



PA7522

LINEAR INTEGRATED CIRCUIT

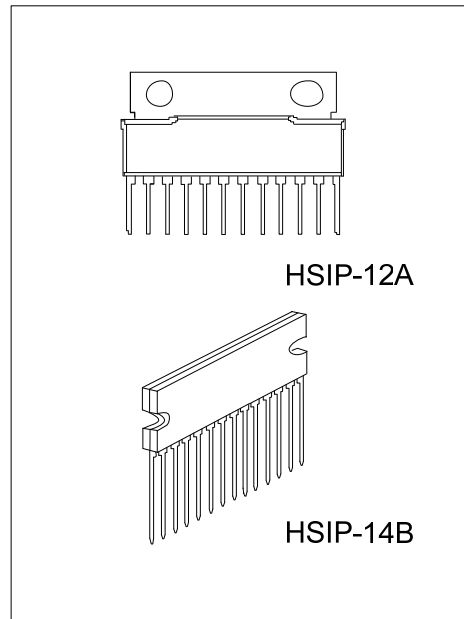
DUAL 3-W BTL AUDIO POWER AMPLIFIER

DESCRIPTION

The UTC **PA7522** is an audio power amplifier IC for the stereo system. In the BTL (balanced transformer less) method, fewer external parts and easier design for applications are required.

FEATURES

- * 3-W output (8Ω) with supply voltage of 8V
- * On-chip standby function
- * On-chip volume function



Lead-free: PA7522L
Halogen-free: PA7522G

ORDERING INFORMATION

| Normal | Ordering Number | | Package | Packing |
|----------------|-------------------|-----------------|----------|---------|
| | Lead Free Plating | Halogen Free | | |
| PA7522-H12-A-T | PA7522L-H12-A-T | PA7522G-H12-A-T | HSIP-12A | Tube |
| PA7522-H14-B-T | PA7522L-H14-B-T | PA7522G-H14-B-T | HSIP-14B | Tube |

| | |
|------------------------|---|
| <p>PA7522L-H12-A-T</p> | <p>(1) T: Tube (2) H12-A: HSIP-12A, H14-B: HSIP-14B (3) G: Halogen Free, L: Lead Free, Blank: Pb/Sn</p> |
|------------------------|---|



