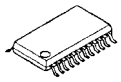
4in-1out Audio Selector with Isolation amplifier

■ GENERAL DESCRIPTION

The **NJM2754** is 4In-1out stereo audio Selector with ground noise isolation amplifiers. It contains dual channel differential amplifier.

It is developed for those car audio applications where long connections between head unit and other components are necessary and ground noise has to be eliminated.

■ PACKAGE OUTLINE

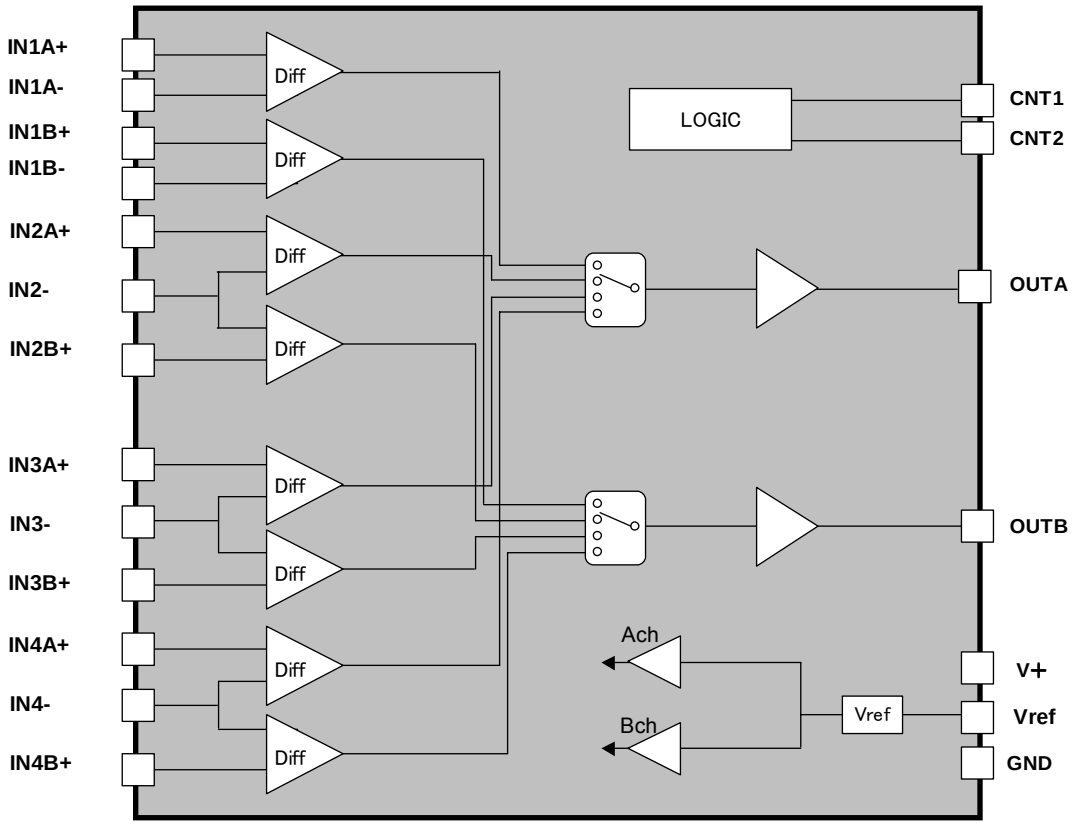


NJM2754V

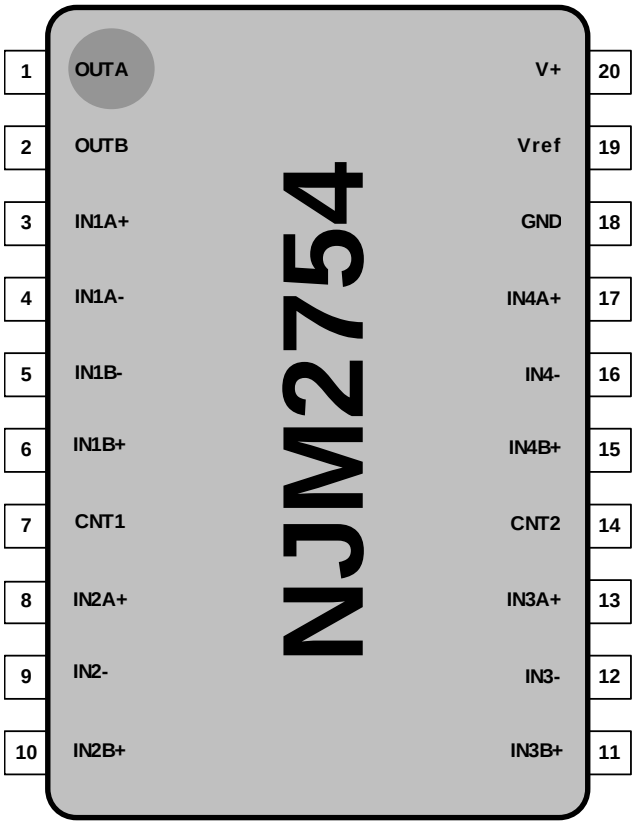
■ FEATURES

- 4in-1out Stereo Audio Selector
- Operating Voltage 4.3 to 12V
- Operating Current 14mA(typ.)
- Common mode rejection ratio CMRR=60dB typ.
- Maximum Output Voltage 2Vrms min., @ THD=0.1%
- Supply Voltage Rejection Ratio 60dB typ.
- Total Harmonic Distortion 0.003% typ.
- Noise Output Voltage 1.7μVrms typ.
- Bipolar Technology
