

HIGH-POWER & LOW-VOLTAGE AUDIO POWER AMPLIFIER

■ GENERAL DESCRIPTION

The **NJU7084** is an audio power amplifier designed for telephone applications. No external coupling capacitors are required because of the differential outputs. The closed loop gain is adjusted by two external resistors, and a SD pin permit power down with muting the input signal.

The **NJU7084** improves high output power compared with other amplifier.

■ PACKAGE OUTLINE



NJU7084R

■ APPLICATION

- Cell Phone, PHS
- Portable Telephone, Wireless Telephone
- White Goods
- Security Alarm
- Monitor

■ FEATURES

- Operating Voltage
- Operating Current
- Supply Current in Shutdown Mode
- Output Power
- Thermal Shutdown Circuit
- C-MOS Technology
- Package Outline

$V^+ = 2.8$ to $5.5V$

$I_{DD1} = 2.5mA$ typ. ($V^+ = 5V, R_L = \infty$, no signal)

$I_{DD1} = 2mA$ typ. ($V^+ = 3V, R_L = \infty$, no signal)

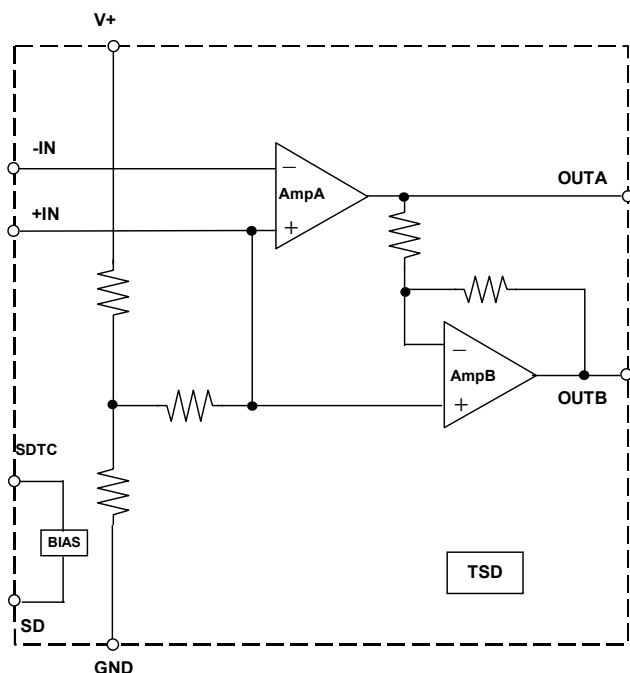
$I_{DD2} = 2\mu A$ max.

$P_O = 1W$ typ. ($V^+ = 5V, R_L = 8\Omega, THD = 2\%$)

$P_O = 400mW$ typ. ($V^+ = 3V, R_L = 4\Omega, THD = 2\%$)

VSP8

■ PIN CONFIGURATION & BLOCK DIAGRAM



1. SD
2. SDTC
3. +IN
4. -IN
5. OUTA
6. V^+
7. GND
8. OUTB

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V ⁺	+7	V
Power Dissipation	P _D	960 ^{*1)} (VSP8)	mW
Output Peak Current	I _{op}	500	mA
Input Voltage Range	V _{IN}	-0.3 to V ⁺ +0.3 ^{*2)}	V
Operating Temperature Range	T _{opr}	-40 to +85	°C
Storage Temperature Range	T _{stg}	-40 to +150	°C

^{*1)} EIA/JEDEC STANDARD Test board (76.2 x 114.3 x 1.6mm, 4layers, FR-4) mounting

^{*2)} SD, SDTC, IN+, IN-, OUTA, OUTB terminals.

■ RECOMMENDED OPERATING VOLTAGE RANGE (Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Voltage Range	V ⁺	-	2.8	3.0	5.5	V

■ ELECTRICAL CHARACTERISTICS

● Amplifier (Ta=25°C, V⁺=5V, G_V=6dB, f=1kHz, R_L=8Ω, Active)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current 1	I _{DD1}	No signal, R _L =∞, Active	-	2.5	6	mA
Operating Current 2	I _{DD2}	No signal, R _L =∞, V _{SD} =0.25V	-	-	2	μA
Output Power	P _{O1}	THD≤2%	0.8	1	-	W
Total Harmonic Distortion (THD+N)	THD	P _O =400mW	-	0.1	-	%
Supply Voltage Rejection Ratio	PSRR	C1=1μF, C2=2.2μF V _{ripple} =100mVrms	45	55	-	dB
Mute Attenuation	MAT	Shutdown	-	70	-	dB
Input Resistance	R _{SD}	SD Terminal	105	150	195	kΩ
Output Offset Voltage	V _{OD}	V _{IN} =0V	-50	-	50	mV

(Ta=25°C, V⁺=3V, G_V=6dB, f=1kHz, R_L=4Ω, Active)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current 1	I _{DD1}	No signal, R _L =∞, Active	-	2.0	4	mA
Operating Current 2	I _{DD2}	No signal, R _L =∞, V _{SD} =0.25V	-	-	2	μA
Output Power	P _{O1}	THD≤2%	320	400	-	mW
Total Harmonic Distortion (THD+N)	THD	P _O =200mW	-	0.1	-	%
Supply Voltage Rejection Ratio	PSRR	C1=1μF, C2=2.2μF V _{ripple} =100mVrms	-	55	-	dB
Mute Attenuation	MAT	Shutdown	-	70	-	dB
Output Offset Voltage	V _{OD}	V _{IN} =0V	-50	-	50	mV

V_{SD}: SD Terminal Voltage

● Mode Control (Ta=25°C)

