



# 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.

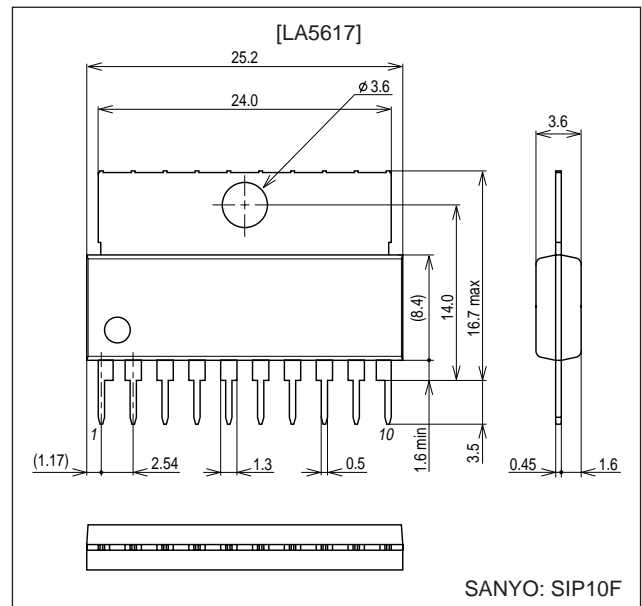
### Functions

- Power supply IC with  $\pm 7.5$  V outputs ( $\pm 1.5$  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 $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Input voltage	$V_{CC}/V_{EE}$ max		$\pm 18$	V
Allowable power dissipation	$P_d$ max	With no heat sink	2.0	W
Operating temperature	$T_{opr}$		-20 to +85	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

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

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

Parameter	Symbol	Conditions	Ratings	Unit
Input voltage	$V_{CC}/V_{EE}$		$\pm 9.5$ to $\pm 16$	V
Output current	$I_{OUT1}$		0 to 1.5	A
	$I_{OUT2}$		-1.5 to 0	A

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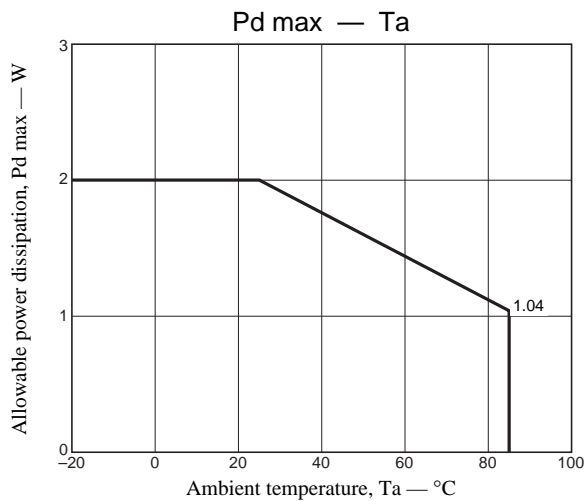
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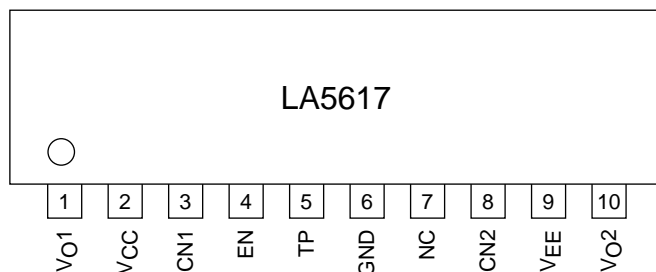
## LA5617

