SOUND ENHANCEMENT AUDIO PROCESSOR

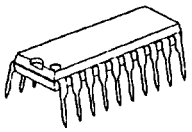
■ GENERAL DESCRIPTION

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

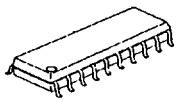
It includes BBE ON/OFF switch and two-grade boost switches in low and high band (Low Band:2.5 or 5.5dB, High Band:4.5dB or 7.5dB).

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

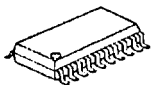
■ PACKAGE OUTLINE



NJM2150D



NJM2150M



NJM2150V

■ FEATURES

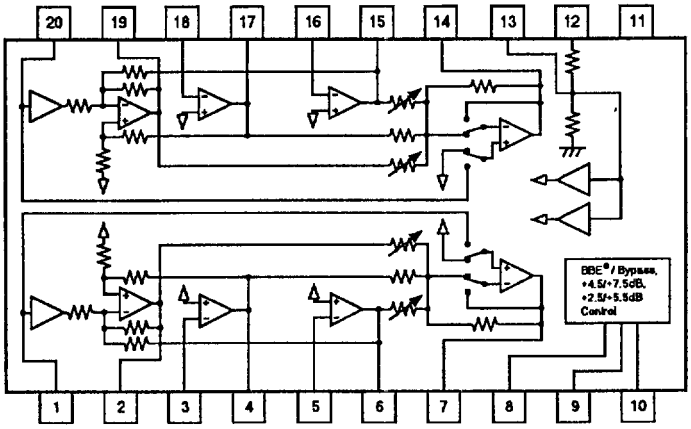
- Operating Voltage (4.5～13V)
- Low Operating Current (8mA typ.)
- Low Output Noise (-100dBv typ.)
- Bypass Gain (0dB typ.)
- BBE ON/OFF Switch
- Independent High/Low Boost two-grade Switch
  (Low Band:2.5 or 5.5dB, High Band:4.5 or 7.5dB)
- Bipolar Technology
- Package Outline DIP20, DMP20, SSOP20

■ 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^+
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

NJM2150D, NJM2150M, NJM2150V
(Top View)



■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	V^+	15	V
Power Dissipation	P_D	(DIP20) 700 (DMP20) 350 (SSOP20) 300	mW
Operating Temperature Range	T_{opr}	-40 to +85	°C
Storage Temperature Range	T_{stg}	-40 to +125	°C

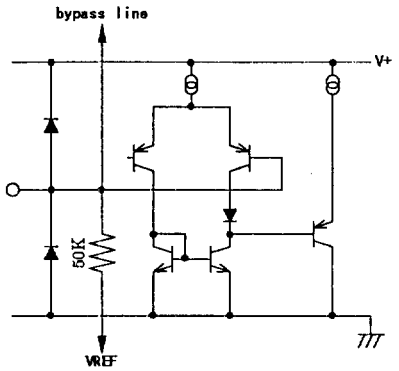
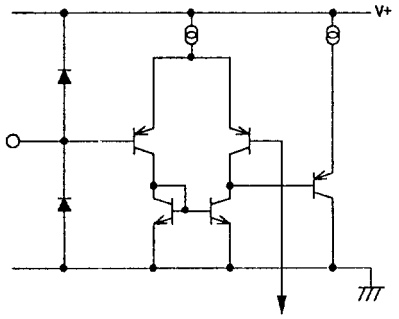
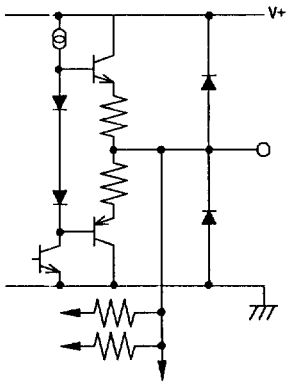
■ ELECTRICAL CHARACTERISTICS (Ta=25°C, V^+=9V)