- Package Outline SSOP20

■ BLOCK DIAGRAM



■PIN CONFIGURATION



No.	SYMBOL	FUNCTION
1	OUTA	Ach Output
2	OUTB	Bch Output
3	IN1A+	Ach +Input 1
4	IN1A-	Ach -Input1
5	IN1B-	Bch -Input1
6	IN1B+	Bch +Input 1
7	CNT1	CONTROL 1
8	IN2A+	Ach +Input 2
9	IN2-	-Input2
10	IN2B+	Bch +Input 2
11	IN3B+	Bch +Input 3
12	IN3-	-Input3
13	IN3A+	Ach +Input 3
14	CNT2	CONTROL 2
15	IN4B+	Bch +Input 4
16	IN4-	-Input4
17	IN4A+	Ach +Input 4
18	GND	Ground
19	Vref	Reference Voltage
20	V+	Power Supply

■**ABSOLUTE MAXIMUM RANGES** (Ta=25°C)

PARAMETER	SYMBOL	RANGE	UNIT
Supply Voltage	V^+	+15	V
Maximum Input Voltage	V_{IM}	0 to $V^{+(*)}$	V
Power Dissipation	P_D	SSOP20 : 700(1) 950(2) (1)EIA/JEDEC STANDARD Test board (76.2x114.3x1.6mm, 2layer, FR-4) mounting (2) EIA/JEDEC STANDARD Test board (76.2x114.3x1.6mm, 4layer, FR-4) mounting	mW
Operating Temperature	Topr	-40 to +85	°C
Storage Temperature	Tstg	-40 to +150	°C

