Lyontek Inc.

LY8601

Rev. 1.4

Dual 0.1W Headphone Amplifier with Active-high shutdown mode

FEATURES

- 2.5V~5.5V Power supply.
- Thermal shutdown Protection.
- Low current shutdown mode
- "Click and Pop" suppression
- No bootstrap capacitors required
- Low noise during turn-on and turn-off transitions
- Active-high shutdown mode
- Lead free and green package available. (RoHS Compliant)
- Space Saving Package
  -- 8-pin MSOP package.

APPLICATION

- Portable electronic devices
- Mobile Phones
- Microphone Preamplifier
- PDA's

GENERAL DESCRIPTION

The LY8601 is a dual 0.1W audio power amplifier. It is capable of driving 16Ω load at a continuous average output of 0.1W/0.1% distortion (THD+N) from a 5.0V power supply.

The LY8601 primarily designed for high quality application in other portable communication device. And the LY8601 audio amplifier features low power consumption shutdown mode. It is achieved by driving the shutdown pin with logic high and it has an internal thermal shutdown protection feature.

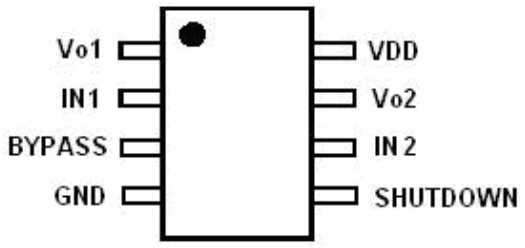
The unity-gain stable LY8601 can be configured by external gain-setting resistors.

The LY8601 audio amplifier was designed specifically to provide high quality output power with a minimal amount of external components. The LY8601 does not require bootstrap capacitors, and the LY8601 is ideally suited for other low voltage applications or portable electronic devices where minimal power consumption is a primary requirement.

PIN CONFIGURATION

8 PIN MSOP PACKAGE

(TOP VIEW)



PIN DESCRIPTION

SYMBOL	Pin No. MSOP	DESCRIPTION
Vo1	1	Audio output of Left channel.
IN1	2	Audio Input of Left channel.
BYPASS	3	Bypass pin
GND	4	Ground
SHUTDOWN	5	Shutdown Pin.(when active **High** is shutdown mode)
IN2	6	Audio Input of Right channel.
Vo2	7	Audio output of Right channel.
V_{DD}	8	Power Supply

