



LA4598

Two-channel Power Amplifier for Radio Cassette Players (No Heat Sink Needed during 9 V Operation)

Overview

The LA4598 is a two-channel power IC that is intended for use in portable audio equipment. Needing no heat sink during 9 V operation facilitates set design with a small footprint.

Functions

- Thermal shutdown protector built in.
- Standby switch built in.

Features

- No heat sink needed during 9 V operation
- $P_O = 2.9 \text{ W} \times 2$ ($V_{CC} = 9 \text{ V}$, $R_L = 3.2 \Omega$, THD = 10%).
- Less quiescent current. ($V_{CC} = 9 \text{ V}$, 20 mA, typ).
- Operating voltage range: $V_{CC \text{ op}} = 4.2$ to 16 V.

Specifications

Maximum Ratings at $T_a = 25^\circ\text{C}$

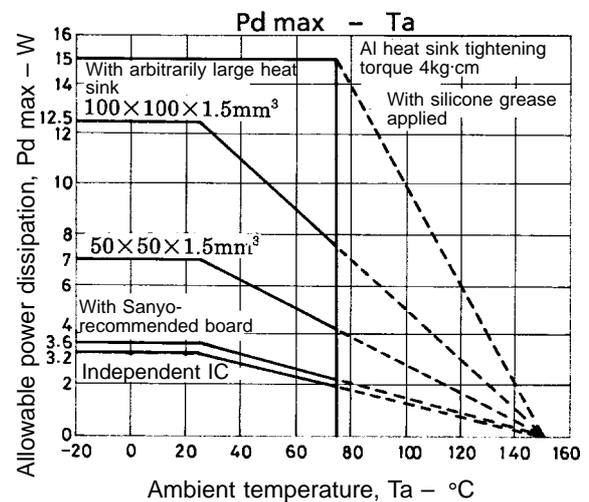
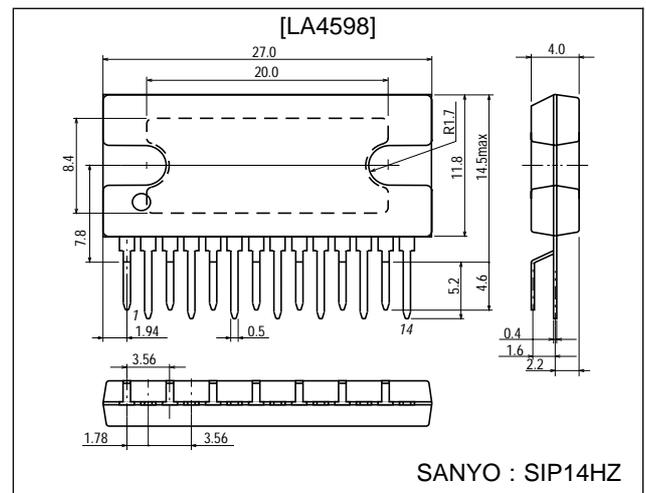
Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{CC \text{ max}}$		18	V
Allowable power dissipation	$P_d \text{ max}^*$	No heat sink	3.6	W
Junction temperature	$T_j \text{ max}$		+150	$^\circ\text{C}$
Operating temperature	T_{opr}		-20 to +75	$^\circ\text{C}$
Storage temperature	T_{stg}		-40 to +150	$^\circ\text{C}$

* With Sanyo-recommended board (9.0 cm \times 8.5 cm \times 1.5 mm (thickness))

Package Dimensions

unit : mm

3113A-SIP14HZ



■ Any and all SANYO products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your SANYO representative nearest you before using any SANYO products described or contained herein in such applications.

■ SANYO assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all SANYO products described or contained herein.

