Quad Boost Amplifier

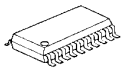
■ GENERAL DESCRIPTION

The **NJM2792** is a quad boost amplifier designed for car audio system. It expands the frequency characteristics by high slew rate.

It can swing 14V peak-to-peak output voltage at 9V. It consists of four channel non-inverting amplifier with the gain of 8dB.

It is suitable for car audio system and other boost amplifier system.

■ PACKAGE OUTLINE

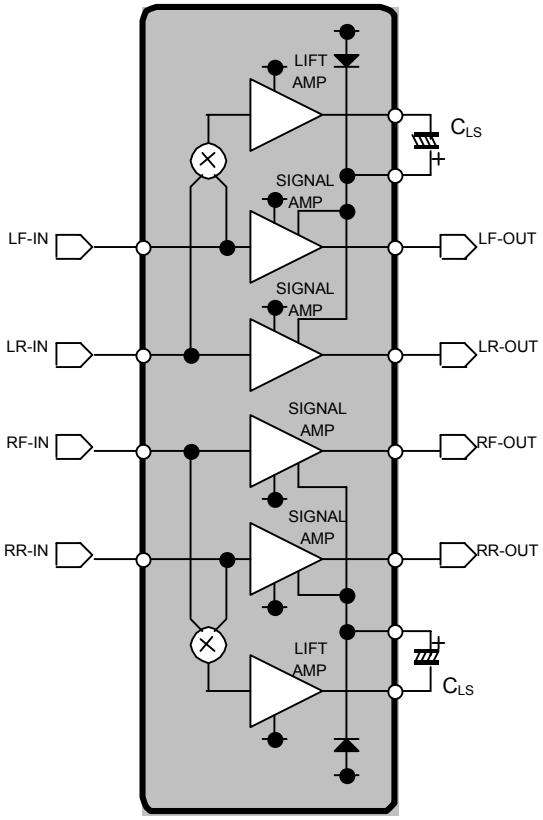


NJM2792V

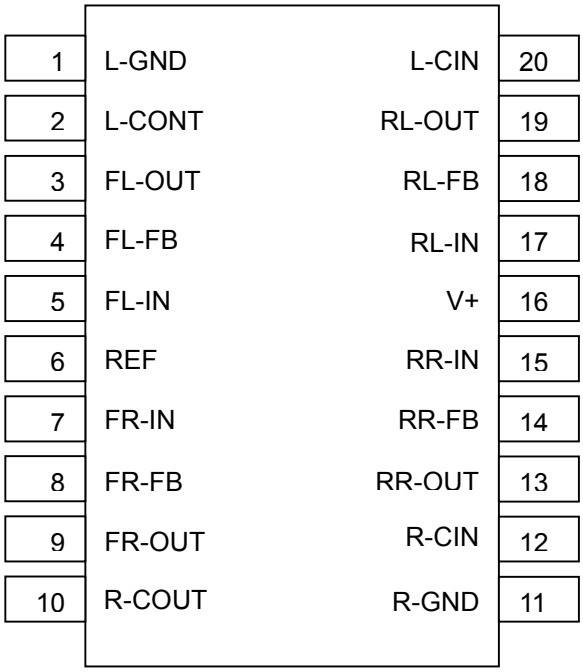
■ FEATURES

- Operating Voltage (6 to 11V)
- Operating Current (12mA typ.)
- Boost output Function (V_O=14Vpp:@V^+=9V)
- Maximum Output Voltage (4.5Vrms typ., @ f=100kHz)
- Supply Voltage Rejection Ratio (50dB typ.)
- Total Harmonic Distortion (0.003% typ.)
- Noise Output Voltage (5μVrms typ.)
- Bipolar Technology
- Package Outline SSOP20

