



# LA5618

## Multi-System Power Supply for Audio Equipment

### Overview

The LA5618 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.

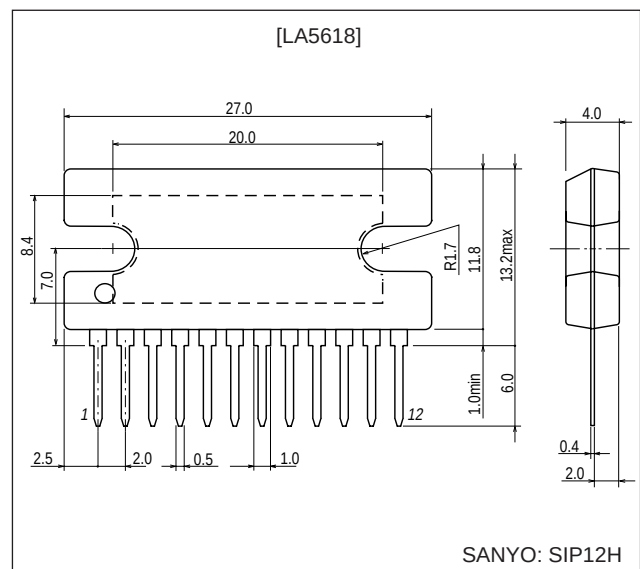
### Functions

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

### Package Dimensions

unit: mm

3049B-SIP12H



### 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 | 2.4             | W                |
| Operating temperature       | $T_{opr}$           |                   | $-20$ to $+85$  | $^\circ\text{C}$ |
| Storage temperature         | $T_{stg}$           |                   | $-55$ to $+150$ | $^\circ\text{C}$ |

### 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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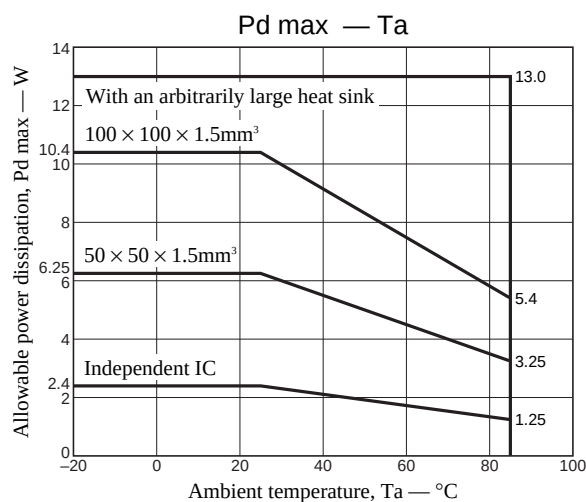
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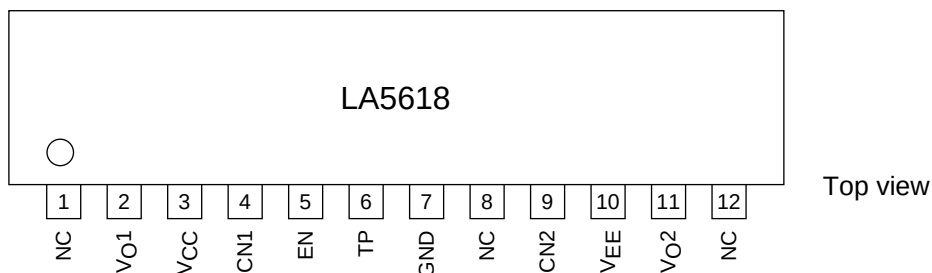
## LA5618

Operating Characteristics at  $T_a = 25^\circ\text{C}$ ,  $V_{CC}/V_{EE} = \pm 9.5\text{ V}$ , 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>O1</sub> OFF  | V <sub>EN</sub> = 0.4 V                                 |         |       | 0.3  | V    |
| Ripple rejection                                                                   | R <sub>rej1</sub>    | 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>O2</sub> OFF  | V <sub>EN</sub> = 0.4 V                                 | −0.3    |       |      | V    |
| Ripple rejection                                                                   | R <sub>rej2</sub>    | 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   |

