

**LA6523****3-Output Power Operational Amplifier****Overview**

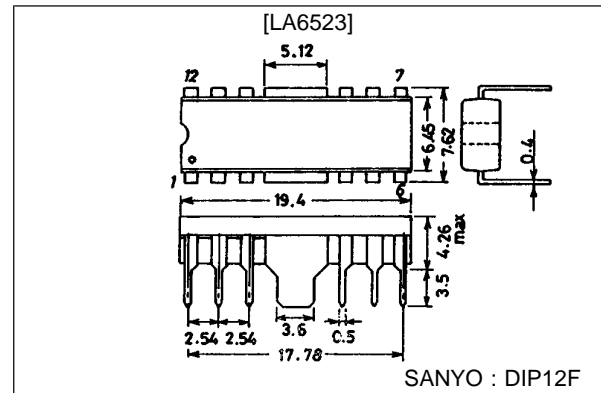
The LA6523 is a 3-output power operational amplifier IC developed for widespread use in consumer and industrial applications.

**Features and Functions**

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

**Package Dimensions**

unit : mm

**3022A-DIP12F****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
Input common-mode voltage	$V_{IN}$		$\pm 15$	V
Allowable power dissipation	$P_d$ 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	$V_{CC}/V_{EE}$		$\pm 2$ to $\pm 16$	V

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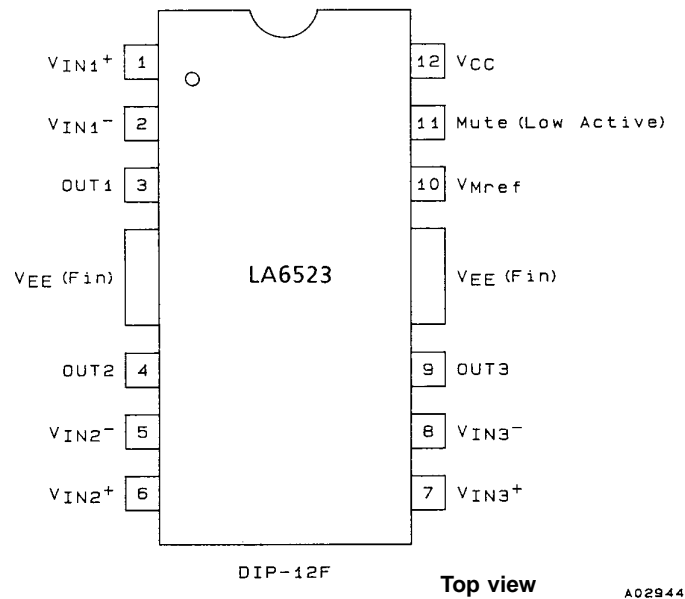
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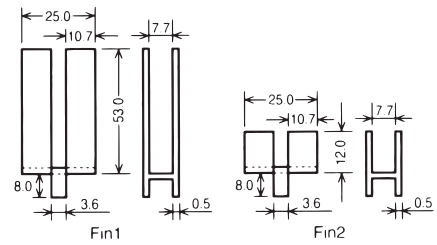
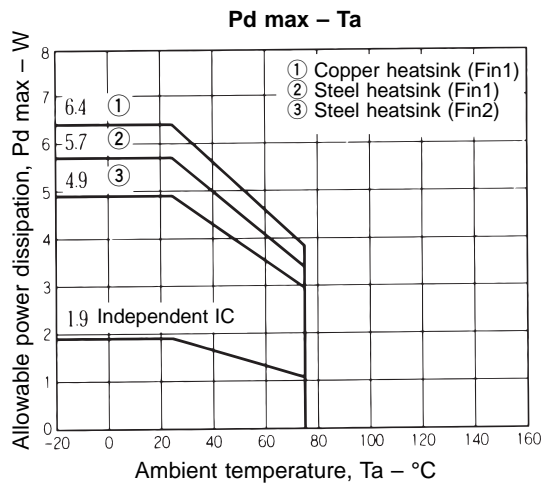
## LA6523

### 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	$V_O$	$R_L = 32\ \Omega$	$\pm 11$	$\pm 12$		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/ $\mu\text{s}$
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	$\mu\text{A}$

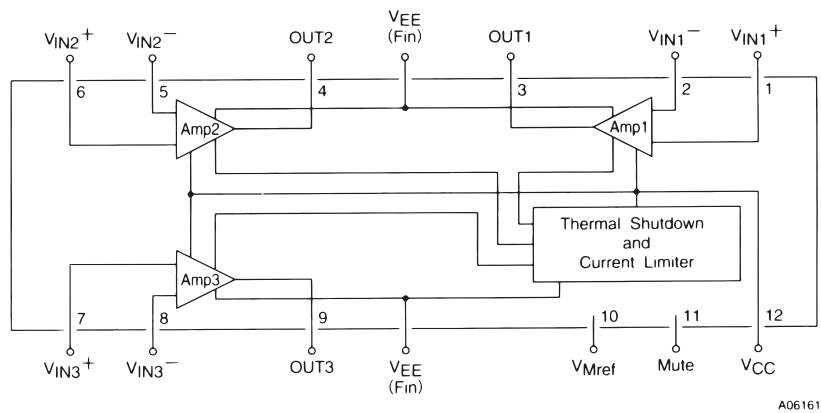
### Pin Assignment





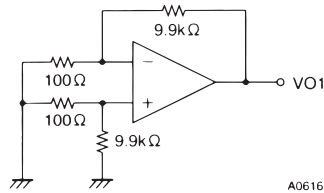
(Unit: mm)

