

# AN7171NK-LC, AN7173K-LC

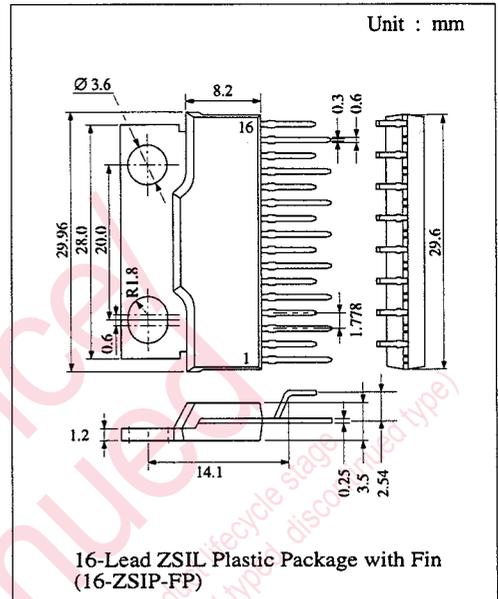
## Dual BTL 14W Audio Power Amplifier

### ■ Description

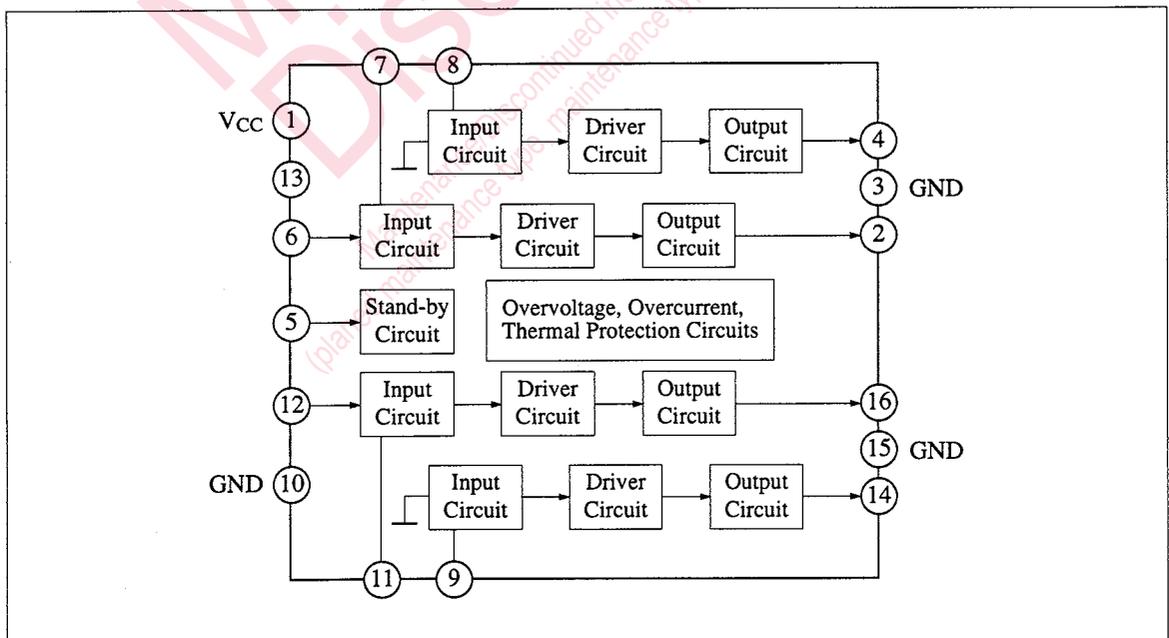
The AN7171NK-LC and AN7173K-LC are the monolithic integrated circuits designed for 14W (13.2V, 4Ω) output power amplifier. Stereo operation is enabled due to incorporating two BTL amplifiers in one chip. High reliability is obtained due to incorporating various protectors. ON/OFF is enabled even if power is supplied to power supply pin by incorporating stand-by circuit.

