

## GK2171 —

### 3W Audio Power Amplifier with Shutdown Mode

#### ● General Description

--- The GK2171 is a mono bridged audio power amplifier capable of delivering 3W of continuous average power into a  $3\ \Omega$  load with less than 10% THD when powered by a 5V power supply .

--- The GK2171 does not require output coupling capacitors, bootstrap capacitors, or snubber networks, it is ideally suited for low-power portable systems that require minimum volume and weight.

--- The GK2171 features include thermal shutdown protection, unity-gain stability, and external gain set.

#### ● Key Specifications

- $P_o$  (5.0V & 10% THD+N)
  - SOP: into  $8\ \Omega$  1.5W (typ)
  - SOP/PP: into  $4\ \Omega$  2.6W (typ)
  - SOP/PP: into  $3\ \Omega$  3.0W (typ)
- Shutdown current 0.1  $\mu$ A (typ)
- THD at 1kHz at 1W continuous average output power into  $8\ \Omega$  load. 0.25% (max)

#### ● Features

- No output coupling capacitors, bootstrap capacitors, or snubber circuits required
- Unity-gain stable
- SOP packaging
- External gain configuration capability
- Pin compatible with the HWD2171M

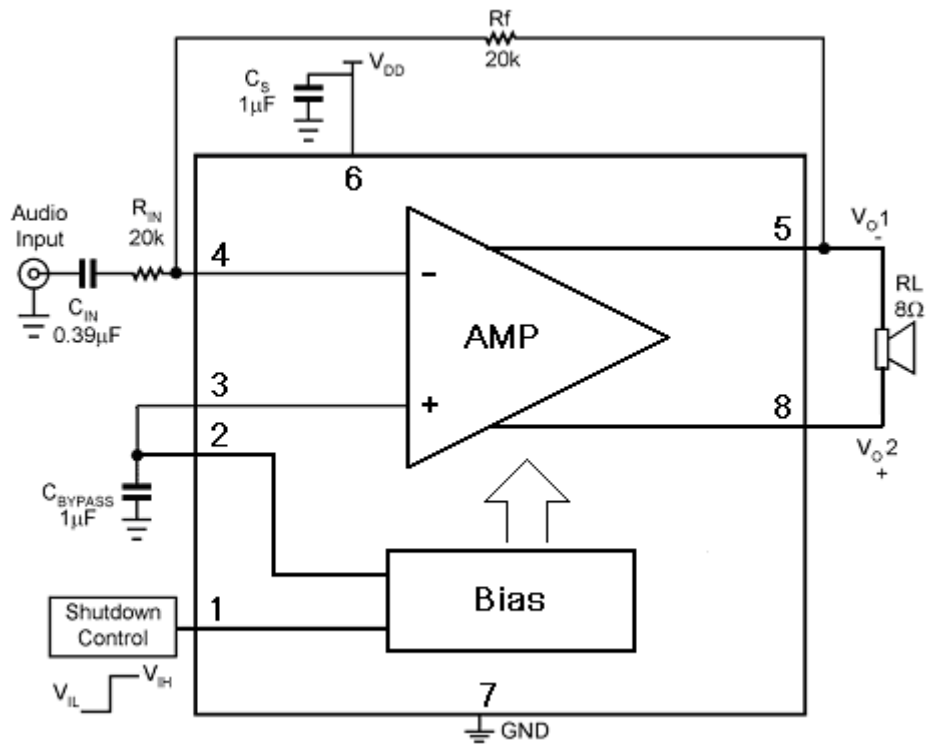
#### ● Applications

- Portable computers
- Desktop computers
- Low voltage audio systems

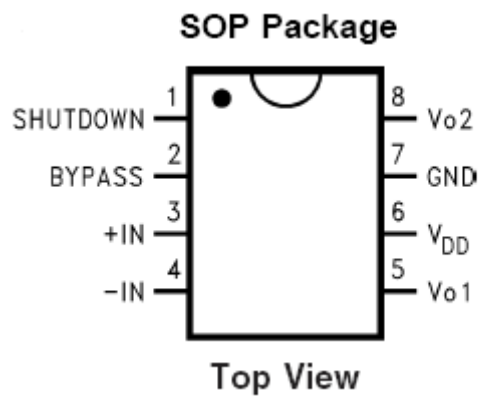
#### ● Operating Ratings

- Temperature Range -  $40^{\circ}\text{C} \sim 85^{\circ}\text{C}$
- Supply Voltage  $2.0\text{V} \leq V_{DD} \leq 5.5\text{V}$

