Ordering number : ENN5671

Monolithic Linear IC

LA5617

Multi-System Power Supply for Audio Equipment

Overview

The LA5617 is a multi-system power supply IC with a built-in on/off control function. It is optimal for use as the power supply IC in CD players, mini-component stereo systems, and other microcontroller controlled audio equipment.

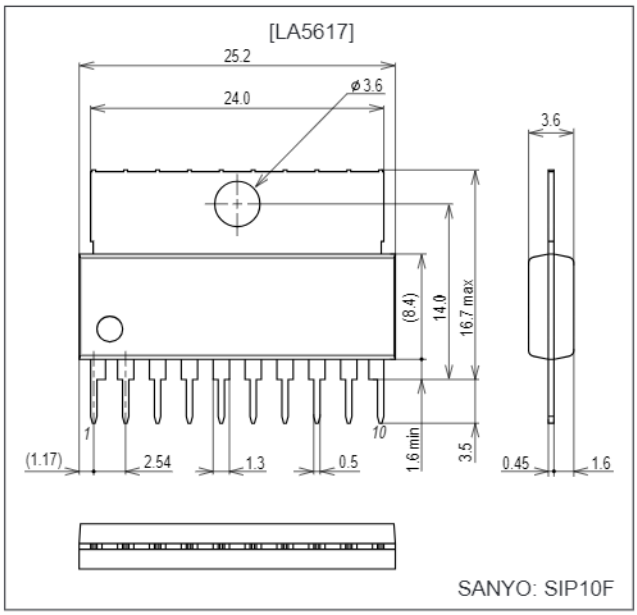
Functions

- Power supply IC with ±7.5 V outputs (±1.5 A) and an on/off control function.
- The LA5617 is pin compatible with the LA5618.

Package Dimensions

unit: mm

3046D-SIP10F



Specifications

Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Input voltage	V_{CC}/V_{EE} max		±18	V
Allowable power dissipation	Pd max	With no heat sink	2.0	W
Operating temperature	Topr		–20 to +85	°C
Storage temperature	Tstg		–55 to +150	°C

Note: On a glass epoxy printed circuit board (114.3 · 76.1 · 1.6 mm)

Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Input voltage	V_{CC}/V_{EE}		±9.5 to ±16	V
Output current	$I_{OUT}1$		0 to 1.5	A
	$I_{OUT}2$		–1.5 to 0	A

