



SANYO Semiconductors

# DATA SHEET

## LA6393D — Monolithic Linear IC LA6393S 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:  $\pm 1.0$  to  $\pm 18.0$ V).
- Wide common-mode input voltage range (0 to  $V_{CC}-1.5$ V).
- Open-collector output enabling wired OR.
- Small current drain (0.6mA) and low power.

### Specifications

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

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	$P_d\ max$		570	mW
Operating temperature	$T_{opr}$		-30 to +85	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-55 to +125	$^\circ\text{C}$

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**SANYO Semiconductor Co., Ltd.**

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# LA6393D / LA6393S

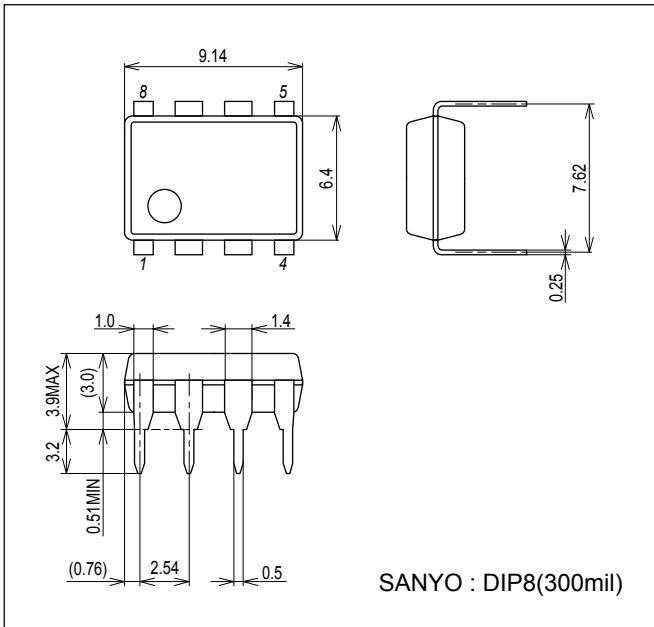
Operating Characteristics at  $T_a = 25^\circ\text{C}$ ,  $V_{CC} = 5\text{V}$

Parameter	Symbol	Conditions	Test Circuit	Ratings			unit
				min	typ	max	
Input offset voltage	$V_{IO}$		1		$\pm 1$	$\pm 5$	mV
Input offset current	$I_{IO}$		2		$\pm 5$	$\pm 50$	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	$I_{CC}$	$R_L = \infty$	4		0.6	1	mA
Voltage gain	VG	$R_L = 15\text{k}\Omega$	5		200		V/mV
Response time		$V_{RL} = 5\text{V}$ , $R_L = 5.1\text{k}\Omega$	6		1.3		$\mu\text{s}$
Output sink current	$I_{SINK}$	$V_{IN^-} = 1\text{V}$ , $V_{IN^+} = 0\text{V}$ , $V_O \leq 1.5\text{V}$	7	6	16		mA
Output saturation current	$V_{OL}$	$V_{IN^-} = 1\text{V}$ , $V_{IN^+} = 0\text{V}$ , $I_{SINK} \leq 3\text{mA}$	8		0.2	0.4	V
Output leakage current	$I_{LEAK}$	$V_{IN^-} = 0\text{V}$ , $V_{IN^+} = 1\text{V}$ , $V_O = 5\text{V}$	9		0.1		nA

## Package Dimensions

unit: mm (typ)

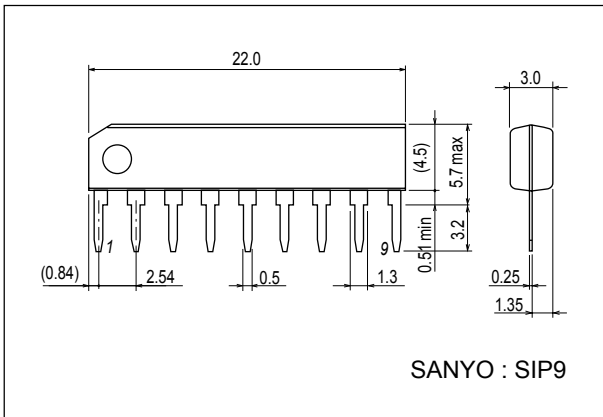
3001D [LA6393D]



