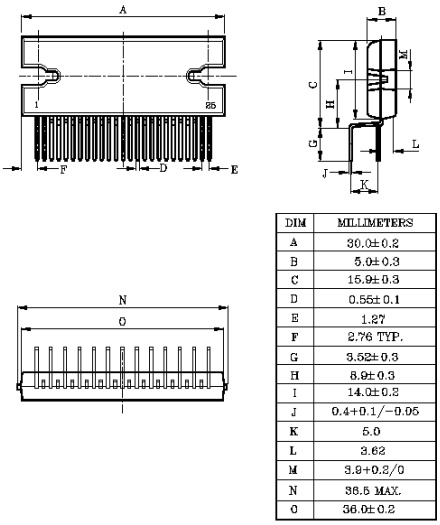
MAX POWER 43W QUAD BTL AUDIO POWER AMPLIFIER

The KIA8262H is 4ch BTL audio power amplifier for car audio application.

This IC can generate more high power : P_{OUT}MAX=43W as it is included the pure complementary PNP and NPN transistor output stage.

It is designed low distortion ratio for 4ch BTL audio power amplifier, built-in Sstand-by Function, Muting Function, Clip detector, and diagnosis circuit. Additionally, the AUX, amplifier is built-in, it can make the beep signal etc. output to 2 channels (OUT1 and 4). It contains various kind of protectors for car audio use.



DIM	MILLIMETERS
A	30.0±0.2
B	5.0±0.3
C	15.9±0.3
D	0.55±0.1
E	1.27
F	2.76 TYP.
G	3.52±0.3
H	6.9±0.3
I	14.0±0.2
J	0.4+0.1/−0.05
K	5.0
L	3.62
M	3.9+0.2/0
N	36.5 MAX.
O	36.0±0.2

HZIP−25

FEATURES

- High Power
  : P_{OUT}MAX(1)=43W(Typ.)
  (Vcc=14.4V, f=1kHz, EIAJ Max., R_L=4Ω)
  : P_{OUT}MAX(2)=40W(Typ.)
  (Vcc=13.7V, f=1kHz, EIAJ Max., R_L=4Ω)
  : P_{OUT}(1)=28W(Typ.)
  (Vcc=14.4V, f=1kHz, THD=10%, R_L=4Ω)
  : P_{OUT}(2)=24W(Typ.)
  (Vcc=13.2V, f=1kHz, THD=10%, R_L=4Ω)
- Built-in clip detector & diagnosis circuit. (Pin㉕)
- Low Distortion Ratio
  : THD=0.02%(Typ.)
  (Vcc=13.2V, f=1kHz, Pout=5W, R_L=4Ω)
- Low Noise
  : V_{NO}=0.10mV_{rms}(Typ.)
  (Vcc=13.2V, Rg=0Ω, G_V=26dB, BW=20∼20kHz)
- Built-in stand-by switch function. (Pin②)
- Built-in muting function. (Pin㉔)
- Built-in AUX. amplifier from single input to 2 channels output (Pin⑯)
- Built-in various protection circuit.
  : Thermal shut down, over voltage, out to GND, out to V_{CC}, out to out short.
- Operating supply voltage.
  : $V_{CC(opr)}$=9∼18V.

MAXIMUM RATINGS (Ta=25℃)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Peak Supply Voltage (0.2sec)	$V_{CC\ (surge)}$	50	V
DC Supply Voltage	$V_{CC\ (DC)}$	25	V
Operating Supply Voltage	$V_{CC\ (opr)}$	18	V
Output Current (Peak)	$I_{O\ (peak)}$	9	A
Power Dissipation	P_D *	250	W
Operating Temperature	T_{opr}	-40~85	℃
Storage Temperature	T_{stg}	-55~150	℃

