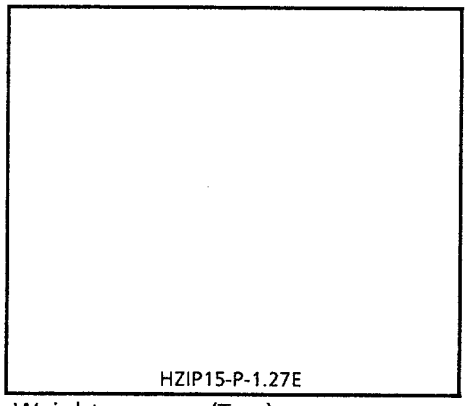
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

# TA8254H

## 45W BTL×2CH AUDIO POWER AMPLIFIER



The TA8254H is BTL stereo audio power amplifier for car audio application, especially for 2Ω load impedance. It is built-in Stand-by Function, Muting Function, diagnosis circuit, output clipping detector and various kind of protections.



HZIP15-P-1.27E

Weight : g (Typ.)

### FEATURES

- High power
  : $P_{OUT\,(1)}$ = 45W (Typ.) / Channel
  ($V_{CC}$ = 14.4V, f = 1kHz, THD = 10%, $R_L$ = 2Ω)
  $P_{OUT\,(2)}$ = 35W (Typ.) / Channel
  ($V_{CC}$ = 13.2V, f = 1kHz, THD = 10%, $R_L$ = 2Ω)
  $P_{OUT\,(3)}$ = 21W (Typ.) / Channel
  ($V_{CC}$ = 13.2V, f = 1kHz, THD = 10%, $R_L$ = 4Ω)
- Low distortion ratio : THD = 0.02% (Typ.)
  ($V_{CC}$ = 13.2V, f = 1kHz, $P_{OUT}$ = 10W, $R_L$ = 4Ω)
- Low noise : $V_{NO}$ = 0.10$mV_{rms}$ (Typ.)
  ($V_{CC}$ = 13.2V, $R_L$ = 4Ω, $R_g$ = 0Ω, BW = 20Hz~20kHz)
- Built-in stand-by function
  : (With pin set at LOW, Power is turned OFF.) $I_{SB}$ = 1μA (Typ.)
- Built-in output clipping detection and diagnosis circuit
  : (Open Collector (Active Low))
- Built-in various protection circuits
  : Thermal Shut Down, Over Voltage, Out→$V_{CC}$ Short, Out→GND Short and OUT-OUT Short.
- Operating supply voltage : $V_{CC\,(opr)}$ = 9~18V

**MAXIMUM RATINGS** (Ta = 25°C)

| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|---|---|---|---|
| Peak Supply Voltage (0.2s) | $V_{CC\,(surge)}$ | 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 | $P_D$ (*) | | W |
| Operating Temperature | $T_{opr}$ | −40~85 | °C |
| Storage Temperature | $T_{stg}$ | −55~150 | °C |

(*) Package terminal resistance $\theta_{j\text{-}T}$ = °C/w (Typ.)
(Ta = 25°C, with infinite heat sink)

