

Dual 2.2W Audio Amplifier Plus Stereo Headphone Function

General Description

The LN4863 is a dual bridge-connected audio power amplifier which, when connected to a 5V supply, will deliver 2.2W to a 4Ω load or 2.5W to a 3Ω load with less than 1.0% THD+N. In addition, the headphone input pin allows the amplifiers to operate in single-ended mode to drive stereo headphones.

Boomer audio power amplifiers were designed specifically to provide high quality output power from a surface mount package while requiring few external components. To simplify audio system design, the LN4863 combines dual bridge speaker amplifiers and stereo headphone amplifiers on one chip.

The LN4863 features an externally controlled, low-power consumption shutdown mode, a stereo headphone amplifier mode, and thermal shutdown protection. It also utilizes circuitry to reduce “clicks and pops” during device turn-on.

Key Specifications

- Power Output @1% THD+N & VDD=5V
LN4863LQ, $R_L=3\Omega, 4\Omega$ 2.5W(TYP.), 2.2W(TYP.)
LN4863MTE, $R_L=3\Omega, 4\Omega$ 2.5W(TYP.), 2.2W(TYP.)
LN4863MTE, $R_L=8\Omega$ 1.1W(TYP.)

Ordering Information

Ordering Number	Package Type
LN4863M	SOP-16
LN4863LQ	LLP

Operating Ratings

Temperature Range

$T_{MIN} \leq T_A \leq T_{MAX}$ ----- $-40^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$

Supply Voltage ----- $2.0\text{V} \leq V_{DD} \leq 5.5\text{V}$

LN4863, $R_L=8\Omega$ 1.1W(TYP.)

- Single-ended mode THD+N@75mW into 32Ω 0.5%(Max)
- Shutdown current 0.7uA(TYP.)
- Supply voltage 2.0V~5.5V

Features

- Stereo headphone amplifier mode
- “Click and pop” suppression circuitry
- Unity-gain stable
- Thermal shutdown protection circuitry
- Exposed-DAP SOP, and LLP packaging available