● **Typical Application**



● **Connection Diagram**



● **Absolute Maximum Ratings**

• Supply Voltage	6.0V
• Storage Temperature	-65°C ~ +150°C
• Input Voltage	-0.3V ~ V <sub>DD</sub> +0.3V
• Power Dissipation	Internally Limited
• ESD Susceptibility (Human body model)	2000V
• ESD Susceptibility (Machine model)	200V
• Junction Temperature	150°C

● **Electrical Characteristics (V<sub>DD</sub>=5V)**

Unless otherwise specified. Limits apply for T<sub>A</sub> =25°C

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I <sub>DD</sub>	Quiescent Power Supply Current	V <sub>IN</sub> =0V, I <sub>O</sub> =0A		6.0	10	mA
I <sub>SD</sub>	Shutdown Current	V <sub>SHUTDOWN</sub> =V <sub>DD</sub>		0.1	2.0	uA
V <sub>OS</sub>	Output Offset Voltage	V <sub>IN</sub> =0V, no load	-50	5.0	50	mV
P <sub>O</sub>	Output Power	THD=1%, f=1kHz GK2171M, RL=8Ω GK2171MP, RL=4Ω GK2171MP, RL=3Ω		1.3 2.1 2.4		W
		THD=10%, f=1kHz GK2171, RL=8Ω GK2171MP, RL=4Ω GK2171MP, RL=3Ω		1.5 2.6 3.0		W
THD+N	Total Harmonic Distortion+Noise	20Hz≤f≤20KHz, A <sub>VD</sub> =2 GK2171, RL=8Ω, P <sub>O</sub> =1W		0.25		%
PSRR	Power Supply Rejection Ratio	V <sub>DD</sub> = 4.9V~5.1V		60		dB

● **External Components Description**

Components		Functional Description
1	R <sub>IN</sub>	Inverting input resistance that sets the closed-loop gain in conjunction with R <sub>f</sub> . This resistor also forms a high pass filter with C <sub>i</sub> at f <sub>c</sub> = 1/(2π RiCi).
2	C <sub>IN</sub>	Input coupling capacitor that blocks the DC voltage at the amplifiers input terminals. Also creates a highpass filter with R <sub>i</sub> at fc = 1/(2π RiCi).
3	R <sub>f</sub>	Feedback resistance that sets the closed-loop gain in conjunction with R <sub>i</sub> .

4	C <sub>S</sub>	Supply bypass capacitor that provides power supply filtering.
5	C <sub>BYPASS</sub>	Bypass pin capacitor that provides half-supply filtering.