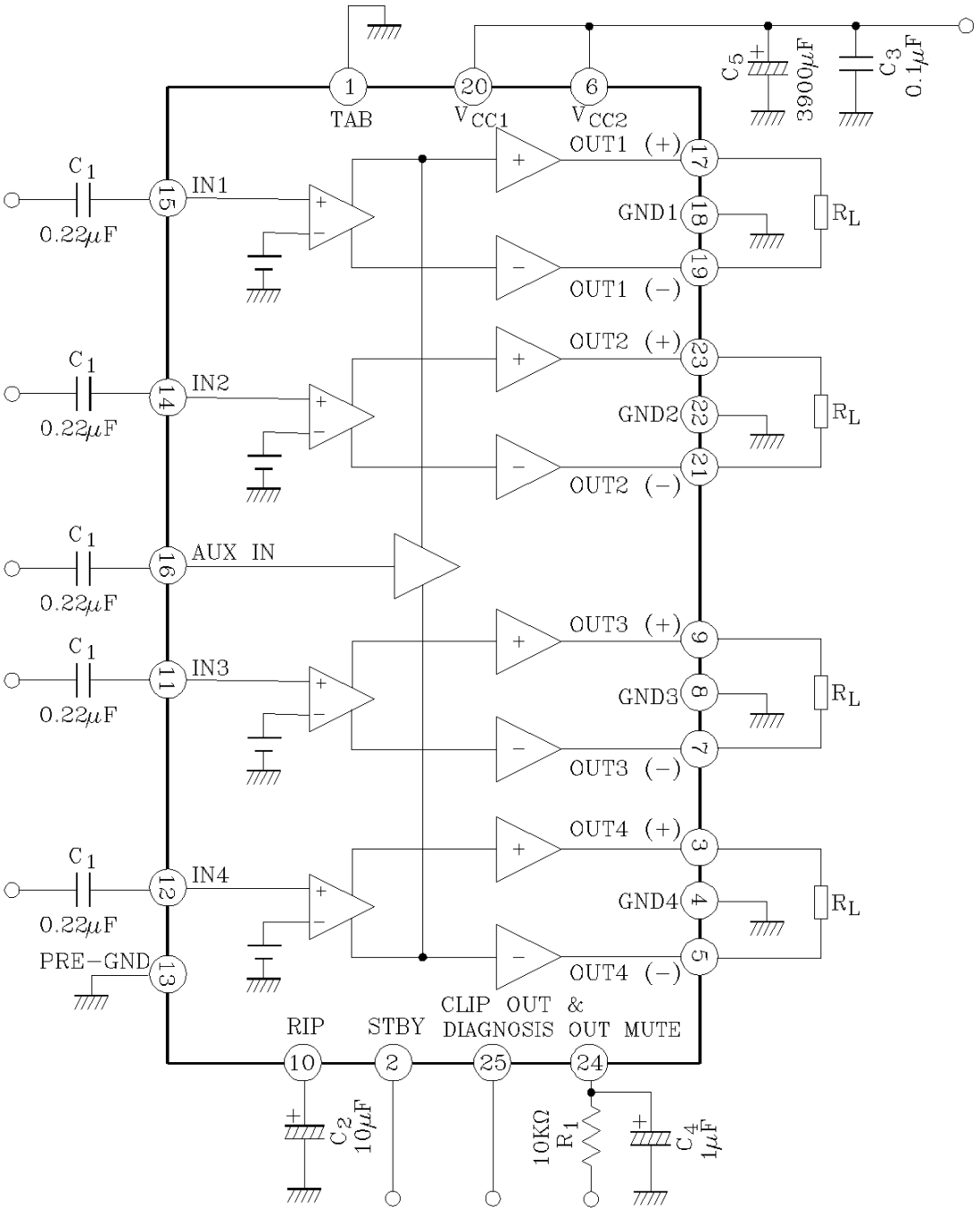
* : Package thermal resistance θ_{j-T}=0.5℃/W(Typ.)
(Ta=25℃, with infinite heat sink)

ELECTRICAL CHARACTERISTICS
(Unless otherwise specified, Vcc=13.2V, R_L=4Ω, f=1kHz, Ta=25℃)

