



LA6523

3-Output Power Operational Amplifier

Overview

The LA6523 is a 3-output power operational amplifier IC developed for widespread use in consumer and industrial applications.

Features and Functions

- High output current ($I_o \text{ max} = 0.5 \text{ A}$)
- High gain
- Current limiter
- Wide operating supply voltage (± 2 to $\pm 18 \text{ V}$)
- Single supply operation possible (4 to 36 V)
- Mute circuit (active low)
- Thermal shutdown circuit built-in

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
Input common-mode voltage	V_{IN}		± 15	V
Allowable power dissipation	$P_d \text{ max}$		1.9	W
Operating temperature	T_{opr}		-20 to $+75$	$^\circ\text{C}$
Storage temperature	T_{stg}		-55 to $+150$	$^\circ\text{C}$

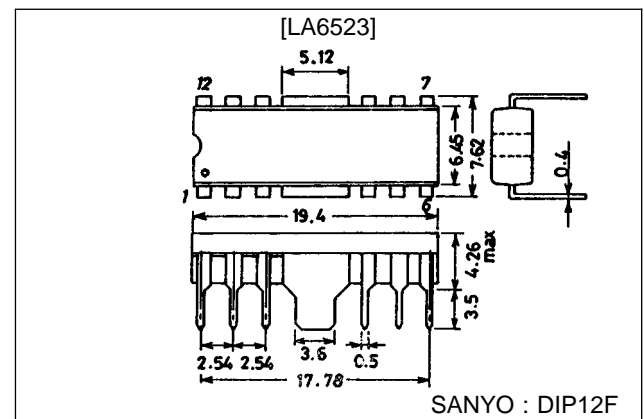
Operating Condition at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Recommended operating supply voltage	V_{CC}/V_{EE}		± 2 to ± 16	V

Package Dimensions

unit : mm

3022A-DIP12F



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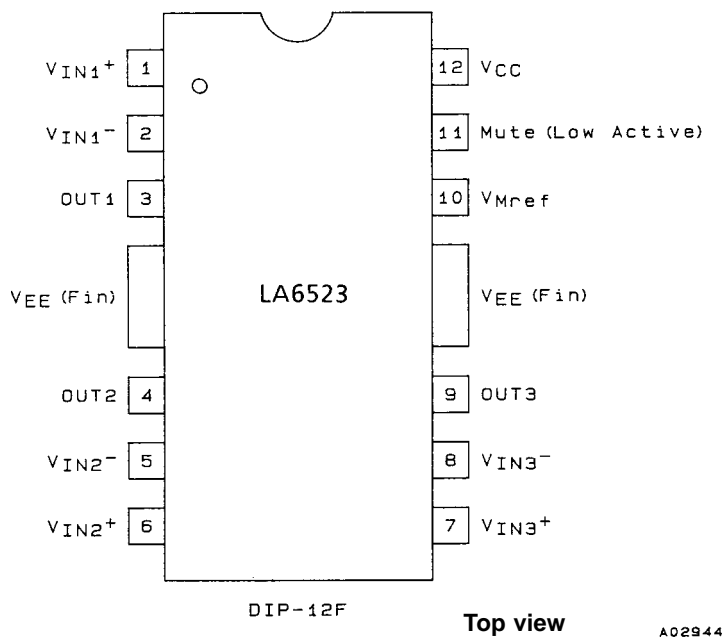
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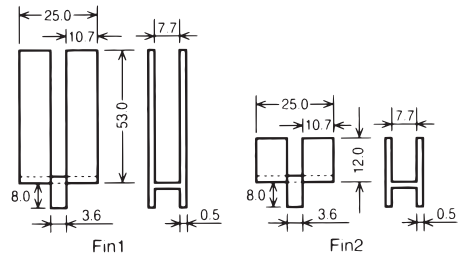
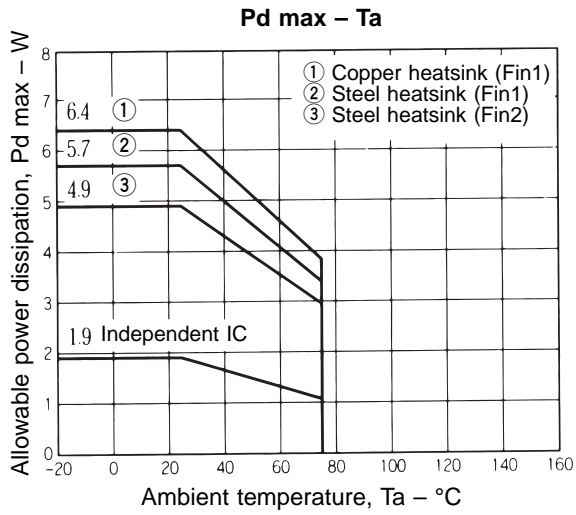
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Electrical Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC}/V_{EE} = \pm 15\text{ V}$

