Ordering number : EN7872B

SANYO Semiconductors
DATA SHEET

LA47501 — Monolithic Linear IC For Car Audio BTL 4ch (50W×4) Power IC

Overview

The LA47501 is a BTL 4ch (50W×4) power IC for car audio.

Functions

- Provided with a terminal against electric mirror noise
- Muting function
- Built-in standby switch
- Full complement of built-in protection circuits, including protection from shorting to V_{CC}, shorting to ground, load shorting, overvoltages, and overheating.
- GND open ground-fault resistance 16V

Specifications

Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max1	Operating	18	V
	V_{CC} max2	Quiescent	26	V
Maximum output current	I_O peak		4.5/ch	A
Allowable power dissipation	Pd max	With a infinity large heat sink	50	W
Operating temperature	Topr		-40 to +85	°C
Storage temperature	Tstg		-40 to +150	°C
Thermal resistance between junction cases	θj-c		1	°C/W

Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V_{CC}		14.4	V
Recommended load resistance	R_L		4	Ω
Operating supply voltage range	V_{CC} op		9 to 18	V

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Electrical Characteristics at Ta = 25°C, V_{CC} = 14.4V, f = 1kHz, R_L = 4Ω, Rg = 600Ω

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current	I_{CCO}	R_L = ∞, Rg = 0		200	350	mA
Standby current	Ist	Vst = 0V			10	μA
Output offset voltage	Vn offset	Rg = 0	-100		+100	mV
Voltage gain	VG	V_O = 0dBm	25	26	27	dB
Voltage gain difference	ΔVG		-1		+1	dB
Output power	P_O1	THD = 10%	24	29		W
	P_O max1	V_{CC} = 13.7V, V_{IN} = 5Vrms		43		W
	P_O max2	V_{IN} = 5Vrms		48		W
Total harmonic distortion	THD	P_O = 4W		0.05	0.4	%
Channel separation	Chsep	V_O = 0dBm, Rg = 10kΩ	55	70		dB
Ripple rejection ratio	SVRR	fr = 100Hz, Vr = 0dBm, Rg = 0	50	70		dB
Output noise voltage	V_{NO}	Rg = 0, B.P.F. = 20Hz to 20kHz		40	100	μVrms
Muting attenuation	Ma	V_O = 20dBm	70	90		dB

Cautions for use

For a capacitor of pin 1 and pin 25 against electric mirror, use a capacitor about twice in capacitance of the input capacitor.

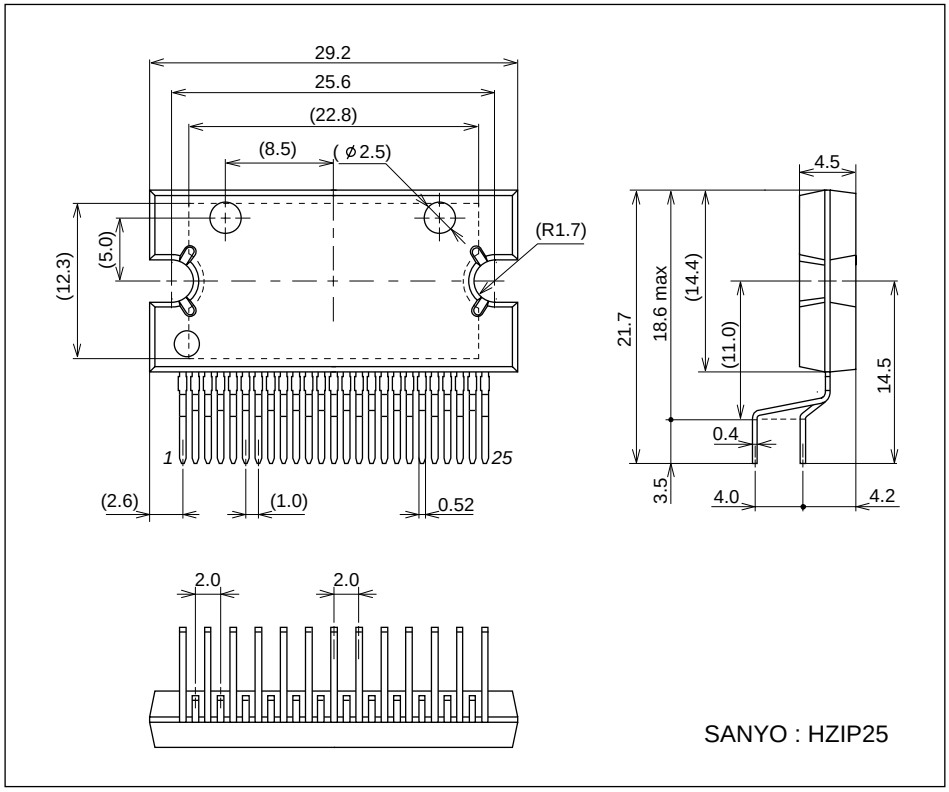
In the sample application circuit, a 0.47μF capacitor is used for the input capacitor of 0.22μF.