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current	I_{CCQ}	-	V_{IN}=0	-	200	400	mA
Output Power	P_{OUT} MAX(1)	-	V_{CC}=14.4V, MAX power	-	43	-	W
	P_{OUT} MAX(2)		V_{CC}=13.7V, MAX power	-	40	-	
	P_{OUT}(1)	-	V_{CC}=14.4V, THD=10%	-	28	-	
	P_{OUT}(2)	-	THD=10%	22	24	-	
Total Harmonic Distortion Ratio	THD	-	P_{OUT}=3W	-	0.02	0.2	%
Voltage Gain	G_V	-	V_{OUT}=0.775V_{rms} (0dBm)	24	26	28	dB
Voltage Gain Ratio	ΔG_V	-	V_{OUT}=0.775V_{rms} (0dBm)	-1.0	0	1.0	
Output Noise Voltage	V_{NO} (1)	-	Rg=0Ω, DIN45405	-	0.12	-	mV_{rms}
	V_{NO} (2)	-	Rg=0Ω, BW=20Hz~20kHz	-	0.10	0.35	
Ripple Rejection Ratio	R.R.	-	f_{ripple}=100Hz, Rg=620Ω V_{rip}=0.775V_{rms} (0dBm)	40	50	-	dB
Cross Talk	C.T.	-	Rg=620Ω, V_{OUT}=0.775V_{rms} (0dBm)	-	65	-	
Output Offset Voltage	V_{OFFSET}	-	-	-100	0	+100	mV
Input Resistance	R_{IN}	-	-	-	90	-	kΩ
Stand-By Current	I_{SB}	-	Stand-by condition	-	2	10	μA
Stand-By Control Voltage	V_{SB} H	-	Power : ON	3.0	-	6.0	V
	V_{SB} L	-	Power : OFF	0	-	1.5	
Mute Control Voltage *	V_{SB} H	-	Power : ON	OPEN			V
	V_{SB} L	-	Mute:on, R_1=10kΩ	0	-	0.5	
Mute Attenuation	ATT M	-	Mute:on, V_{OUT}=7.75V_{rms}(20dBm) at Mute:off	80	90	-	dB

* : Muting function have to be controlled by open and low logic, which logic is a transistor, FET and μ-COM port of IMUTE>250μA ability. This means that the Mute control terminal : pin㉔ must not be pulled-up.

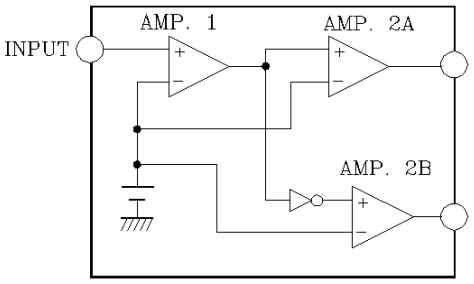
TEST CIRCUIT & BLOCK DIAGRAM



CAUTION AND APPLICATION METHOD
(Description is made only no the single channel.)

1. Voltage gain adjustment

This IC has no NF (negative feedbak) terminals. Therefore, the voltage gain can't adjusted, but it makes the device a space and total costs saver.



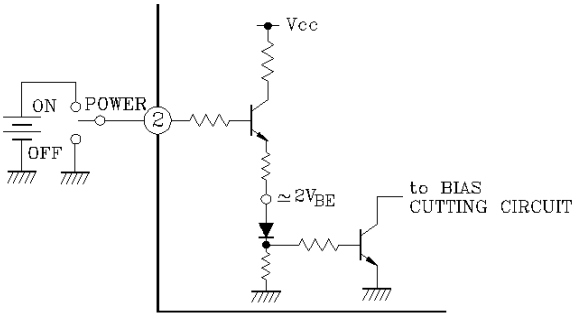
(Fig.1) Block Diagram

The voltage gain of Amp. 1 : G_V=0dB
The voltage gain of Amp. 2A, B : G_V=20dB
The voltage gain of BTL Connection : $G_{V(BTL)}$=6dB
Therefore, the total voltage gain is decided by expression below.
$G_V=G_{V1}+G_{V2}+G_{V(BTL)}=0+20+6=26dB$

2. Stand-by SW function (pin②)
By means of controlling pin② (Stand-by terminal) to High and Low, the power supply can be set to ON and OFF.
The threshold voltage of pin② is set at about $3V_{BE}$(Typ.), and the power supply current is about 2㎂(Typ.) at the Stand-by state.