### Operating Characteristics at Ta= 25°C, VCC/V<sub>EE</sub> = ±9.5 V, in the specified test circuit.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[+7.5 V Power Supply Block] I <sub>OUT1</sub> = 500 mA, C <sub>OUT1</sub> = 100 μF						
Output voltage	V <sub>O1</sub>		7.0	7.5	8.0	V
Dropout voltage	V <sub>DROP1-1</sub>			1.5	2.0	V
	V <sub>DROP1-2</sub>	I <sub>OUT1</sub> = 300 mA		1.0	1.5	V
Line regulation	ΔV <sub>OLN1</sub>	9 V ≤ V <sub>CC</sub> ≤ 16 V		20	100	mV
Load regulation	ΔV <sub>OLD1</sub>	5 mA ≤ I <sub>OUT1</sub> ≤ 1 A		80	200	mV
Peak output current	I <sub>OP1</sub>	V <sub>CC</sub> /V <sub>EE</sub> = ±12 V	1.5	1.8		A
Output short current	I <sub>OSC1</sub>			1.0		A
Output off voltage	V <sub>O1OFF</sub>	V <sub>EN</sub> = 0.4 V			0.3	V
Ripple rejection	Rrej1	f = 120 Hz, 8.5 V ≤ V <sub>CC</sub> ≤ 16 V, CN1 = 1 μF		65		dB
[-7.5 V Power Supply Block] I <sub>OUT2</sub> = 500 mA, C <sub>OUT2</sub> = 100 μF						
Output voltage	V <sub>O2</sub>		-8.0	-7.5	-7.0	V
Dropout voltage	V <sub>DROP2-1</sub>			1.5	2.0	V
	V <sub>DROP2-2</sub>	I <sub>OUT2</sub> = -300 mA		1.0	1.5	V
Line regulation	ΔV <sub>OLN2</sub>	-16 V ≤ V <sub>EE</sub> ≤ -9 V		200	300	mV
Load regulation	ΔV <sub>OLD2</sub>	-1 A ≤ I <sub>OUT2</sub> ≤ -5 mA		80	200	mV
Peak output current	I <sub>OP2</sub>	V <sub>CC</sub> /V <sub>EE</sub> = ±12 V		-1.8	-1.5	A
Output short current	I <sub>OSC2</sub>			-1.0		A
Output off voltage	V <sub>O2OFF</sub>	V <sub>EN</sub> = 0.4 V	-0.3			V
Ripple rejection	Rrej2	f = 120 Hz, 16 V ≤ V <sub>EE</sub> ≤ -8.5 V, CN2 = 1 μF		50		dB
[Common Circuit Block] C <sub>OUT1</sub> = 100 μF, C <sub>OUT2</sub> = 100 μF						
Output off control voltage	V <sub>ENL</sub>	V <sub>O1</sub> , V <sub>O2</sub> : Off			0.4	V
Current drain (positive voltage power supply block)	I <sub>QP1</sub>	I <sub>OUT1</sub> = 0, I <sub>OUT2</sub> = 0		5.0		mA
	I <sub>QP2</sub>	I <sub>OUT1</sub> = 1.5 A, I <sub>OUT2</sub> = 0		7.0		mA
Current drain (negative voltage power supply block)	I <sub>QM1</sub>	I <sub>OUT1</sub> = 0, I <sub>OUT2</sub> = 0		-5.0		mA
	I <sub>QM2</sub>	I <sub>OUT1</sub> = 0, I <sub>OUT2</sub> = -1.5 A		-12.0		mA



