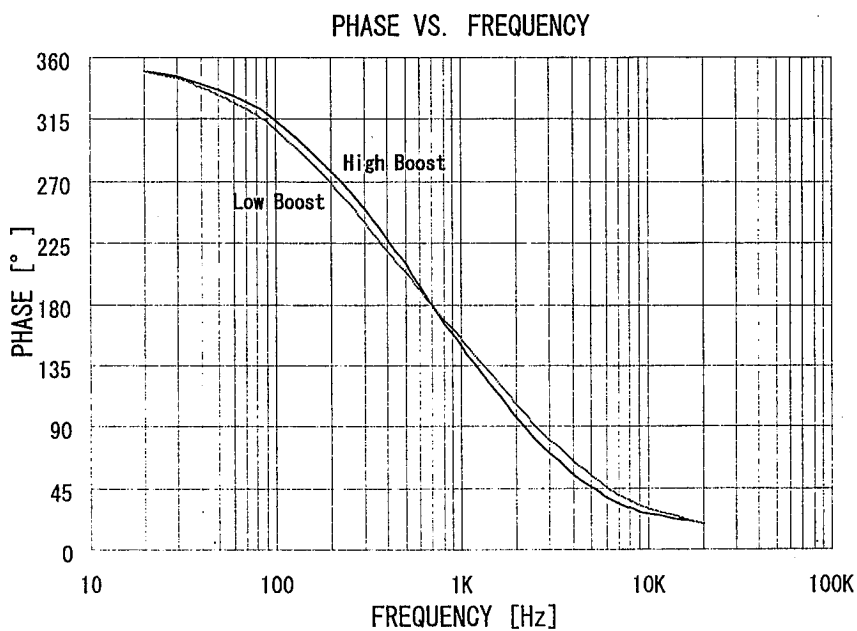
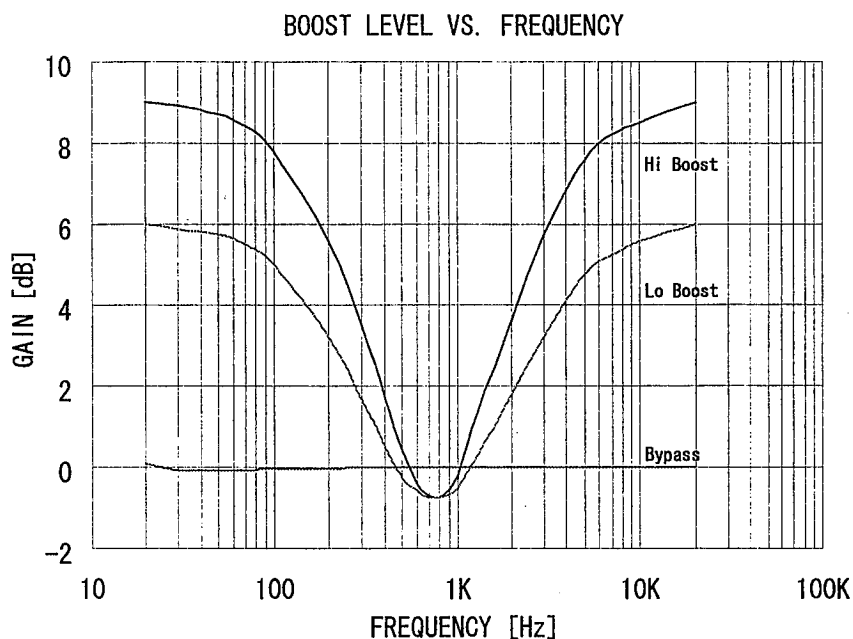
No.	SYMBOL	FUNCTION	EQUIVALENT CIRCUIT
8 9 10	PROCESS LO CONTOUR BBE	Boost Level Control Bypass Control	
11	GND	GND	
12	V+	Power Supply	
13	VREF	Reference Voltage Output	

■ APPLICATION CIRCUIT



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## ■ TYPICAL CHARACTERISTICS



## ■ NOTE

The NJM2150A 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 NJM2150A can be purchased from New Japan Radio Co., Ltd.

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## MEMO

**[CAUTION]**

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