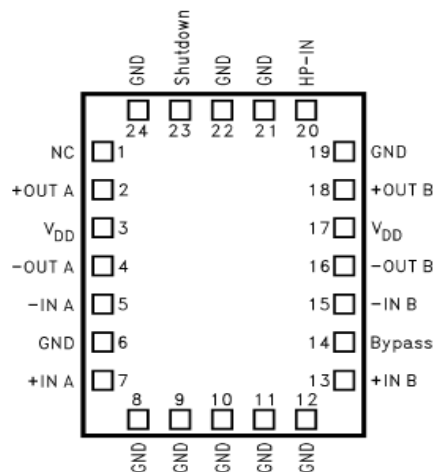
Applications

- Multimedia monitors
- Portable and desktop computers
- Portable televisions

Package

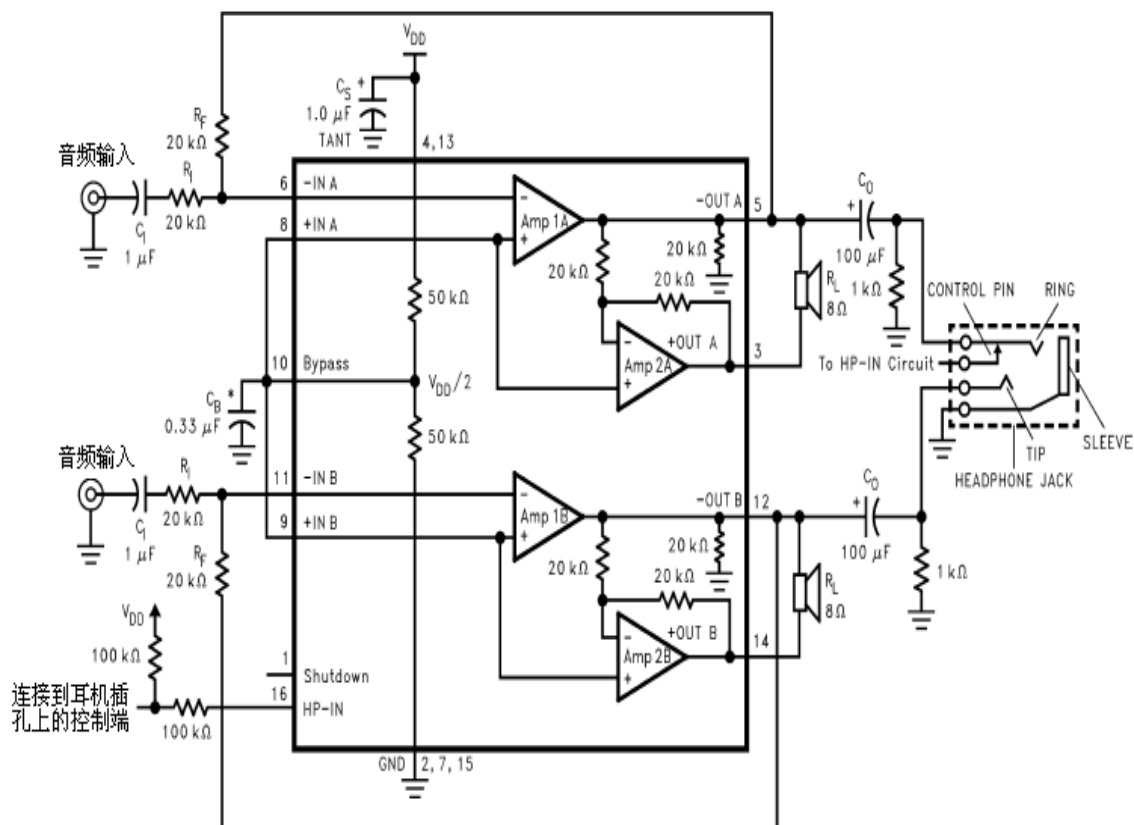
- SOP-16
- LLP

■ Function Block Diagram



LLP

Order Number: LN4863LQ



■ Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Supply Voltage	VDD	-0.3—6.0	V
Input Voltage	VIN	-0.3—VDD+0.3	V
Power Output	—	Internal limit	
Junction Temperature	—	-150	°C
Storage Temperature	Tstg	-65—150	°C
ESD Susceptibility	-	2000	V

■ Electrical Characteristics

(VDD = 5V Unless otherwise specified. Limits apply for TA = 25°C.)

Symbol	Parameters	Test Conditions	Min.	Typ.	Max.	Unit
V _{DD}	Supply voltage	—	2.0	—	5.5	V
I _{DD}	Quiescent Power Supply Current	V _{IN} = 0V, I _O = 0A, HP-IN=0V	6	11.5	20	mA
		V _{IN} = 0V, I _O = 0A, HP-IN=4V	—	5.8	—	mA
I _{SD}	Shutdown Current	V _{SHUTDOWN} = 5V	—	0.7	2	μA
V _{IH}	HP Sence Voltage Input High	—	4	—	—	V
V _{IL}	HP Sence Voltage Input Low	—	—	—	0.8	V

■ Electrical Characteristics For Bridged-Mode Operation

(VDD = 5V Unless otherwise specified. Limits apply for TA = 25°C.)