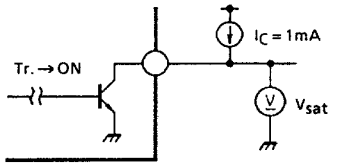
TENTATIVE

**ELECTRICAL CHARACTERISTICS** (Unless otherwise specified, $V_{CC}$ = 13.2V, $R_L$ = 4Ω, f = 1kHz, Ta = 25°C)

| CHARACTERISTIC | SYMBOL | TEST CIR-CUIT | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|---|
| Quiescent Supply Current | $I_{CCQ}$ | — | $V_{IN}$ = 0 | — | 120 | 250 | mA |
| Output Power | $P_{OUT}$ (1) | — | $V_{CC}$ = 14.4V, $R_L$ = 2Ω THD = 10% | — | 45 | — | W |
| | $P_{OUT}$ (2) | — | $R_L$ = 2Ω, THD = 10% | | 35 | — | |
| | $P_{OUT}$ (3) | — | THD = 10% | | 21 | — | |
| Total Harmonic Distortion Ratio | THD | — | $P_{OUT}$ = 1W | — | 0.02 | 0.2 | % |
| Voltage Gain | $G_V$ | — | — | 24 | 26 | 28 | dB |
| Voltage Gain Ratio | $\Delta G_V$ | — | — | −1.0 | 0 | 1.0 | dB |
| Output Noise Voltage | $V_{NO}$ | — | $R_g$ = 0Ω, BW = 20Hz~20kHz | — | 0.10 | 0.35 | $mV_{rms}$ |
| Ripple Rejection Ratio | R.R. | — | $f_{ripple}$ = 100Hz, $R_g$ = 600Ω | 40 | 55 | — | dB |
| Input Resistance | $R_{IN}$ | — | — | — | 90 | — | kΩ |
| Output Offset Voltage | $V_{offset}$ | — | $V_{IN}$ = 0 | −150 | 0 | 150 | mV |
| Current at Stand-by State | $I_{SB}$ | — | — | — | 1 | 10 | μA |
| Cross Talk | C.T. | — | $R_g$ = 600Ω $V_{OUT}$ = 0.775$V_{rms}$ (0dBm) | — | 75 | — | dB |
| Stand-by Control Voltage | $V_{SB}$ | — | Stand-By → OFF (Power → ON) | 3.0 ~~2.5~~ | — | $V_{CC}$ | V |
| CLIP DET & DIAGNOSIS OUT Saturation Voltage | $V_{sat}$ | — | $I_C$ = 1mA | — | 100 | — | mV |
| Mute Control Voltage (*) | $V_{M\ H}$ | — | Mute : off | OPEN | | | V |
| | $V_{M\ L}$ | — | Mute : on | 0 | — | 1.5 | |
| Mute Attenuation | ATT M | — | Mute : on, $V_{OUT}$ = 7.75$V_{rms}$ (20dBm) at Mute : off | — | 85 | — | dB |

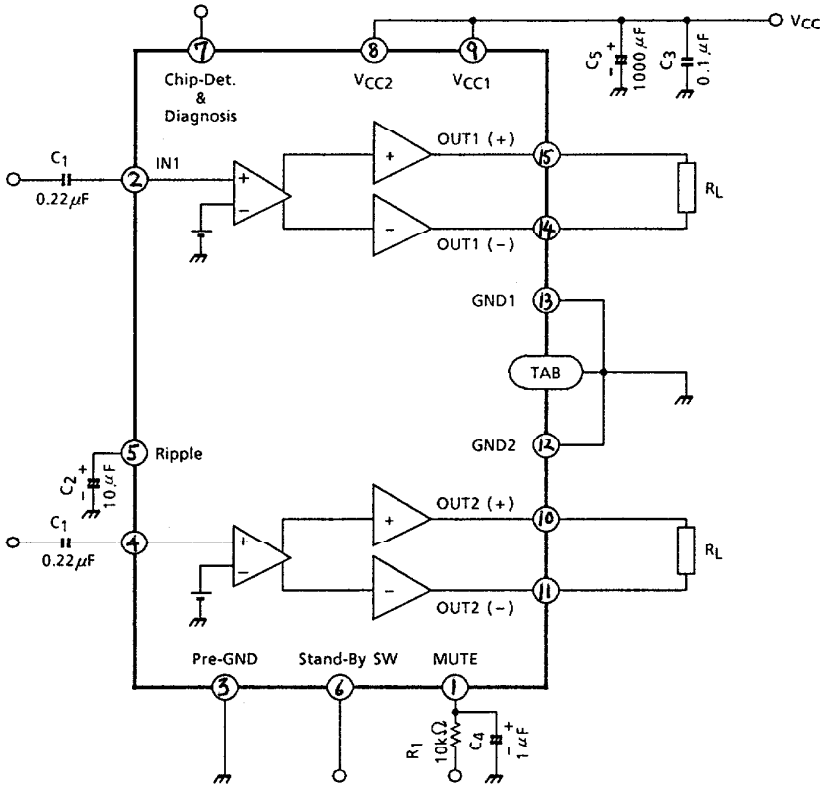
(*) Muting function must be controlled by open and Low Logic.
This means that the Mute control terminal : pin○ must not be pulled up.