■ BLOCK DIAGRAM



■PIN CONFIGURATION



No.	Symbol	Function	No	Symbol	Function
1	L-GND	Ground for Left Channel	11	R-GND	Ground for Right Channel
2	L-COUT	Capacitor for - Level Shift Left Channel	12	R-CIN	Capacitor for + Level Shift Right Channel
3	FL-OUT	Output for Front Left Channel	13	RR-OUT	Output for Rear Right Channel
4	FL-FB	- Input for Front Left Channel	14	RR-FB	- Input for Rear Right Channel
5	FL-IN	+ Input for Front Left Channel	15	RR-IN	+ Input for Rear Right Channel
6	REF	Reference Voltage	16	V+	Power Supply
7	FR-IN	+ Input for Front Right Channel	17	RL-IN	+ Input for Rear Left Channel
8	FR-FB	- Input for Front Right Channel	18	RL-FB	- Input for Rear Left Channel
9	FR-OUT	Output for Front Right Channel	19	RL-OUT	Output for Rear Left Channel
10	R-COUT	Capacitor for - Level Shift Right Channel	20	L-CIN	Capacitor for + Level Shift Left Channel

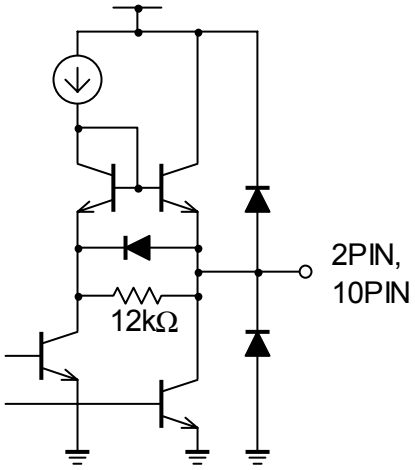
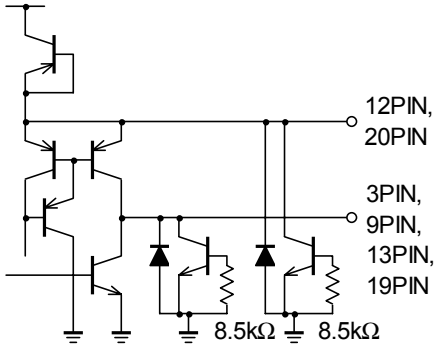
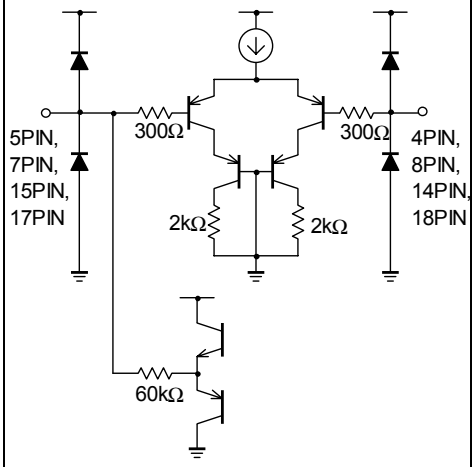
■ **ABSOLUTE MAXIMUM RANGES** (Ta=25°C)

PARAMETER	SYMBOL	RANGE	UNIT
Supply Voltage	V^+	+15	V
Power Dissipation	P_D	550 NOTE: EIA/JEDEC STANDARD Test board (76.2x114.3x1.6mm, 2layer, FR-4) mounting	mW
Operating Temperature	Topr	-40 to +85	°C
Storage Temperature	Tstg	-40 to +125	°C