### Block Diagram



# Test Circuit

(1)  $V_{IO}$ , SVRR

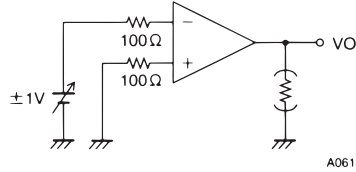


$$V_{IO} = V_{CC} / V_{EE} = \pm 15V$$

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

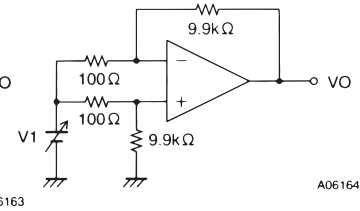
$$SVRR \left[ \begin{matrix} V_{CC} = 15V, 5V \\ V_{EE} = -5V, -15V \end{matrix} \right]$$

(2)  $V_O$



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

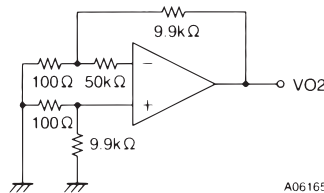
(3) CMRR,  $V_{ICM}$



$$CMRR \quad V_1 = \pm 7.5V$$

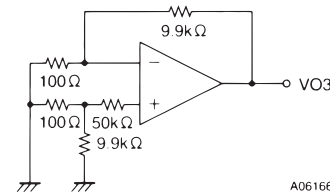
$$CMR = 20 \log \frac{15 \times 100}{|\Delta V_O|}$$

(4)  $I_B (-)$



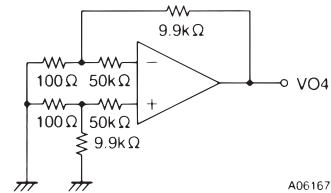
$$I_B (-) = \frac{|V_{O2} - V_{O1}|}{50k\Omega \times 100}$$

(5)  $I_B (+)$



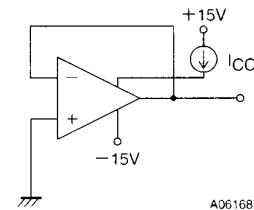
$$I_B (+) = \frac{|V_{O3} - V_{O1}|}{50k\Omega \times 100}$$

(6)  $I_{IO}$

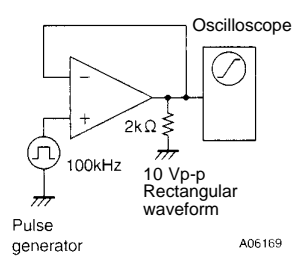


$$I_{IO} = \frac{|V_{O4} - V_{O1}|}{50k\Omega \times 100}$$

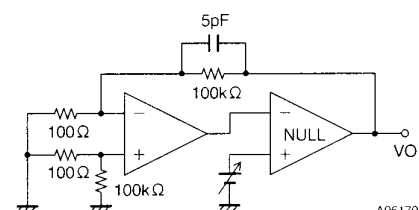
(7)  $I_{CC}$



(8) SR

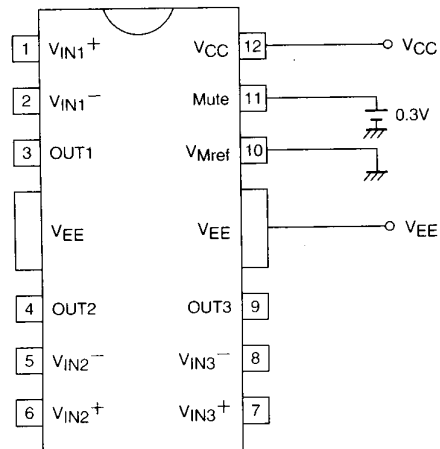


(9)  $V_{G_O}$



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

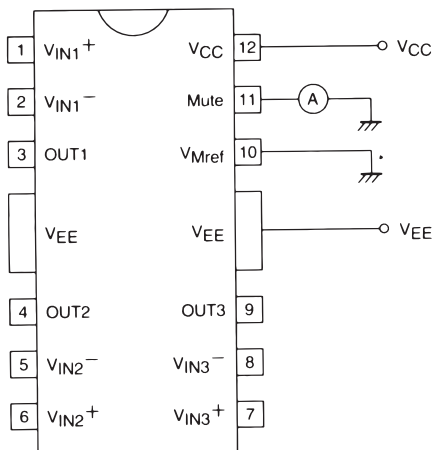
(10)  $V_{MON}$



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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