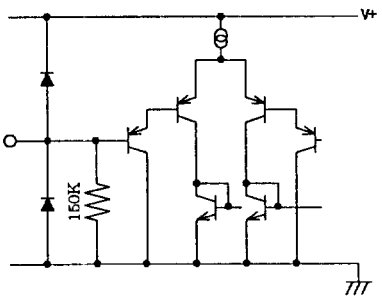
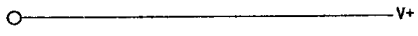
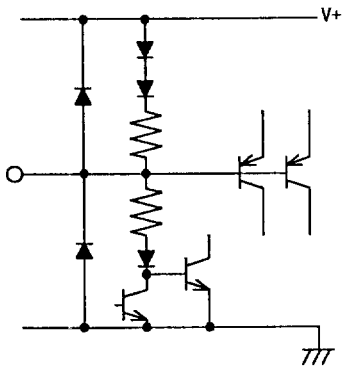
PARAMETER	SYMBOL	TEST CONDITION	FUNCTION		MIN.	TYP.	MAX.	UNIT
			BBE	Boostlevel				
Operating Voltage	V^+				4.5	—	13.0	V
Supply Current	Icc	No Signal			—	8	12	mA
Reference Voltage	Vref				4.0	4.5	5.0	V
SW Control Voltage Threshold	VthH				2.0	—	V^+	V
	VthL				0	—	0.5	V
Boost Level	Boost1	f=20Hz	ON	Low	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	Vinmax	f=1kHz, R_L=10kΩ, THD=10%	BYPASS		2.8	—	—	Vrms
Total Harmonic Distortion	THD	f=1kHz, Vin=0.1Vrms	ON	Low	—	0.04	0.1	%
Output Noise	Vno	Vin=GND, A-Weighting	ON	Low	—	-100	-90	dBv

■ SWITCH FUNCTION

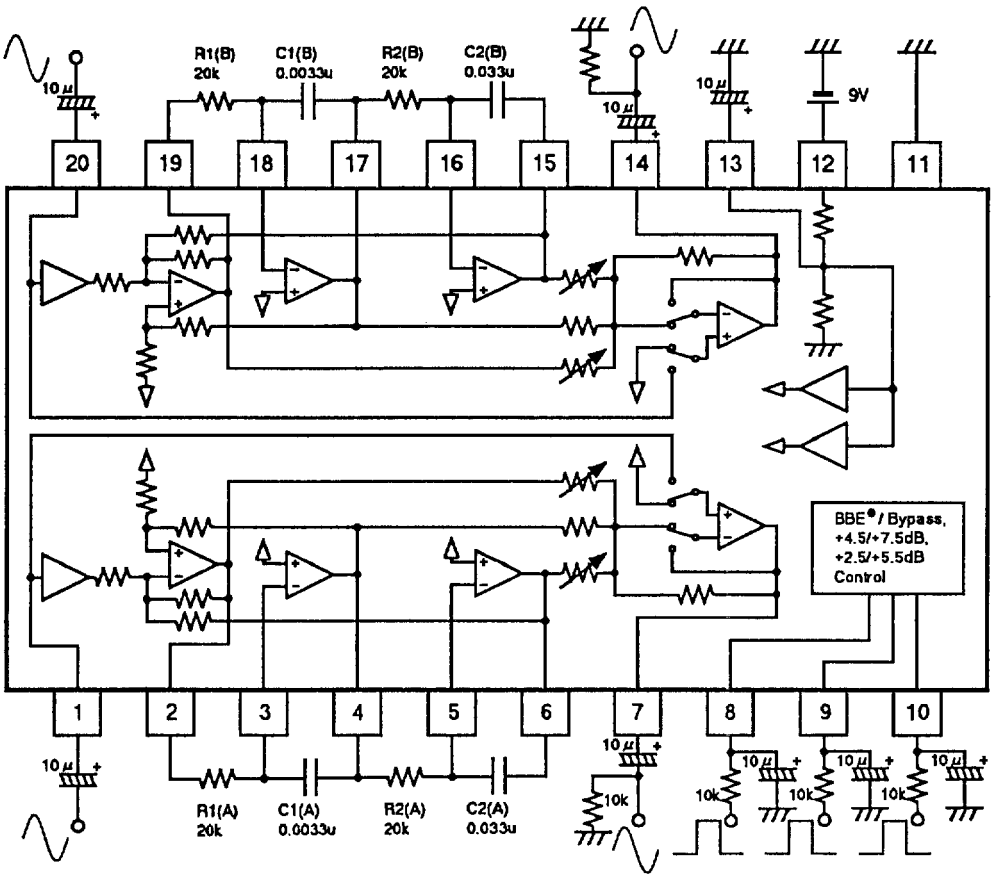
Switch Terminal	Control Voltage Level	Function
BBE	High	BBE ON
	Low	Bypass
PROCESS	High	+7.5dB
	Low	+4.5dB
LO CONTOUR	High	+5.5dB
	Low	+2.5dB