### ■ Features

- High output power (BTL 14W x 2)
- Incorporating stand-by circuits
- Incorporating protection circuits. (Temperature, overvoltage,  $V_{OUT}$ -GND short, Load short,  $V_{OUT}$ - $V_{CC}$  short)
- Low shock noise from power ON/OFF operation
- Fewer external components
- Highly stable operation



### ■ Block Diagram



### ■ Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Rating	Unit
Supply Voltage	V <sub>CC</sub> *1	24	V
Supply Current	I <sub>CC</sub>	6	A
Supply Voltage Surge	V <sub>CC(surge)</sub> *2	50	V
Power Dissipation	P <sub>D</sub> *3	62.5	W
Operating Ambient Temperature	Topr	-30 ~ +75	°C
Storage Temperature	Tstg	-55 ~ +150	°C

Operating Supply Voltage Range: V<sub>CC</sub> = 8.0V ~ 18.0V

\*1 No-signal      \*2 Time = 0.2s      \*3 R<sub>θj-c</sub> = 2°C/W

### ■ Electrical Characteristics (V<sub>CC</sub>=13.2V, R<sub>L</sub>=4Ω, f=1kHz, Ta=25°C)

Item	Symbol	Condition	min.	typ.	max.	Unit
Quiescent Current	I <sub>CQ</sub>	V <sub>in</sub> = 0mV		120	200	mA
Output Noise Voltage	V <sub>no</sub> *	V <sub>in</sub> = 0mV, R <sub>g</sub> = 10kΩ		0.6	1.5	mV
Voltage Gain	G <sub>v</sub>	V <sub>in</sub> = 5mV	49.5	51.5	53.5	dB
Total Harmonic Distortion	THD	V <sub>in</sub> = 5mV		0.2	0.75	%
Maximum Output Power	P <sub>O</sub>	THD = 10%	9.0	12.5		W
Ripple Rejection	RR*	R <sub>g</sub> = 0Ω, V <sub>in</sub> = 0mV, V <sub>r</sub> = 300mV, f <sub>r</sub> = 120Hz	35	40		dB
Output Offset Voltage	V <sub>O(offset)</sub>	V <sub>in</sub> = 0mV	-250	0	+250	mV
Channel Balance	CB	V <sub>in</sub> = 5mV	-1	0	+1	dB
Total Harmonic Distortion	THD	V <sub>in</sub> = 5mV, f = 100Hz		0.26		%
Total Harmonic Distortion	THD	V <sub>in</sub> = 5mV, f = 10kHz		0.45		%
Frequency Characteristics	f <sub>CH</sub>	V <sub>in</sub> = 5mV, -3dB down		22		kHz
Frequency Characteristics	f <sub>CL</sub>	V <sub>in</sub> = 5mV, -3dB down		21		Hz
Quiescent Circuit Current at Stand-by Pin ON	I <sub>CQ(STBY-ON)</sub>	Stand-by Pin ON		21		μA
Crosstalk	CT	V <sub>in</sub> = 5mV, R <sub>g</sub> = 10kΩ		61		dB

