



ON Semiconductor®

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# LA6500

## Monolithic Linear IC Power Operational Amplifier

### Overview

The LA6500 is a power operational amplifier.

### Features

- High output current ( $I_O$  max = 1.0A)
- High gain
- With current limiter
- Capable of being operated from single supply

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{CC}/V_{EE}$		$\pm 18$	V
Differential input voltage	$V_{ID}$		30	V
Common-mode input voltage	$V_{IN}$		$\pm 15$	V
Output current	$I_O$ max		1.0	A
Allowable power dissipation	$P_d$ max1	With infinity large heat sink	20	W
	$P_d$ max2	Independent IC	1.75	W
Operating temperature	$T_{opr}$		-20 to +75	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

# LA6500

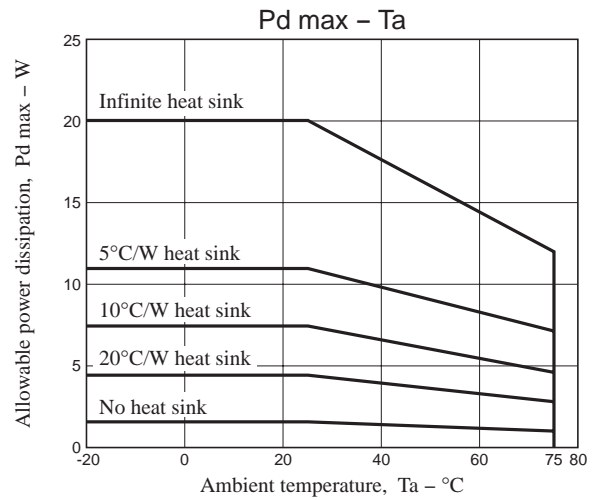
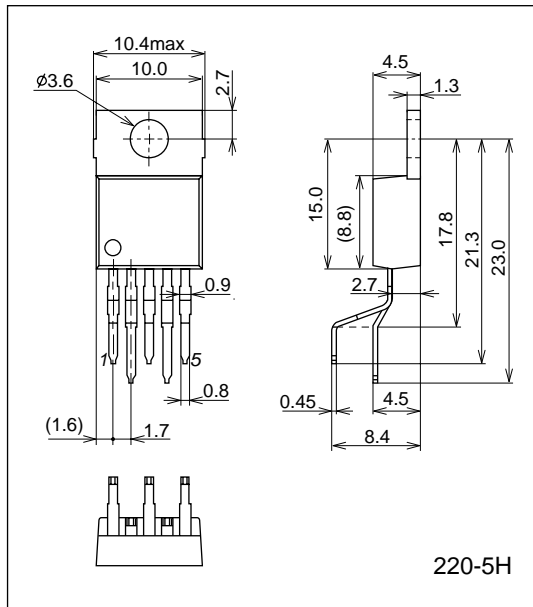
**Electrical Characteristics** at  $T_a = 25^\circ\text{C}$ ,  $V_{CC}/V_{EE} = \pm 15\text{V}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current dissipation	$I_{CCO}$			6.0	12.0	mA
Input offset voltage	$V_{IO}$			2	6	mV
Input offset current	$I_{IO}$			10	200	nA
Input bias current	$I_B$			100	700	nA
Common-mode input voltage range	$V_{ICM}$		-15		+13	V
Common-mode rejection	CMR		70	80		dB
Maximum output voltage	$V_O$	$R_L = 33\Omega$	$\pm 12$	$\pm 13$		V
Voltage gain	$V_{GO}$			100		dB
Slew rate	SR	$G_V = 0, R_L = 33\Omega, R = 2.2\Omega, L = 0.1\mu\text{F}$		0.15		V/ $\mu\text{s}$
Equivalent input noise voltage	$V_{NI}$	$R_g = 1\text{k}\Omega, \text{DIN AUDIO}$		2		$\mu\text{V}$
Supply voltage rejection	SVR			30	150	$\mu\text{V/V}$
Limiting current	$I_{SC}$			1.0		A

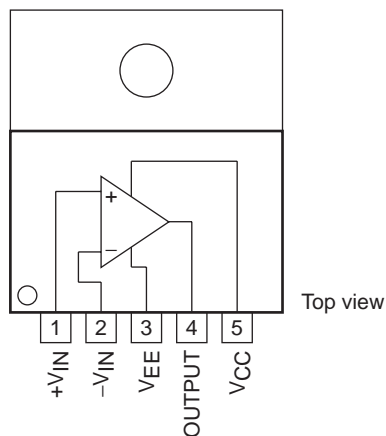
## Package Dimensions

unit : mm (typ)