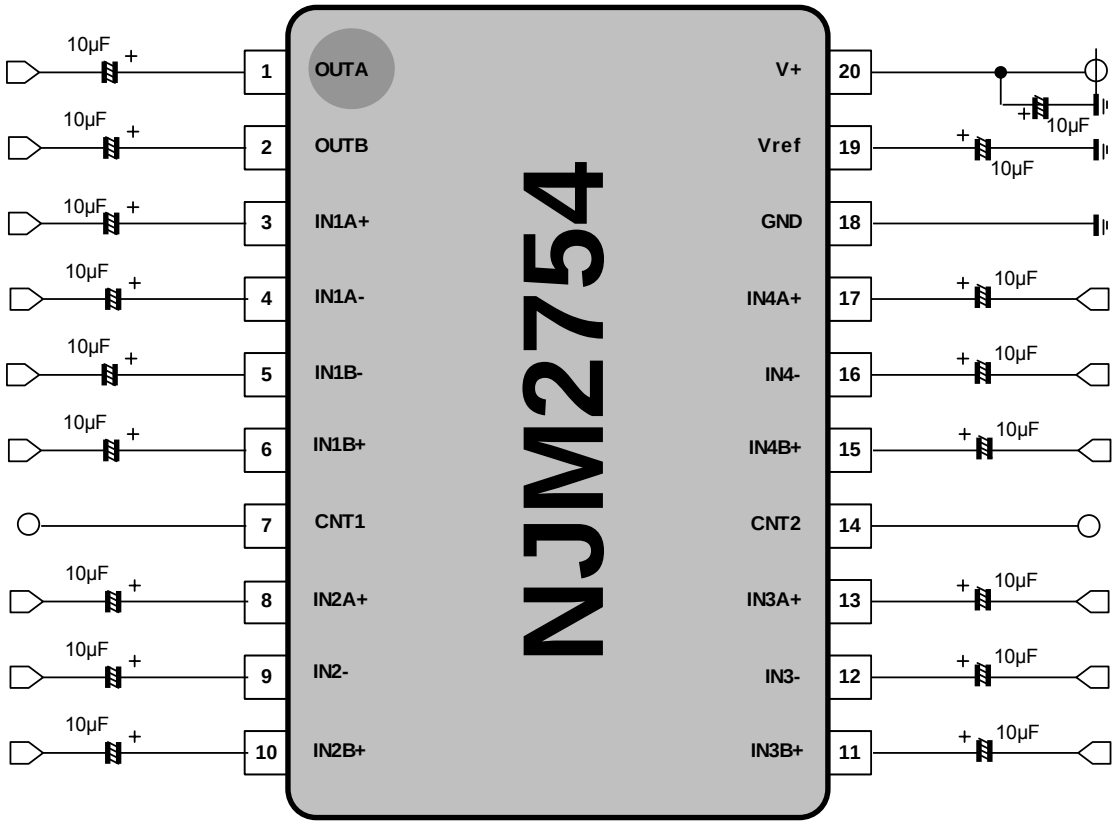
■**ELECTRICAL CHARACTERRISTIC** (V^+=9V,Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
DCCHARACTERRISTIC						
Operating Voltage	V^+		4.3	9	12	V
Operating Current	I_{CC}	No Signal	-	14	20	mA
Reference Voltage	V_{REF}		3.8	4.3	4.8	V
AC CHARACTERRISTIC (Non-inverting circuit, f=1kHz, Vin=1Vrms, R_g=0Ω, R_L=10kΩ unless otherwise specified						
Voltage Gain	Gv		-1.0	0.0	+1.0	dB
Cross Talk	CT	f=1kHz,A-Weighted	100	110	-	dB
Channel Separation	CS	f=1kHz,A-Weighted	90	110	-	dB
Channel Balance	BAL		-	-	0.5	dB
Roll-off High Frequency	f_{RH}	-1dB	100	-	-	kHz
Input Resistance	R_{IN}		85	105	125	kΩ
Output Resistance	R_{OUT}		-	90	-	Ω
Maximum Output Voltage	V_{OM}	THD=0.1%, f = 1kHz	2	2.5	-	Vrms
Noise Output Voltage	V_{NO}	Rg=600Ω, A-weighted	-	1.7	2.5	μVrms
Total Harmonic Distortion	THD	f=1kHz , V_{IN}=1Vrms, BW=400Hz to 30kHz	-	0.003	0.01	%
Common Mode Rejection Ratio	CMRR		50	60	-	dB
Common Mode Input Voltage	Vicm	CMRR=50dB	-	2	-	Vrms
Supply Voltage Rejection Ratio	SVR	f=100Hz , V_{ripple}=100mVrms	55	65	-	dB
Switch-ON Voltage Level	V_{CH}	V_{CNT}=High Level	2.3	-	V^+	V
Switch-OFF Voltage Level	V_{CL}	V_{CNT}=Low Level	-	-	0.8	V

■SWITCH CONTROL LOGIC

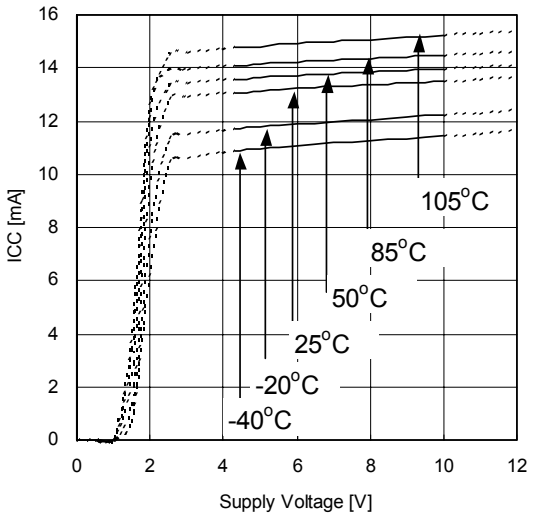
CNT2	CNT1	Input Ach / Bch
L	L	1
L	H	2
H	L	3
H	H	4