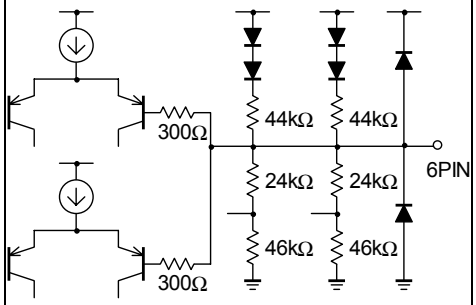
■ **ELECTRICAL CHARACTERRISTIC** (V^+=9V,Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
DC CHARACTERRISTIC						
Operating Voltage	V^+		6.0	9.0	11.0	V
Operating Current	I_{CC}	No Signal	-	12.0	18.0	mA
Output Voltage	V_{ODC}		-	7.8	-	V
AC CHARACTERRISTIC (f=1kHz , Vo=1Vrms, R_L=10kΩ)						
Voltage Gain	Av		7.5	8.0	8.5	dB
Channel Separation 1	CS1	R_S=600Ω , V_O=1Vrms, f = 1kHz, Front channel vs. Rear channel	70	80	-	dB
Channel Separation 2	CS2	R_S=600Ω , V_O=1Vrms, f = 1kHz, L channel vs. R channel	-	100	-	dB
Channel Balance	BAL		-	-	0.5	dB
Roll-off Low Frequency	f_{RL}	-1dB	-	5	-	Hz
Roll-off High Frequency	f_{RH}	-1dB	100	-	-	kHz
Input Resistance	R_{IN}		44	60	76	kΩ
Output Resistance	R_{OUT}		-	2	-	Ω
Maximum Output Voltage 1	V_{OM1}	THD=0.1%, f = 1kHz	5.0	5.2	-	Vrms
Maximum Output Voltage 2	V_{OM2}	THD=1%, f = 100kHz	-	4.5	-	Vrms
Noise Output Voltage	V_{NO}	Rs=0Ω , A-Weighting	-	5	10	μVrms
Total Harmonic Distortion	THD1	f=1kHz , V_O=3Vrms, A-Weighting	-	0.003	0.01	%
	THD2	f=17Hz to 20kHz , V_O=3Vrms, A-Weighting	-	0.01	-	%
Supply Voltage Rejection Ratio	SVR1	Rs=0Ω, f=1kHz , V_{RP}=100mVrms	55	-	-	dB
	SVR2	Rs=0Ω, f=20Hz to 20kHz , V_{RP}=100mVrms	-	50	-	dB