APPLICATION CIRCUIT

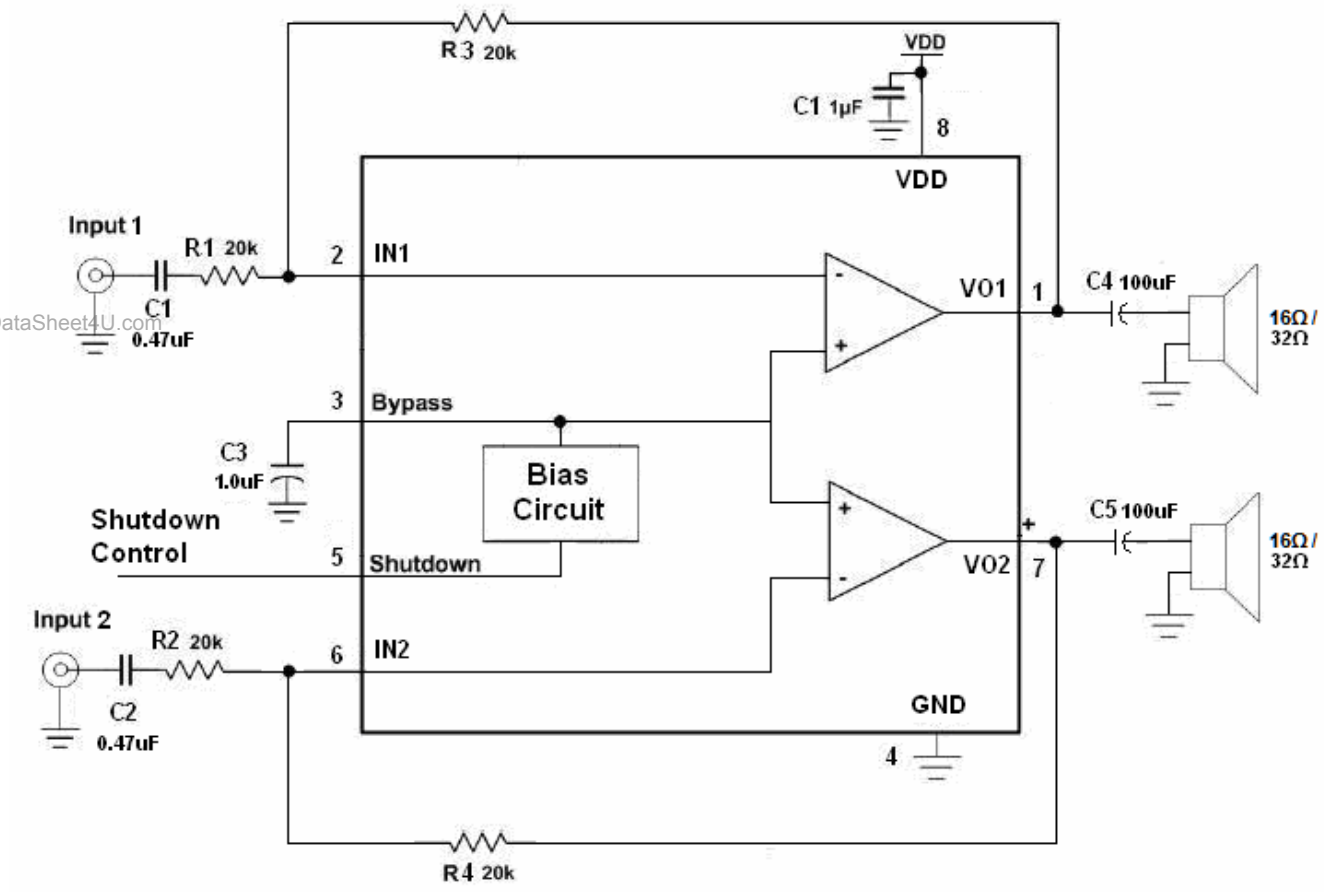


Figure 1. Typical Audio Amplifier Application Circuit

ABSOLUTE MAXIMUN RATINGS*

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	V_{DD}	6.0	V
Operating Temperature	T_A	-40 to 85 (I grade)	℃
Input Voltage	V_I	-0.3V to V_{DD} +0.3V	V
Storage Temperature	T_{STG}	-65 to 150	℃
Power Dissipation	P_D	Internally Limited	W
ESD Susceptibility	V_{ESD}	2000	V
Junction Temperature	T_{JMAX}	150	℃
Soldering Temperature (under 10 sec)	T_{SOLDER}	260	℃

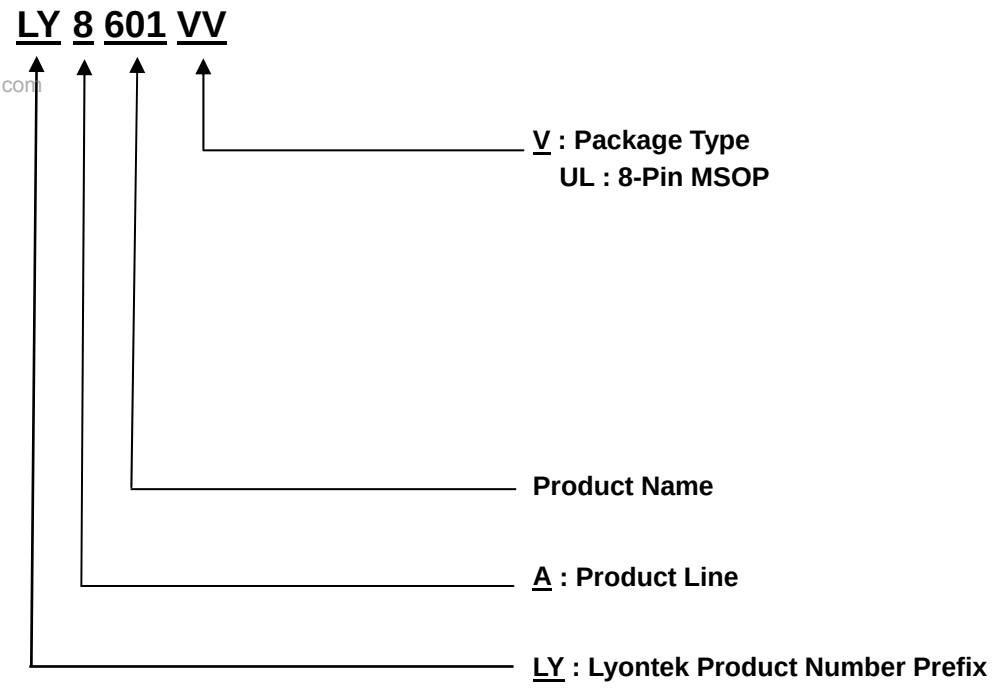
DC ELECTRICAL CHARACTERISTICS (V_{DD}=5V, T_A=25℃)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Power Supply Current	I_{DD}	V_{IN} = 0V, I_O = 0A, No Load	-	3.5	9.0	mA
		V_{IN} = 0V, I_O = 0A, 8Ω Load	-	4.0	10.0	mA
Shutdown Current	I_{SD}	$V_{SHUTDOWN}$ = V_{DD}	-	0.1	2.0	μA
Shutdown Voltage Input High	V_{SDIH}		0.8xV_{DD}	-	-	V
Shutdown Voltage Input Low	V_{SDIL}		-	-	0.2xV_{DD}	V
Output Offset Voltage	V_{OS}		-	7.0	50.0	mV
Output Power	Po	THD+N=0.1%,f =1kHz,R_L=8Ω		258		mW
		THD+N=0.1%,f =1kHz,R_L=16Ω		114		
		THD+N=0.1%,f =1kHz,R_L=32Ω		93		
Total Harmonic Distortion+ Noise	THD+N	Po = 50mW; R_L = 32Ω f = 20Hz to 20kHz	-	0.4		%
Power Supply Rejection Ratio	PSRR	C_B=1.0uF,Vripple = 200mVPP f = 1kHz, Input terminated with 50Ω.	-	66	-	dB
Thermal Shutdown Temperature	T_{SD}		150	170	190	℃