## Package Dimensions

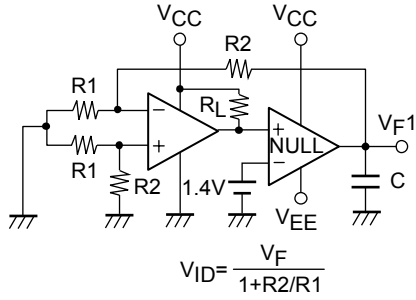
unit: mm (typ)

3017D [LA6393S]



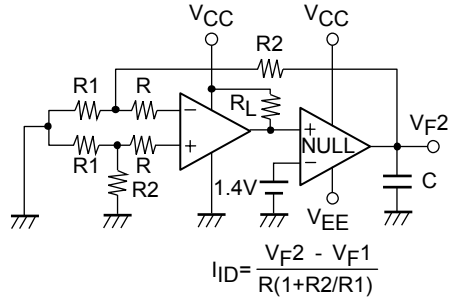
Test Circuits

1. Input Offset Voltage



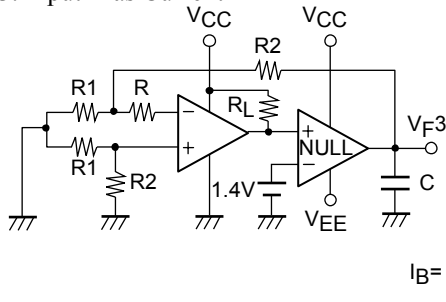
ILA07103

2. Input Offset Current



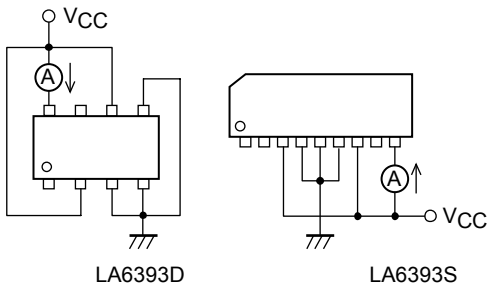
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3. Input Bias Current



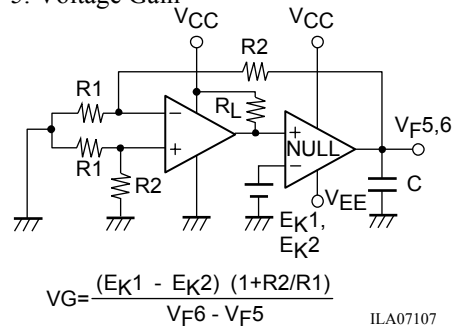
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4. Supply Current



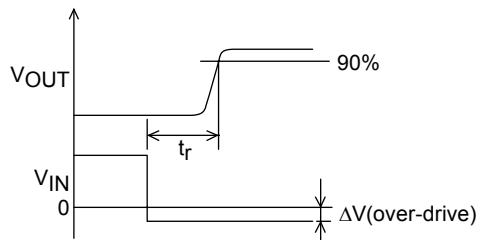
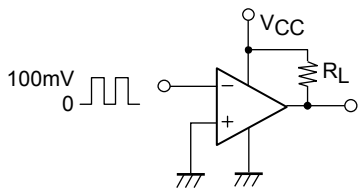
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5. Voltage Gain



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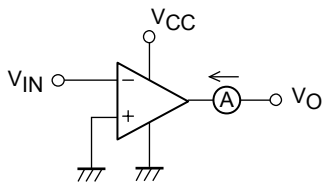
6. Response Time



ΔV: Overdrive

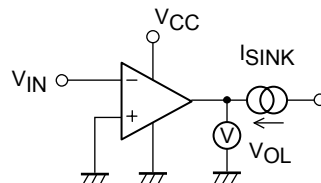
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7. Output Sink Current



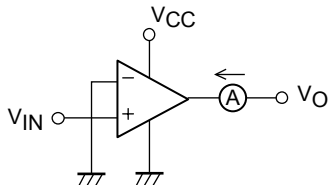
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8. Output Saturation Voltage