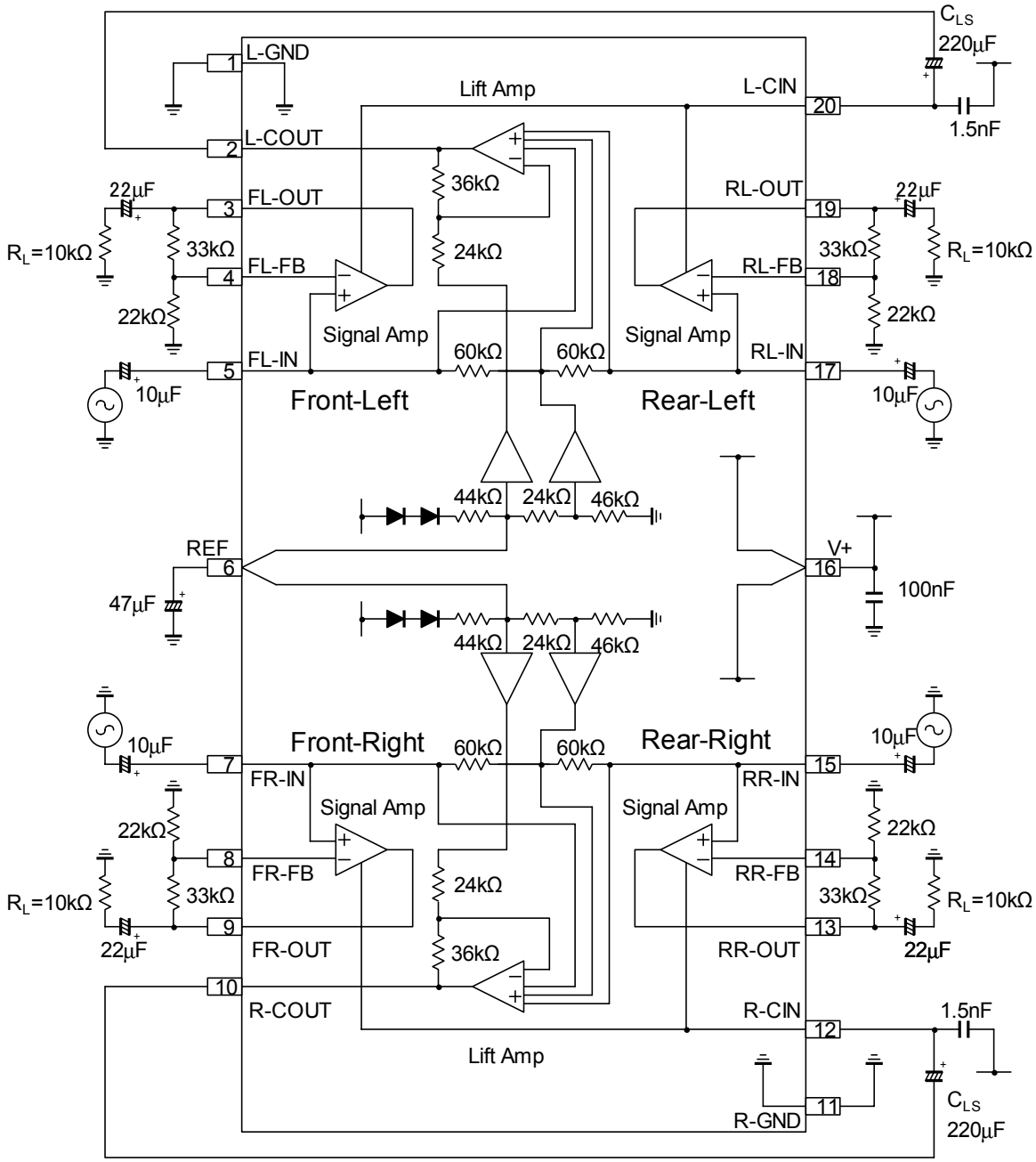
■ TERMINAL DESCRIPTION

PIN NO.	SYMBOL	FUNCTION	EQUIVALENT CIRCUIT	TERMINAL DC VOLTAGE
2 10	L-COUT R-COUT	Capacitor for - Level Shift Left Channel Capacitor for - Level Shift Right Channel		$(V^+-1.4)x0.09$ [V]
12 20 3 9 13 19	R-CIN L-CIN FL-OUT FR-OUT RR-OUT RL-OUT	Capacitor for + Level Shift Right Channel Capacitor for + Level Shift Left Channel Output for Front Left Channel Output for Front Right Channel Output for Rear Right Channel Output for Rear Left Channel		V^+-0.7 [V] (12,20PIN) V^+-1.4 [V] (3,9,13,19PIN)
4 8 14 18 5 7 15 17	FL-FB FR-FB RR-FB RL-FB FL-IN FR-IN RR-IN RL-IN	- Input for Front Left Channel - Input for Front Right Channel - Input for Rear Right Channel - Input for Rear Left Channel + Input for Front Left Channel + Input for Front Right Channel + Input for Rear Right Channel + Input for Rear Left Channel		$(V^+-1.4)x0.4$ [V]

■ **TERMINAL DESCRIPTION**

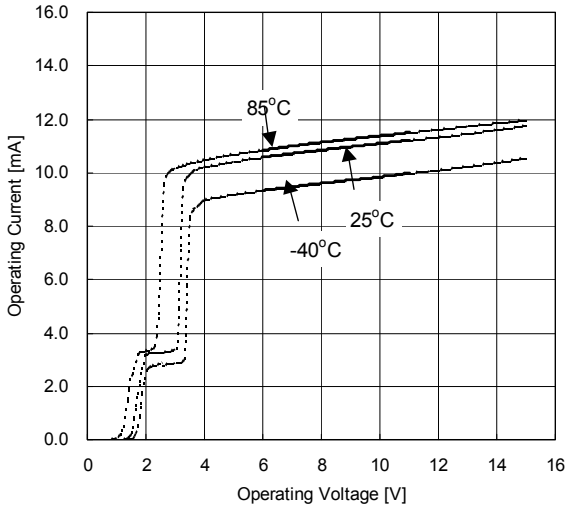
PIN NO.	SYMBOL	FUNCTION	EQUIVALENT CIRCUIT	TERMINAL DC VOLTAGE
6	REF	Reference Voltage		$(V^+-1.4)x0.6$ [V]

