



LA6512, 6513

High-Voltage Dual Power Operational Amplifiers

Overview

LA6512 (SIP10F) and LA6513 (SIP10) are power operational amplifier ICs capable of withstanding high voltages of ± 30 V/1 A and are best suited for such voltage division devices as LCD drivers and general-purpose power operational amplifiers.

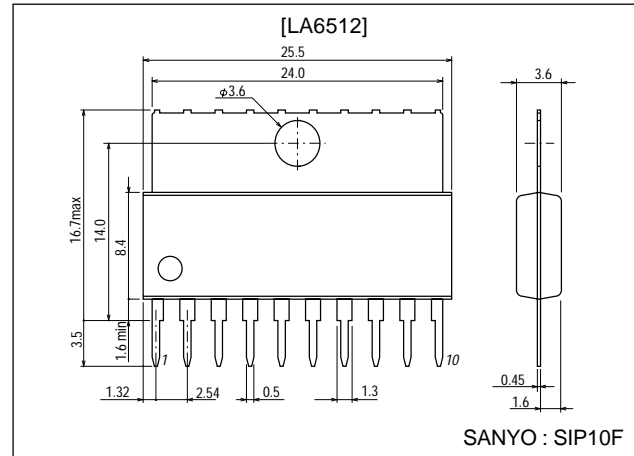
Features

- High output current (I_O max=1.0A).
- High gain.
- Equipped with current limiter pin (Adjustable by external settings).
- Supports single power source operation.
- Withstands high voltages (± 30 V).

Package Dimensions

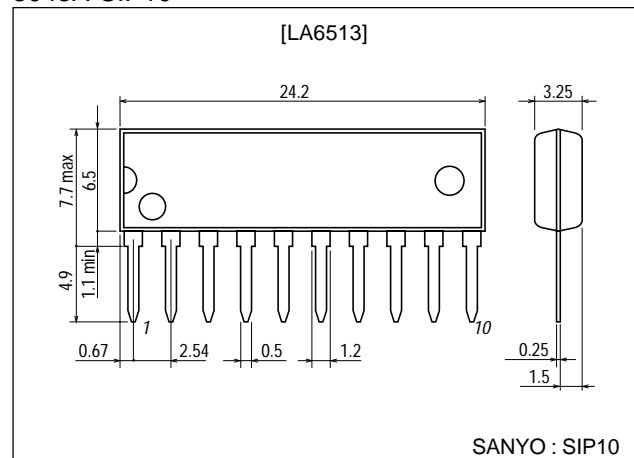
unit:mm

3046B-SIP10F



unit:mm

3043A-SIP10



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SANYO Electric Co., Ltd. Semiconductor Company

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

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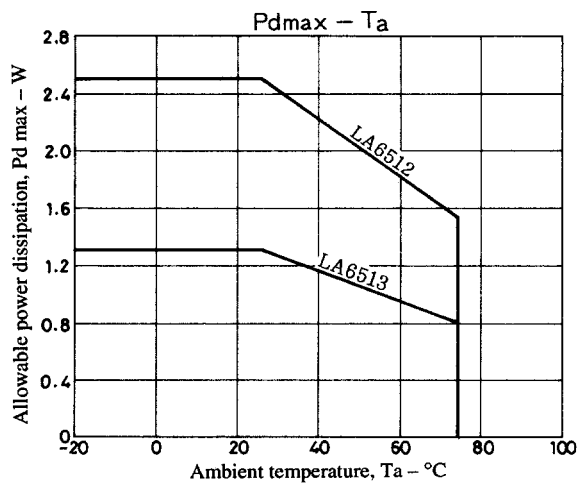
Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{CC}/V_{EE\text{ max}}$		± 30	V
Differential input voltage	V_{IDIF}		56	V
Common-mode input voltage	V_{ICOM}		± 28	V
Maximum output current	$I_{O\text{ max}}$		1.0	A
Allowable power dissipation	Pd max	LA6512	2.5	W
		LA6513	1.3	W
Operating temperature	T_{opr}		-20 to +75	$^\circ\text{C}$
Storage temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