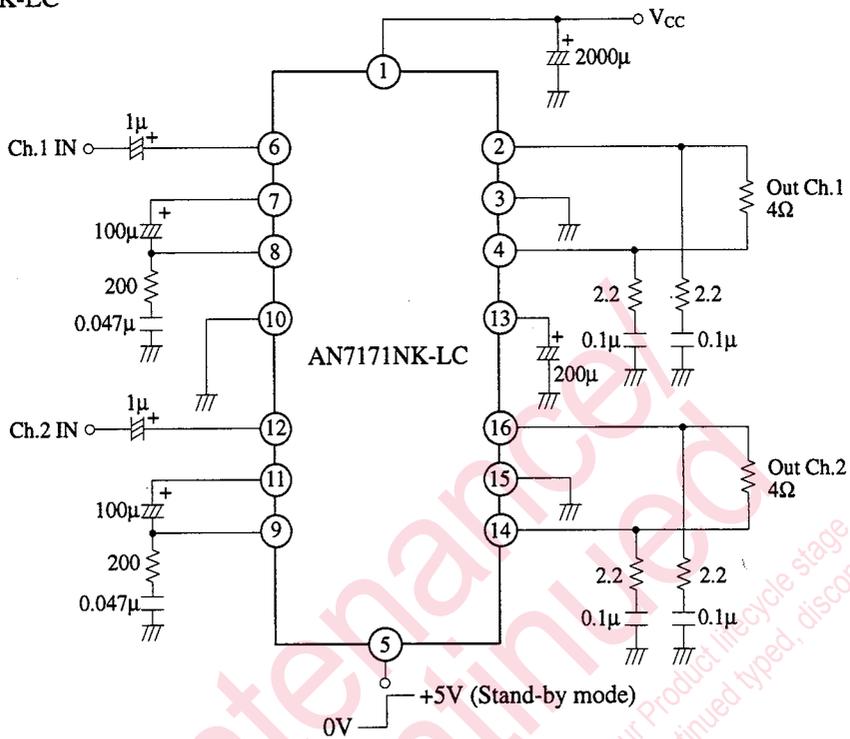
\* With 15Hz ~ 30kHz (12dB/OCT) filter

### ■ Pin

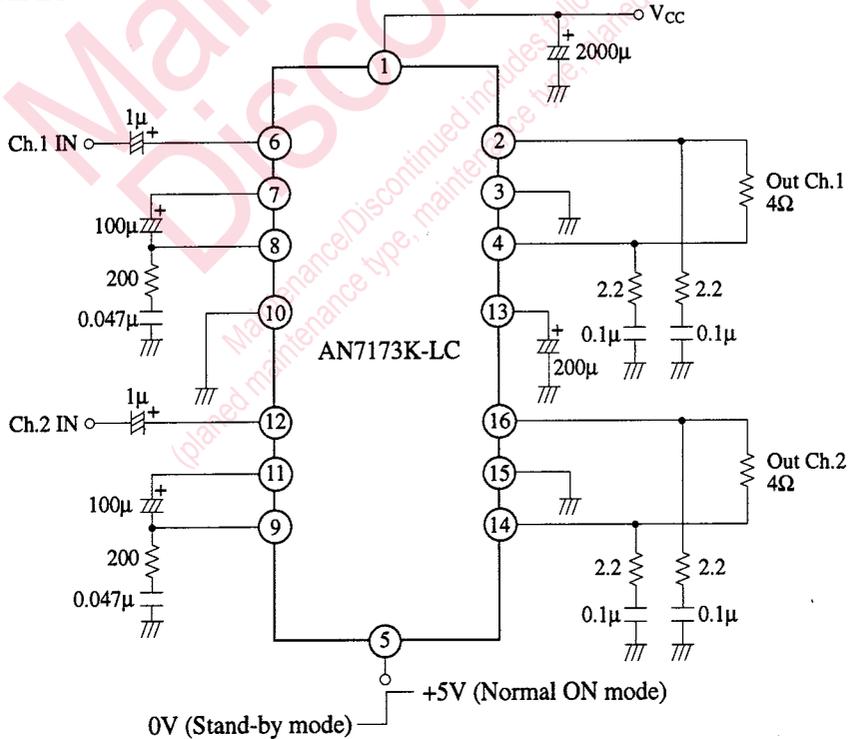
Pin No	Pin Name	Pin No	Pin Name
1	V <sub>CC</sub>	9	N.F.B. Ch.2
2	Output Ch.1	10	GND (Input)
3	GND (Output Ch.1)	11	N.F.B. Ch.2
4	Output Ch.1	12	Input Ch.2
5	Stand-by	13	Ripple Filter
6	Input Ch.1	14	Output Ch.2
7	N.F.B. Ch.1	15	GND (Output Ch.2)
8	N.F.B. Ch.1	16	Output Ch.2