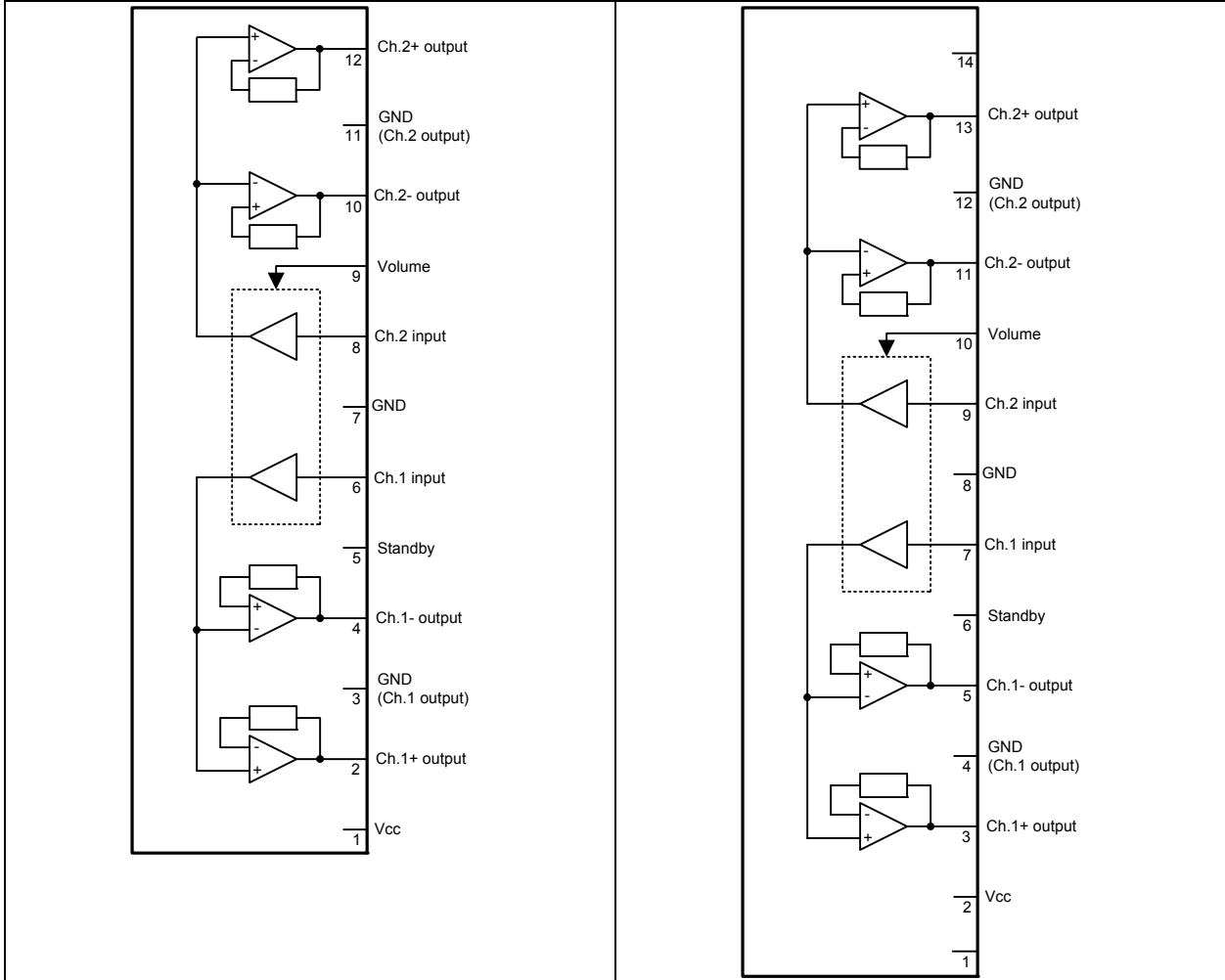
■ PIN DESCRIPTION

| PIN NO. | | PIN NAME | DESCRIPTION |
|----------|----------|-----------------|---|
| HSIP-12A | HSIP-14B | | |
| - | 1 | NC | No connect |
| 1 | 2 | V _{CC} | Supply voltage |
| 2 | 3 | Ch.1+ output | Ch.1+ output |
| 3 | 4 | GND | Ground (output ch.1) |
| 4 | 5 | Ch.1- output | Ch.1 - output |
| 5 | 6 | Standby | Standby (standby state if this pin is open) |
| 6 | 7 | Ch.1 input | Ch.1 input |
| 7 | 8 | GND | Ground (input) |
| 8 | 9 | Ch.2 input | Ch.2 input |
| 9 | 10 | Volume | Volume (max. volume if this pin is open.) |
| 10 | 11 | Ch.2- output | Ch.2 - output |
| 11 | 12 | GND | Ground (output ch.2) |
| 12 | 13 | Ch.2+ output | Ch.2 + output |
| - | 14 | NC | No connect |

■ BLOCK DIAGRAM

HSIP-12A

HSIP-14B



■ ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|-------------------------------|------------------|------------|------|
| Supply Voltage (At no signal) | V _{CC} | 14 | V |
| Supply Current | I _{CC} | 2.0 | A |
| Power Dissipation(Ta = 70°C) | P _D | 1.92 | W |
| Operating Temperature | T _{OPR} | -20 ~ +85 | °C |
| Storage Temperature | T _{STG} | -40 ~ +150 | °C |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ RECOMMENDED OPERATING RATINGS

| PARAMETER | SYMBOL | RATINGS | UNIT |
|----------------|-----------------|------------|------|
| Supply voltage | V _{CC} | 3.5 ~ 13.5 | V |

