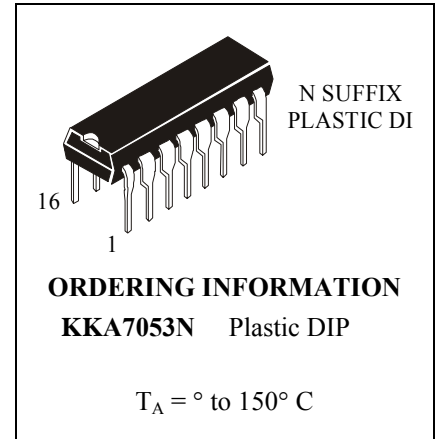


2 x 1 W portable/mains-fed stereo power amplifier

KKA7053N

The KKA7053N is an integrated class-B stereo power amplifier in a 16-lead dual-in-line (DIL) plastic package. The device, consisting of two BTL amplifiers, is primarily developed for portable audio applications but may also be used in mains-fed applications.

- No external components
- No switch-ON/OFF clicks
- Good overall stability
- Low power consumption
- Short-circuit-proof



QUICK REFERENCE DATA

PARAMETER	CONDITIONS	SYMBOL	MIN.	MAX.	UNIT
Supply voltage range		V_P	3	18	V
Total quiescent current	$R_L = \infty$	I_{tot}	-	16	mA
Output power	$R_L = 8 \Omega$, $V_P = 6 V$, THD = 10%	P_O	-	1	W
Internal voltage gain	$R_L = 8 \Omega$, $V_P = 6 V$	G_v	38	40	dB
Total harmonic distortion	$P_O = 0.1 W$, $R_L = 8 \Omega$, $V_P = 6 V$	THD	-	1.0	%

PINNING

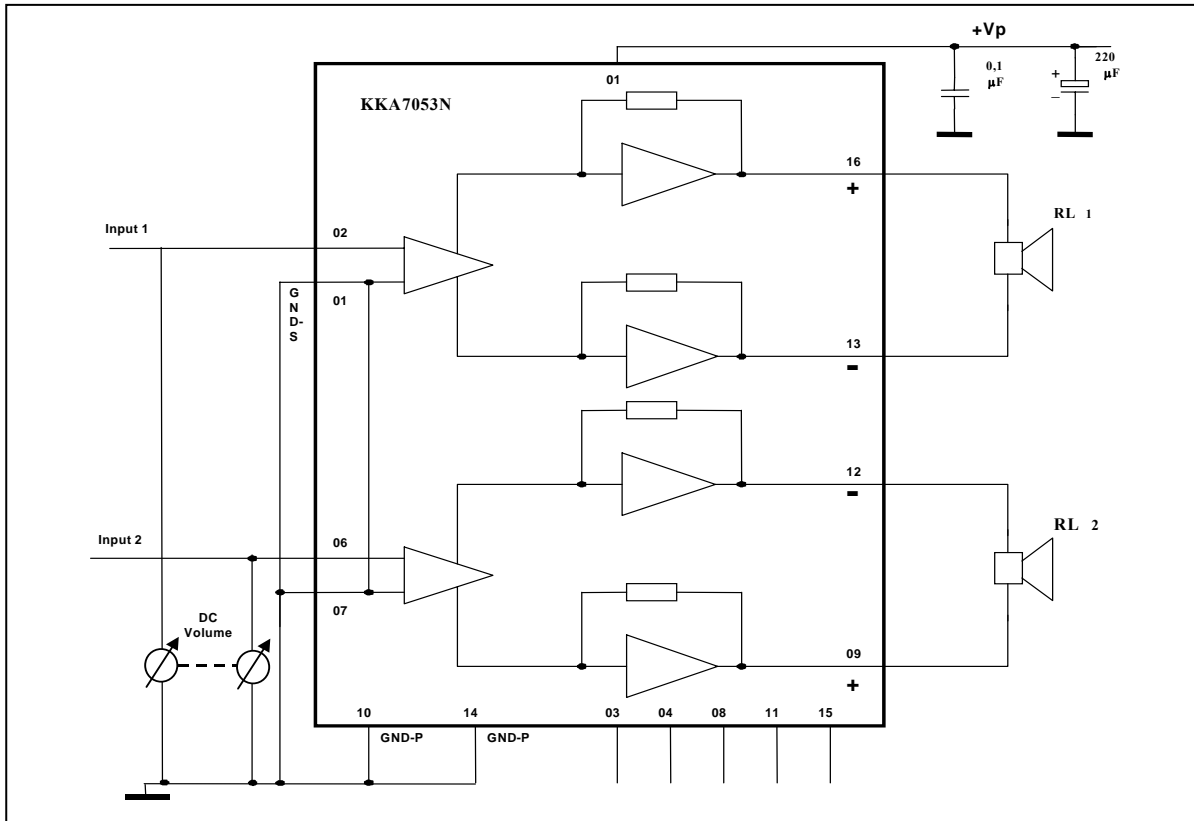
Pin №	Symbol	Description	Pin №	Symbol	Description
01	SGND1	signal ground 1	09	OUT2A	output 2 (positive)
02	IN1	input 1	10	GND2	power ground 2
03	n.c.	not connected	11	n.c.	not connected
04	n.c.	not connected	12	OUT2B	output 2 (negative)
05	V_P	supply voltage	13	OUT1B	output 1 (negative)
06	IN2	input 2	14	GND1	power ground 1
07	SGND2	signal ground 2	15	n.c.	not connected
08	n.c.	not connected	16	OUT1A	output 1 (positive)