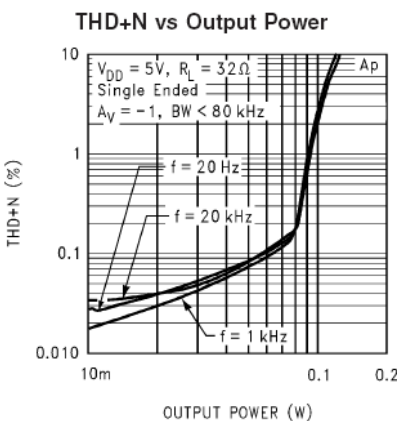
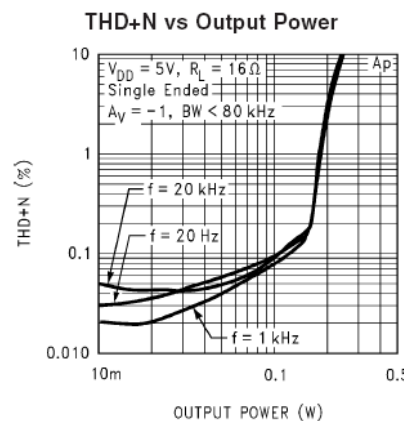
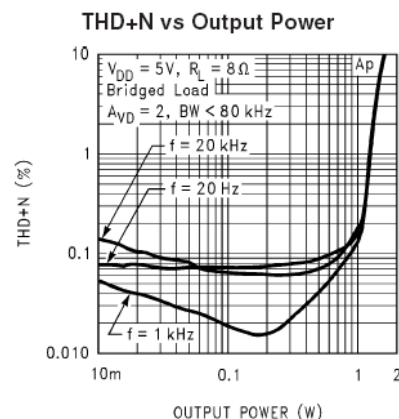
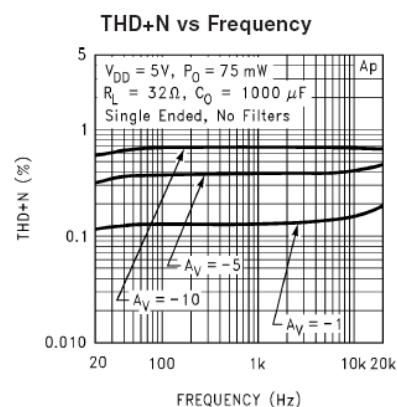
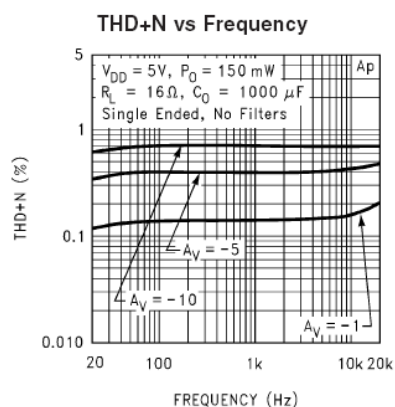
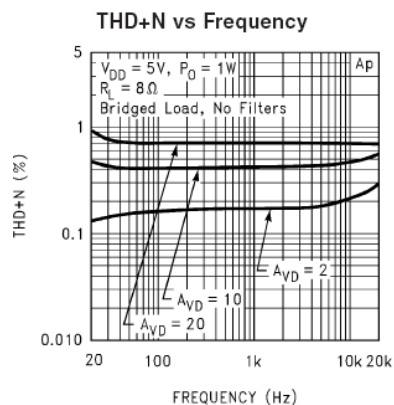
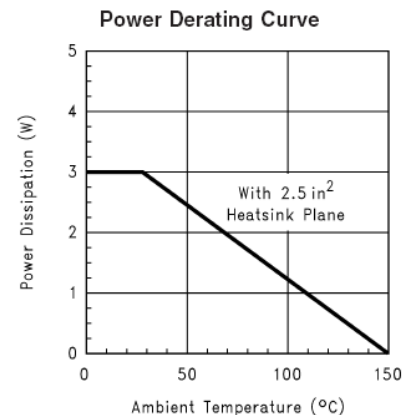
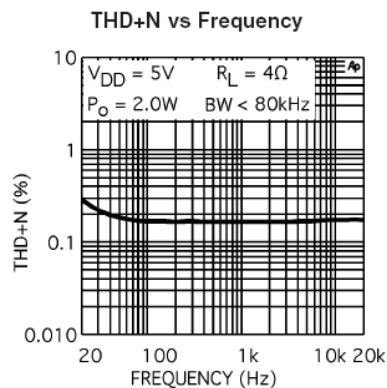
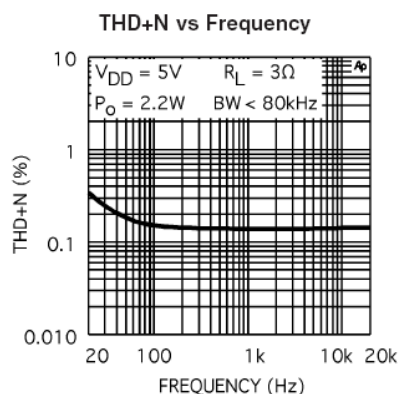
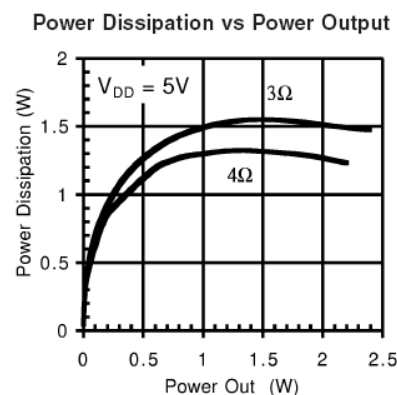
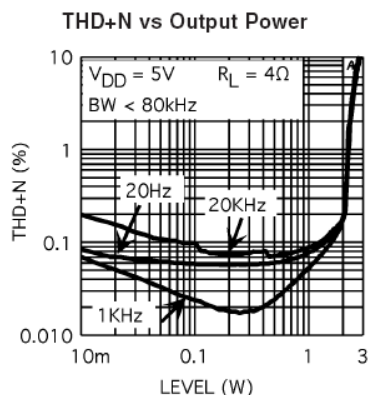
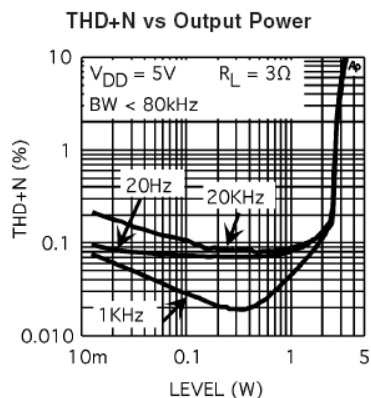
Symbol	Parameters	Test Conditions	Min.	Typ.	Max.	Unit
V _{OS}	Output Offset Voltage	V _{IN} = 0V	—	5	50	mV
P _O	Output Power	THD+N = 1%; f = 1 kHz LN4863LQ, RL=3Ω LN4863LQ, RL=4Ω LN4863, RL=8Ω	1.0	2.5 2.2 1.1	—	W
		THD+N = 10%; f = 1 kHz LN4863LQ, RL=3Ω LN4863LQ, RL=4Ω LN4863, RL=8Ω THD+N=1%,f=1kHz, RL=32Ω	—	3.2 2.7 1.5 0.34	—	W
THD+N	Total Harmonic Distortion+Noise	AVD=2; 20Hz<=f<=20kHz LN4863LQ, RL=4Ω, PO=2W LN4863, RL=8Ω, PO=1W	—	0.3 0.3	—	%
PSRR	Power Supply Rejection Ratio	VDD=5V, V _{ripple} = 200mV _{p-p} , C _{BP} =1μF, RL=8Ω	—	67	—	dB
X _{TALK}	Channel Separation	f=1kHz, C _{BP} =1μF	—	90	—	dB
SNR	Signal To Noise Ratio	VDD=5V, RL=8Ω, PO=1.1mW	—	98	—	dB

