Ordering number : EN8272

SANYO Semiconductors
DATA SHEET

Monolithic Linear IC

LA47512 — Four-Channel BTL Power Amplifier IC for Car Stereo Systems

Overview

The LA47512 is a four-channel 45W BTL power amplifier IC for car stereo systems.

Features

- Maximum output : 45W×4 (at V_{CC} = 14.4V, R_L = 4Ω, V_I = 2.5Vrms)
- Very low external component count (No oscillator prevention RC circuit, NF circuit, or BS capacitor required)
- Electrically driven mirror noise countermeasure pin provided
- Mute function
- Standby switch
- Full compliment of protection circuits, including shorting to power, shorting to ground, load shorting, and thermal protection circuits

Specifications

Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max1	No signal, t = 1 minute	26	V
	V_{CC} max2	With signal	18	V
Maximum output current	I_O peak	Per channel	4.5	A
Allowable power dissipation	Pd max	With a infinity large heat sink (note)	50	W
Operating temperature	Topr		-40 to +85	°C
Storage temperature	Tstg		-40 to +150	°C
Junction-to-case thermal resistance	θj-c		1	°C/W

Note : Power consumption (Pd), junction-to-case thermal resistance (θj-c), heat sink thermal resistance (θf), junction temperature (Tj), case temperature (Tc), and ambient temperature (Ta) have the relationship shown in the following equation.

Tj = Pd (θj-c+θf) +Ta

= Pd×θj-c+Tc, *Tc = Pd×θf+Ta However, Tj max is limited by Tstg max (150°C)

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Operating Conditions at Ta = 25°C

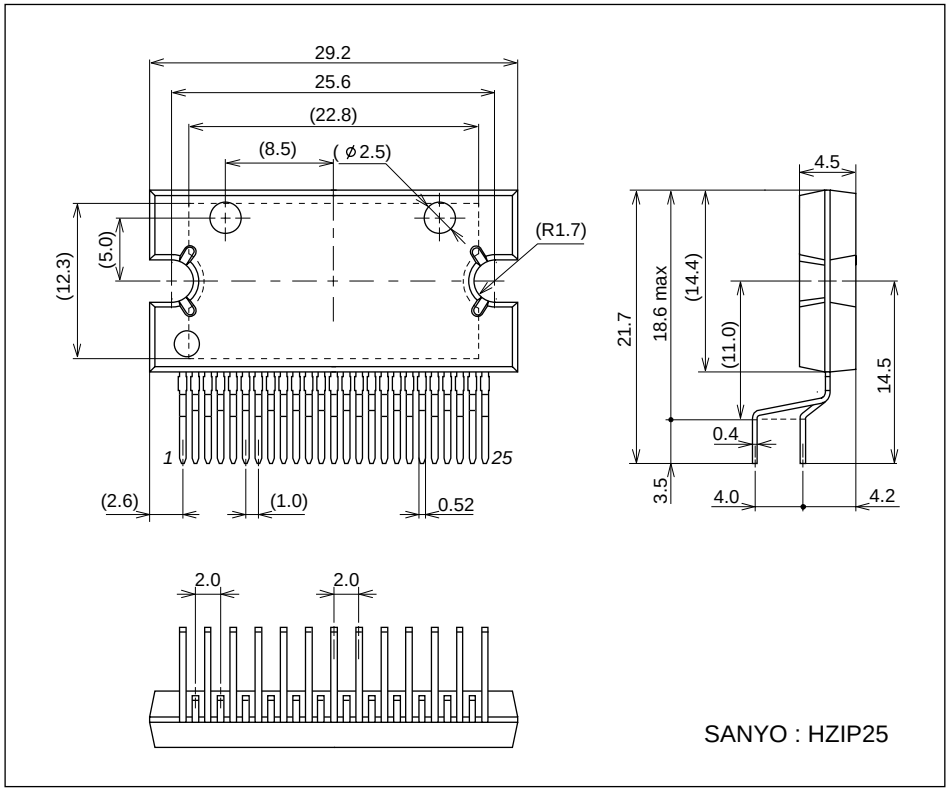
Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V_{CC}		14.4	V
Recommended load resistance	R_L		4	Ω
Operating supply voltage range	V_{CC} op	Pd max shall not be exceeded.	9 to 18	V