■ **APPLICATION CIRCUIT**

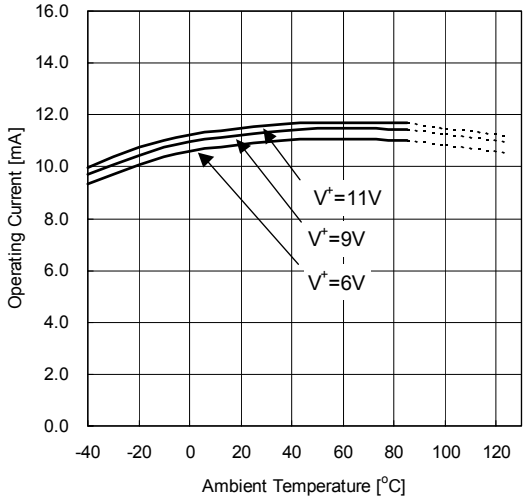


■ TYPICAL CHARACTERISTICS

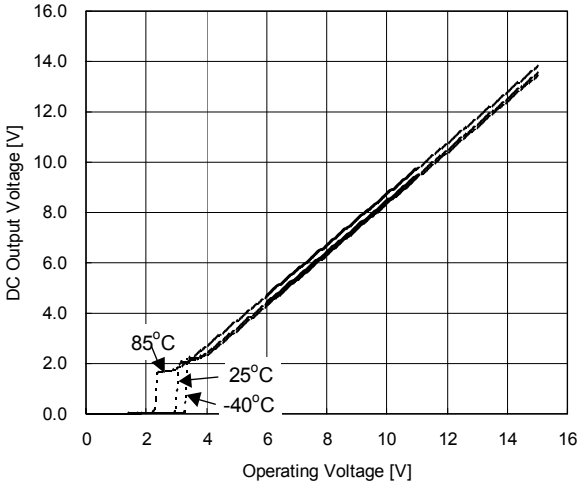
Operationg Current vs. Operating Voltage
(No signal, R_S=0Ω, R_L=10kΩ)



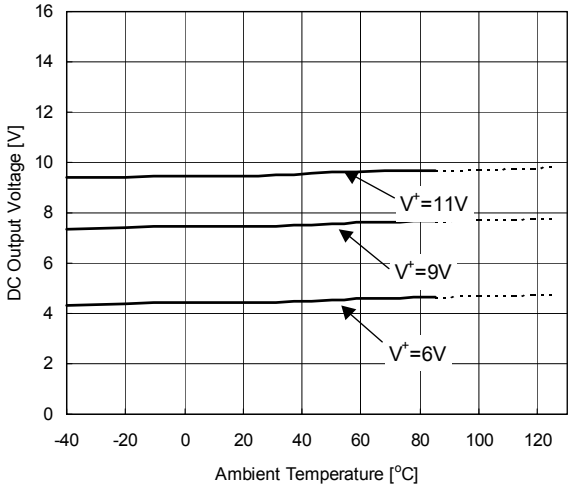
Operating Current vs. Ambient Temperature
(No signal, R_S=0Ω, R_L=10kΩ)



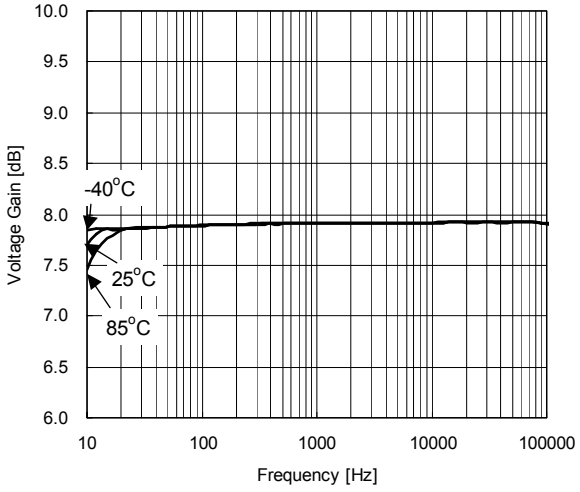
DC Output Voltage vs. Operating Voltage
(No signal, R_S=0Ω, R_L=10kΩ)