■ ELECTRICAL CHARACTERISTICS

(V_{CC}=8.0V, R_L=8Ω, f=1kHz, Ta=25°C±2°C, unless otherwise specified.)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|-----------------------------|---------------------|---|------|------|------|---------|
| Quiescent Circuit Current | I _D | V _{IN} =0mV, Vo1.=0V | | 45 | 100 | mA |
| Standby Current | I _{STN-BY} | V _{IN} =0mV, Vo1.=0V | | 1 | 10 | μA |
| Output Noise Voltage (Note) | V _{NO} | R _G =10KΩ, Vo1.=0V | | 0.10 | 0.4 | mV(rms) |
| Output Offset Voltage | V _{OFF} | R _G =10KΩ, Vo1.=0V | -250 | 0 | 250 | mV |
| Total Harmonic Distortion | THD | P _{OUT} =0.5W, Vo1.=1.25V | | 0.10 | 0.5 | % |
| Maximum Output Power | P _{OUT1} | THD=10%, Vo1.=1.25V | 2.4 | 3.0 | | W |
| Ripple Rejection (Note) | RR | R _G =10KΩ, Vo1.=0V V _R =1V(rms), f _R =120Hz | 30 | 50 | | dB |
| Voltage Gain | G _V | P _{OUT} =0.5W, Vo1.=1.25V | 31 | 33 | 35 | dB |
| Volume Attenuation Rate* | Att | P _{OUT} =0.5W, Vo1.=0V | 70 | 85 | | dB |
| Channel Balance 1 | CB1 | P _{OUT} =0.5W, Vo1.=1.25V | -1 | 0 | 1 | dB |
| Channel Balance 2 | CB2 | P _{OUT} =0.5W, Vo1.=0.6V | -3 | 0 | 3 | dB |
| Intermediate Voltage Gain | G _{VM} | P _{OUT} =0.5W, Vo1.=0.6V | 20.5 | 23.5 | 26.5 | dB |
| Channel Crosstalk | C _T | P _{OUT} =0.5W, Vo1.=1.25V | 40 | 55 | | dB |

Note: In measuring, the filter for the range of 15 Hz ~ 30 kHz (12 dB/OCT) is used.

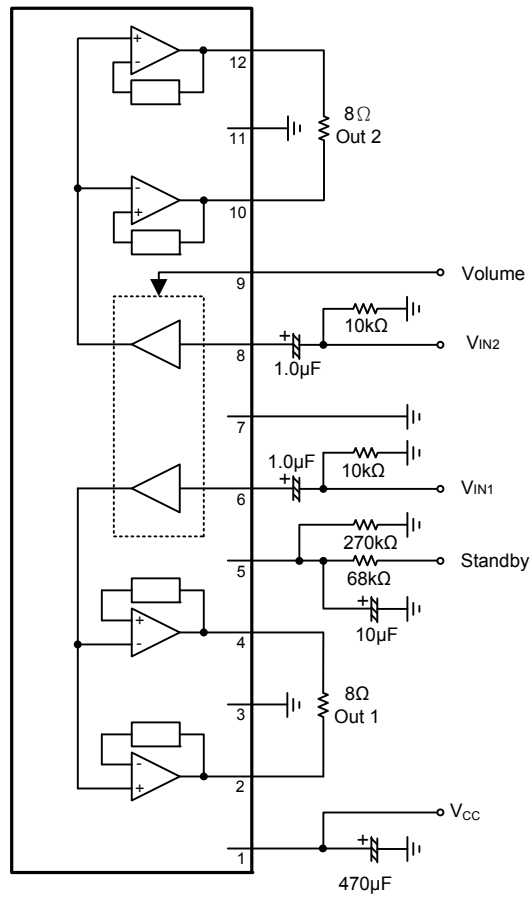
■ TERMINAL EQUIVALENT CIRCUITS AT $V_{CC}=8V$