■ Electrical Characteristics For Single-Ended Operation

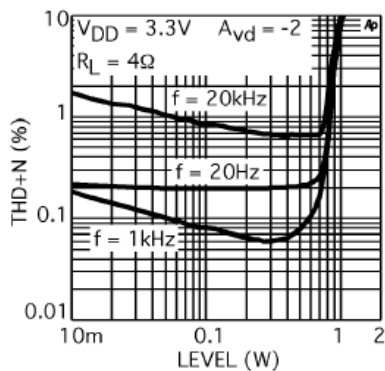
(VDD = 5V Unless otherwise specified. Limits apply for TA = 25°C.)

Symbol	Parameters	Test Conditions	Min.	Typ.	Max.	Unit
P _O	Output Power	THD+N = 0.5%; f = 1 kHz, RL=32Ω THD+N = 1%; f = 1 kHz, RL=8Ω THD+N = 10%; f = 1 kHz, RL=8Ω	75	85 340 440	— — —	mW
V _{OS}	Output Offset Voltage	V _{in} =0V	5	50	—	mV
THD+N	Total Harmonic Distortion+Noise	A _v =-1, 20Hz<=f<=20kHz, RL=32Ω, PO=75mW	—	0.2	—	%
PSRR	Power Supply Rejection Ratio	f=1kHz, V _{ripple} = 200mV _{RMS} , C _B =1μF	—	52	—	dB
X _{TALK}	Channel Separation	f=1kHz, C _{BP} =1μF	—	60	—	dB
SNR	Signal To Noise Ratio	VDD=5V, RL=8Ω, PO=340mW	—	95	—	dB