■ Terminal Description

PIN 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	

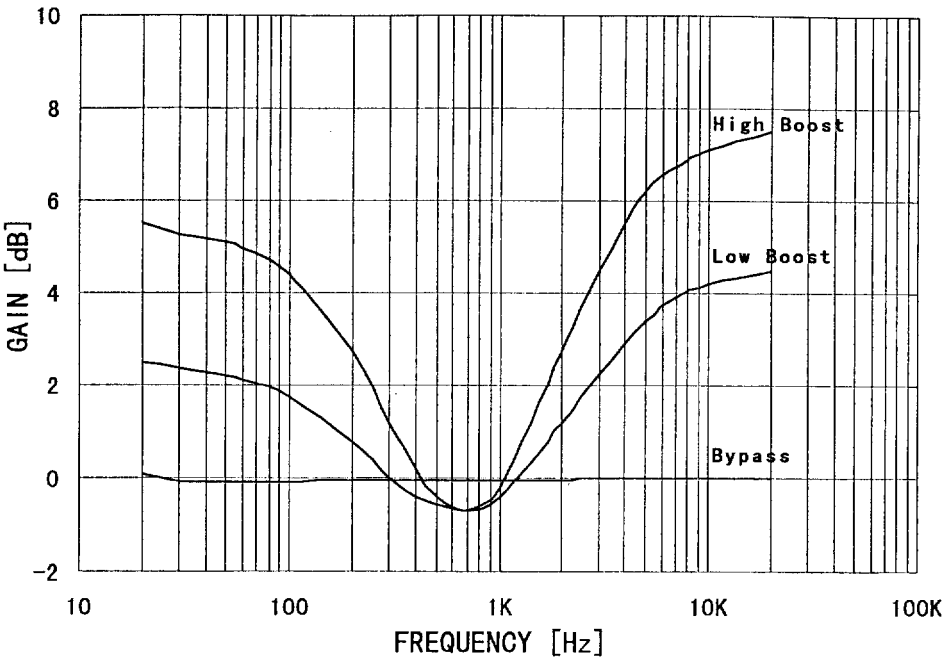
PIN NO.	SYMBOL	FUNCTION	EQUIVALENT CIRCUIT
8 9 10	PROCESS LO CONTOUR BBE	Boost Level Control Bypass Control	
11	GND	GND	
12	V+	Power Surrply	
13	VREF	Reference Voltage Output	

■ APPLICATION CIRCUIT

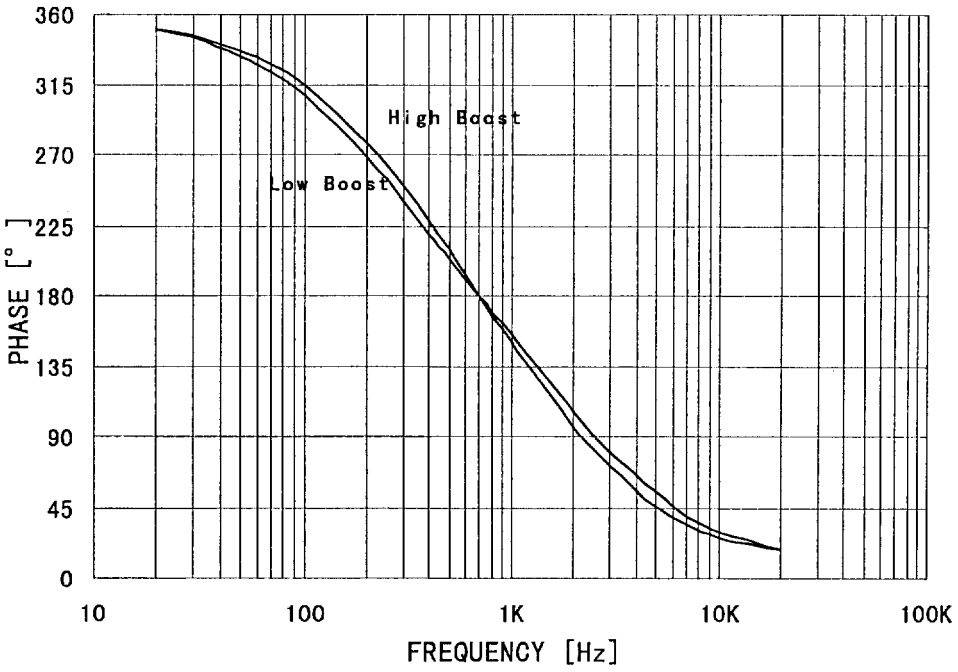


■ TYPICAL CHARACTERISTICS

BOOST LEVEL VS. FREQUENCY



PHASE VS. FREQUENCY



■ NOTE

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BBE is a registered trade mark of BBE Sound Inc.
A license from BBE Sound Inc. is required before the NJM2150 can be purchased from New Japan Radio Co., Ltd.

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