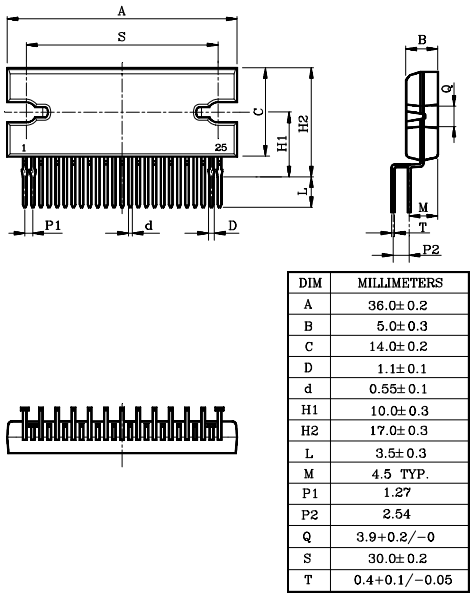
MAX POWER 30W BTL×4CH AUDIO POWER IC

The KIA8251AH is 4ch BTL audio power amplifier for consumer application.
It is designed low distortion ratio for 4ch BTL audio power amplifier, built-in stand-by function, muting function and junction temperature detection 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.



DIM	MILLIMETERS
A	36.0±0.2
B	5.0±0.3
C	14.0±0.2
D	1.1±0.1
d	0.55±0.1
H1	10.0±0.3
H2	17.0±0.3
L	3.5±0.3
M	4.5 TYP.
P1	1.27
P2	2.54
Q	3.9+0.2/−0
S	30.0±0.2
T	0.4+0.1/−0.05

CPP−25 (C Type)

FEATURES

- High Power
  : P_{OUT}(MAX)=30W(Typ.)
  (V_{CC}=13.7V, f=1kHz, R_L=4Ω)
  : $P_{OUT(1)}$=21W(Typ.)
  (V_{CC}=14.4V, f=1kHz, THD=10%, R_L=4Ω)
  : $P_{OUT(2)}$=18W(Typ.)
  (V_{CC}=13.2V, f=1kHz, THD=10%, R_L=4Ω)
- Low Distortion Ratio
  : THD=0.02%(Typ.)
  (V_{CC}=13.2V, f=1kHz, Pout=3W, R_L=4Ω)
- Low Noise
  : V_{NO}=0.10mV_{rms}(Typ.)
  (V_{CC}=13.2V, Rg=0Ω, G_V=34dB, BW=20∼20kHz)
- Built-in stand-by switch function (Pin ②)
- Built-in muting function (Pin ①, ㉕)
- Built-in AUX. amplifier from single input to 2 channels output (Pin ⑯)
- Built-in junction temperature detection circuit (Pin ㉔)
  : Pin ㉔ DC voltage rises at about +10mV/℃ in proportion to junction temperature.
- 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 (Note)	83	W
Operating Temperature	T_{opr}	-40～85	℃
Storage Temperature	T_{stg}	-55～150	℃