Connect a capacitor of each pin of 1 and 25 to Pre GND similarly to the case of input capacitor.

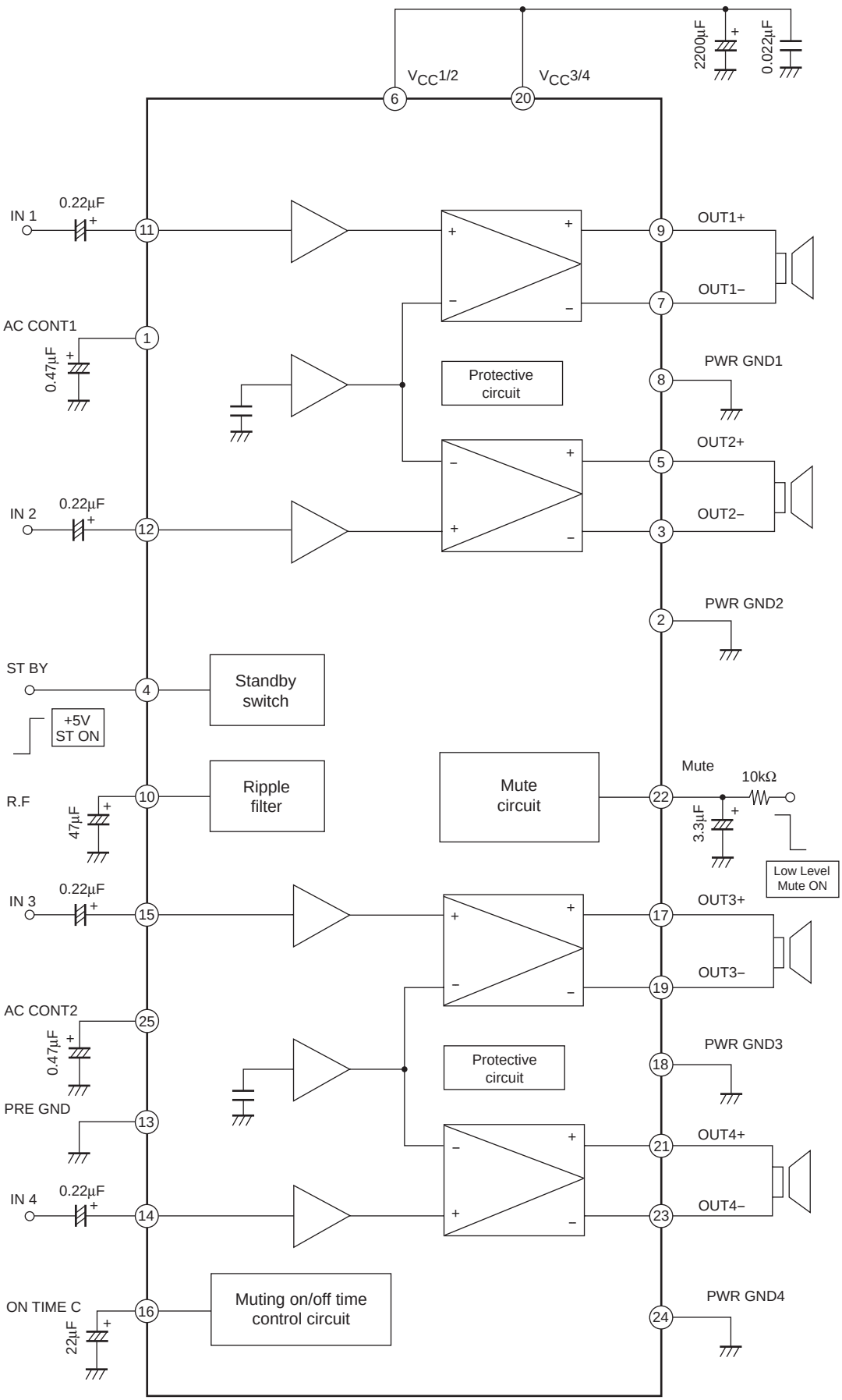
Package Dimensions

unit : mm (typ)

3236A



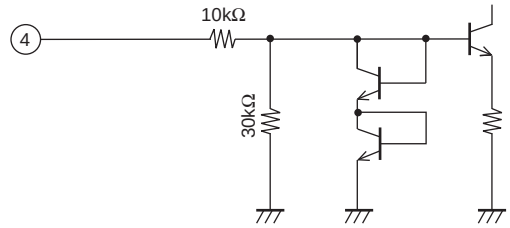
Block Diagram



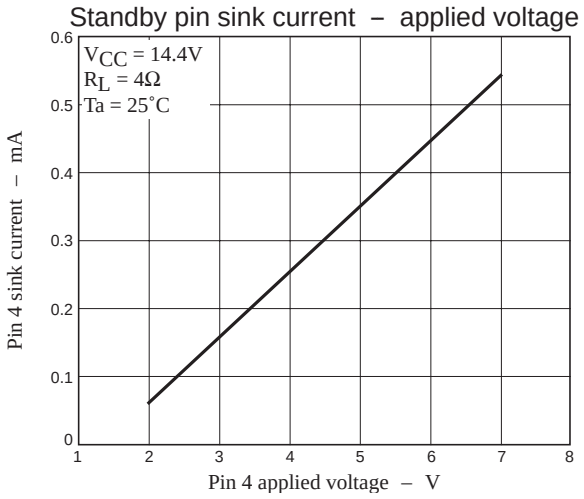
* Package : HZIP25

Standby switch and muting switch usage methods (for reference purposes)

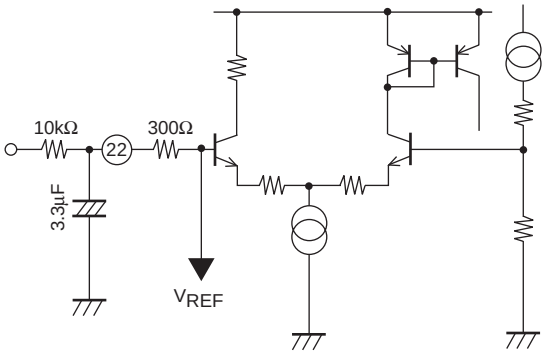