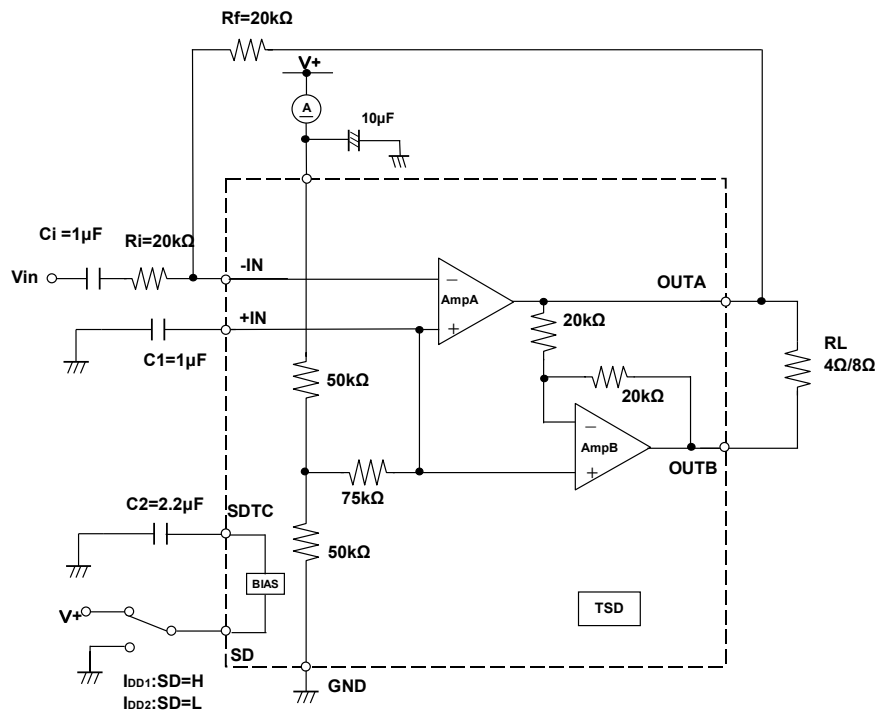
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
High Level Input Voltage	V _{IH}	-	0.7V ⁺	-	V ⁺	V
Low Level Input Voltage	V _{IL}	-	0	-	0.25	

■ CONTROL TERMINAL EXPLANATION

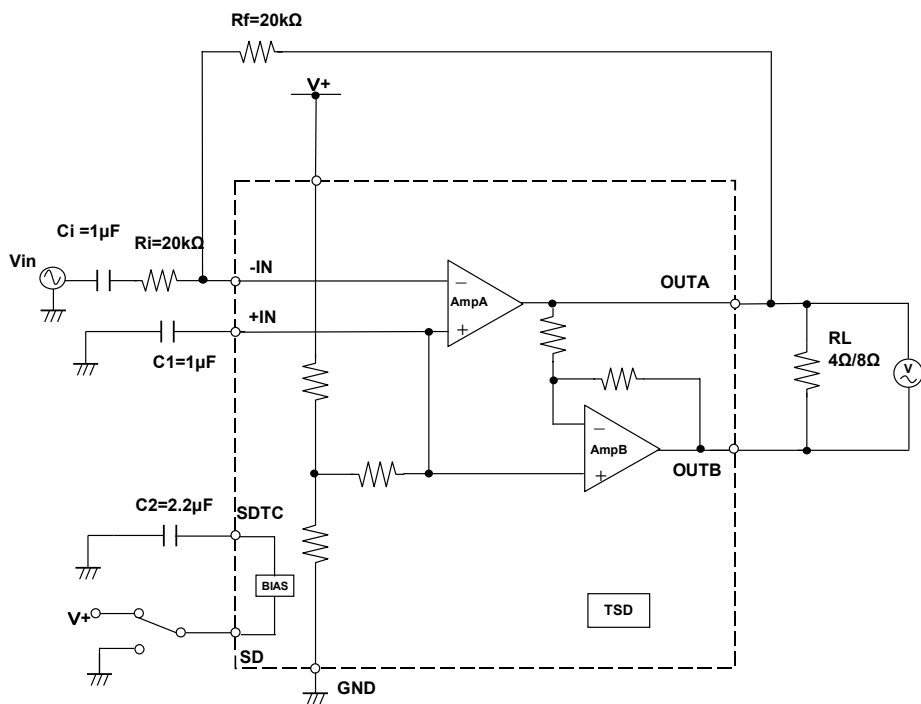
MODE	CONTROL SIGNAL (SD Terminal)	STATUS
Shutdown	L(=V _{IL})	IC is standby.
Active	H(=V _{IH})	IC is active.

■ TEST CIRCUIT

TEST CIRCUIT1 (Operating Current I_{DD1} , I_{DD2})