Control Voltage of pin② : $V_{(SB)}$

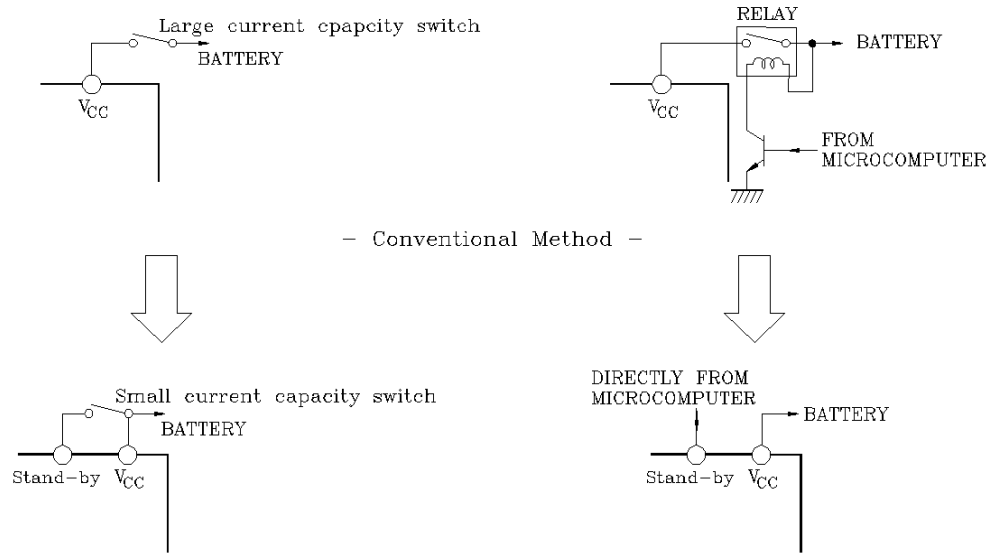
STAND-BY	POWER	V(SB) (V)
ON	OFF	0~1.5
OFF	ON	3~6



(Fig.2) With pin ② set to High, Power is turned ON

Adjustage of Stand-by SW
(1) Since V_{CC} can directly be controlled to ON or OFF by the microcomputer, the switching relay can be omitted.

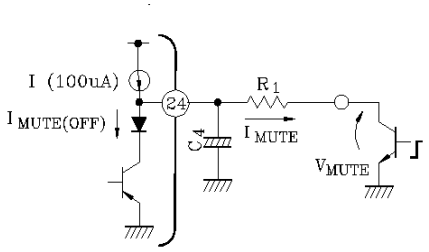
(2) Since the control current is microscopic, the switching relay of small current capacity is satisfactory for switching



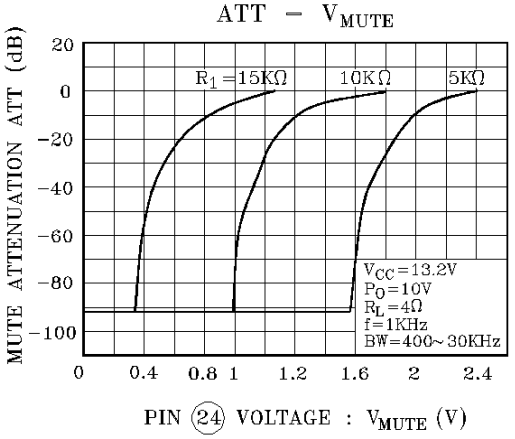
(Fig.3)

3. Muting function (pin㉔)

By means of controlling pin㉔ less than 0.5V, it can make the audio muting condition.
The muting time constant is decided by R_1 and C_4 and these parts is related the pop noise at power ON/OFF.
The series resistance ; R1 must be set up less than 15kΩ, we recommend 10kΩ.
The muting function have to be controlled by a transistor, FET and μ-COM port which has I_{MUTE}>250μA ability.
Terminal ㉔ must not be pulled up and it shall be controlled by OPEN/LOW.