Test Circuit

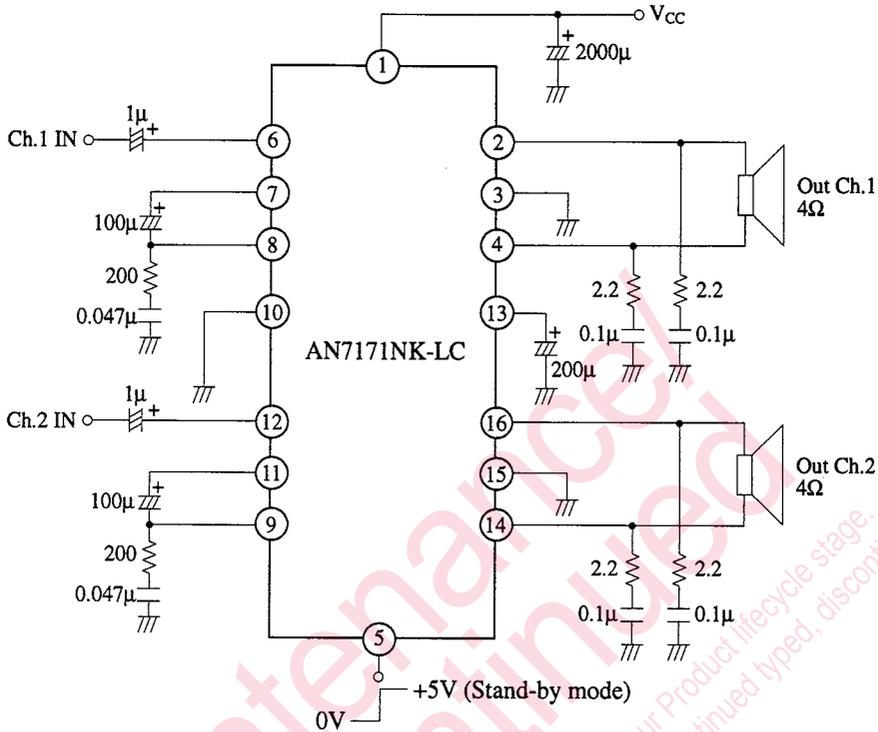
AN7171NK-LC



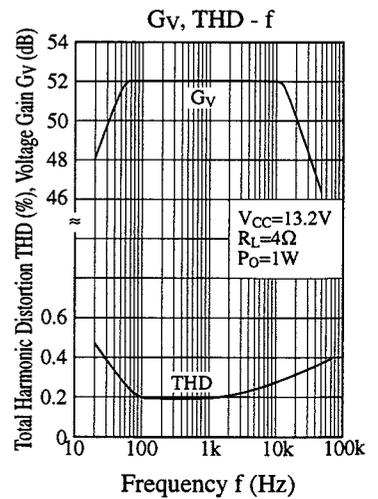
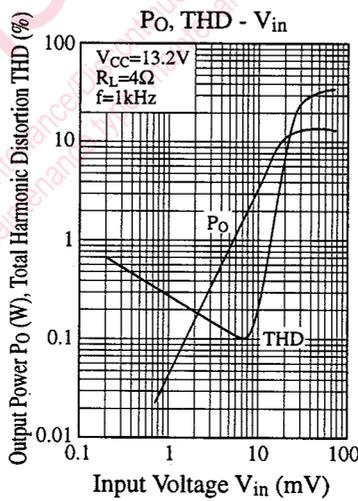
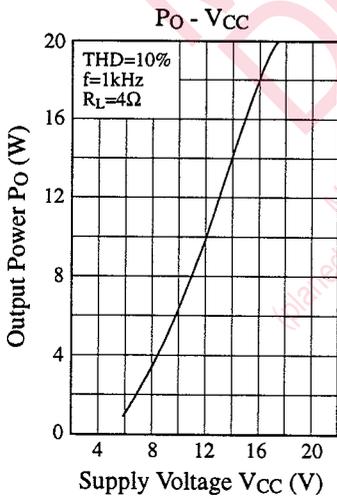
AN7173K-LC



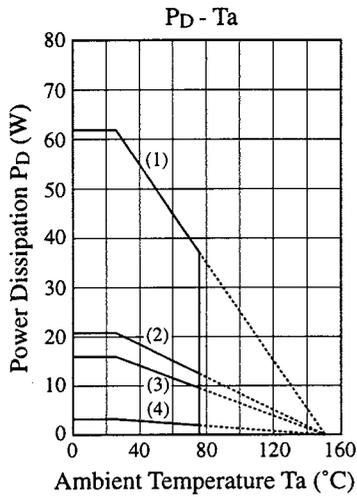
■ Application Circuit



■ Characteristics Curve

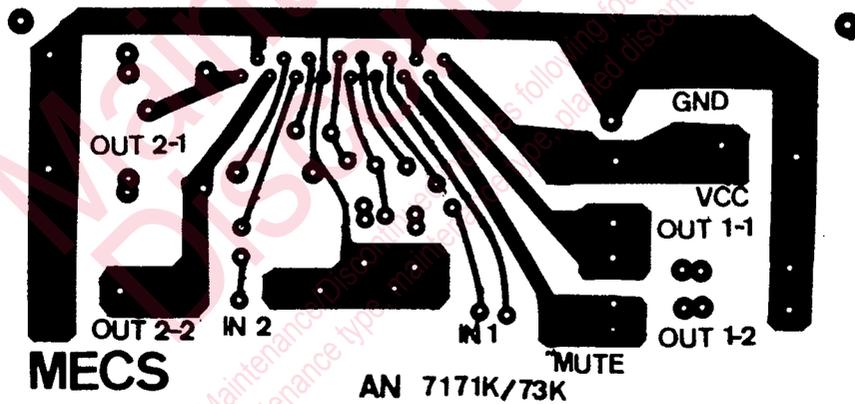


■ Characteristics Curve (Continue)



- (1)  $T_c = T_a, 62.5W$  ( $\theta_{j-c} = 2^\circ C/W$ )
- (2)  $20.8W$  ( $\theta_j = 4^\circ C/W$ ) With a  $100cm^2 \times 3mm$  Al heat sink (black colour coated) or a  $200cm^2 \times 2mm$  Al heat sink (not lacquered)
- (3)  $15.6W$  ( $\theta_j = 6^\circ C/W$ ) With a  $100cm^2 \times 2mm$  Al heat sink (not lacquered)
- (4)  $3.0W$  at  $T_a = 30^\circ C$  Without heat sink

■ Printed Circuit Board Layout (Scale: 1:1)



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