SANYO Electric Co., Ltd. Semiconductor Company

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

D3095HA/N1792TS(II) No.4087-1/9

LA4598

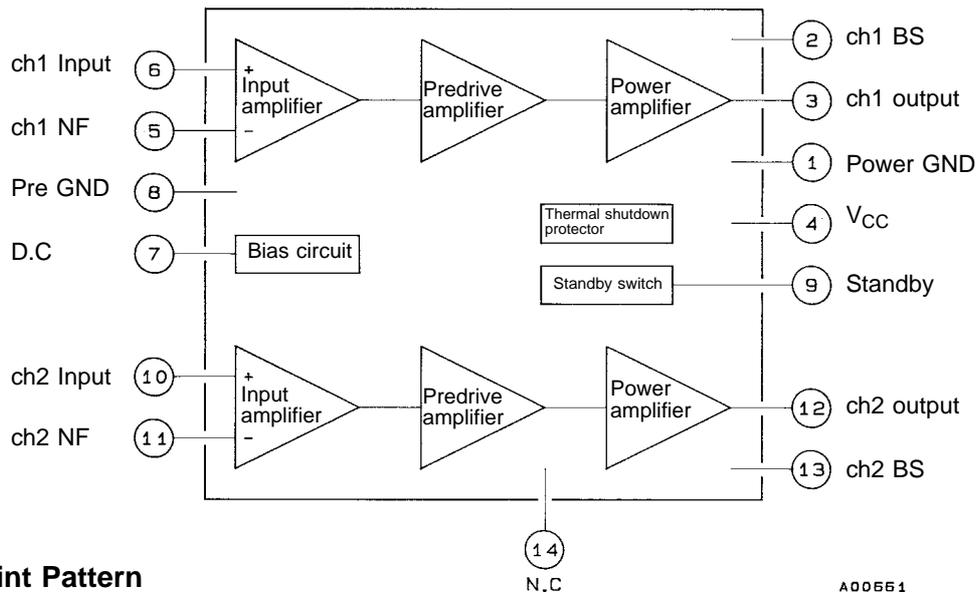
Operating Conditions at $T_a = 25\text{ }^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V_{CC}		9	V
Recommended load resistance	R_L		3.2	Ω
Operating voltage range	$V_{CC\text{ op}}$		4.2 to 16.0	V

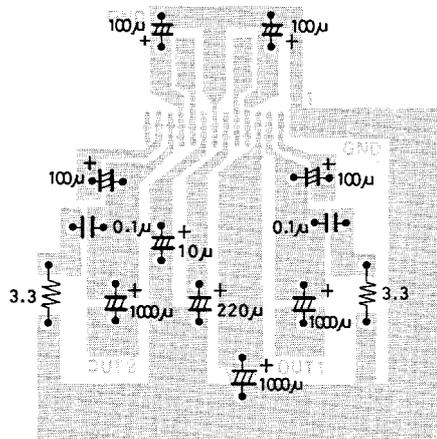
Operating Characteristics at $T_a = 25\text{ }^\circ\text{C}$, $V_{CC} = 9\text{ V}$, $f = 1\text{ kHz}$, $R_g = 600\text{ }\Omega$, $R_L = 3.2\text{ }\Omega$

Parameter	Symbol	Conditions	min	typ	max	unit
Quiescent current	I_{CCO}		10	20	40	mA
Voltage gain	VG		47	49	51	dB
Output power	P_{O1}	THD = 10%	2.2	2.9		W
	P_{O2}	THD = 10%, $R_L = 4\text{ }\Omega$		2.3		W
Total harmonic distortion	THD	$V_O = 2\text{ V}$		0.3	1.0	%
Input resistance	r_i		20	30		$k\Omega$
Output noise voltage	V_{NO1}	$R_g = 0$, B.P.F = 20 Hz to 20 kHz		0.4	1.0	mV
	V_{NO2}	$R_g = 10\text{ k}\Omega$, B.P.F = 20 Hz to 20 kHz		0.6	2.0	mV
Ripple rejection ratio	Rr	$R_g = 0$, $f_r = 100\text{ Hz}$, $V_{CCr} = 150\text{ mV}$	40	50		dB
Channel separation	CH Sep	$R_g = 10\text{ k}\Omega$, $V_O = 0\text{ dB}$	45	55		dB
Standby current	I_{sd}				10	μA

