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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}		± 18	V
Differential input voltage	V_{ID}		30	V
Common-mode input voltage	V_{IN}		± 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

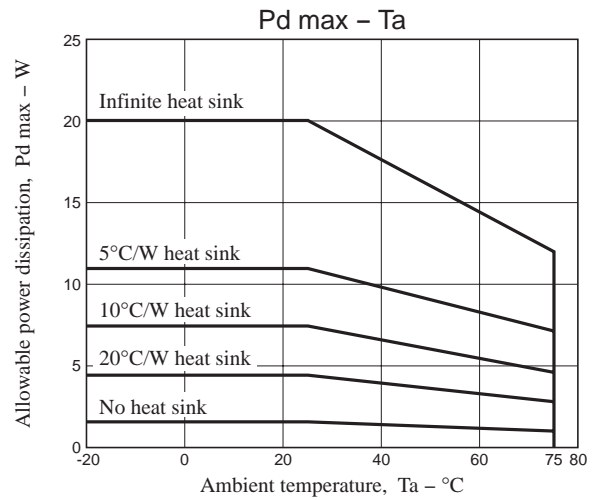
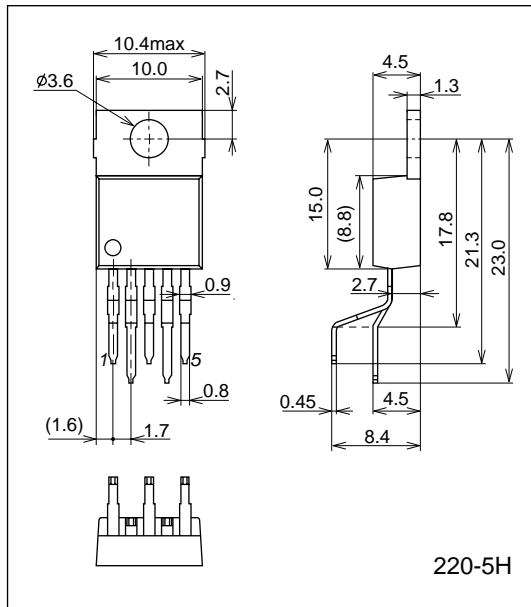
Electrical Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC}/V_{EE} = \pm 15\text{V}$

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	$R_L = 33\Omega$	± 12	± 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/ μs
Equivalent input noise voltage	V_{NI}	$R_g = 1\text{k}\Omega, \text{DIN AUDIO}$		2		μV
Supply voltage rejection	SVR			30	150	$\mu\text{V/V}$
Limiting current	I_{SC}			1.0		A

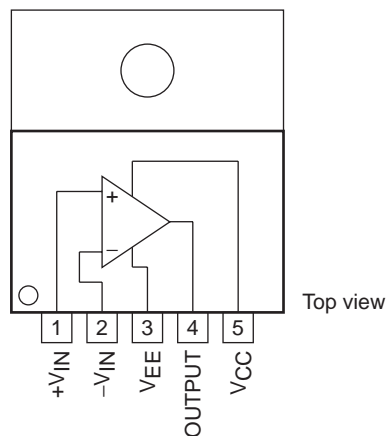
Package Dimensions

unit : mm (typ)