Note

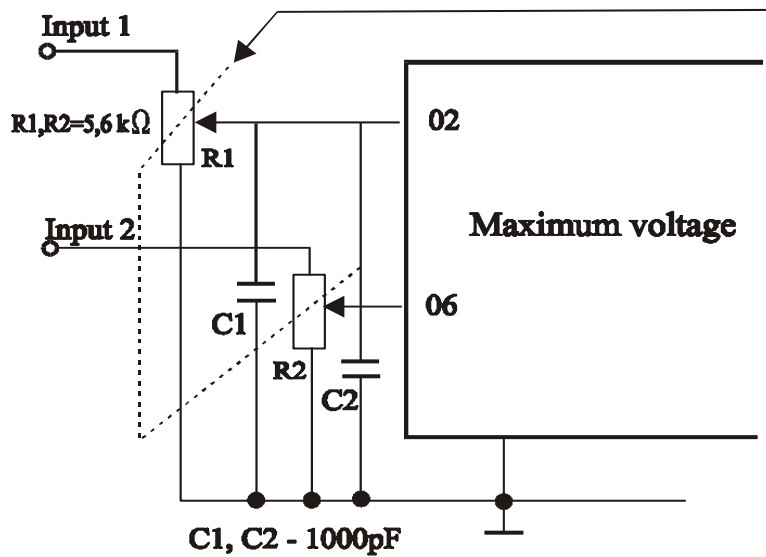
The information contained within the parentheses refer to the polarity of the loudspeaker terminal to which the output must be connected.

FUNCTIONAL DESCRIPTION

The KKA7053N is a stereo output amplifier, with an internal gain of 39 dB, which is primarily for use in portable audio applications but may also be used in mains-fed applications. The current trends in portable audio application design is to reduce the number of batteries which results in a reduction of output power when using conventional output stages. The KKA7053N overcomes this problem by using the Bridge-Tied-Load (BTL) principle and is capable of delivering 1.2 W into an 8 Ω load ($V_P = 6 V$). The load can be short-circuited under all input conditions.



Volume Control



1. This capacitor can be omitted if the 220 μF electrolytic capacitor is connected close to pin 01.
2. $R_L = 8 \Omega$
3. Resistors R1, R2 = 5,6 kΩ connected to the inputs 02, 06 should be dual.

Fig.1 Block diagram, test and application circuit diagram

RATINGS

Limiting values in accordance with the Absolute Maximum System

PARAMETER	CONDITIONS	SYMBOL	MIN.	MAX.	UNIT
Supply voltage		V_p	-	18	V
Non-repetitive peak output current		I_{OSM}	-	1.5	A
Total power dissipation		P_{tot}	see Fig.2		
Crystal temperature		T_c	-	+150	°C
Storage temperature range		T_{stg}	-60	+150	°C