(Fig.4) Muting Function

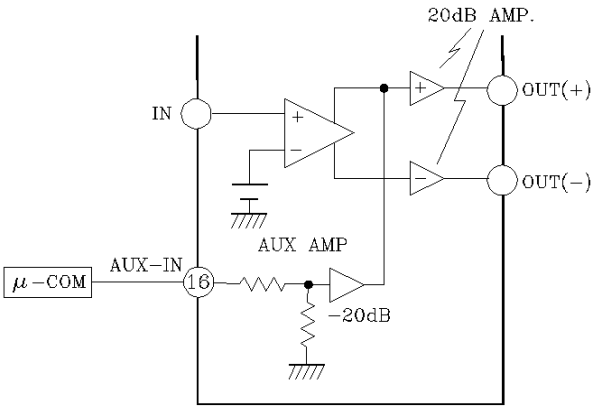


(Fig.5) Mute Attenuation–V_{MUTE} (V)

4. AUX. Input (pin⑯)

The pin⑯ is for input terminal of AUX. amplifier. The total gain is 0dB by using of AUX. amplifier. Therefore, the μ-COM can directly drive the AUX. amplifier.

BEEP sound or voice synthesizer signal can be input to pin⑯ directly.



(Fig.6) AUX INPUT

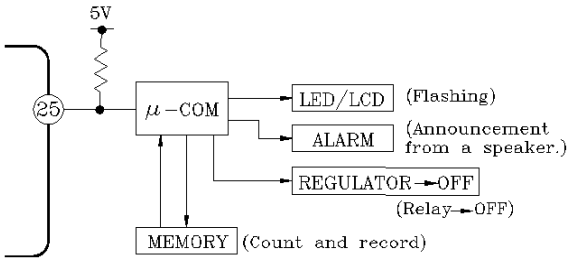
5. DIAGNOSIS OUTPUT (pin㉕)

The diagnosis output terminal of pin㉕ has open collector output structure on chip as shown in Fig.6.

In unusual case that output terminal of Power Amp. is condition of output to V_{CC} or output to GND short and over voltage input mode, it is possible to protect all the system of apparatus as well as power IC protection.

In case of being unused this function, use this IC as open-connection on pin㉕.

(Application)



(Fig.7)

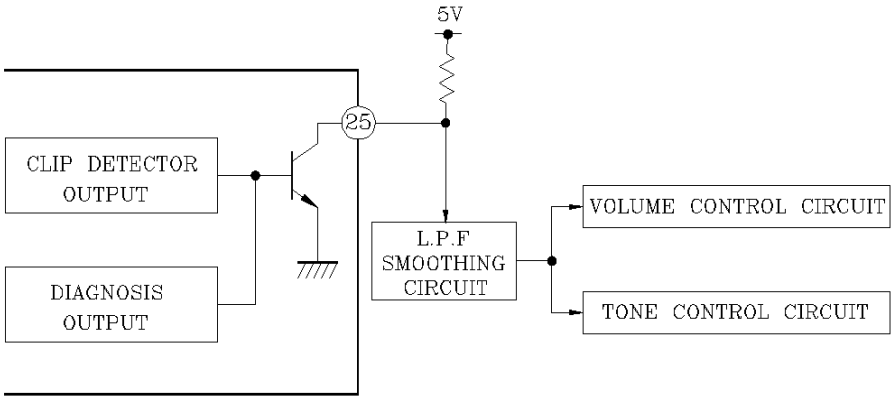
6. Output Clip Detection Function (pin㉕)

The output clip detection terminal of pin㉕ has the open collector output structure on chip as shown in Fig.8 In case that the output waveform is clipping, the clip detection circuit is operated and NPN Tr. is turned on.