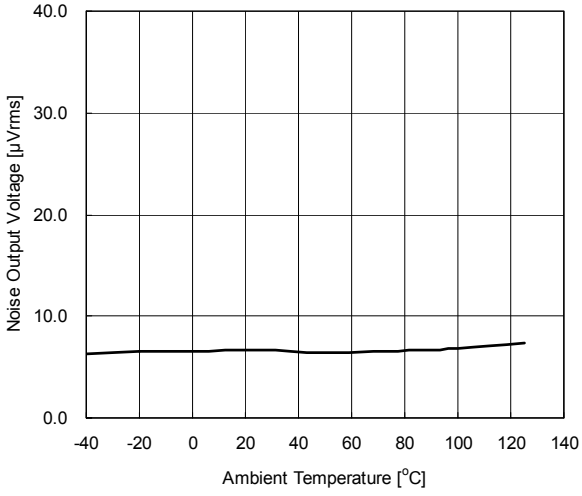
DC Output Voltage vs. Ambient Temperrature
(No signal, R_S=0Ω, R_L=10kΩ)



Voltage Gain vs. Frequency
(V+=9V, R_L=10kΩ, Vo=1Vrms)

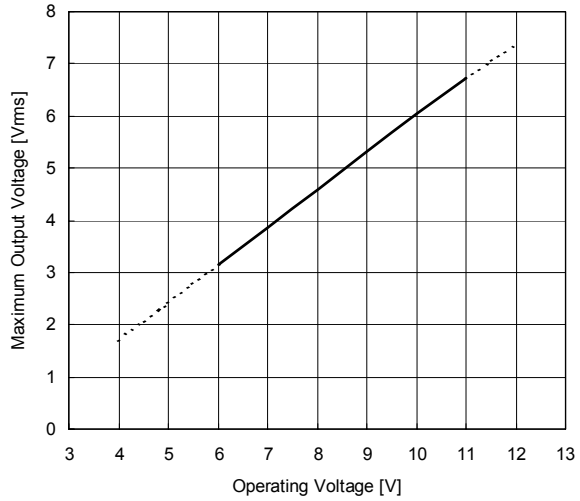


Noise Output Voltage vs. Ambient Temperature
(V+=9V, Rs=0Ω, A-Weighting Filter)

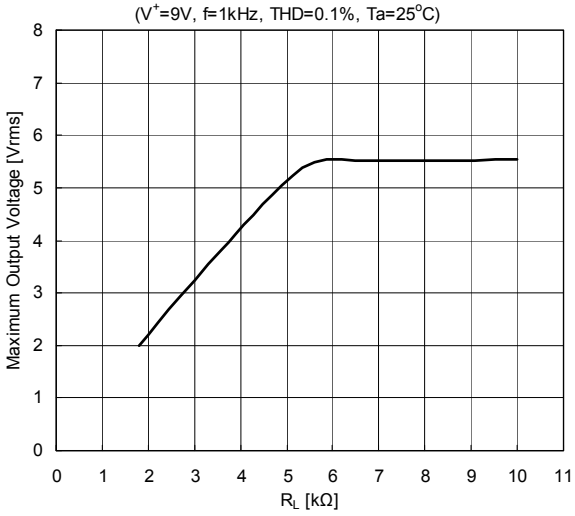


■ TYPICAL CHARACTERISTICS

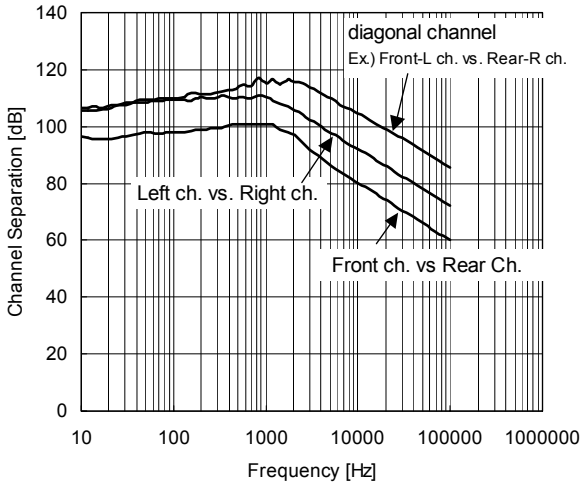
Maximum Output Voltage vs. Operating Voltage
(R_L=10kΩ, f=1kHz, THD=0.1%, LPF=80kHz, Ta=25°C)