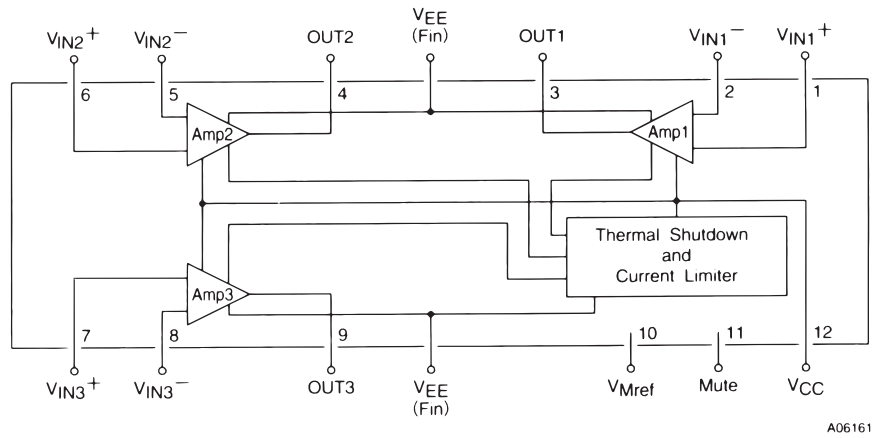
Parameter	Symbol	Conditions	min	typ	max	Unit
No-load current drain 1	I_{CC1}		8	20	32	mA
No-load current drain 2	I_{CC2}	Mute On		6.5	16.5	mA
Input offset voltage	V_{IO}	$R_s \leq 10\text{ k}\Omega$		2	7	mV
Input offset current	I_{IO}			10	100	nA
Input bias current	I_B			50	300	nA
Input common-mode voltage range	V_{ICM}		-15		+13	V
Common-mode signal rejection ratio	CMR		65	80		dB
Maximum output voltage	V_O	$R_L = 32\ \Omega$	± 11	± 12		V
Voltage gain	V_{GO}			85		dB
Slew rate	SR	$G_V = 0$, $R_L = 32\ \Omega$, $R = 10\ \Omega$, $C = 0.1\ \mu\text{F}$		0.15		V/ μs
Supply voltage rejection ratio	SVR			30	300	$\mu\text{V/V}$
Limiter current (built-in type)	I_{SC}			0.5		A
Mute ON voltage	V_{MON}		0.3	1.0		V
Mute pin output current	I_{Mute}	$V_{Mref} = V_{Mute} = 0\text{ V}$		10	50	μA

Pin Assignment



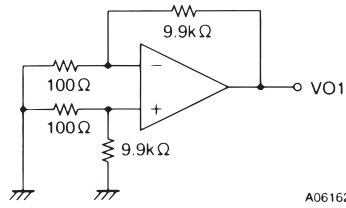


Block Diagram



Test Circuit

(1) $V_{IO}, SVRR$

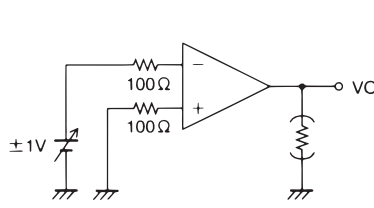


$$V_{IO} = V_{CC} / V_{EE} = \pm 15V$$

$$V_{IO} = V_{O1} / 100$$

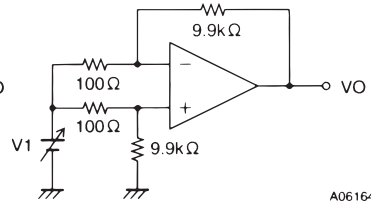
$$SVRR \left[\begin{matrix} V_{CC} = 15V, 5V \\ V_{EE} = -5V, -15V \end{matrix} \right]$$