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	-150		+150	mV
Voltage gain	VG	V_O = 0dBm	31	32	33	dB
Voltage gain difference	ΔVG		-1		+1	dB
Output power	P_O1	THD = 10%	23	28		W
	P_O max1	V_{CC} = 13.7V, V_{IN} = 2.5Vrms		40		W
	P_O max2	V_{IN} = 2.5Vrms		45		W
Total harmonic distortion	THD	P_O = 4W		0.1	0.4	%
Channel separation	CHsep	V_O = 0dBm, Rg = 10kΩ	55	65		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		80	200	μVrms
Mute attenuation	Ma	V_O = 20dBm	70	90		dB

Package Dimensions

unit : mm (typ)
3236A

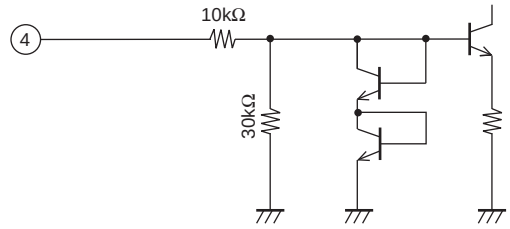


Usage Notes

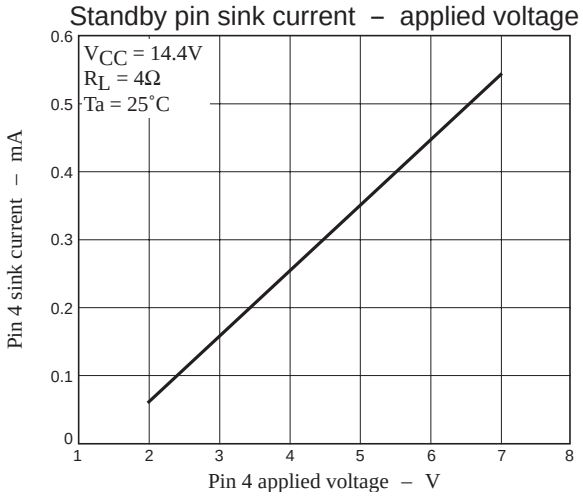
A capacitor about twice the size of the input capacitors must be used for the capacitor between pins 1 and 25 that is used to minimize for noise from the electrically driven mirror. In the sample application circuit, a 0.47μF capacitor is used for 0.22μF input capacitors.
Note that the capacitor connected between pins 1 and 25 must be connected to the same pre-ground as the input capacitors.

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

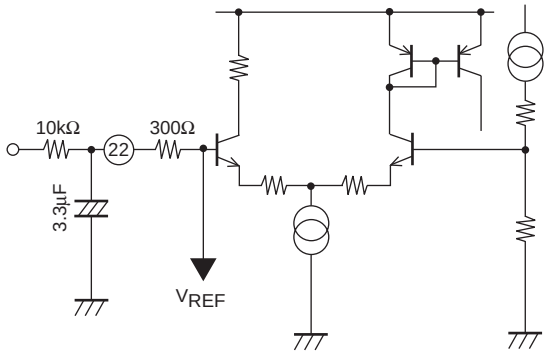
(1) The amplifier will be on when the standby switch (pin 4) has a voltage of 2V or higher applied, and will be off when that pin is at the ground level.



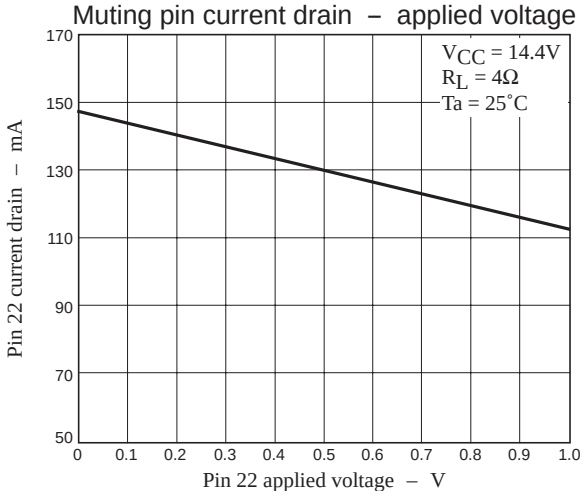
Standby pin internal equivalent circuit diagram