THERMAL RESISTANCE

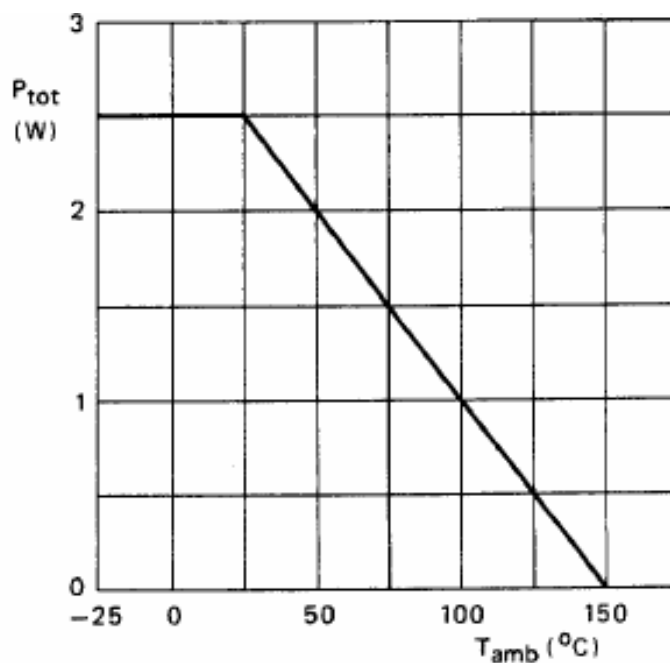
From junction to ambient $R_{th\ j-a}$ 60 K/W

Power dissipation

Assuming: $V_p = 6\text{ V}$ and $R_L = 8\ \Omega$:

The maximum sinewave dissipation is 1.8 W, therefore $T_{amb(max.)} = 150 - (60 \times 1.8) = 42^\circ\text{C}$.

Fig.2 Power derating curve



CHARACTERISTICS
 $V_p = 6\text{ V}$; $R_L = 8\ \Omega$; $T_{amb} = 25^\circ\text{C}$; unless otherwise specified; measured from test circuit, Fig.2.

PARAMETER	CONDITIONS	SYMBOL	MIN.	MAX.	UNIT
Supply voltage range		V_p	3	18	V
Total quiescent current	$R_L = \infty$; note 1	I_{tot}	-	16	mA
Input bias current		I_{bias}	-	300	nA
Supply voltage ripple rejection	note 2	SVRR	40	-	dB
Input impedance		Z_I	100 (type)		k Ω
DC output offset voltage	note 3	ΔV_{13-16}	-	100	mV
		ΔV_{12-9}	-	100	mV
Noise output voltage (RMS value)	note 4	$V_{no(rms)}$	-	300	μV
	note 5	$V_{no(rms)}$	60 (type)		μV
Output power	THD = 10%	PO	-	0.8	W
Total harmonic distortion	$P_O = 0.1\text{ W}$	THD	-	1.0	%
Internal voltage gain		G_V	38	40	dB
Channel balance		ΔG_V	-	1	dB
Channel separation	note 3	α	40	-	dB
Frequency response	$R_L = 8\ \Omega$, $V_p = 6\text{ V}$	f	0.2 to 20 (type)		kHz

Notes to the characteristics

1. With a practical load the total quiescent current depends on the offset voltage.
2. Ripple rejection measured at the output with $R_S = 0\ \Omega$ and $f = 100\text{ Hz}$ to 10 kHz . The ripple voltage (200 mV) is applied to the positive supply rail.
3. $R_S = 5\text{ k}\Omega$.
4. The noise output voltage (RMS value) is measured with $R_S = 5\text{ k}\Omega$, unweighted and a bandwidth of 60 Hz to 15 kHz.
5. The noise output voltage (RMS value) is measured with $R_S = 0\ \Omega$ and $f = 500\text{ kHz}$ with 5 kHz bandwidth. If $R_L = 8\ \Omega$ and $L_L = 200\text{ mH}$ the noise output current is only 100 nA.