DC ELECTRICAL CHARACTERISTICS (V_{DD}=3V, T_A=25℃)

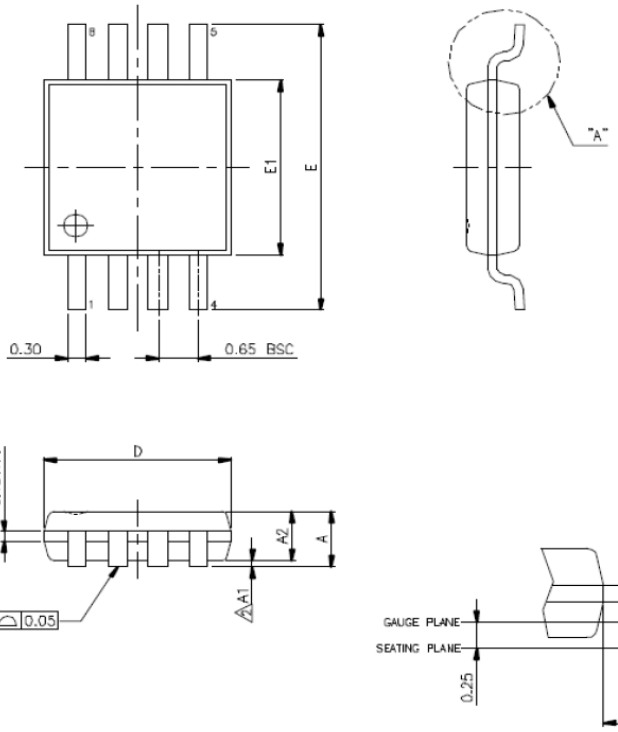
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Power Supply Current	I_{DD}	V_{IN} = 0V, I_O = 0A, No Load	-	3.0	8.0	mA
		V_{IN} = 0V, I_O = 0A, 8Ω Load	-	3.5	9.0	mA
Shutdown Current	I_{SD}	$V_{SHUTDOWN}$ = V_{DD}	-	0.1	2.0	μA
Shutdown Voltage Input High	V_{SDIH}		0.8xV_{DD}	-	-	V
Shutdown Voltage Input Low	V_{SDIL}		-	-	0.2xV_{DD}	V
Output Offset Voltage	V_{OS}		-	7.0	50.0	mV
Output Power	Po	THD+N=0.1%,f =1kHz,R_L=8Ω		105		mW
		THD+N=0.1%,f =1kHz,R_L=16Ω		73		
		THD+N=0.1%,f =1kHz,R_L=32Ω		35		
Total Harmonic Distortion+ Noise	THD+N	Po = 25mW; R_L = 32Ω f = 20Hz to 20kHz	-	0.4		%
Power Supply Rejection Ratio	PSRR	C_B=1.0uF,Vripple = 200mVPP f = 1kHz, Input terminated with 50Ω.		62	-	dB
Thermal Shutdown Temperature	T_{SD}		150	170	190	℃

ORDERING INFORMATION



PACKAGE OUTLINE DIMENSION

8 pin MSOP Package Outline Dimension



SYMBOLS	MIN.	NOM.	MAX.
A	–	–	1.10
A1	0.00	–	0.15
A2	0.75	0.85	0.95
D		3.00 BSC	
E		4.90 BSC	
E1		3.00 BSC	
L	0.40	0.60	0.80
L1		0.95 REF	
θ°	0	–	8

UNIT : MM

NOTES:
1.JEDEC OUTLINE : MO-187 AA
2.DIMENSION "D" DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH, PROTRUSIONS OR GATE BURRS SHALL NOT EXCEED 0.15 PER SIDE.
3.DIMENSION "E1" DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION. INTERLEAD FLASH OR PROTRUSION SHALL NOT EXCEED 0.25 PER SIDE.
4.DIMENSION "0.22" DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.08 MM TOTAL IN EXCESS OF THE "0.22" DIMENSION AT MAXIMUM MATERIAL CONDITION. DAMBAR CANNOT BE LOCATED ON THE LOWER RADIUS OF THE FOOT. MINIMUM SPAC BETWEEN PROTRUSION AND ADJACENT LEAD IS 0.07 MM.
5.DIMENSIONS "D" AND "E1" TO BE DETERMINED AT DATUM PLANE ⊞ .