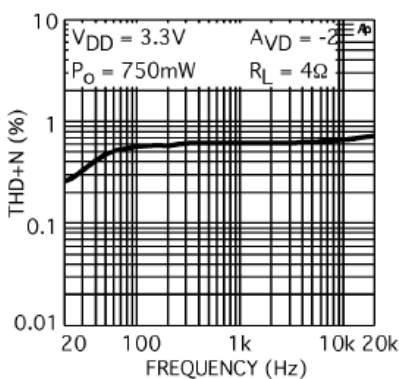
Typical Performance Characteristics



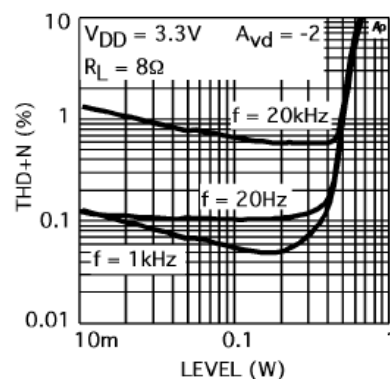
THD+N vs Output Power



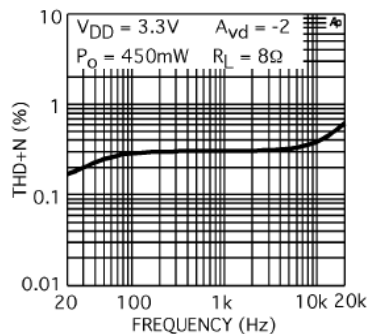
THD+N vs Frequency



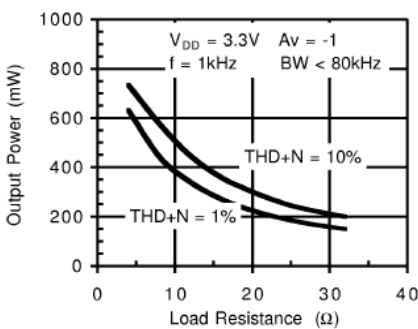
THD+N vs Output Power



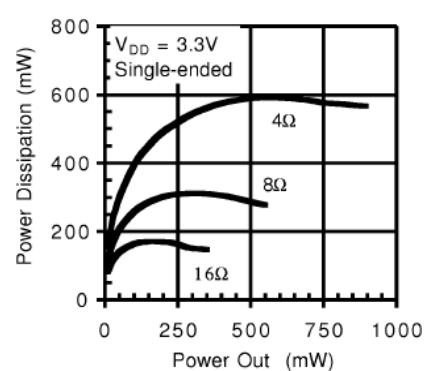
THD+N vs Frequency



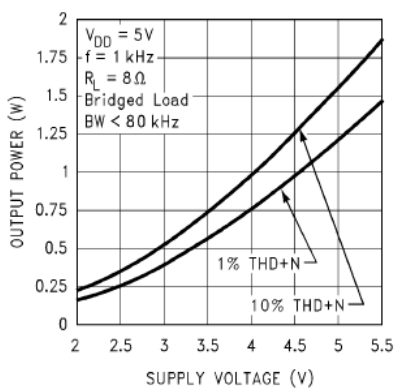
Output Power vs Load Resistance



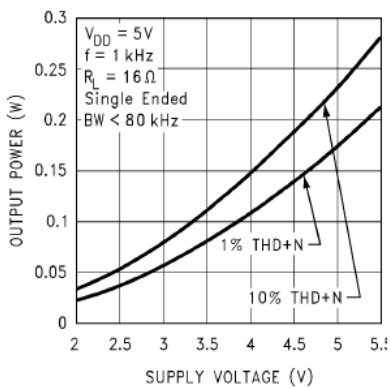
Power Dissipation vs Supply Voltage



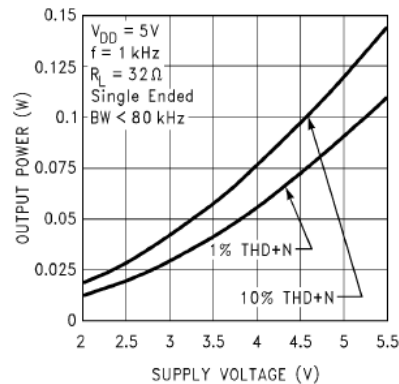
Output Power vs Supply Voltage



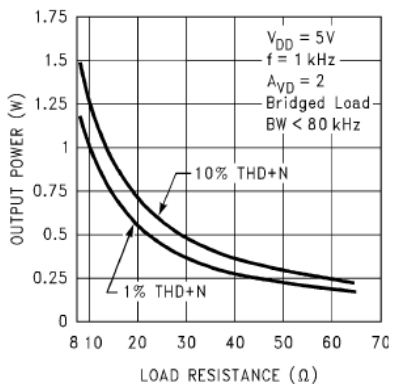
Output Power vs Supply Voltage