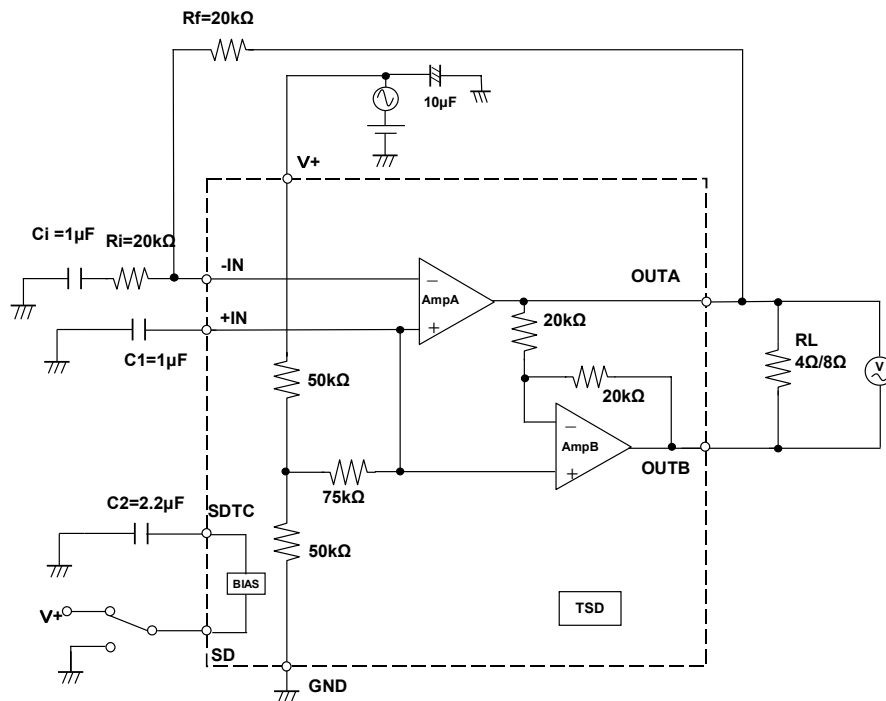


TEST CIRCUIT2 (Output Power P_O , Total Harmonic Distortion THD)

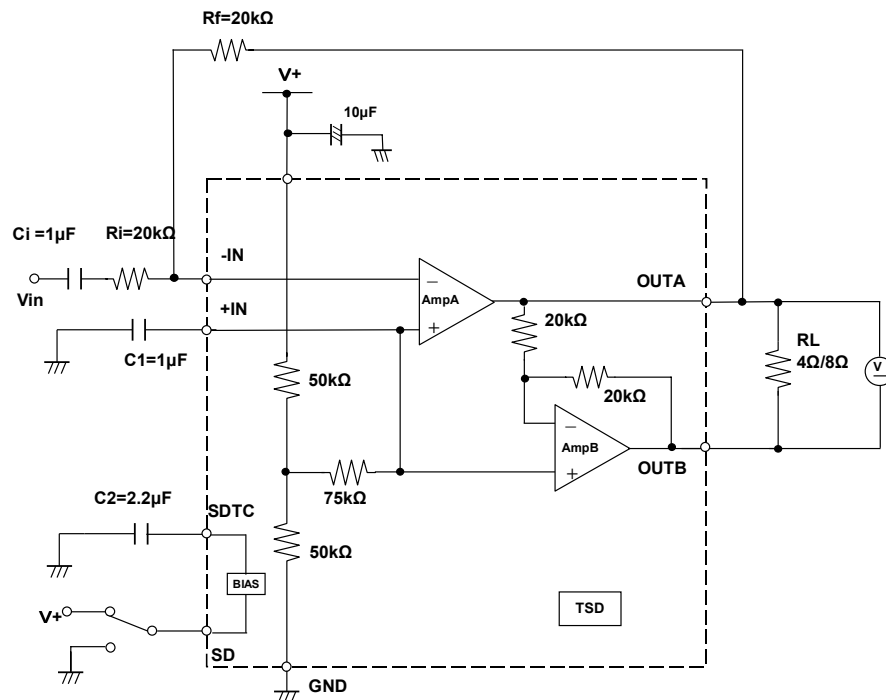


■ TEST CIRCUIT

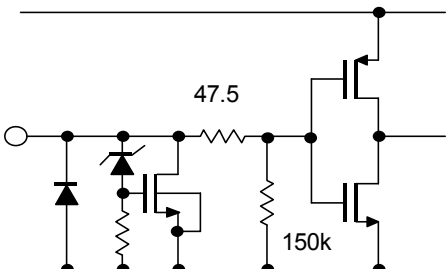
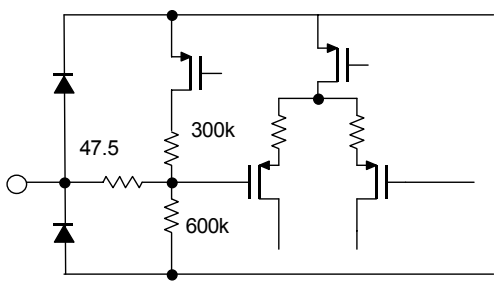
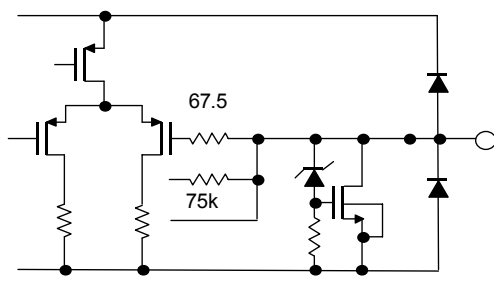
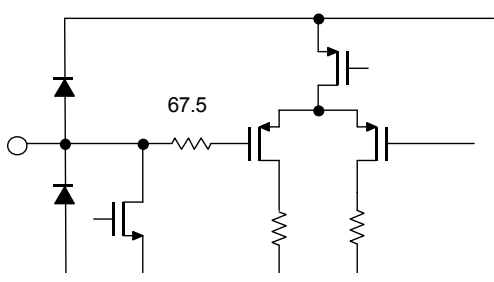
TEST CIRCUIT3 (Supply Voltage Rejection Ratio PSRR)



TEST CIRCUIT4 (Output Offset Voltage V_{OD})