| PIN NO. | | PIN NAME | VOLTAGE |
|----------|----------|-------------------|--|
| HSIP-12A | HSIP-14B | | |
| 1 | 2 | V_{CC} | 8V |
| 2 | 3 | Ch.1 + output pin | 3.6V (at no signal) |
| 3 | 4 | GND | 0V |
| 4 | 5 | Ch.1 - output pin | 3.9V (at no signal) |
| 5 | 6 | Standby pin | 0V or 5V (Standby off at supply 5V. Standby at 0.4V less or open.) |
| 6 | 7 | Ch.1 input pin | 1.4V (Input circuit bias voltage is output) |
| 7 | 8 | GND | 0V |
| 8 | 9 | Ch.2 input pin | 1.4V (Input circuit bias voltage is output) |
| 9 | 10 | Volume pin | Supply to 0V ~ 1.25V |
| 10 | 11 | Ch.2-output pin | 3.9V (at no signal) |
| 11 | 12 | GND | 0V |
| 12 | 13 | Ch.2+ output pin | 3.6V (at no signal) |

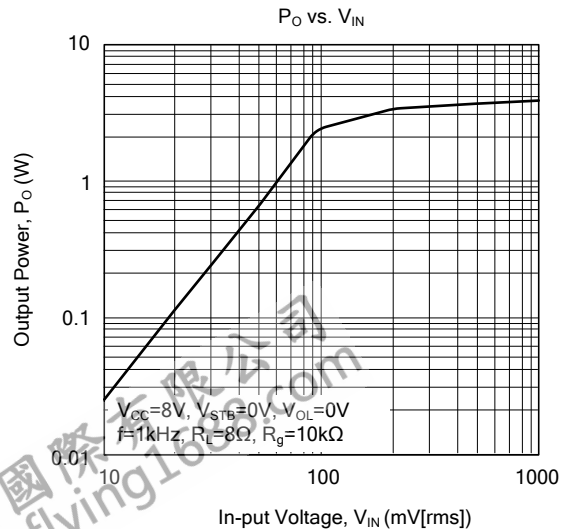
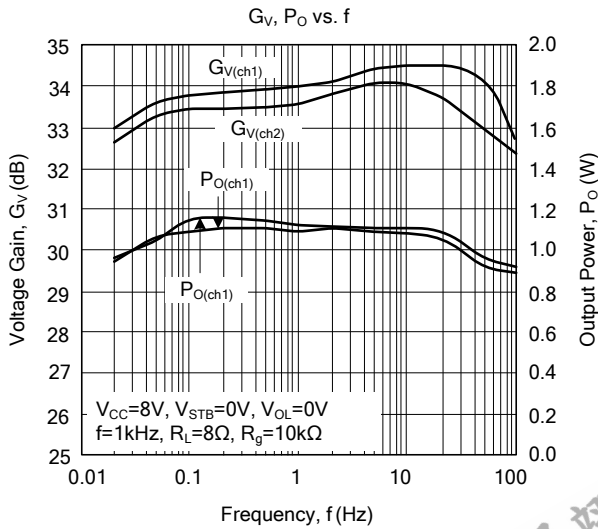
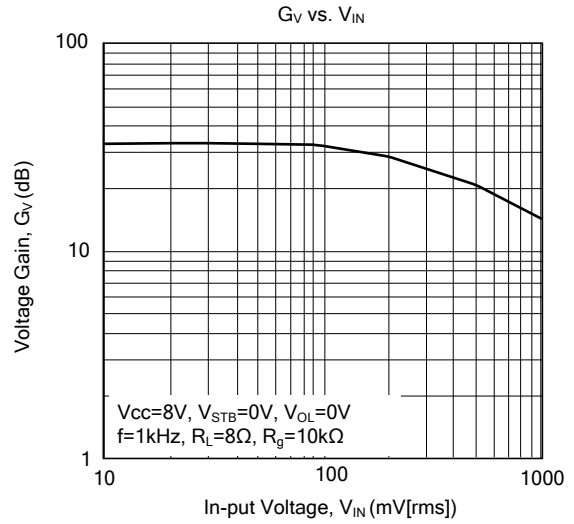
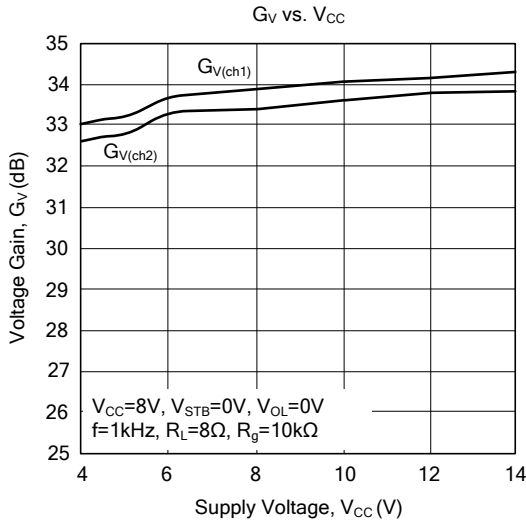
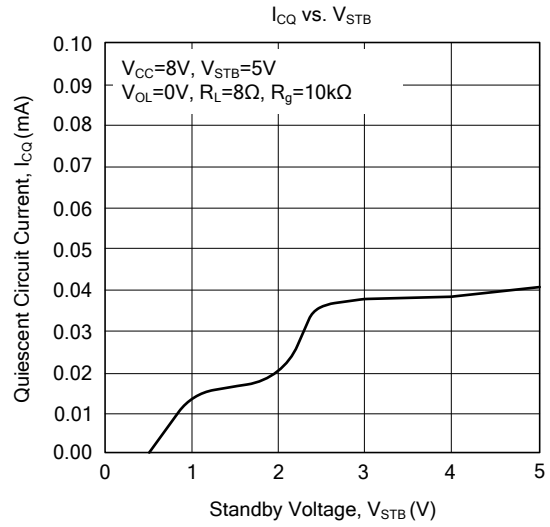
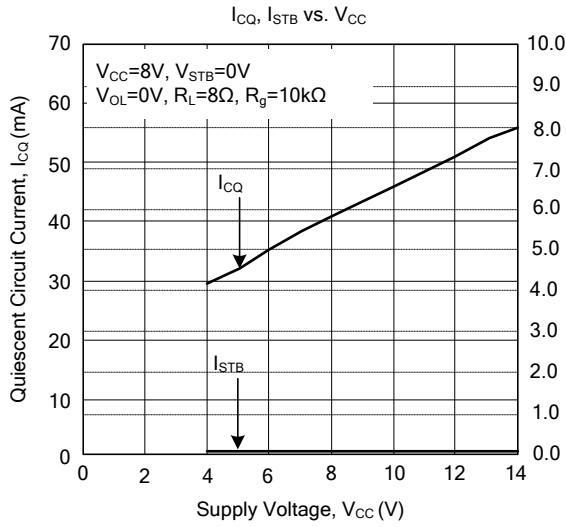
■ USAGE NOTES