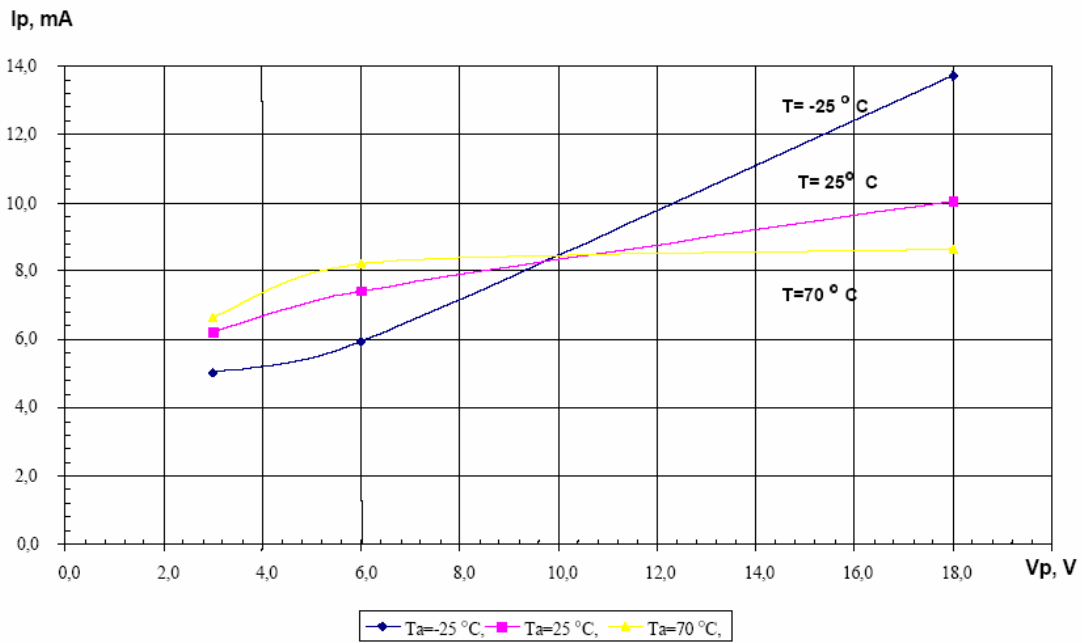


Fig.3. Output power as a function of voltage supply (V_p); THD = 10%; $f = 1$ kHz; $T_{amb} = 60$ °C.

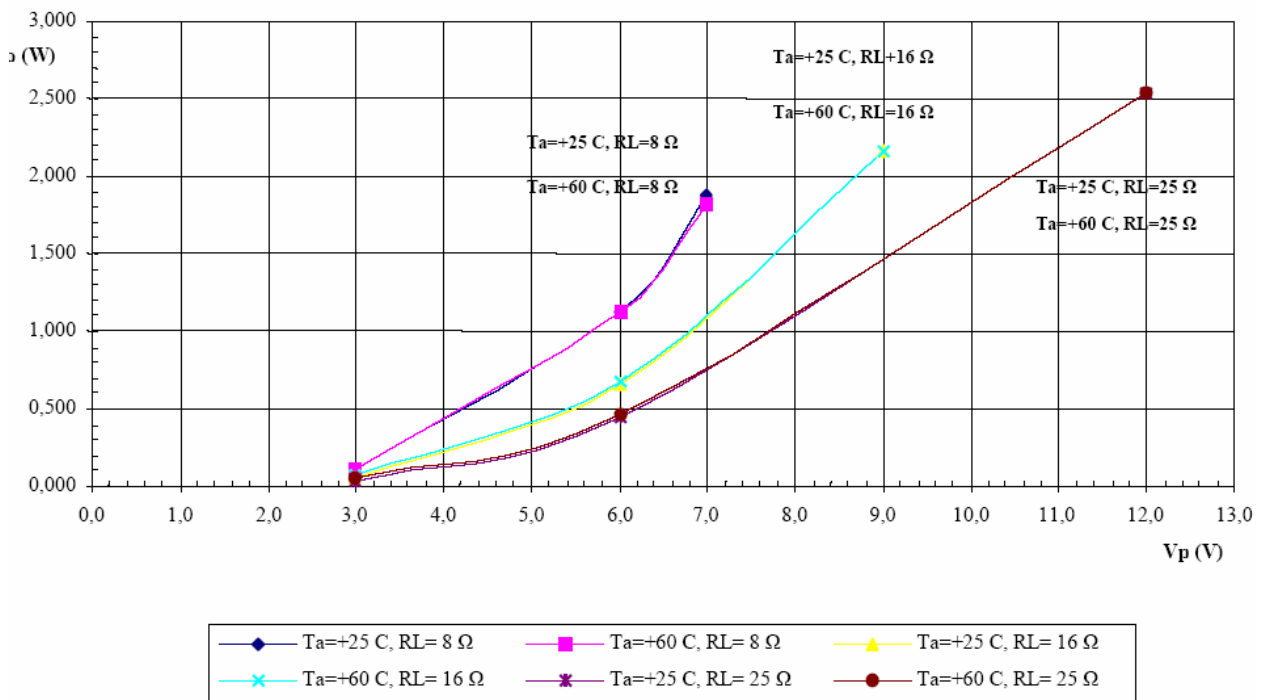


Fig.4. Output power as a function of voltage supply (V_p); THD = 10%; $f = 1$ kHz; $T_{amb} = 60$ °C.