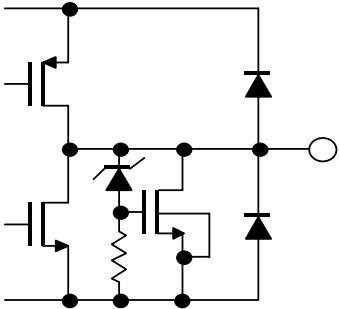
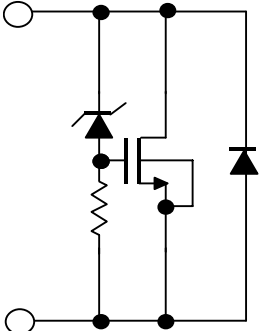


■ EQUIVALENT CIRCUIT

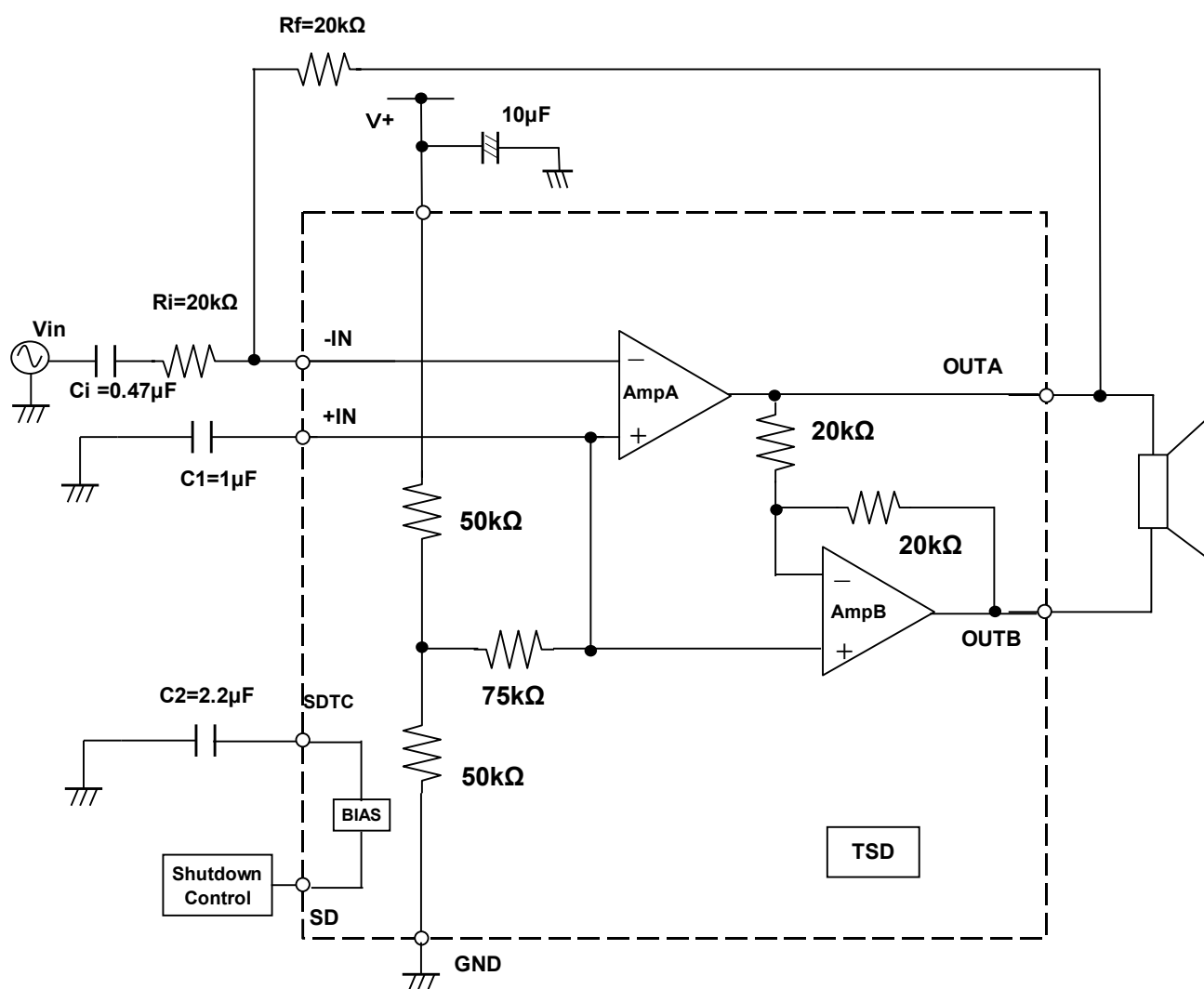
PIN No.	SYMBOL	EQUIVALENT CIRCUIT	TERMINAL VOLTAGE	Note
1	SD		-	
2	SDTC		$2*V^+/3$	
3	+IN		$V^+/2$	
4	-IN		$V^+/2$	

