Ordering number : EN999D

SANYO Semiconductors
DATA SHEET

LA6393D
LA6393S

Monolithic Linear IC
High-Performance Dual Comparator

Overview

The LA6393D and 6393S are high-performance dual comparators that are capable of operating from a single power supply voltage over a wide range of 2 to 36V. Because of their excellent input characteristics and low power, they can be very conveniently applied to multisignal parallel comparator circuits that require high-density assembly.

Features

- LA6393D: DIP-8 pin package, LA6393S: SIP-9 pin package.
- Wide operating power-supply voltage range (Single power supply: 2.0 to 36.0V, dual power supplies: ±1.0 to ±18.0V).
- Wide common-mode input voltage range (0 to V_{CC}-1.5V).
- Open-collector output enabling wired OR.
- Small current drain (0.6mA) and low power.

Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max		36	V
Differential input voltage	V_{ID}		36	V
Common-mode input voltage range	V_{ICM}		-0.3 to +36	V
Allowable power dissipation	Pd max		570	mW
Operating temperature	Topr		-30 to +85	°C
Storage temperature	Tstg		-55 to +125	°C

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

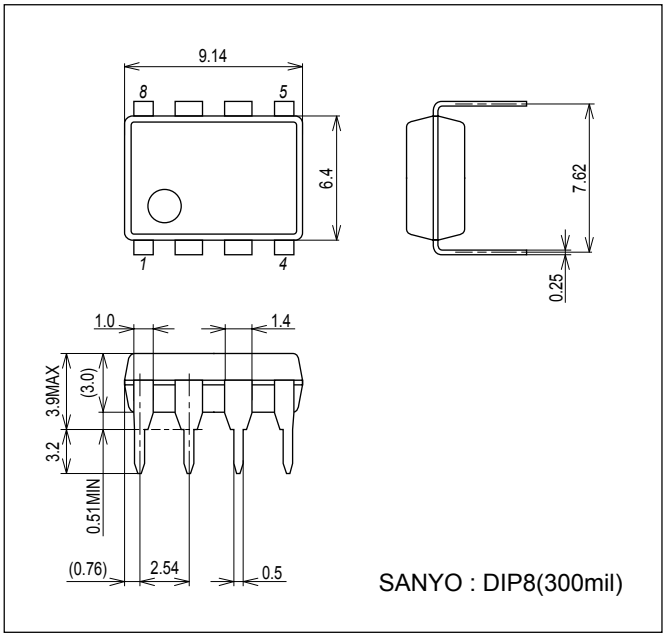
Operating Characteristics at Ta = 25°C, V_{CC} = 5V

Parameter	Symbol	Conditions	Test Circuit	Ratings			unit
				min	typ	max	
Input offset voltage	V_{IO}		1		±1	±5	mV
Input offset current	I_{IO}		2		±5	±50	nA
Input bias current	I_B		3		25	250	nA
Common-mode input voltage range	V_{ICM}			0		V_{CC}-1.5	V
Supply current	I_{CC}	R_L = ∞	4		0.6	1	mA
Voltage gain	VG	R_L = 15kΩ	5		200		V/mV
Response time		V_{RL} = 5V, R_L = 5.1kΩ	6		1.3		μs
Output sink current	I_{SINK}	V_{IN}- = 1V, V_{IN}+ = 0V, V_O≤1.5V	7	6	16		mA
Output saturation current	V_{OL}	V_{IN}- = 1V, V_{IN}+ = 0V, I_{SINK}≤3mA	8		0.2	0.4	V
Output leakage current	I_{LEAK}	V_{IN}- = 0V, V_{IN}+ = 1V, V_O = 5V	9		0.1		nA

Package Dimensions

unit: mm (typ)

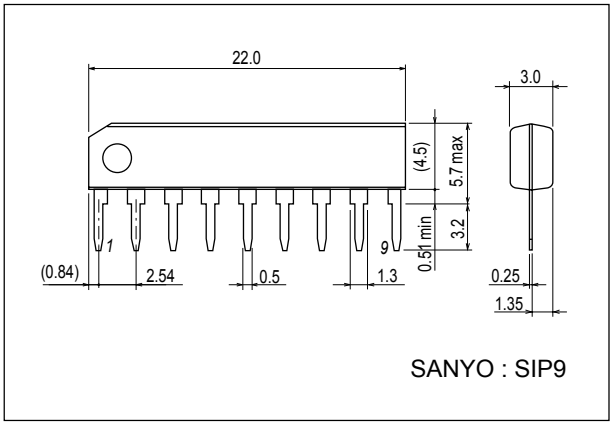
3001D [LA6393D]