(2) V_O



$$\left. \begin{matrix} SVR(+) \\ SVR(-) \end{matrix} \right) = \left| \frac{\Delta V_{O1}}{100 \times 10V} \right|$$

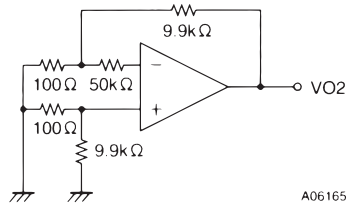
(3) CMRR, V_{ICM}



$$CMRR \quad V1 = \pm 7.5V$$

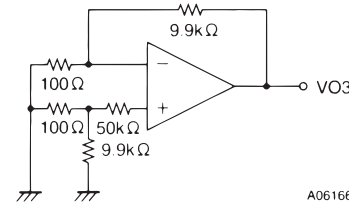
$$CMR = 20 \log \frac{15 \times 100}{|\Delta V_O|}$$

(4) $I_B (-)$



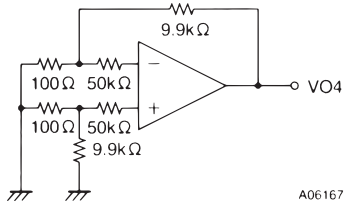
$$I_B (-) = \frac{|V_{O2} - V_{O1}|}{50k\Omega \times 100}$$

(5) $I_B (+)$



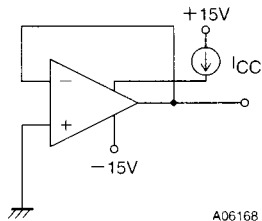
$$I_B (+) = \frac{|V_{O3} - V_{O1}|}{50k\Omega \times 100}$$

(6) I_{IO}

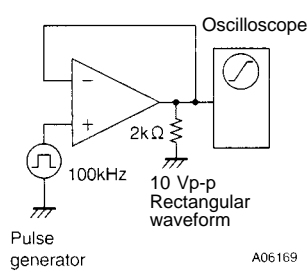


$$I_{IO} = \frac{|V_{O4} - V_{O1}|}{50k\Omega \times 100}$$

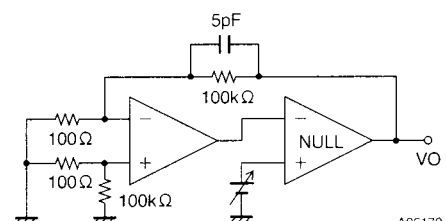
(7) I_{CC}



(8) SR



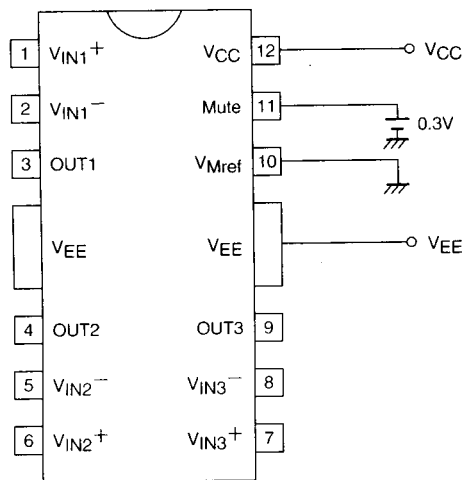
(9) V_{G_O}



$$V_{G_O} = 20 \log \frac{1000 \times 20}{\Delta V_O}$$

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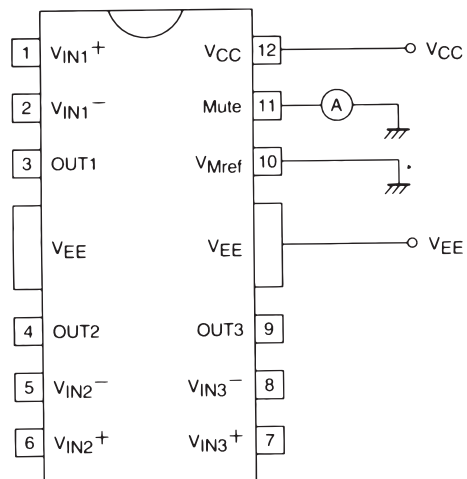
(10) V_{MON}



When $V_{Mref} = 0$ [V], $V_{Mute} = 0.3$ [V], output is not turned on.

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(11) I_{Mute}



Out-flow current when $V_{Mref} = V_{Mute} = 0$ [V]

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