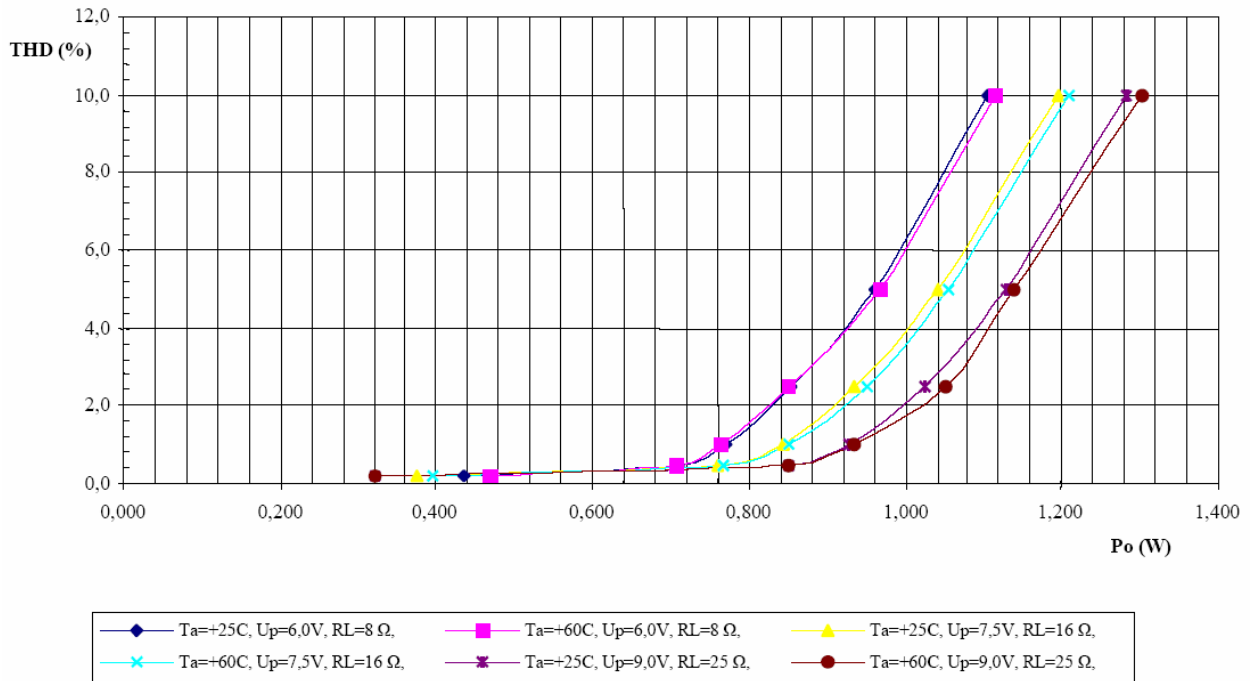
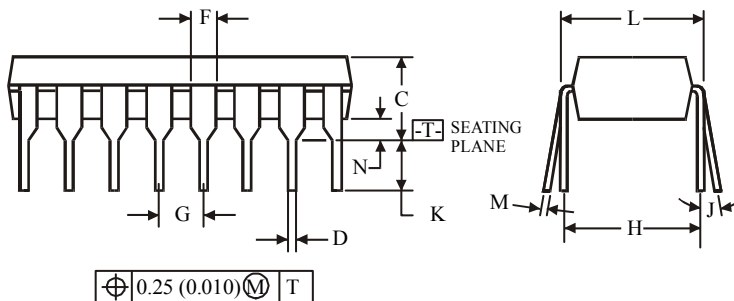
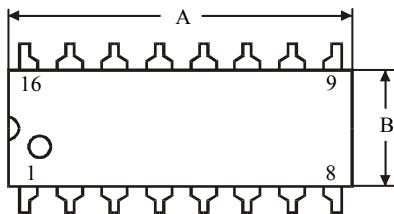
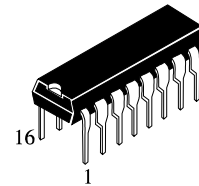


Fig.5 Total harmonic distortion as a function of output power; f = 1 kHz; T amb = 60 °C.

**N SUFFIX PLASTIC DIP
(MS - 001BB)**



Symbol	Dimension, mm	
	MIN	MAX
A	18.67	19.69
B	6.1	7.11
C		5.33
D	0.36	0.56
F	1.14	1.78
G	2.54	
H	7.62	
J	0°	10°
K	2.92	3.81
L	7.62	8.26
M	0.2	0.36
N	0.38	

NOTES:

- Dimensions "A", "B" do not include mold flash or protrusions.
Maximum mold flash or protrusions 0.25 mm (0.010) per side.