It is possible to improve the audio quality with controlling the volume, tone control circuit through L.P.F. smoothing circuit as shown in Fig.8.

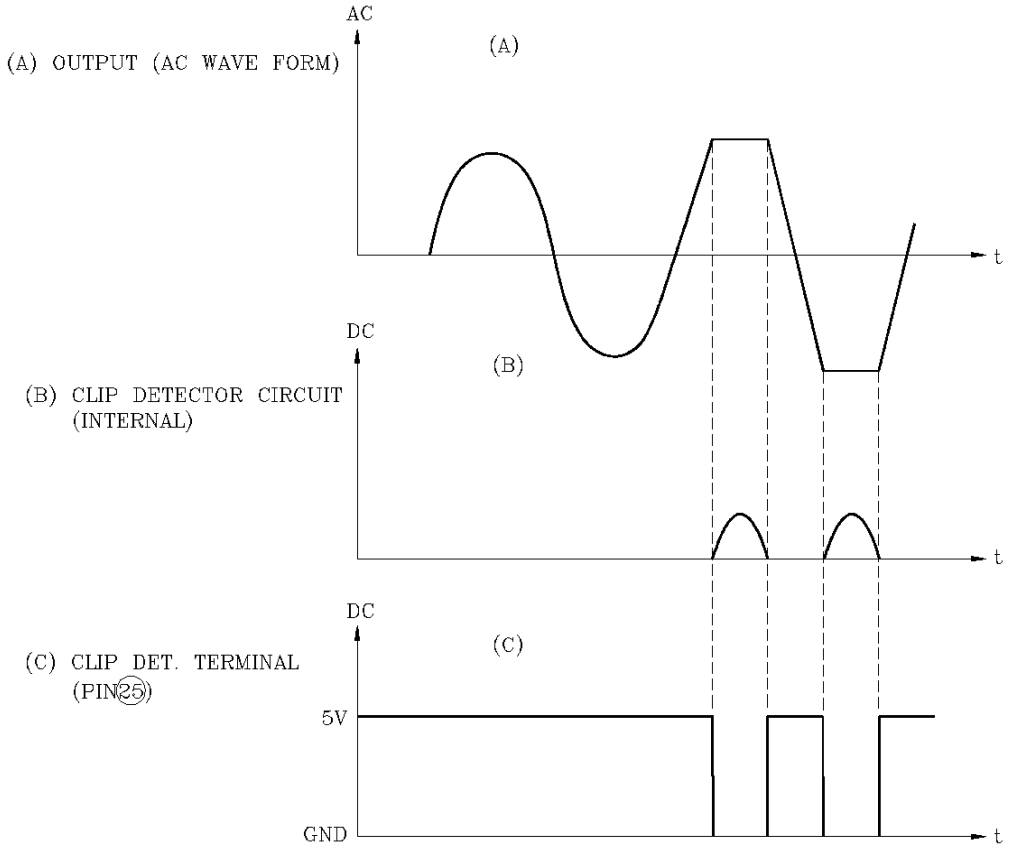
In case of being unused this function, use this IC as open connection on pin㉕.

(Application)



PIN (25) : Open Collector Output (Active Low)

(Fig.8)



7. Cross talk

The cross talk characteristics of the IC is not good between OUT1 and 2, OUT3 and 4.
So we recommend to use by below method.

OUT1,2	L-ch (or R-ch)
OUT3,4	R-ch (or L-ch)

And, please refer to below table in case of applying the AUX, IN because it is out to OUT1 and 4.

ex)

OUT1	Front	L-ch (or R-ch)	AUX. OUT
OUT2	Rear		-
OUT3	Rear	R-ch (or L-ch)	-
OUT4	Front		AUX. OUT