■APPLICATION CIRCUIT

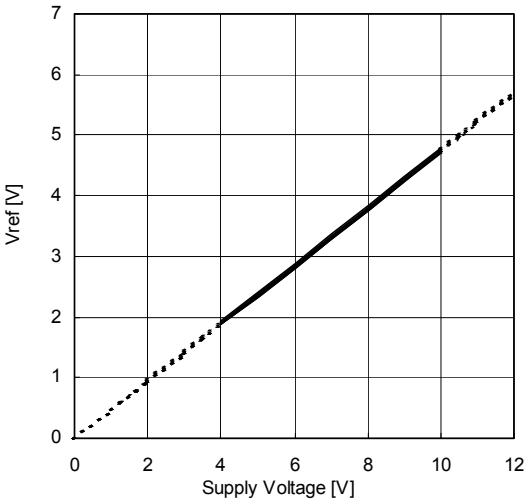


■TYPICAL CHARACTERISTICS

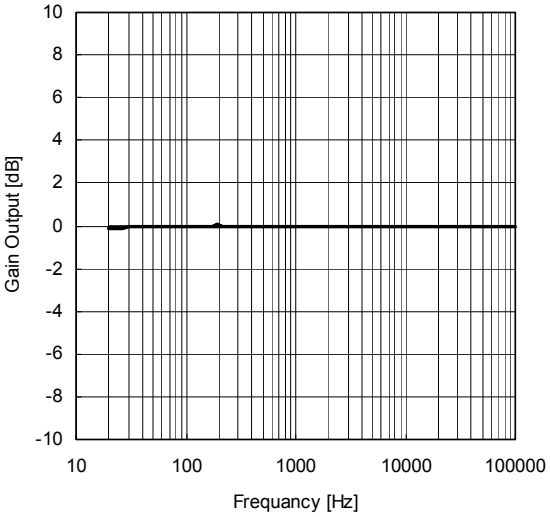
ICC vs Supply Voltage
No signal



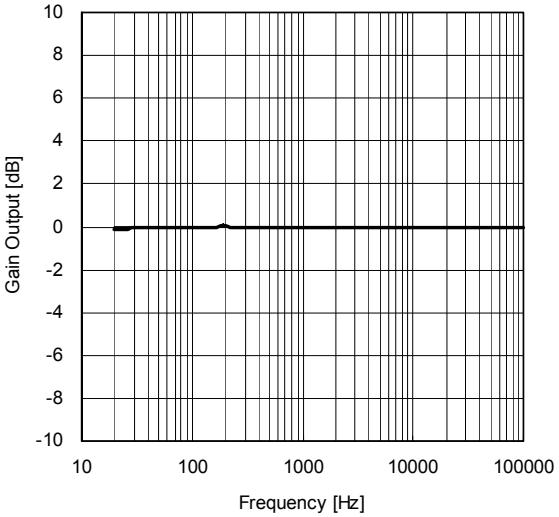
Vref vs Supply Voltage
No signal, T=105,85,50,25,-20,-40°C



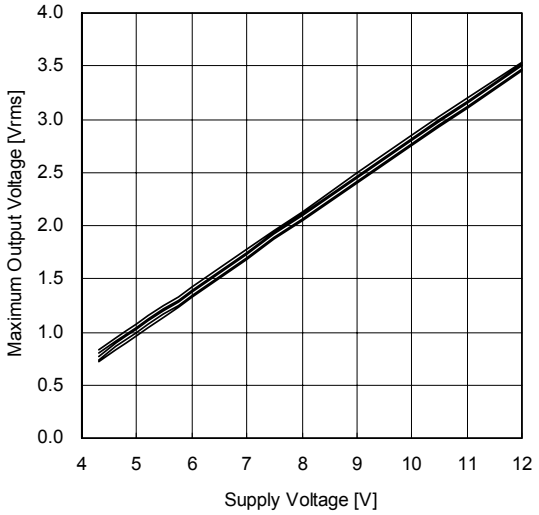
Gain Output vs Frenquancy
V+=9V, Vin=1Vrms, INA1-Aout, Non-Inverting circuit
T=105,85,50,25,-20,-40°C