- * Please avoid the short-circuits to V_{CC} , ground, or load short-circuit.
- * Please connect the cooling fin with the GND potential.
- * The thermal shutdown circuit operates at about $T_J=150^{\circ}C$. However, the thermal shutdown circuit is reset automatically if the temperature drops.
- * Please carefully design the heat radiation especially when you take out high power at high V_{CC} .
- * Please connect only the ground of signal with the signal GND of the amplifier in the previous stage.

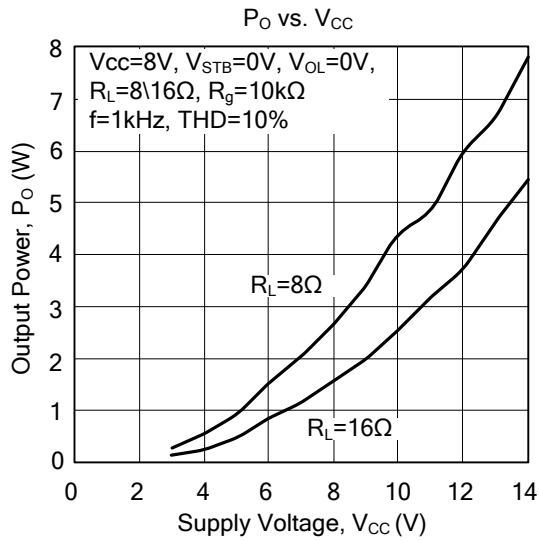
■ APPLICATION CIRCUIT EXAMPLE



■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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