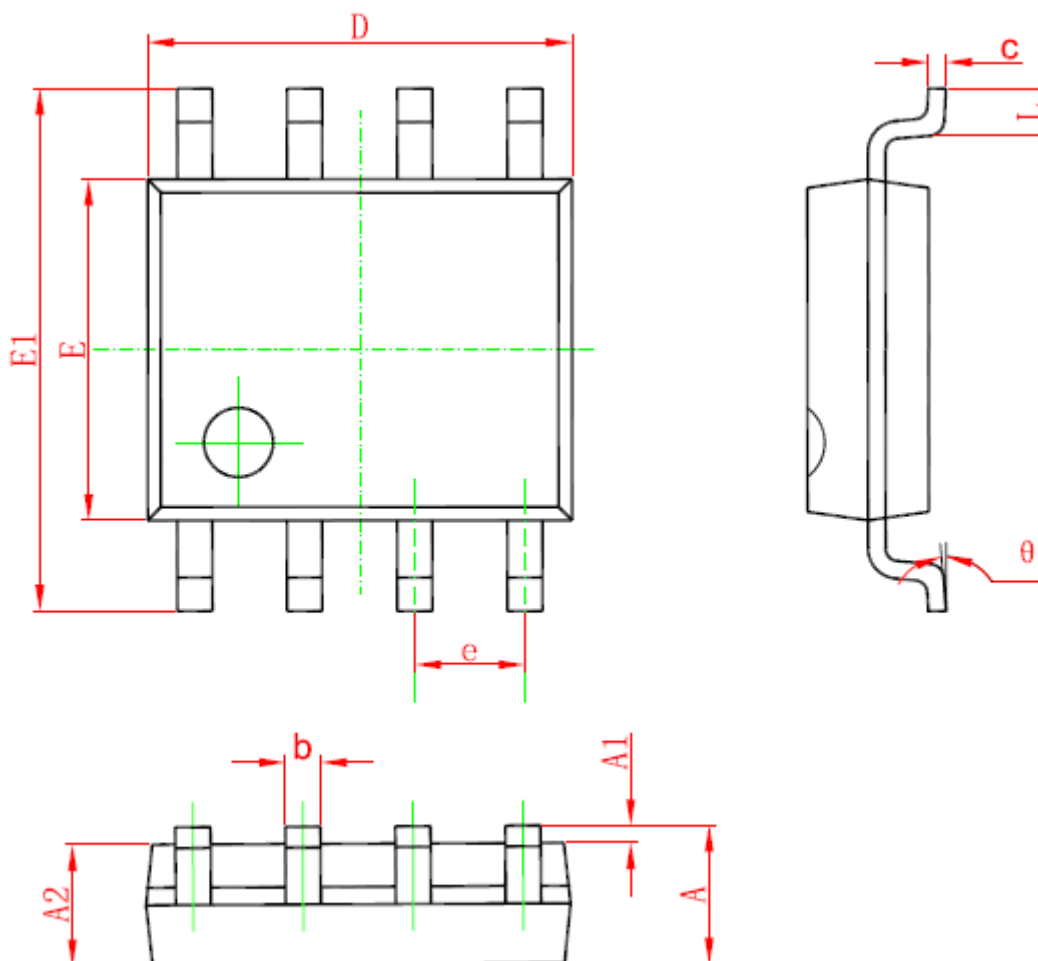
● **Ordering Information**

Part Number	Marking	Package Type	MOQ
GK2171M	GK****X YXX	SOP	3,000 Units/Tape and Reel
GK2171MP	GK****X YXX	SOP	3,000 Units/Tape and Reel

Notes: GK\*\*\*\*X GK-Serial number, \*\*\*\*-Product ID, X-Package type  
YXX Y-Year, XX-In-line coding

● **Package Dimensions**

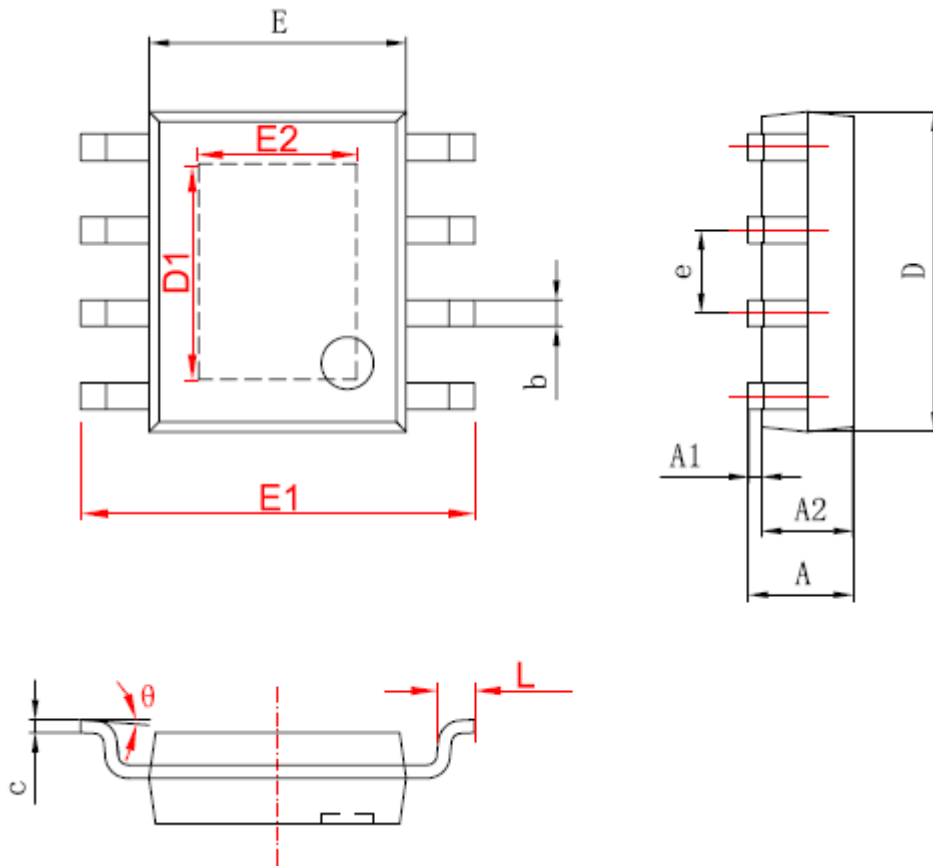
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Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
e	1.270(BSC)		0.050(BSC)	
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
L	0.400	1.270	0.016	0.050
$\theta$	0°	8°	0°	8°

Order Number GK2171M

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Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.050	0.150	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	0.006	0.010
D	4.700	5.100	0.185	0.200
D1	3.202	3.402	0.126	0.134
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
E2	2.313	2.513	0.091	0.099
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
$\theta$	0°	8°	0°	8°

Order Number GK2171MP

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