Package Dimensions

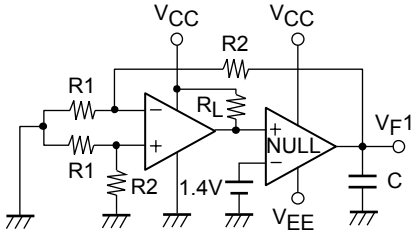
unit: mm (typ)

3017D [LA6393S]



Test Circuits

1. Input Offset Voltage



$$V_{ID} = \frac{V_F}{1+R2/R1}$$

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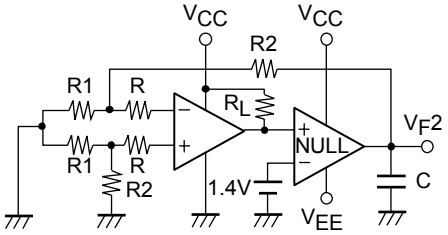
2. Input Offset Current



$$I_{ID} = \frac{V_F2 - V_F1}{R(1+R2/R1)}$$

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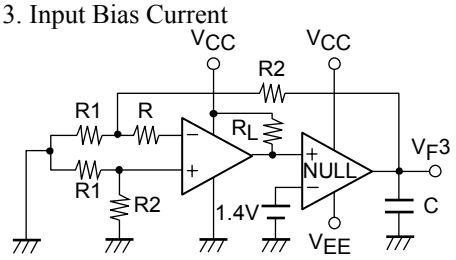
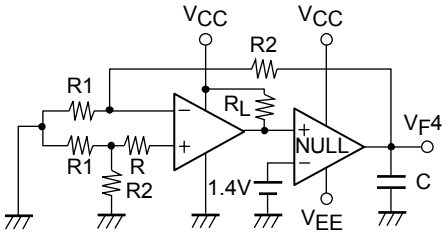
3. Input Bias Current





$$I_B = \frac{|V_F3 - V_F4|}{2R(1+R2/R1)}$$

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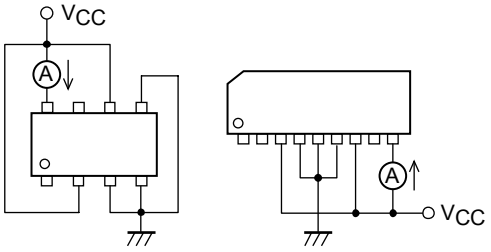
4. Supply Current



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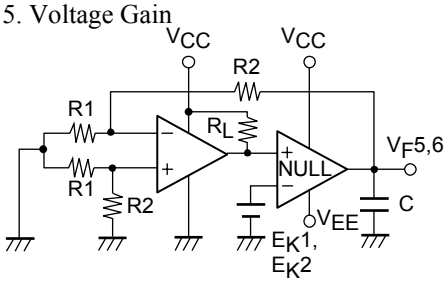
5. Voltage Gain



$$V_G = \frac{(E_K1 - E_K2)\ (1+R2/R1)}{V_F6 - V_F5}$$

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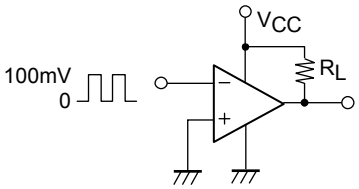
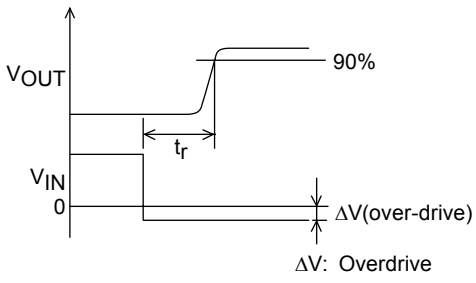
6. Response Time





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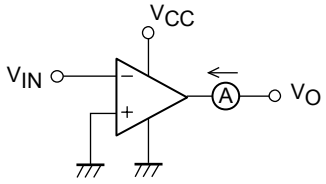
7. Output Sink Current



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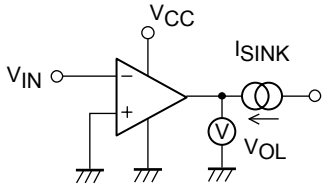
8. Output Saturation Voltage