(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

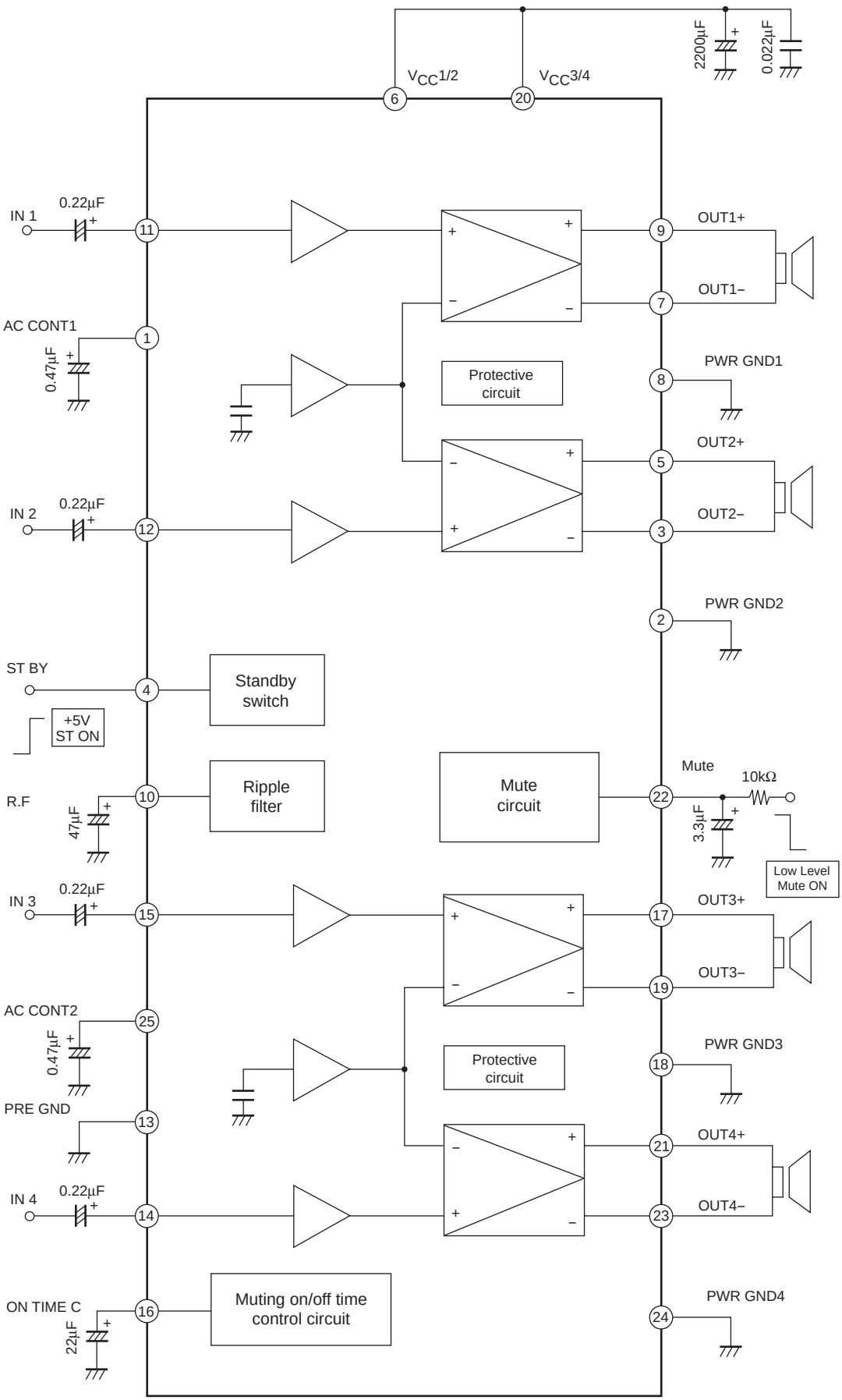


Muting pin internal equivalent circuit



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

Block Diagram



* Package : HZIP25