(1) The amplifier will be on when the standby switch (pin 4) has a voltage of 2V or higher applied, and will be off when that pin is at the ground level.



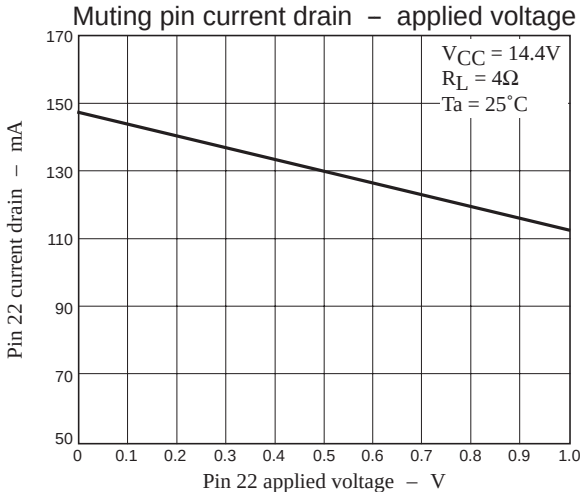
Standby pin internal equivalent circuit diagram



(2) Muting will be on when muting switch (pin 22) has a voltage of 1V or lower applied, and will be off when that pin is open



Muting pin internal equivalent circuit



Muting on/off times for the recommended external component values
Muting on time : 50ms
Muting off time : 20ms