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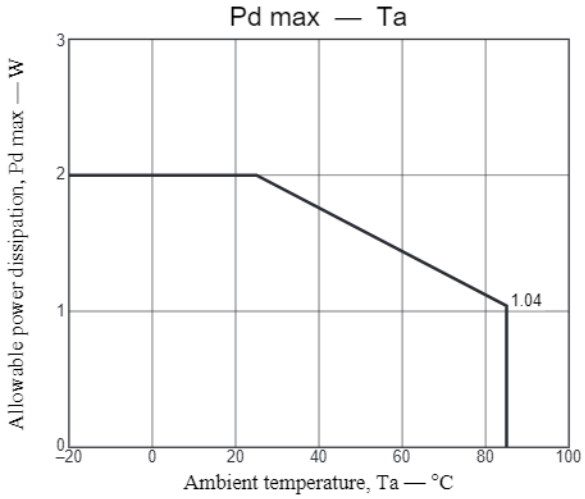
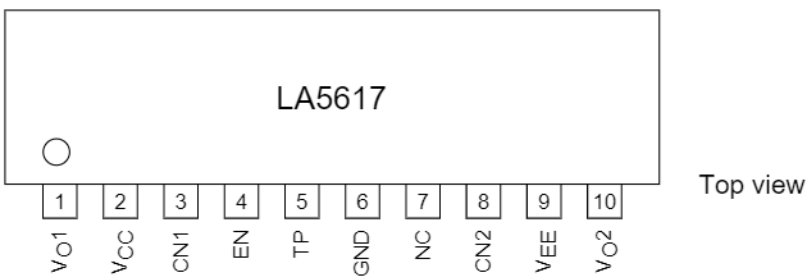
Operating Characteristics at Ta= 25°C, V_{CC}/V_{EE} = ±9.5 V, in the specified test circuit.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[+7.5 V Power Supply Block] $I_{OUT}1$ = 500 mA, $C_{OUT}1$ = 100 µF						
Output voltage	V_O1		7.0	7.5	8.0	V
Dropout voltage	$V_{DROP}1$-1			1.5	2.0	V
	$V_{DROP}1$-2	$I_{OUT}1$ = 300 mA		1.0	1.5	V
Line regulation	$\Delta V_{OLN}1$	9 V ≤ V_{CC} ≤ 16 V		20	100	mV
Load regulation	$\Delta V_{OLD}1$	5 mA ≤ $I_{OUT}1$ ≤ 1 A		80	200	mV
Peak output current	$I_{OP}1$	V_{CC}/V_{EE} = ±12 V	1.5	1.8		A
Output short current	$I_{OSC}1$			1.0		A
Output off voltage	V_O1_{OFF}	V_{EN} = 0.4 V			0.3	V
Ripple rejection	Rrej1	f = 120 Hz, 8.5 V ≤ V_{CC} ≤ 16 V, CN1 = 1 µF		65		dB
[–7.5 V Power Supply Block] $I_{OUT}2$ = 500 mA, $C_{OUT}2$ = 100 µF						
Output voltage	V_O2		–8.0	–7.5	–7.0	V
Dropout voltage	$V_{DROP}2$-1			1.5	2.0	V
	$V_{DROP}2$-2	$I_{OUT}2$ = –300 mA		1.0	1.5	V
Line regulation	$\Delta V_{OLN}2$	–16 V ≤ V_{EE} ≤ –9 V		200	300	mV
Load regulation	$\Delta V_{OLD}2$	–1 A ≤ $I_{OUT}2$ ≤ –5 mA		80	200	mV
Peak output current	$I_{OP}2$	V_{CC}/V_{EE} = ±12 V		–1.8	–1.5	A
Output short current	$I_{OSC}2$			–1.0		A
Output off voltage	V_O2_{OFF}	V_{EN} = 0.4 V	–0.3			V
Ripple rejection	Rrej2	f = 120 Hz, 16 V ≤ V_{EE} ≤ –8.5 V, CN2 = 1 µF		50		dB
[Common Circuit Block] $C_{OUT}1$ = 100 µF, $C_{OUT}2$ = 100 µF						
Output off control voltage	V_{ENL}	V_O1, V_O2: Off			0.4	V
Current drain (positive voltage power supply block)	$I_{QP}1$	$I_{OUT}1$ = 0, $I_{OUT}2$ = 0		5.0		mA
	$I_{QP}2$	$I_{OUT}1$ = 1.5 A, $I_{OUT}2$ = 0		7.0		mA
Current drain (negative voltage power supply block)	$I_{QM}1$	$I_{OUT}1$ = 0, $I_{OUT}2$ = 0		–5.0		mA
	$I_{QM}2$	$I_{OUT}1$ = 0, $I_{OUT}2$ = –1.5 A		–12.0		mA



Pin Assignment



Top view

Note: The TP pin is used for IC testing.
It must be left open during normal operation.

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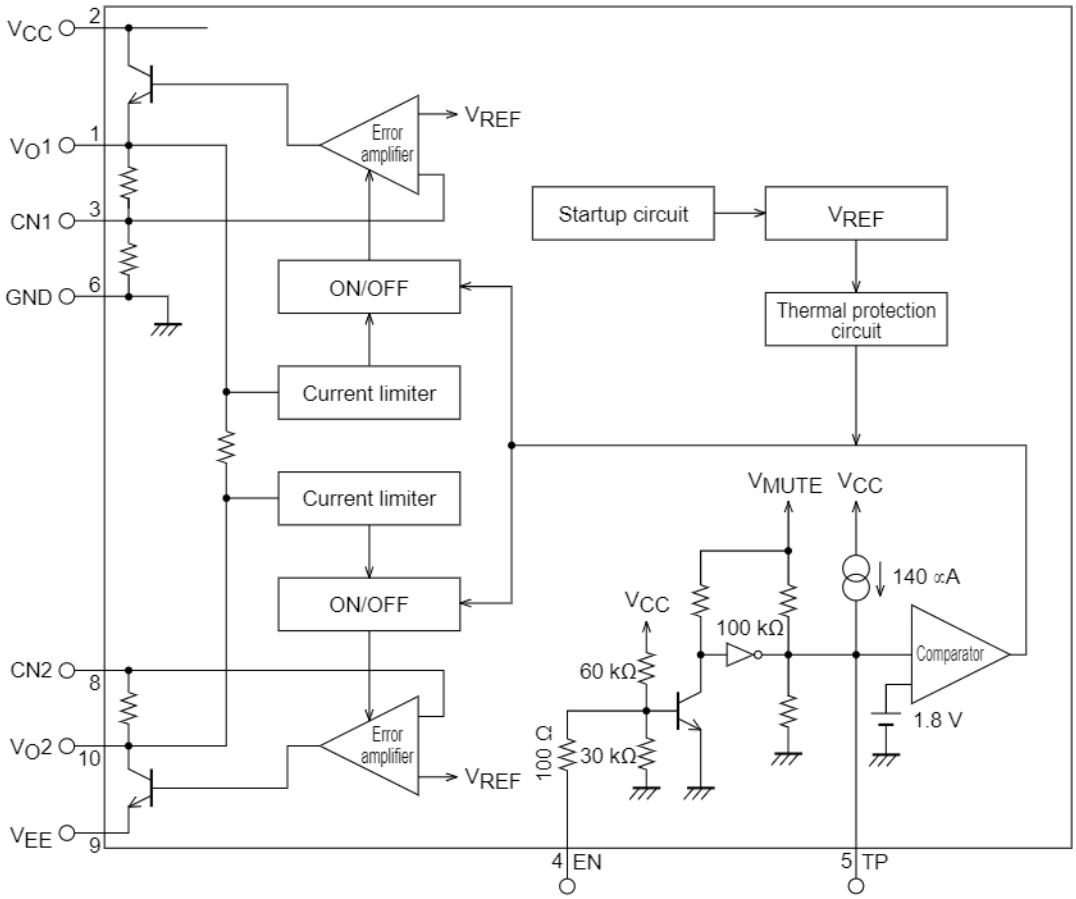
Equivalent Circuit Block Diagram