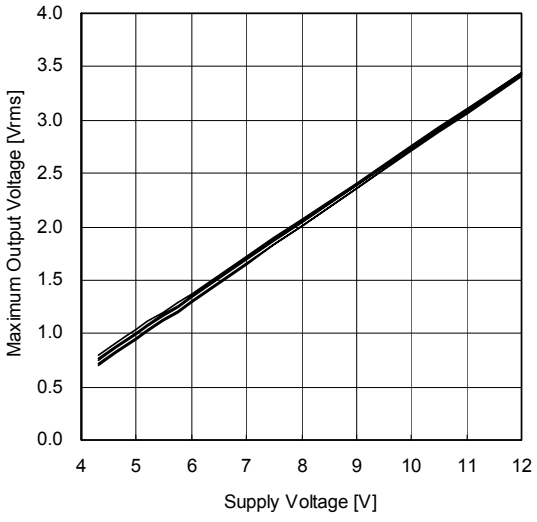
Volume Gain output vs Frequency
V+=9V, Vin=1Vrms, INA1-Aout, Inverting circuit
T=105,85,50,25,-20,-40°C



Maximum Output Voltage vs Supply Voltage
V=+9V, THD=0.1%, INA1-Aout, Non-Inverting circuit,
T=105,85,50,25,-20,-40°C



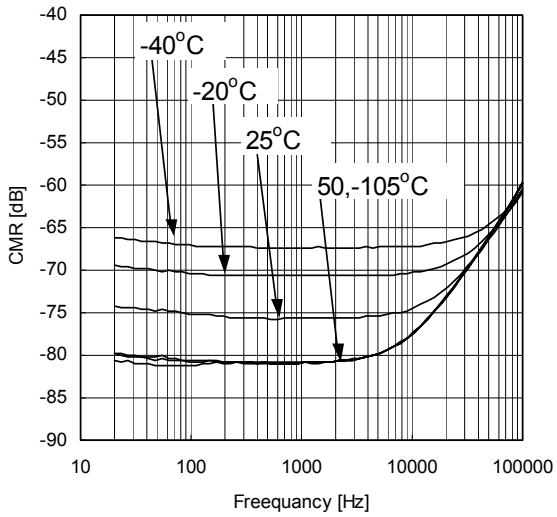
Maximum Output Voltage vs Supply Voltage
V=+9V, THD=0.1%, I/O: INA1-Aout, Reversing circuit
T=105,85,50,25,-20,-40°C