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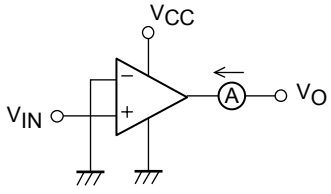
9. Output Leakage Current



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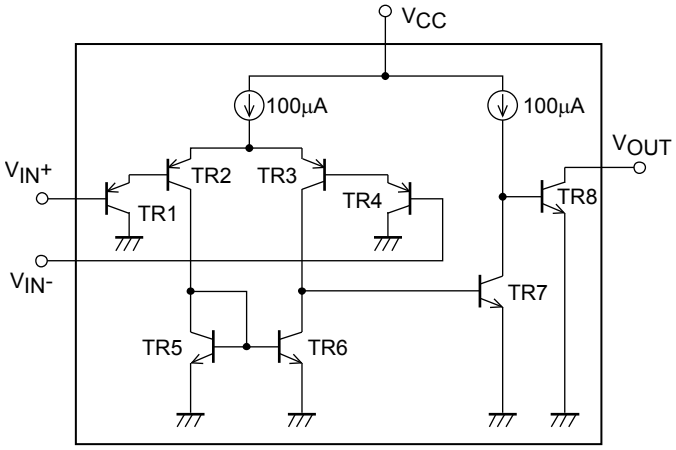
Equivalent Circuit



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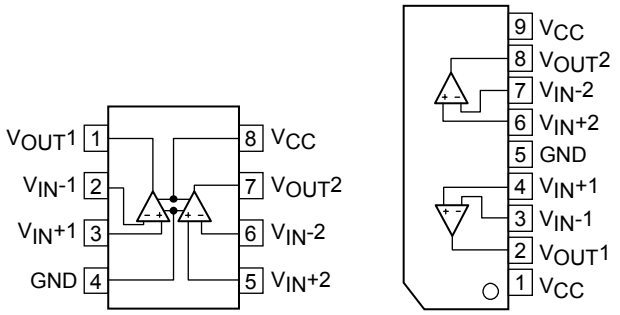
Pin Assignment