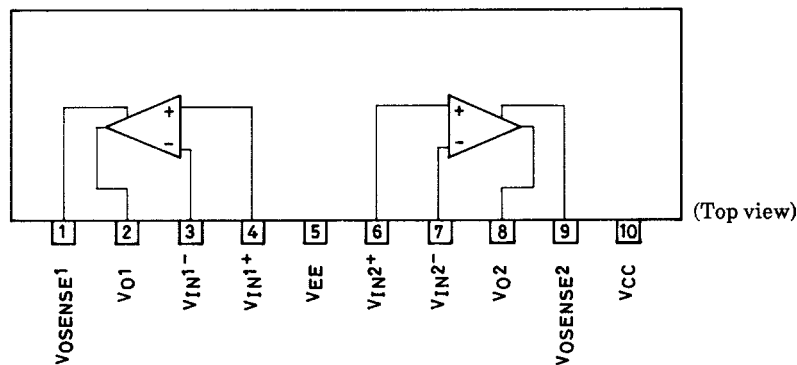
Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC}/V_{EE} = \pm 15$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
No load current drain	I_{CCO}		6	12	20	mA
Input offset voltage	V_{IO}	$R_S \leq 10\text{k}\Omega$		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}		-14		+13	V
Common-mode single rejection ratio	CMRR		70	80		dB
Maximum output voltage	$V_{O\text{ max}}$		± 12	± 13		V
Voltage gain	V_{GO}			100		dB
Slew rate	SR	$GV=0$, $R_L=33\Omega$, $R=2.2\Omega$, $C=0.1\mu\text{F}$		0.15		$\text{V}/\mu\text{s}$
Supply voltage rejection ratio	SVRR			30	150	$\mu\text{V}/\text{V}$
Limiting current	I_{SC}	$R_{SC}=2.2\Omega$		0.35		A



Pin Assignment

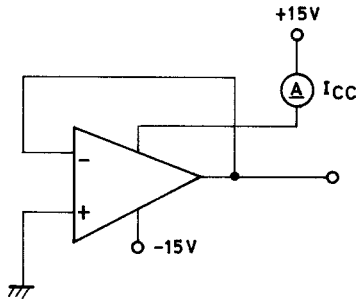
(LA6512, 6513 common)



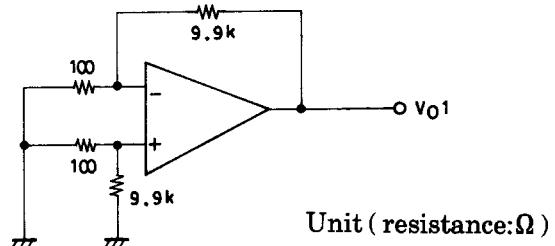
LA6512, 6513

Test Circuits

I_{CC}



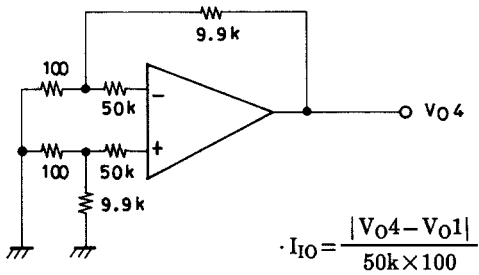
$V_{IO}, SVRR$



Unit (resistance: Ω)

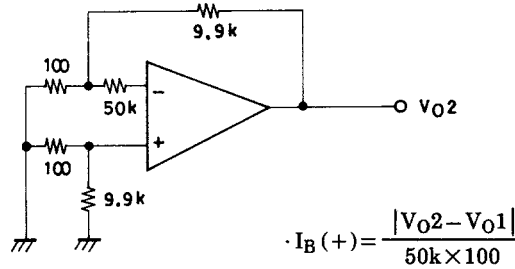
- V_{IO} is with $V_{CC}/V_{EE} = \pm 15V$
- $V_{IO} = V_{O1}/100$
- $SVRR$ is with $\begin{bmatrix} V_{CC} = 15,5V \\ V_{EE} = -5, -15V \end{bmatrix}$
- $SVR (+) = \left| \frac{\Delta V_{O1}}{100 \times 10V} \right|$
- $SVR (-) = \left| \frac{\Delta V_{O1}}{100 \times 10V} \right|$

I_{IO}



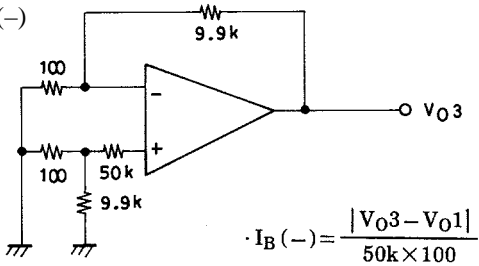
$$\cdot I_{IO} = \frac{|V_{O4} - V_{O1}|}{50k \times 100}$$

$I_B (+)$



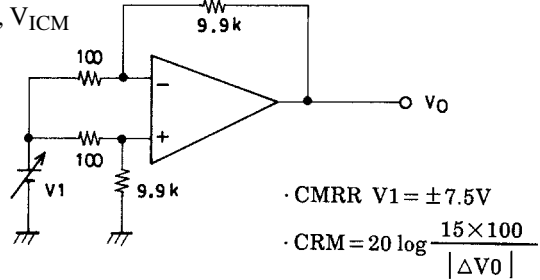
$$\cdot I_B (+) = \frac{|V_{O2} - V_{O1}|}{50k \times 100}$$