Block Diagram



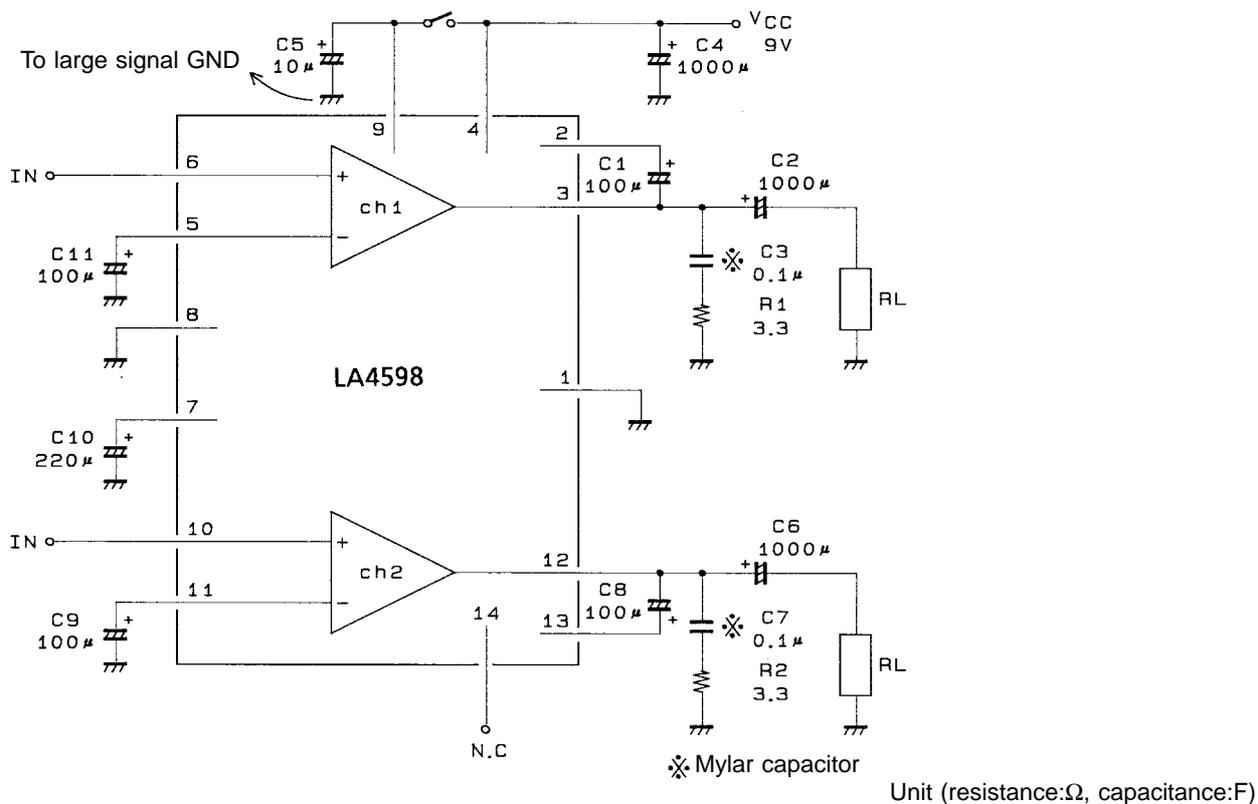
Sample Print Pattern



Unit (resistance: Ω , capacitance: F)

Copper-foiled side $85 \times 90\text{ mm}^2$

Sample Application Circuit



※ : Mylar capacitor
 C + R can be added to the negative side of the output capacitor.
 However, this is true only for a Sanyo-recommended board; for a set board, artwork must also be considered.

Description of External Components

- C₁, C₈: Bootstrap capacitors
 These capacitors affect low-region output; if the capacitor value is reduced, the low-region output decreases. Therefore, 47 µF or more is desirable.
- C₂, C₆: Output capacitors
 If the capacitor value is reduced, low-region roll-off frequency f_L and low-region P_o worsen.
- C₃, C₇: Oscillation blocking capacitors
 Mylar capacitor, which is excellent in temperature characteristics and frequency characteristics is used.
- C₄: Power supply capacitor
 The capacitor values depends on the power supply line loads (motor, and the like.) and transformer ripple component. 1000 µF to 2200 µF is recommended.
- C₅: Standby capacitor
 Pop noise reduction capacitor
- C₉, C₁₁: Feedback capacitors
 In addition to affecting low-region roll-off frequency f_L , if the capacitor value is increased, the start-up time is extended.
- C₁₀: Decoupling capacitor
 This capacitor absorbs power supply ripples; 220 µF is recommended.
- R₁, R₂: Oscillation blocking resistors
 The resistor value may be varied 3.3 Ω to 1.0 Ω.