■TYPICAL CHARACTERISTICS

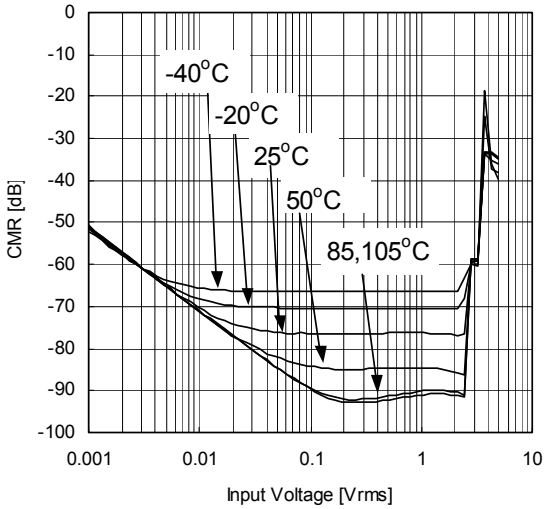
CMR vs Frequancy

V+=9V, Vin=1Vrms, OUTA,
T=105,85,50,25,-20,-40°C



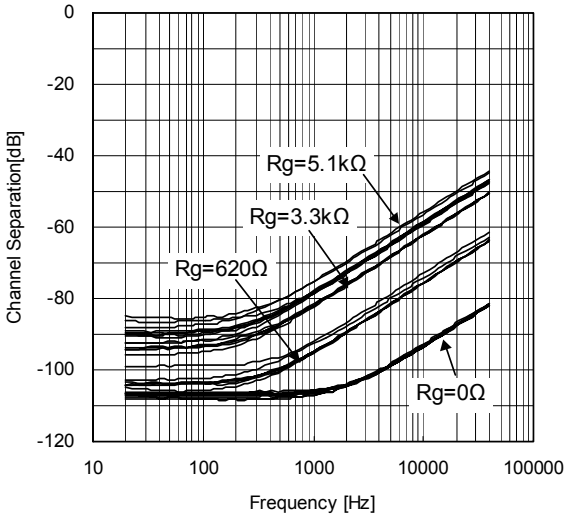
CMR vs Input Voltage

V+=9V, f=1kHz, BW:400Hz-30kHz, OUTA,
T=105,85,50,25,-20,-40°C



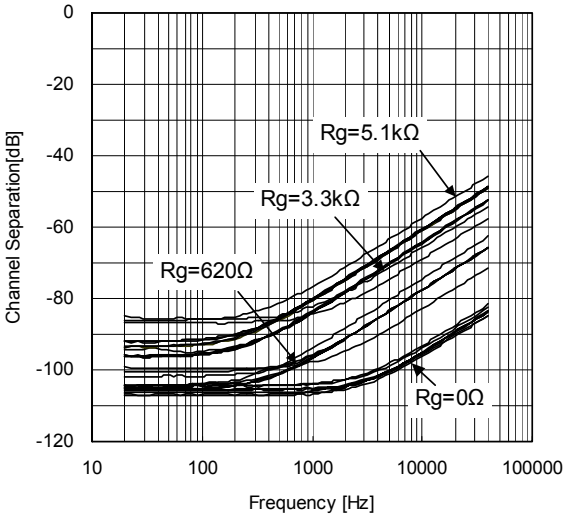
Channel Separation vs Frequency

V=+9V, Vin=1Vrms, BW:10-80kHz, I/O: INB1+-outA,
Non-reversing circuit,T=105,85,50,25,-20,-40°C



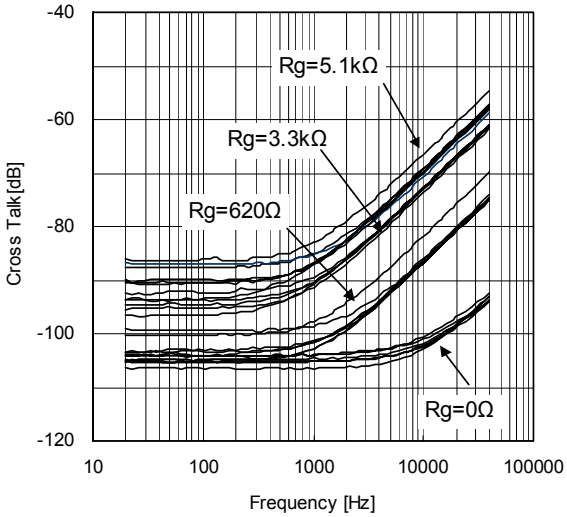
Channel Separation vs Frequency

V=+9V, Vin=1Vrms, BW:10-80kHz, I/O: INB1--outA,
Reversing circuit,T=105,85,50,25,-20,-40°C



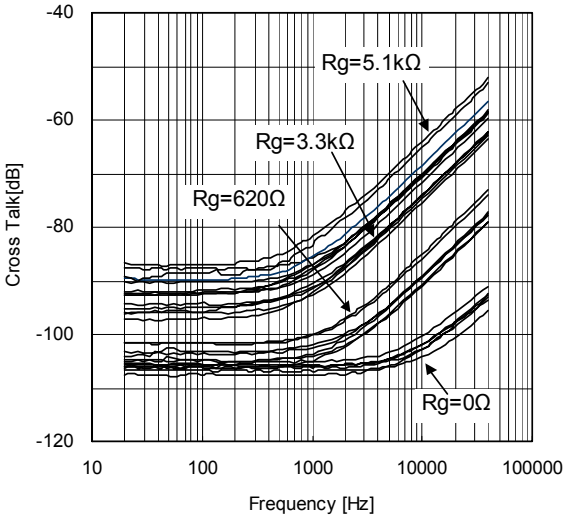
Cross Talk vs Frequency

V=+9V, Vin=1Vrms, BW:10-80kHz,Non-reversing circuit
I/O: INA2+,INA3+,INA4+,/OutA, T=105,85,50,25,-20,-40°C



Cross Talk vs Frequency

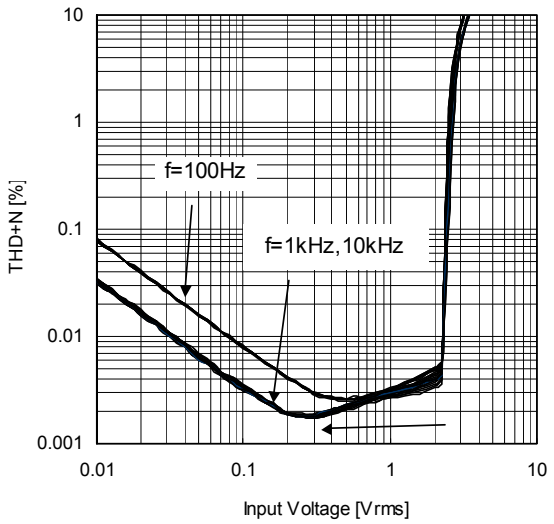
V=+9V, Vin=1Vrms, BW:10-80kHz,Reversing circuit
II/O: INA2-,INA3-,INA4-,/OutA, T=105,85,50,25,-20,-40°C