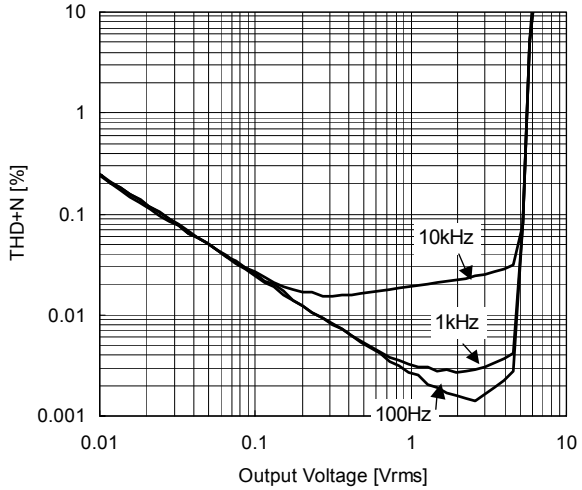
Maximum Output Voltage vs. R_L
(V^+=9V, f=1kHz, THD=0.1%, Ta=25°C)



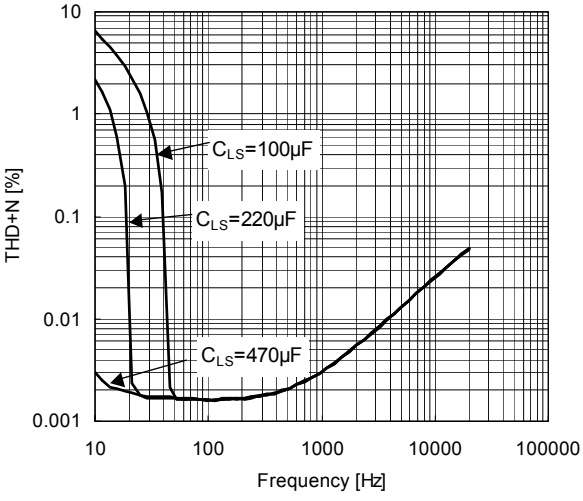
Channel Separation vs. Frequency
(V^+=9V, Rs=600Ω, R_L=10kΩ, Ta=25°C)



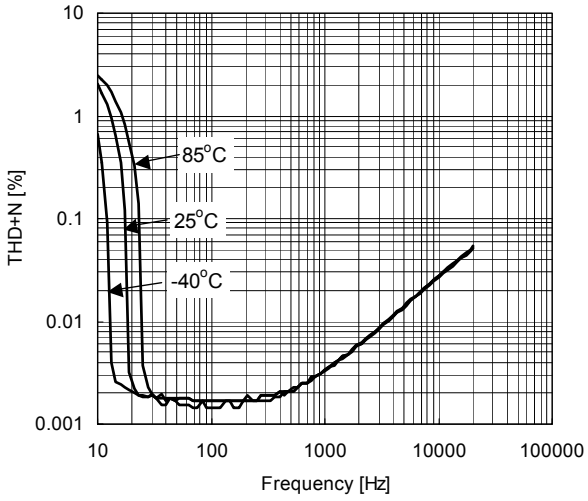
THD+N vs. Output Voltage
(V^+=9V, R_L=10kΩ, C_{LS}=220μF, LPF=80kHz, Ta=25°C)



THD+N vs. Frequency
(V^+=9V, R_L=10kΩ, Vo=3Vrms, LPF=80kHz, Ta=25°C)



THD+N vs. Frequency
(V^+=9V, R_L=10kΩ, C_{LS}=220μF, Vo=3Vrms, LPF=80kHz)



■ TYPICAL CHARACTERISTICS

Supply Voltage Rejection Ratio vs. Frequency
(V^+=9V, V_{RP}=100mVrms, Rs=0Ω, Ta=25°C)