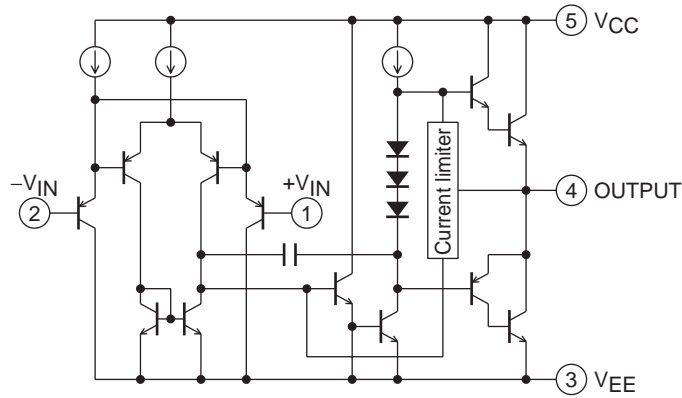
3079C



Pin Assignment

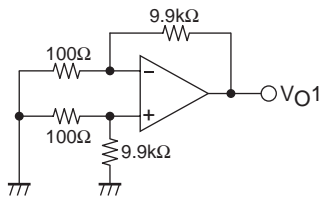


Equivalent Circuit



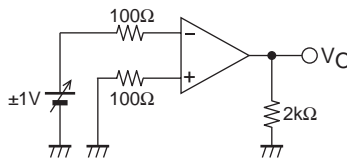
Test Circuit

(1) V_{IO} , SVRR



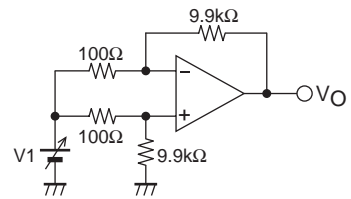
• V_{IO} is $V_{CC}/V_{EE} = \pm 15V$
 • SVRR is $\begin{cases} V_{CC} = 15, 5V \\ V_{EE} = -5, -15V \end{cases}$

(2) V_O



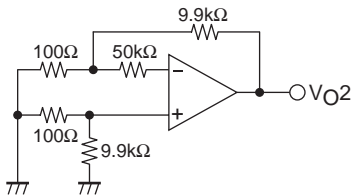
• $V_{IO} = V_{O1} / 100$
 $SVR(+)=\left|\frac{\Delta V_{O1}}{100 \times 10V}\right|$
 $SVR(-)=\left|\frac{\Delta V_{O1}}{100 \times 10V}\right|$

(3) CMMR, V_{ICM}



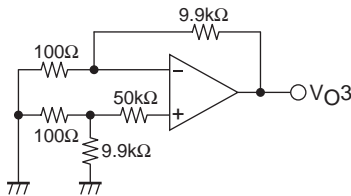
• CMRR $V_1 = \pm 7.5V$
 • $CMR = 20 \log \frac{15 \times 100}{|\Delta V_{O1}|}$

(3) $I_{B(+)}$



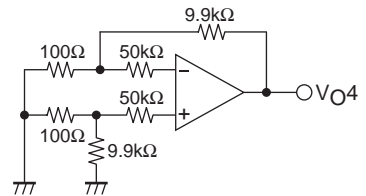
• $I_{B(+)} = \frac{|V_{O2} - V_{O1}|}{50k\Omega \times 100}$

(4) $I_{B(-)}$



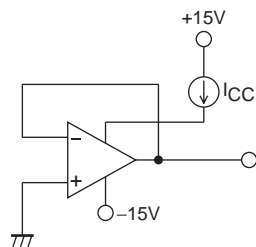
• $I_{B(-)} = \frac{|V_{O3} - V_{O1}|}{50k\Omega \times 100}$

(5) I_{IO}

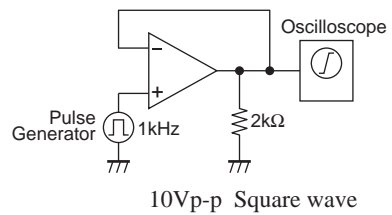


• $I_{IO} = \frac{|V_{O4} - V_{O1}|}{50k\Omega \times 100}$

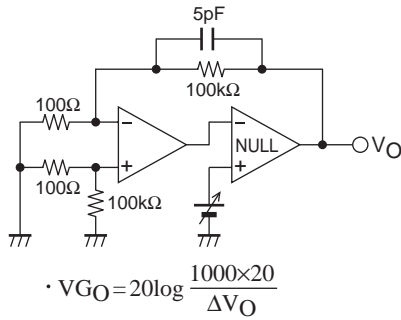
(7) I_{CC}



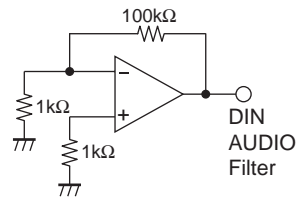
(8) SR



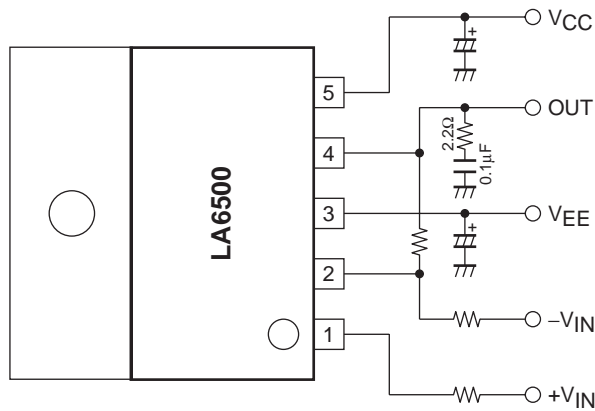
(9) V_{GO}



(10) V_{NI}



Application Circuit Example



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