■TYPICAL CHARACTERISTICS

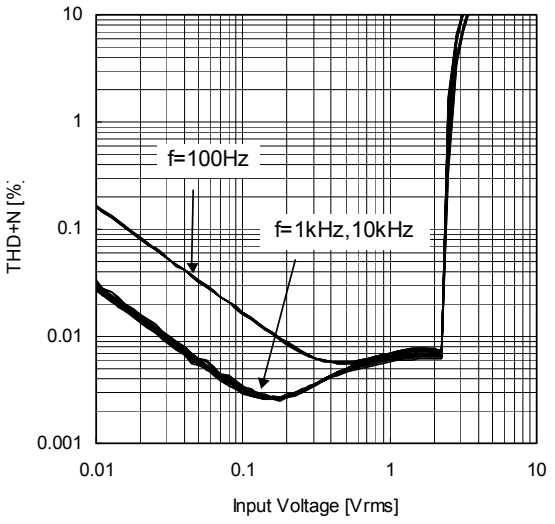
THD+N vs Input Voltage (Non-reversing circuit)

V=+9, BW:10-22kHz(f=100Hz), 400-30kHz(f=1kHz, 10kHz),
I/O: INA1+,/OutA, T=105,85,50,25,-20,-40°C



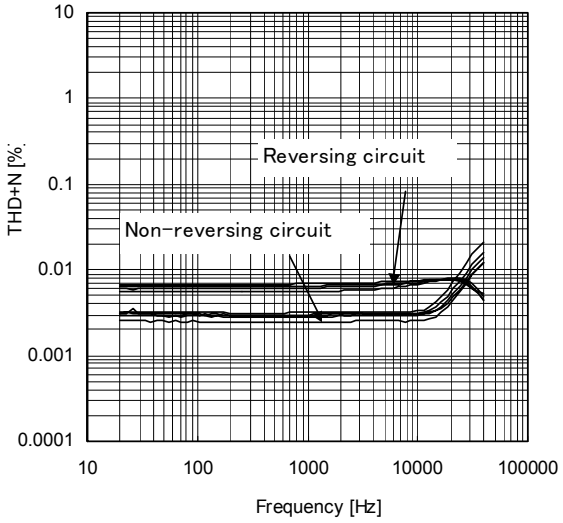
THD+N vs Input Voltage (Reversing circuit)

V=+9V, BW:10-22kHz(f=100Hz), 400-30kHz(f=1kHz, 10kHz),
I/O: INA1-,/OutA, T=105,85,50,25,-20,-40°C



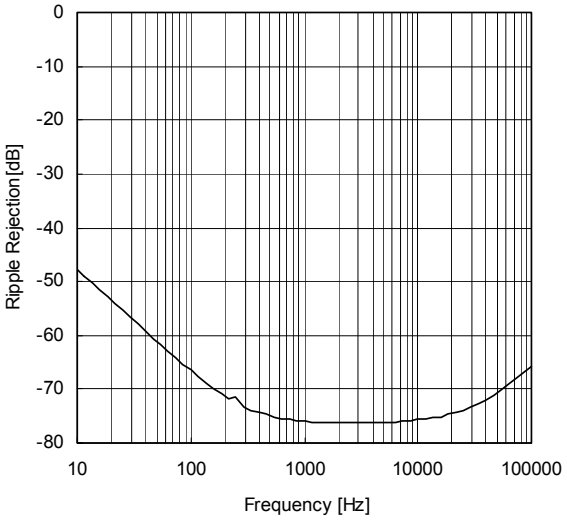
THD+N vs Frequency

V=+9V, f=1kHz, BW:10-80kHz, Vin=1Vrms ,
I/O: INA1-1Aout, T=105,85,50,25,-20,-40°C