NJU7084

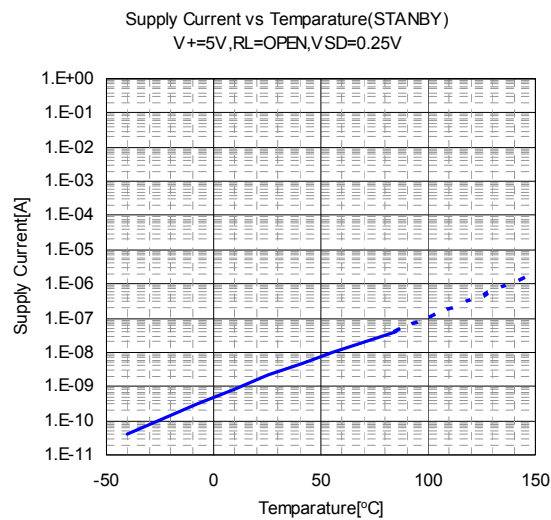
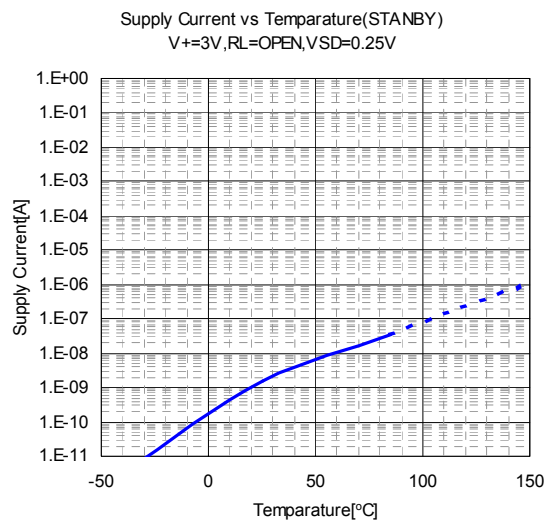
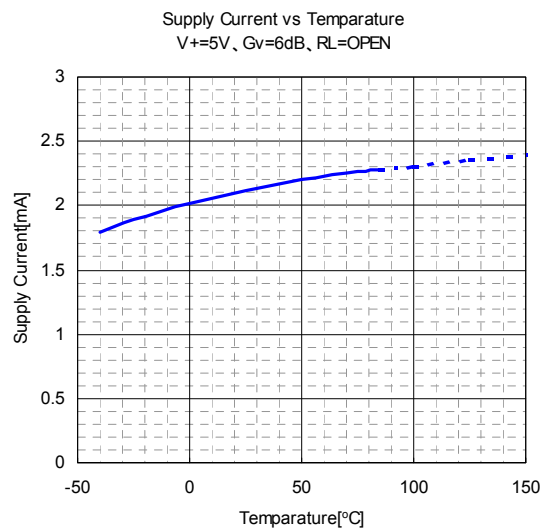
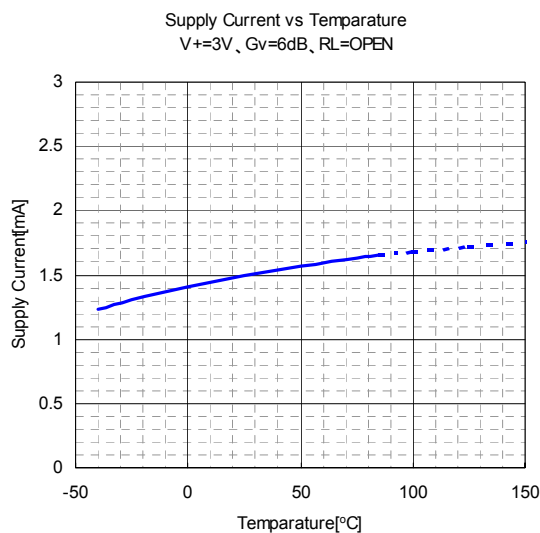
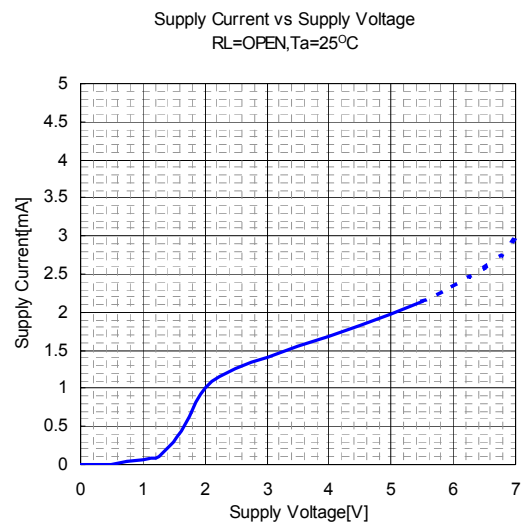
■ EQUIVALENT CIRCUIT