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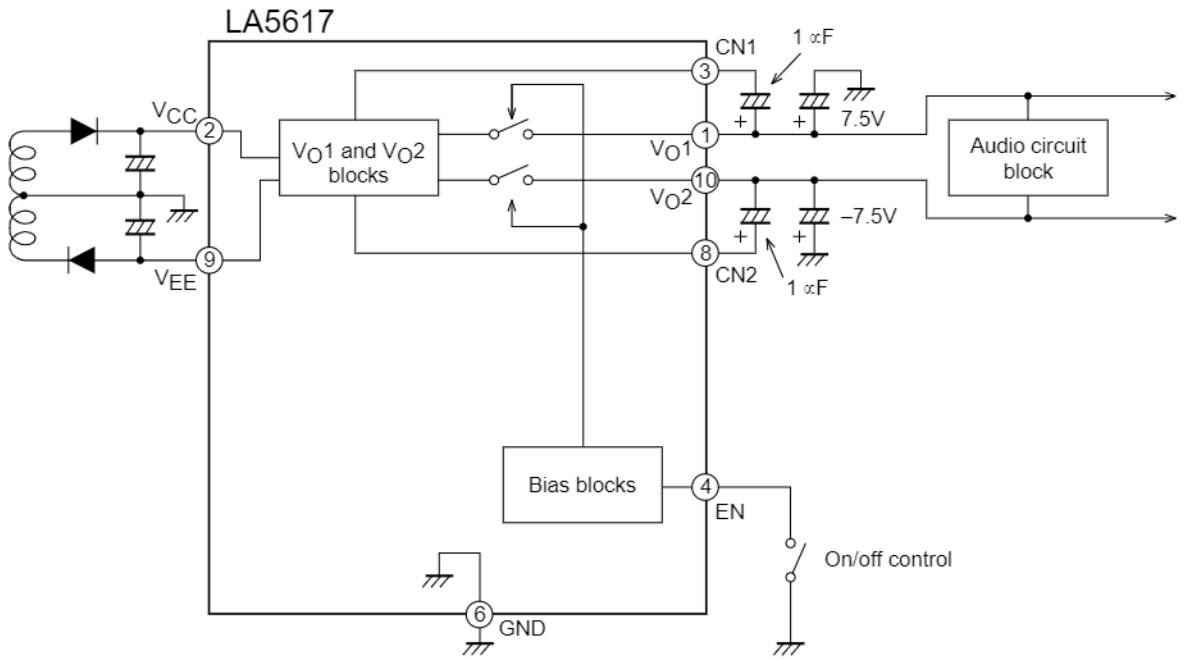
Sample Application Circuit: Mini-component stereo system power supply



Notes: 1. A capacitor with a low temperature coefficient must be used as the EN DELAY delay capacitor.
2. The V_O1 and V_O2 output capacitors must have values of at least 100 µF and capacitors with low temperature coefficients must be used to prevent oscillation at low temperatures.
3. External noise can be suppressed and ripple rejection improved by adding capacitors between CN1 and V_O1 and between CN2 and V_O2.