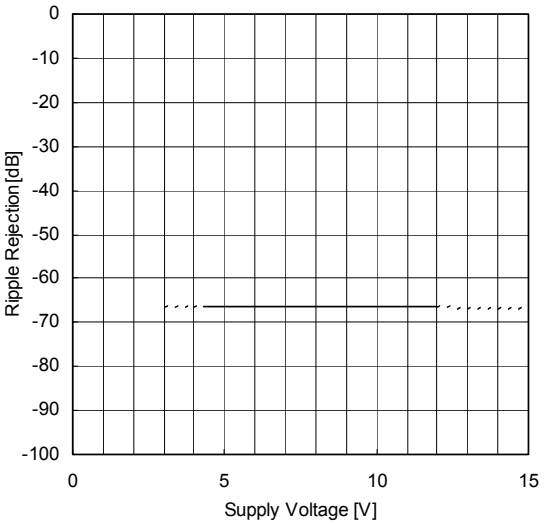
RippleRejection vs Frequency

Vrp=100mV, f=100Hz, Rg=600Ω,V+=9V, T=25°C



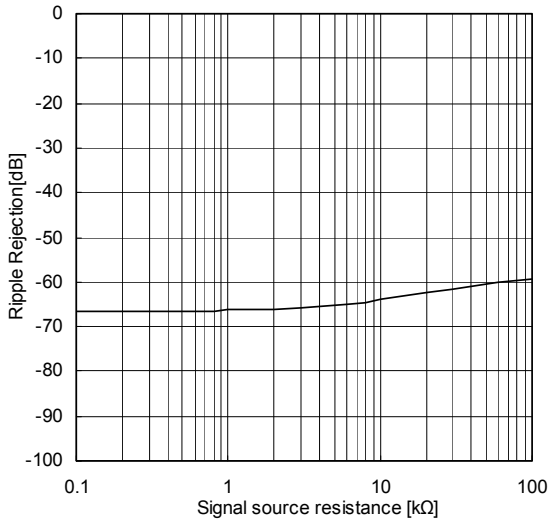
RippleRejection vs Supply Voltage

Vrip=100mV, f=100Hz, T=25°C



RippleRejection vs Signal source resistance

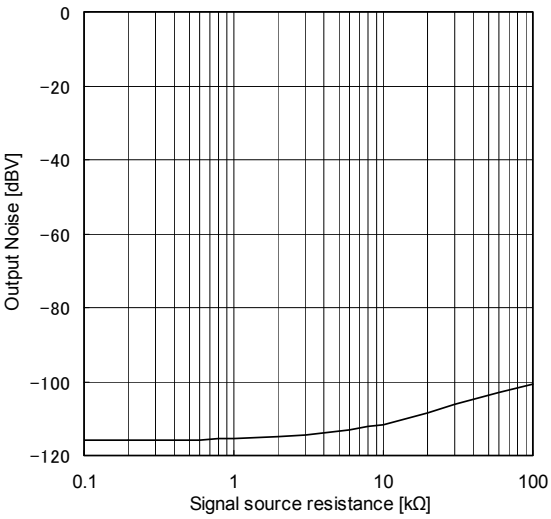
V+=9V, Vrp=100mV, f=100Hz, T=25°C



■TYPICAL CHARACTERISTICS

NOISE vs Signal source resistance

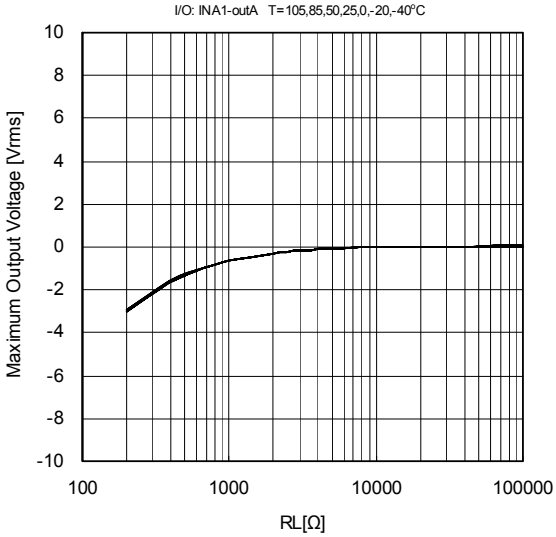
V=±9V, A-Weighting, f=1kHz, T=25°C, Non-Inverting



Output Voltage vs Load Resistance

V=±9V, f=1kHz,

I/O: INA1-outA T=105,85,50,25,0,-20,-40°C



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