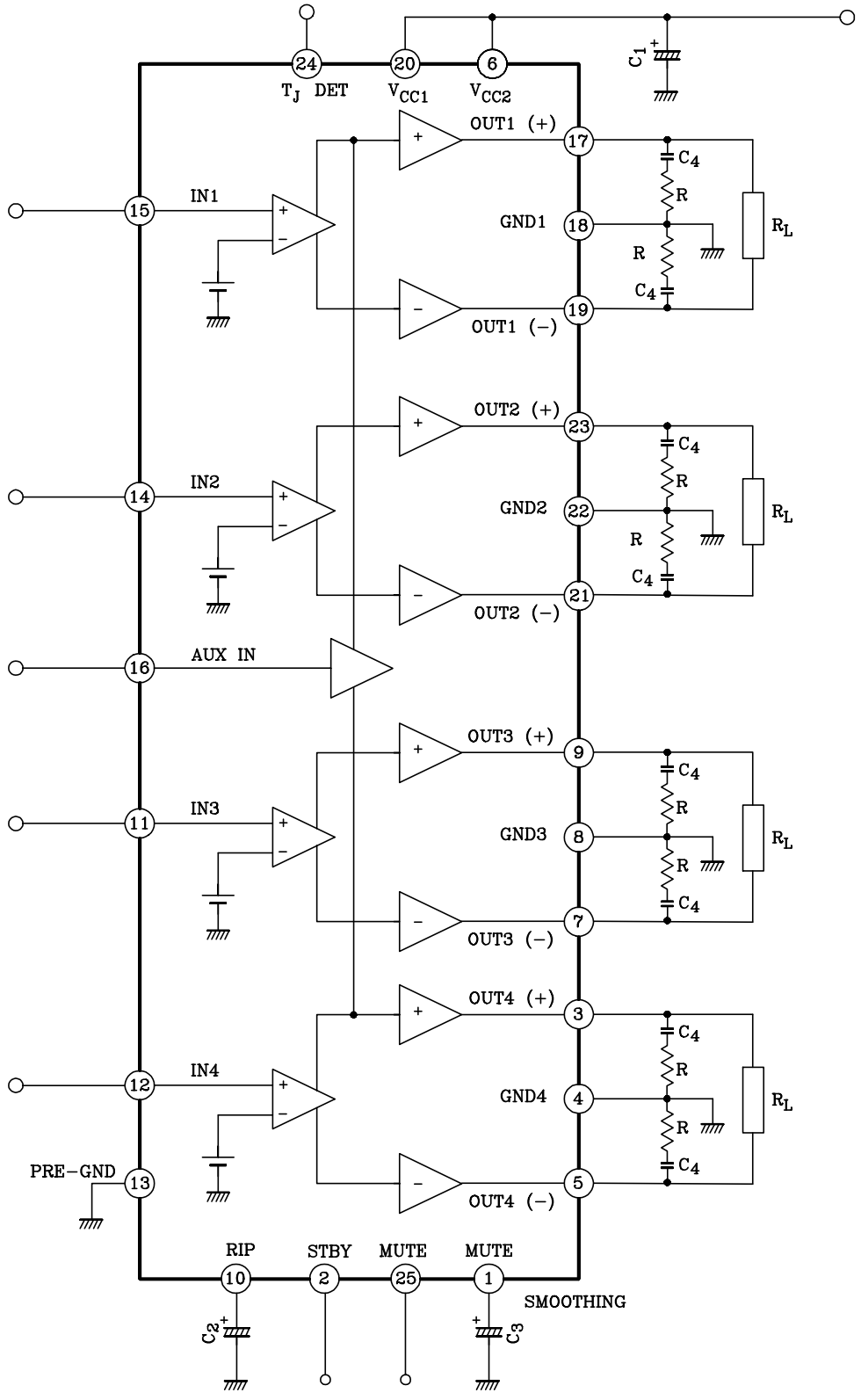
Note) Package thermal resistance θ_{j-T}=1.5℃/W (Typ.)
(Ta=25℃, with infinite heat sink)

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	-	V_{CC}=13.7V, MAX power	-	30	-	W
	P_{OUT}(1)	-	V_{CC}=14.4V, THD=10%	-	21	-	
	P_{OUT}(2)	-	THD=10%	16	18	-	
Total Harmonic Distortion Ratio	THD	-	P_{OUT}=3W	-	0.02	0.2	%
Voltage Gain	G_V	-	V_{OUT}=0.775V_{rms} (0dBm)	32	34	36	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	55	-	dB
Cross Talk	C.T.	-	Rg=620Ω, V_{OUT}=0.775V_{rms} (0dBm)	-	75	-	
Output Offset Voltage	V_{OFFSET}	-	-	-300	0	300	mV
Input Resistance	R_{IN}	-	-	-	30	-	kΩ
Stand-By Current	I_{SB}	-	Stand-by condition	-	100	150	μA
Stand-By Control Voltage	V_{SB} H	-	Power : ON	3.0	-	V_{CC}	V
	V_{SB} L	-	Power : OFF	0	-	1.5	
Mute Control Voltage (Note)	V_M H	-	Mute : OFF	OPEN			
	V_M L	-	Mute : ON	0	-	1.5	
Mute Attenuation	ATT M	-	Mute : ON	-	70	-	dB

Note) Muting function must be controlled by open and low logic.
This means that the mute control terminal : pin㉕ must not be pulled up.

BLOCK DIAGRAM



TEST CIRCUIT
(G_V=34dB)