Clip. Det. & Diagnosis Out Test Circuit




**TEST CIRCUIT**

TA8254H ($G_V$ = 26dB)




* Now under considering pin arrangement.

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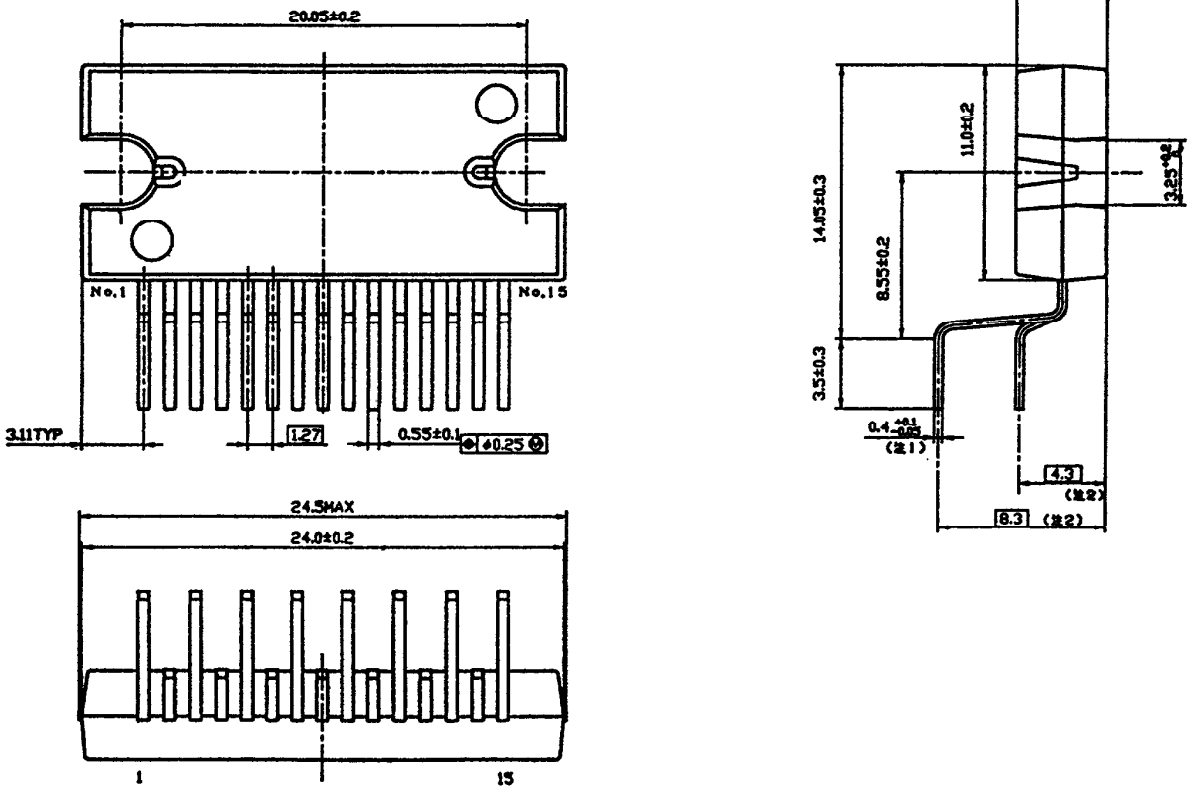
OUTLINE DRAWING

HZIP15-P-1.27E

Unit : mm




Weight : g (Typ.)

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