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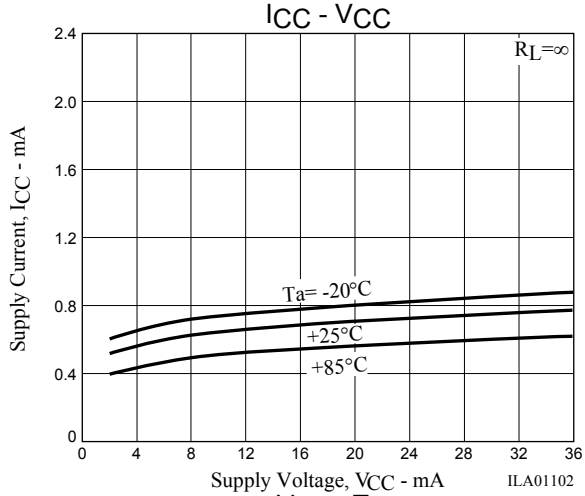
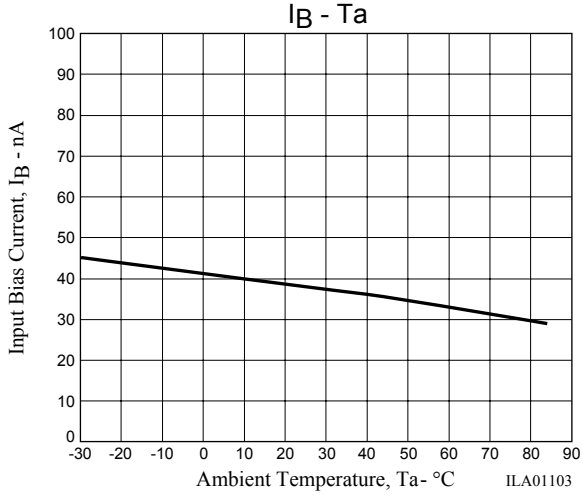
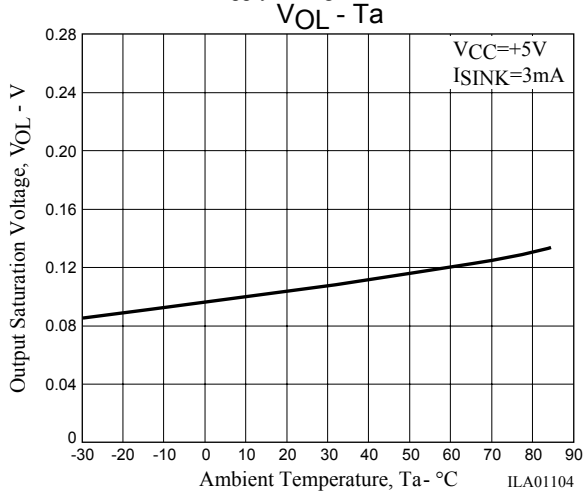
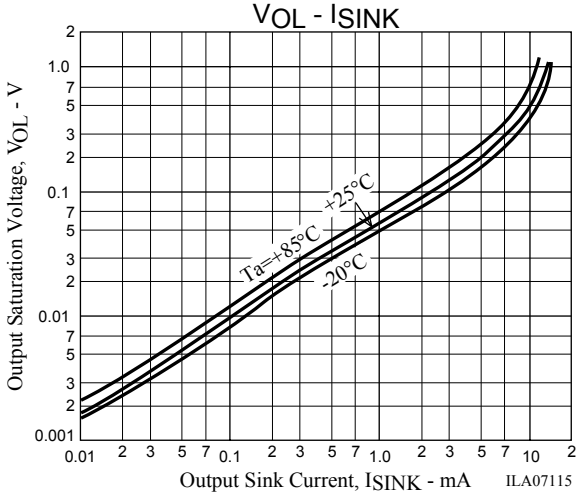
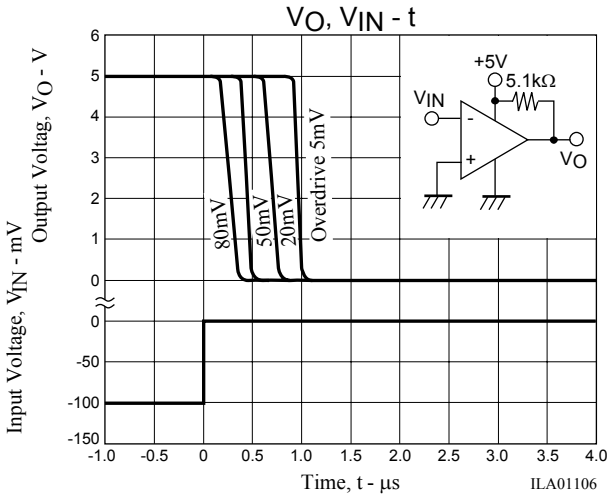
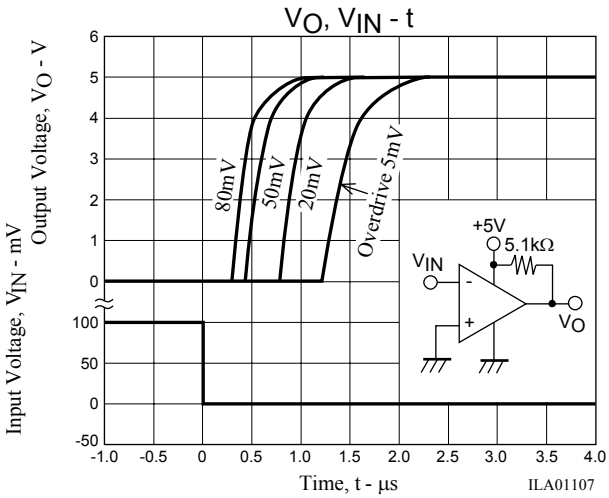




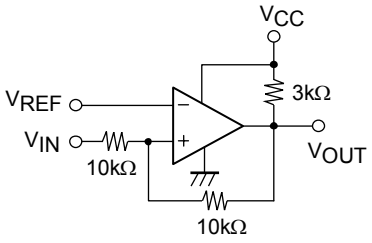




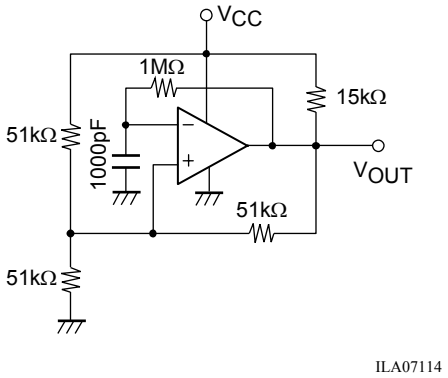




Sample Application Circuits



Voltage comparator
(with hysteresis)



Square wave generator