PIN No.	SYMBOL	EQUIVALENT CIRCUIT	TERMINAL VOLTAGE	Note
5 8	OUTA OUTB		$V^+/2$	
6 7	V^+ GND		-	

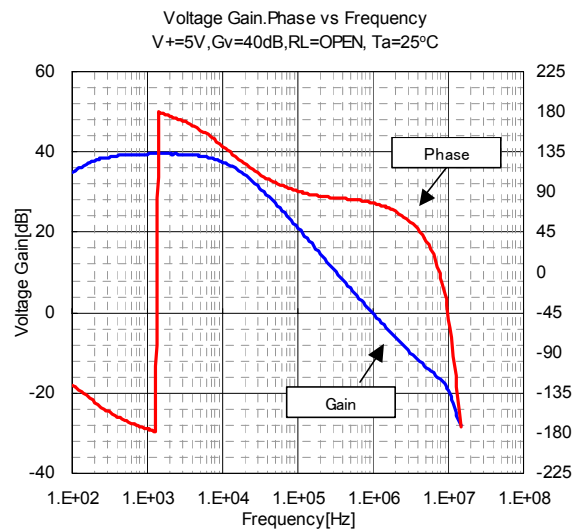
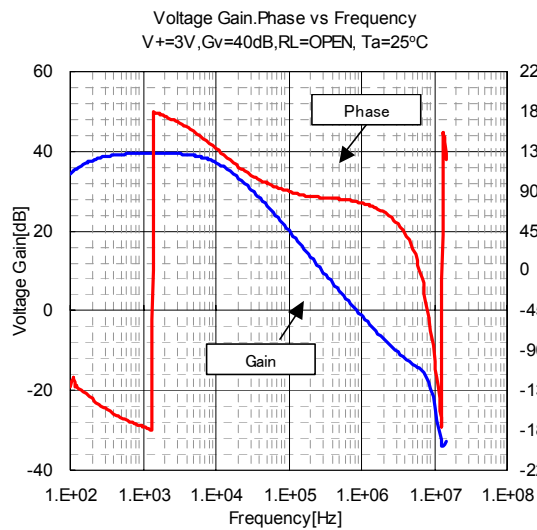
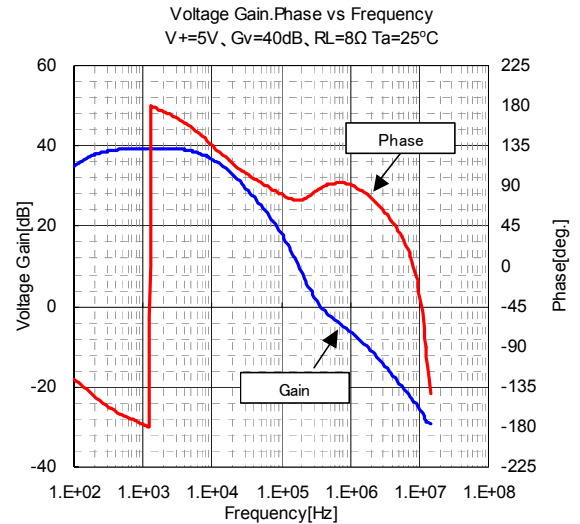
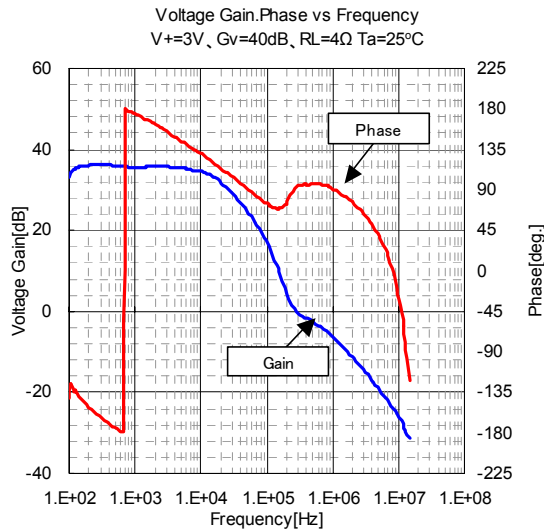
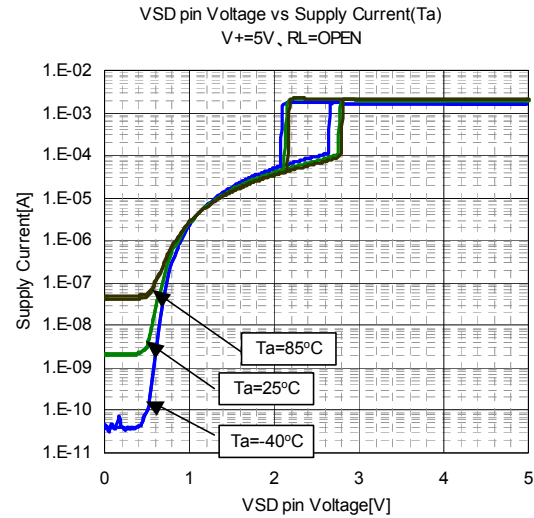
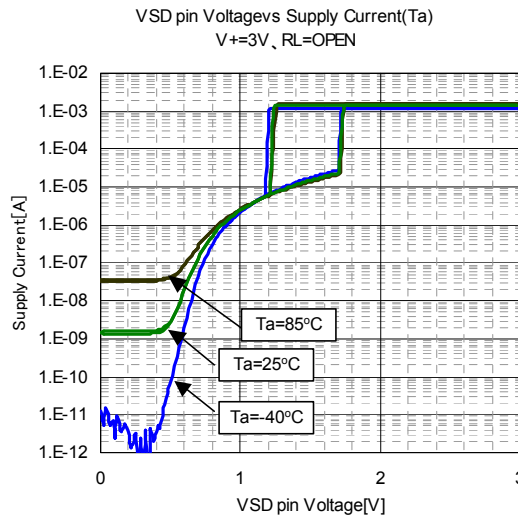
■ APPLICATION CIRCUIT