### Pin Assignment

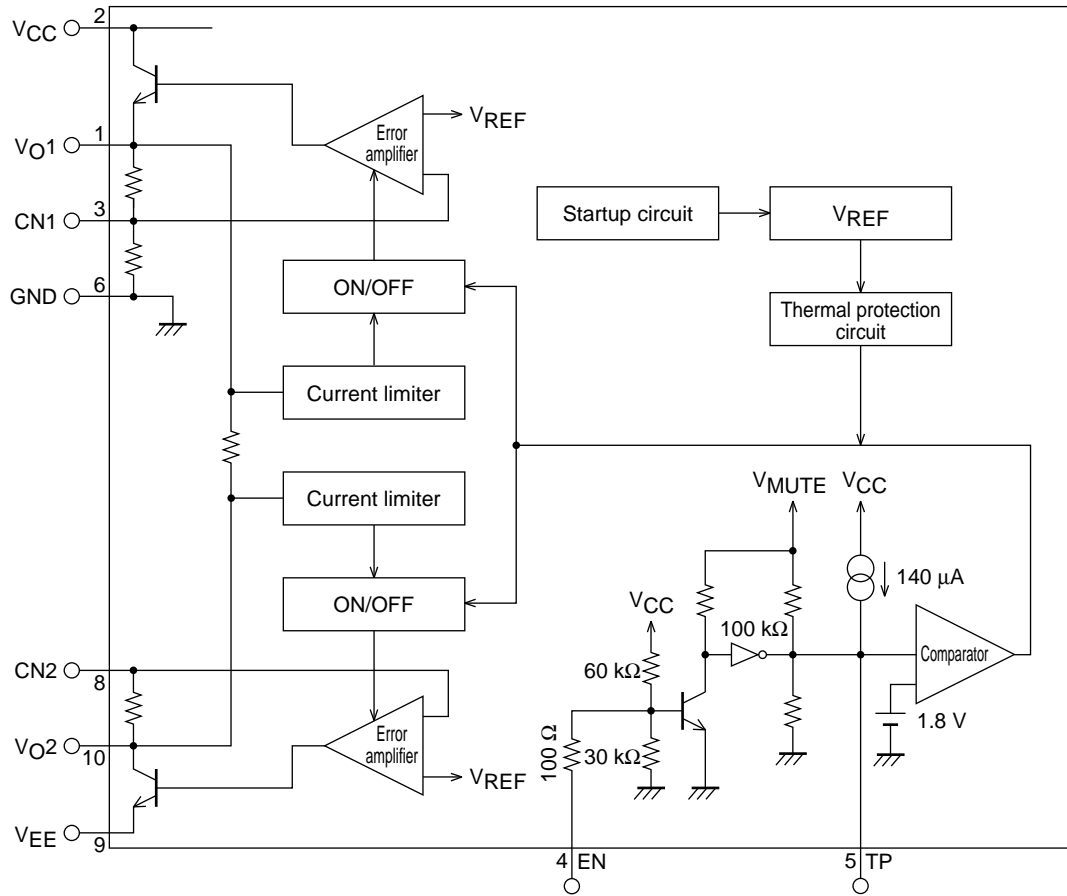


Top view

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

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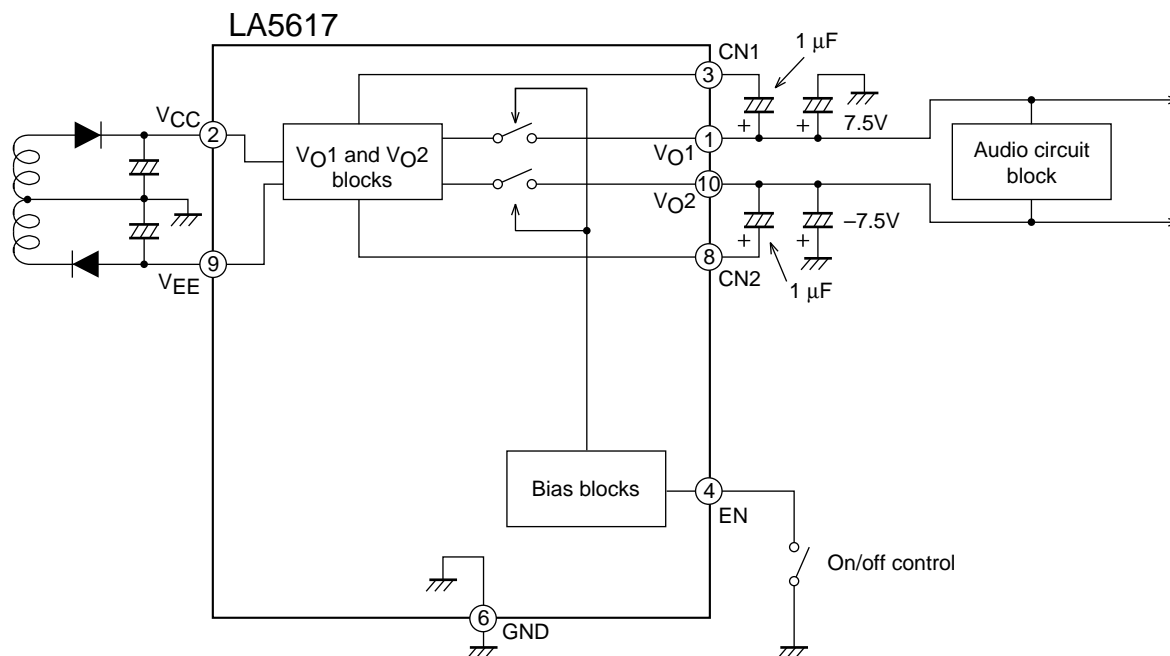
Equivalent Circuit Block Diagram



Note: The TP pin is used for IC testing.  
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## Sample Application Circuit: Mini-component stereo system power supply



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- 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  $100 \mu\text{F}$  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  $V_{O2}$ .

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