$I_B (-)$



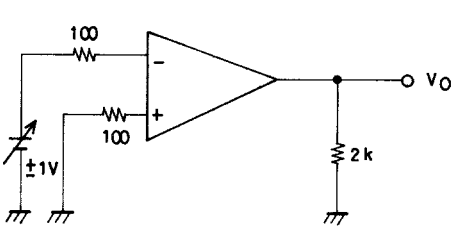
$$\cdot I_B (-) = \frac{|V_{O3} - V_{O1}|}{50k \times 100}$$

CMRR, V_{ICM}

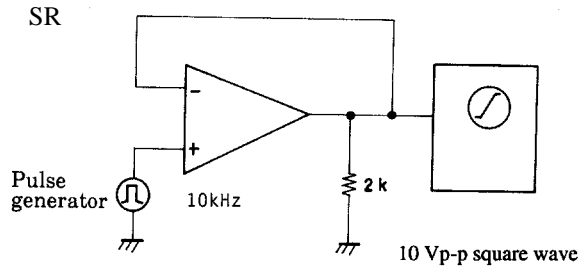


- $CMRR V1 = \pm 7.5V$
- $CRM = 20 \log \frac{15 \times 100}{|\Delta V_0|}$

V_O

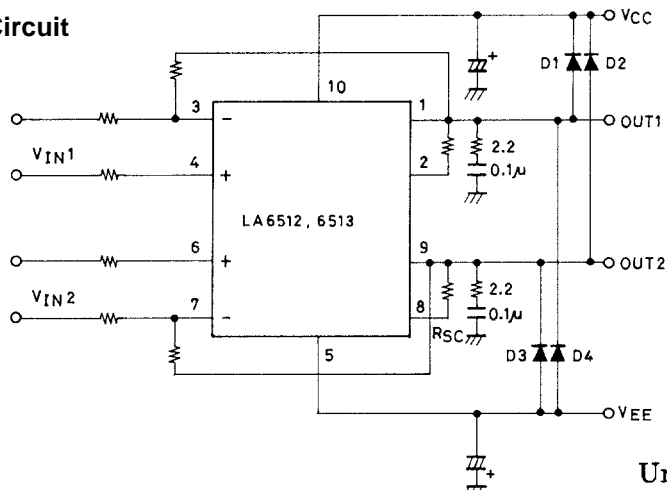


SR



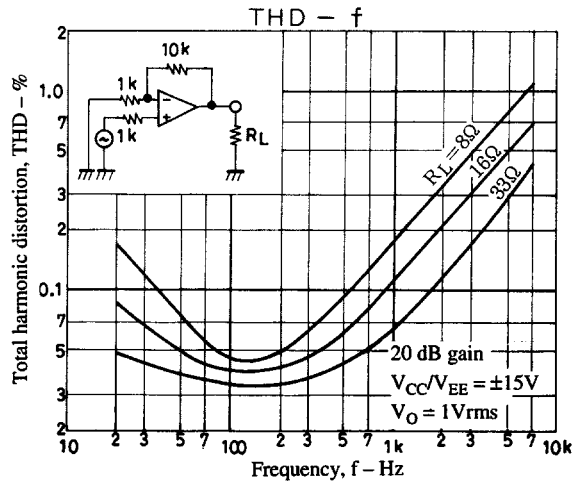
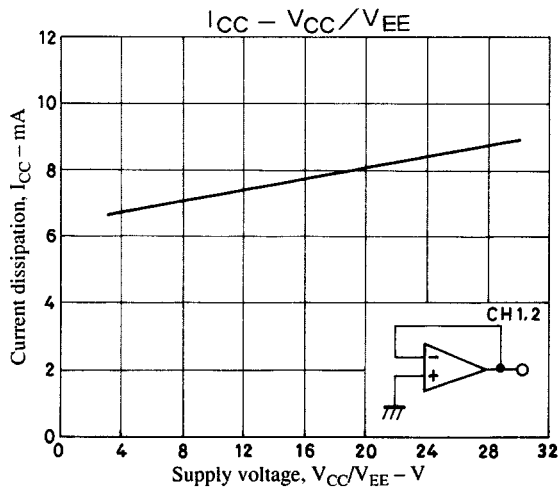
10 Vp-p square wave

Sample Application Circuit



Unit (resistance: Ω capacitance: F)

Note : When driving an inductive load, a D1 to D4 protective diode should be installed.



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