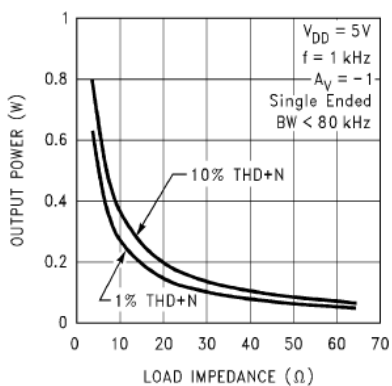
Output Power vs Supply Voltage



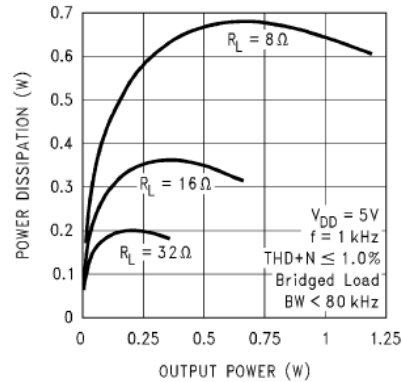
Output Power vs Load Resistance



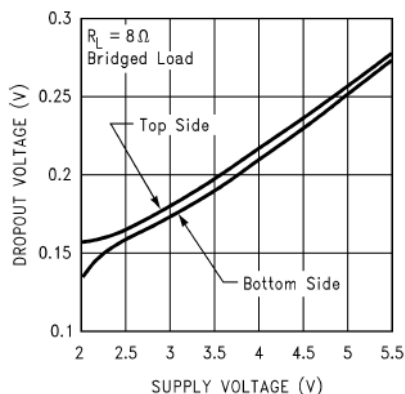
Output Power vs Load Resistance



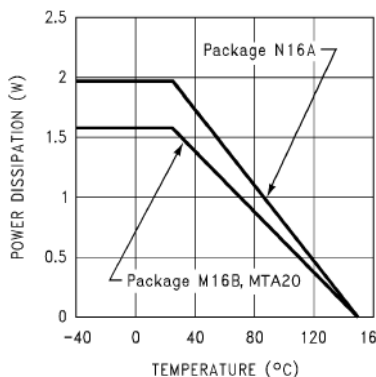
Power Dissipation vs Output Power



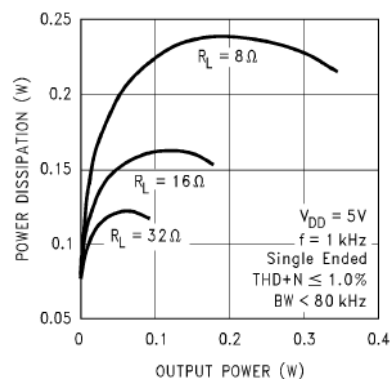
Dropout Voltage vs
Supply Voltage



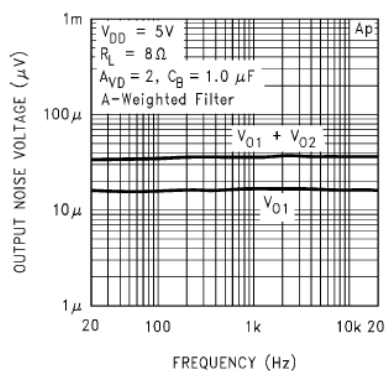
Power Derating Curve



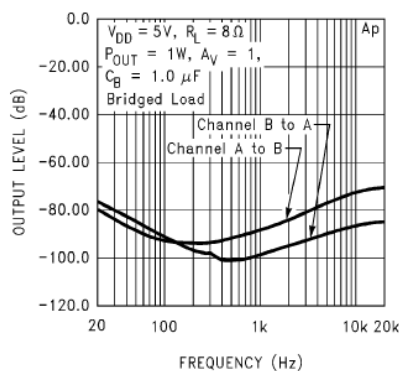
Power Dissipation vs
Output Power



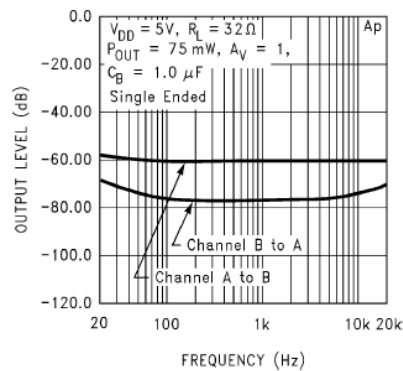
Noise Floor



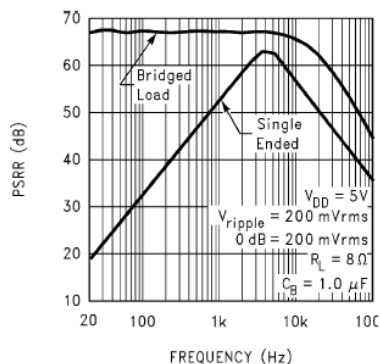
Channel Separation



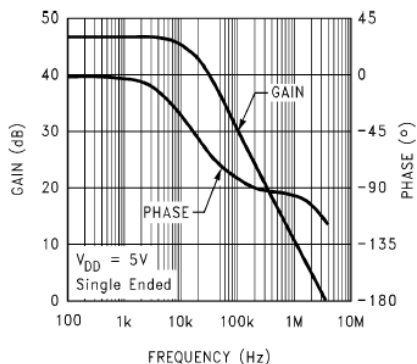