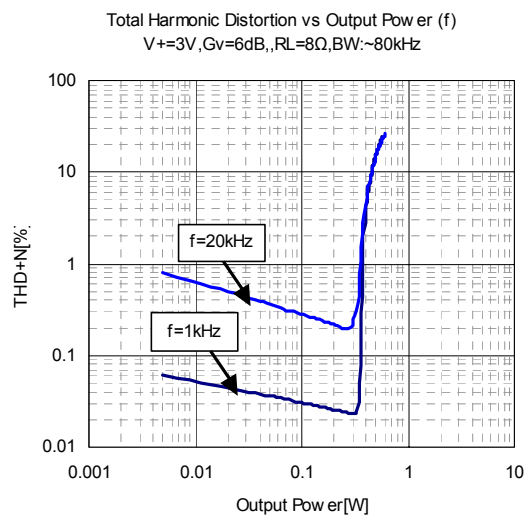
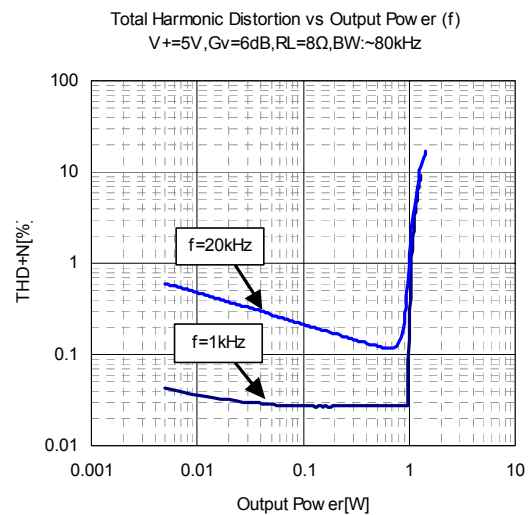
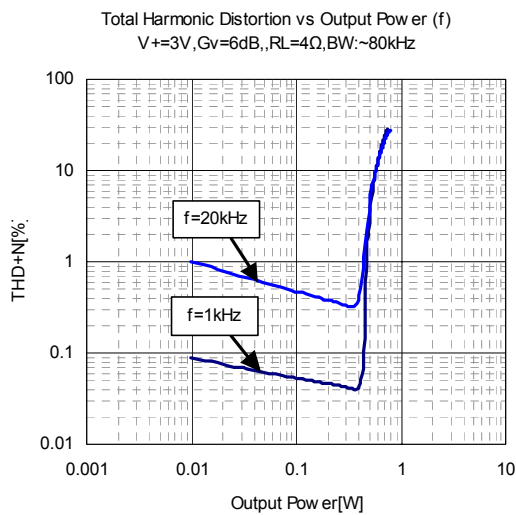
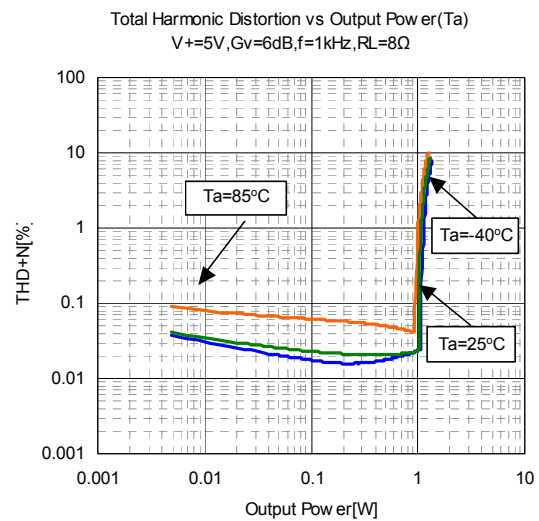
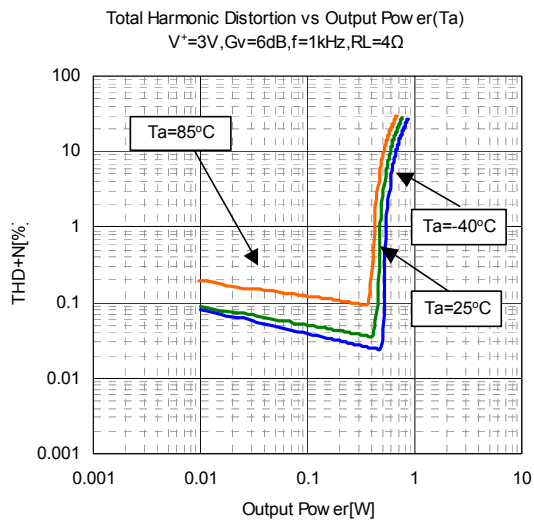
TYPICAL CHARACTERISTICS