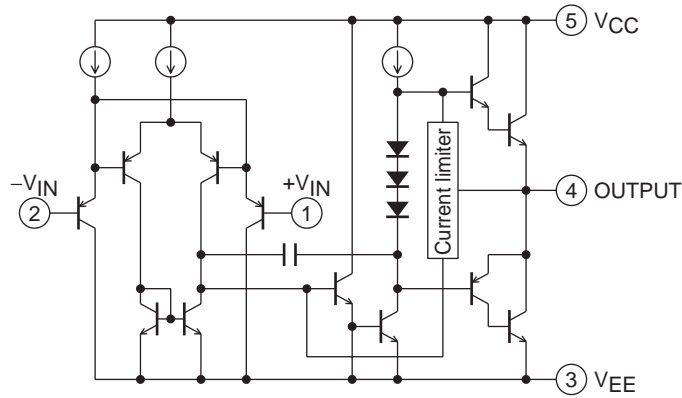
3079C



## Pin Assignment

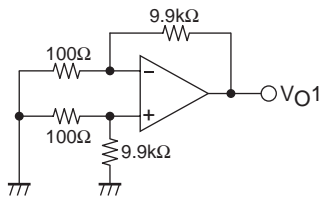


Equivalent Circuit



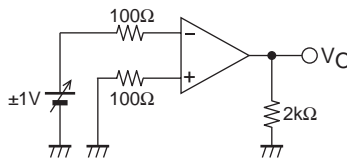
Test Circuit

(1)  $V_{IO}$ , SVRR



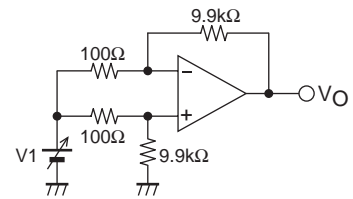
•  $V_{IO}$  is  $V_{CC}/V_{EE} = \pm 15V$   
 • SVRR is  $\begin{cases} V_{CC} = 15, 5V \\ V_{EE} = -5, -15V \end{cases}$

(2)  $V_O$



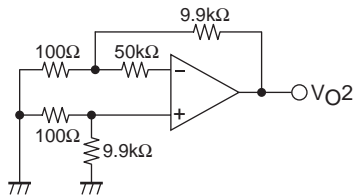
•  $V_{IO} = V_O / 100$   
 $SVR(+)$  and  $SVR(-)$  are calculated as  $\left| \frac{\Delta V_O}{100 \times 10V} \right|$

(3) CMMR,  $V_{ICM}$



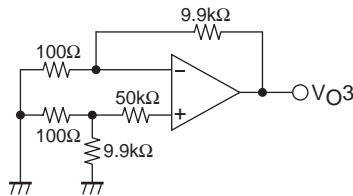
• CMRR  $V_1 = \pm 7.5V$   
 •  $CMR = 20 \log \frac{15 \times 100}{|\Delta V_O|}$

(3)  $I_B(+)$



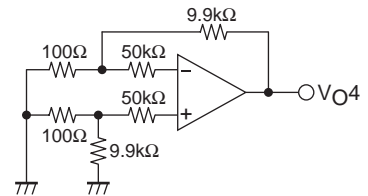
•  $I_B(+)$  is calculated as  $\frac{|V_{O2} - V_{O1}|}{50k\Omega \times 100}$

(4)  $I_B(-)$



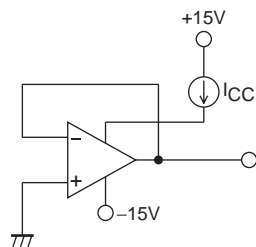
•  $I_B(-)$  is calculated as  $\frac{|V_{O3} - V_{O1}|}{50k\Omega \times 100}$

(5)  $I_{IO}$

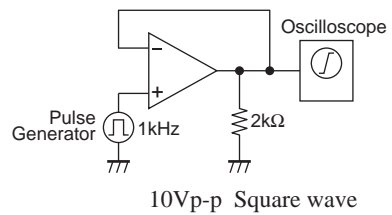


•  $I_{IO}$  is calculated as  $\frac{|V_{O4} - V_{O1}|}{50k\Omega \times 100}$

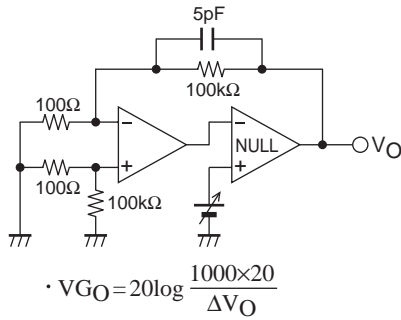
(7)  $I_{CC}$



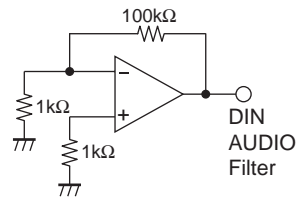
(8) SR



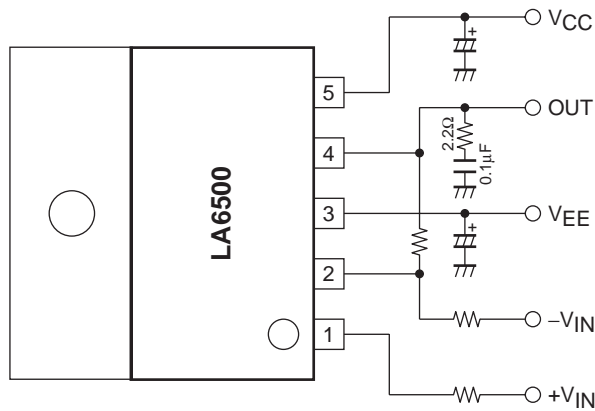
(9)  $V_{GO}$



(10)  $V_{NI}$



**Application Circuit Example**



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