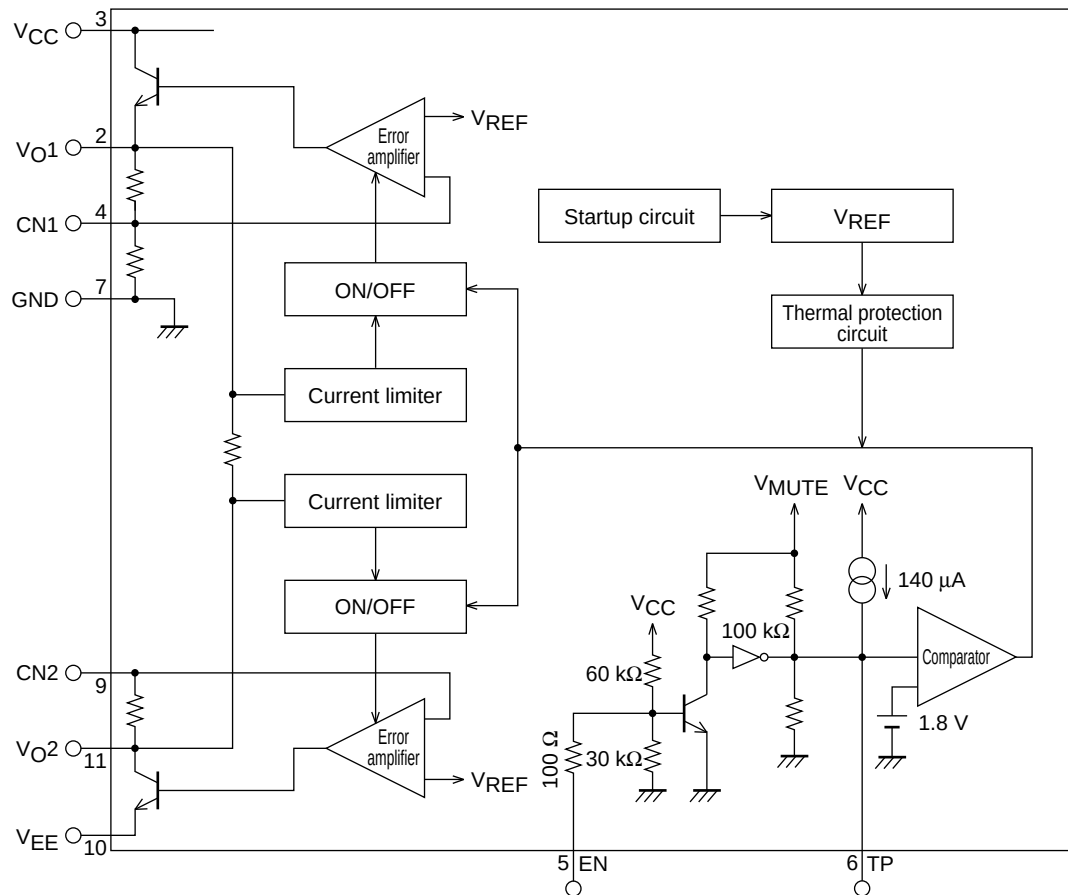


## Pin Assignment



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

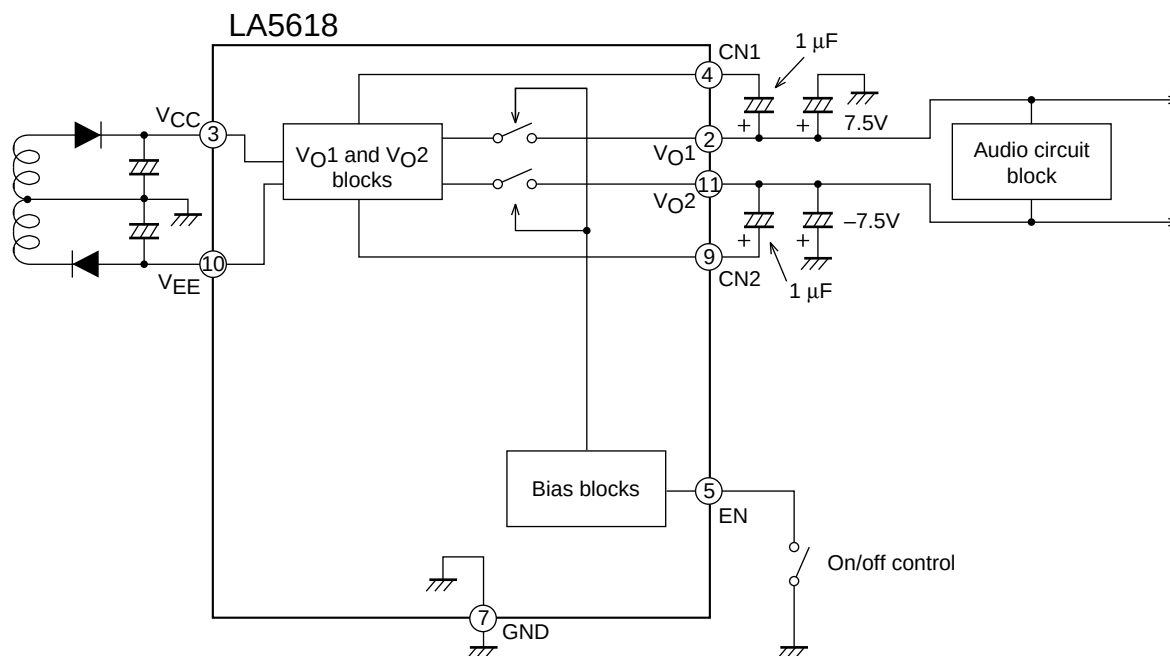
## Equivalent Circuit Block Diagram



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

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## Sample Application Circuit: Mini-component stereo system power supply



A06999

- Notes: 1. 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.
2. 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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