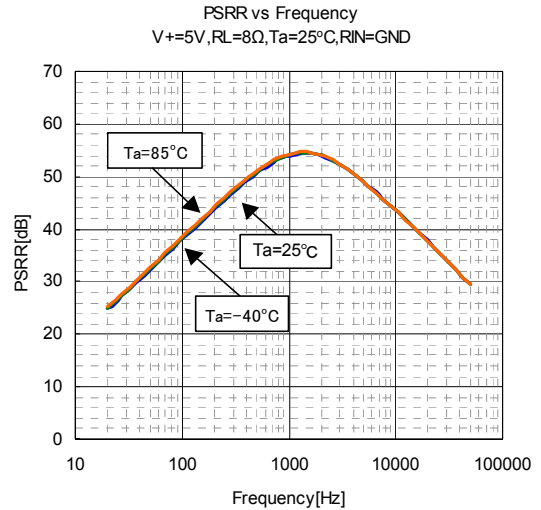
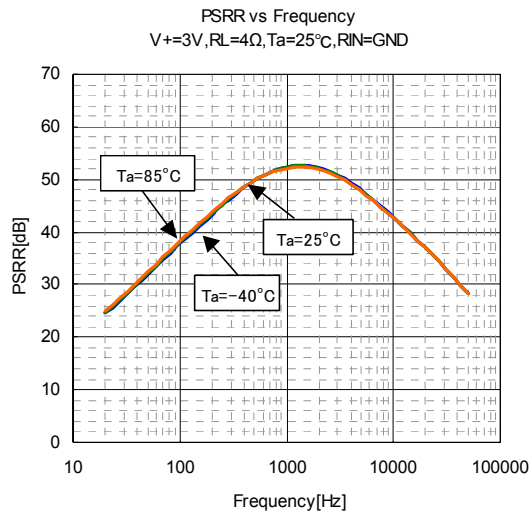
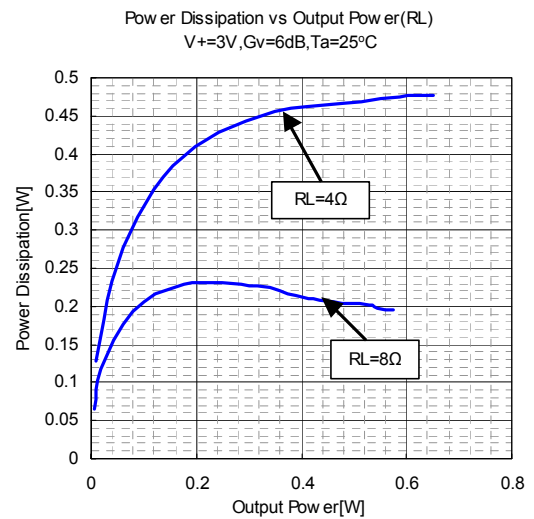
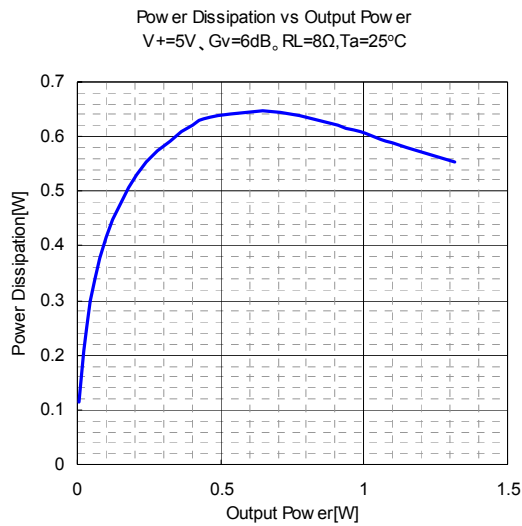
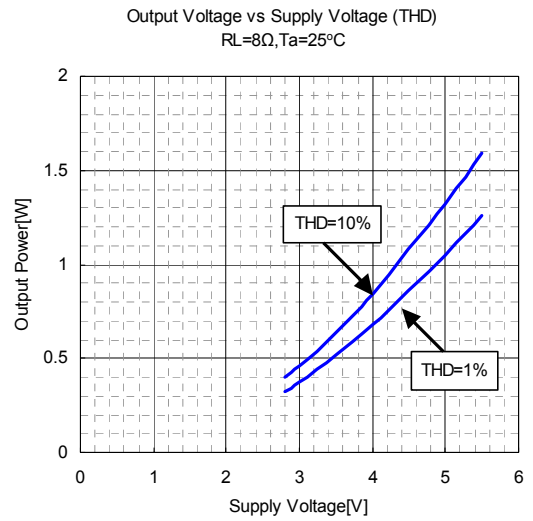
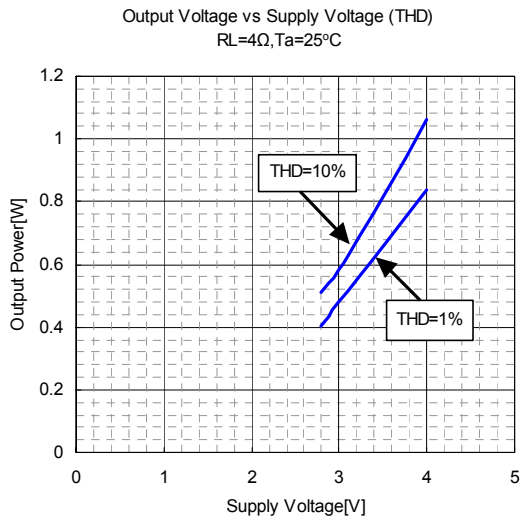
■ TYPICAL CHARACTERISTICS



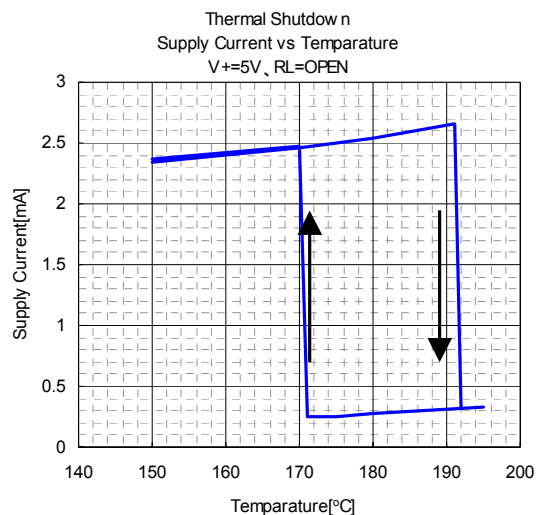
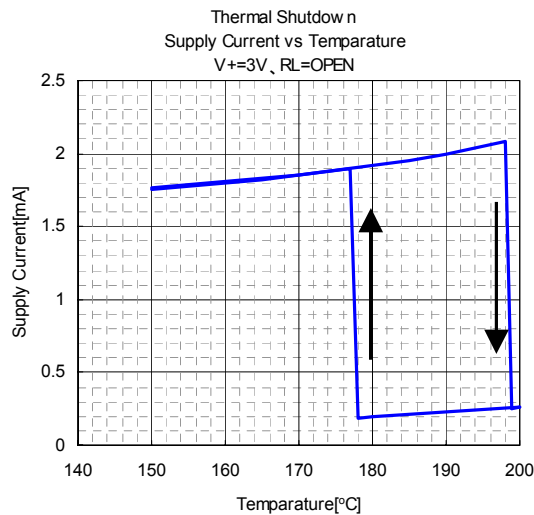
TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS



[CAUTION]
The specifications on this databook are only given for information , without any guarantee as regards either mistakes or omissions. The application circuits in this databook are described only to show representative usages of the product and not intended for the guarantee or permission of any right including the industrial rights.