Channel Separation



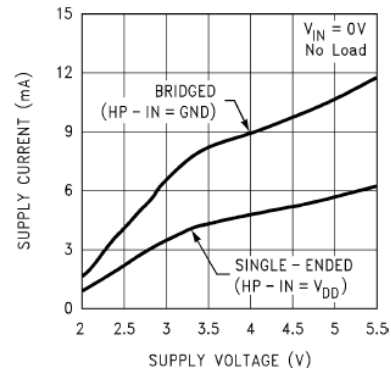
Power Supply
Rejection Ratio



Open Loop
Frequency Response

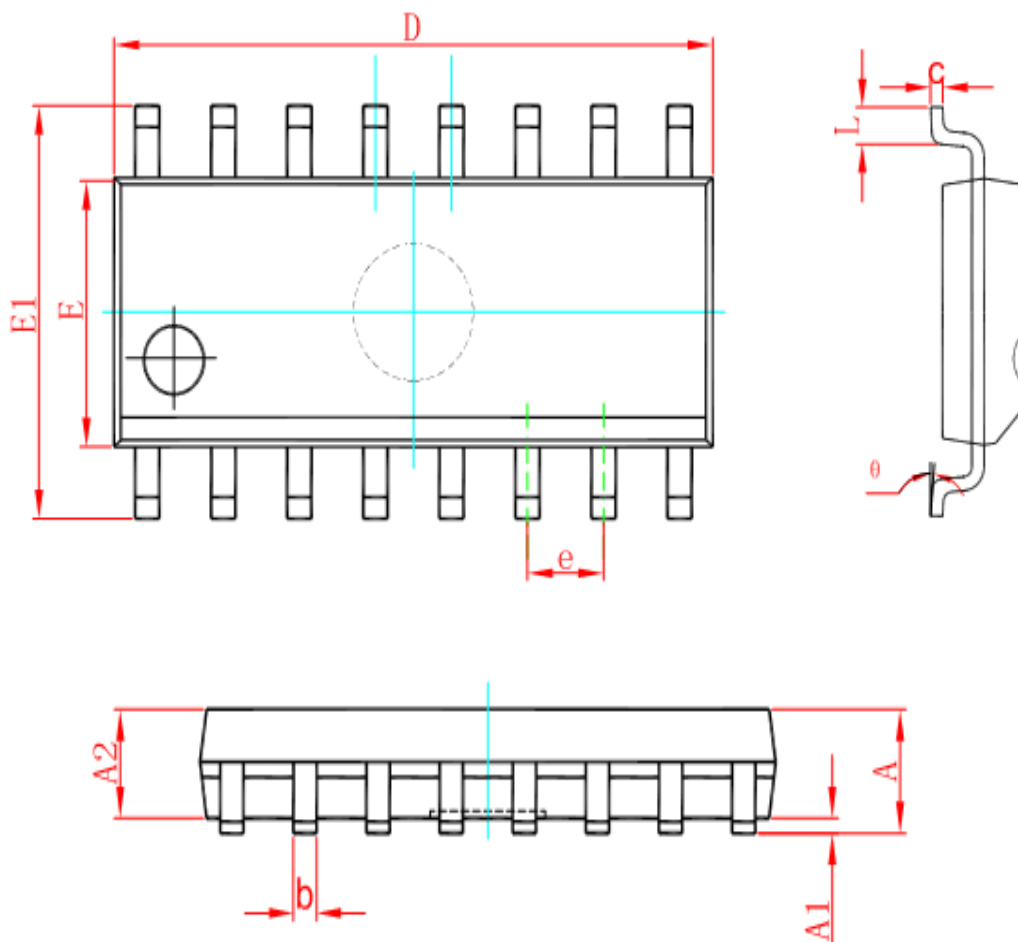


Supply Current vs
Supply Voltage



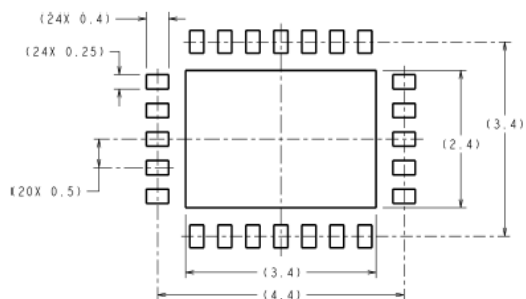
Package Information

SOP-16 (LN4863M)

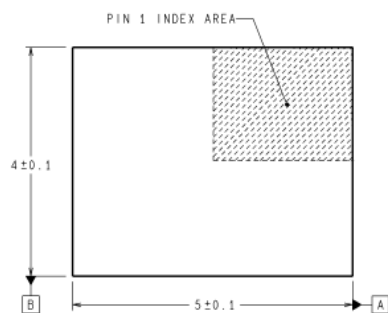


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	9.800	10.200	0.386	0.402
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

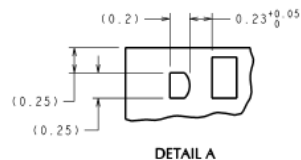
● LLP (LN4863LQ)



RECOMMENDED LAND PATTERN
1:1 RATIO WITH PRG SOLDER PADS



DIMENSIONS ARE IN MILLIMETERS
DIMENSIONS IN () FOR REFERENCE ONLY



DETAIL A