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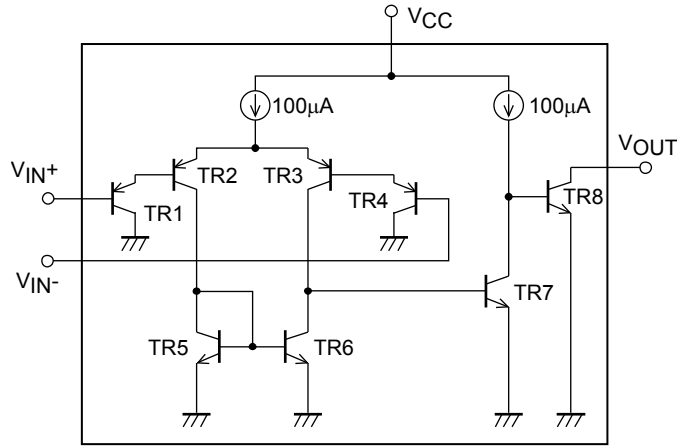
9. Output Leakage Current



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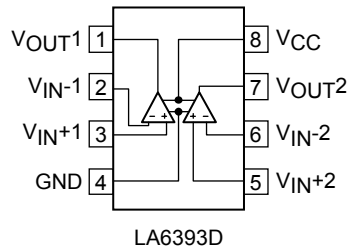
# LA6393D / LA6393S

## Equivalent Circuit

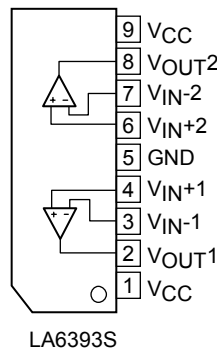


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## Pin Assignment

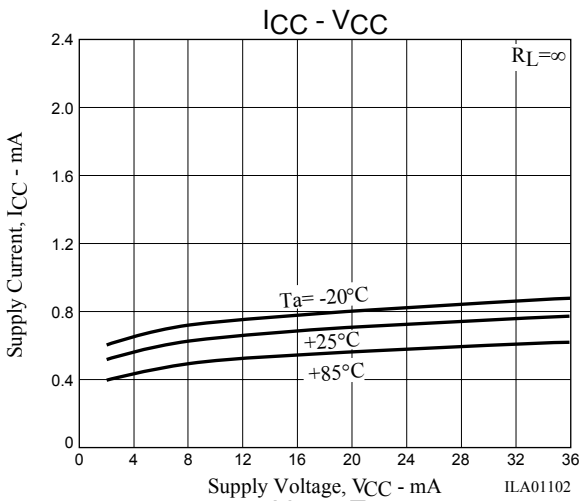


LA6393D

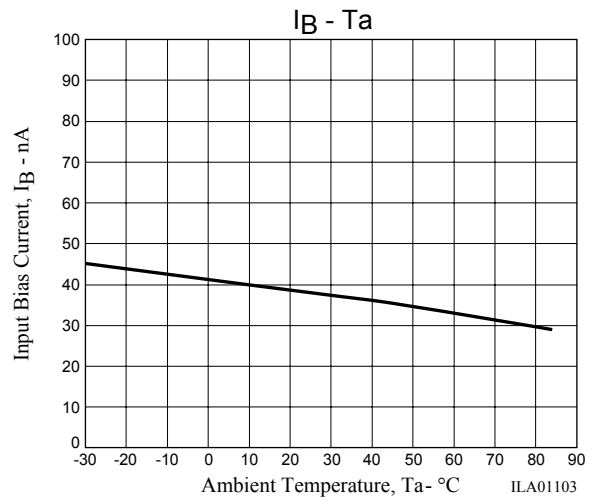


LA6393S

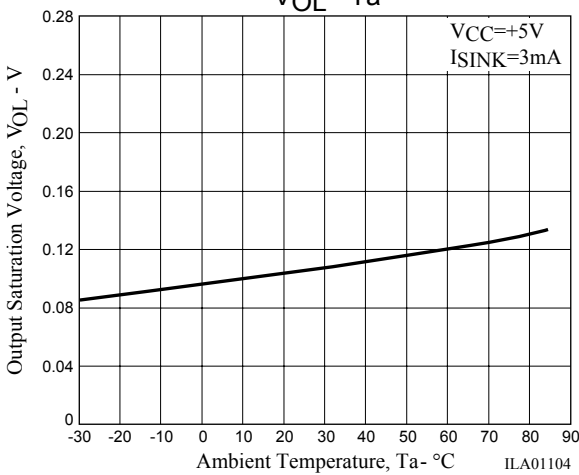
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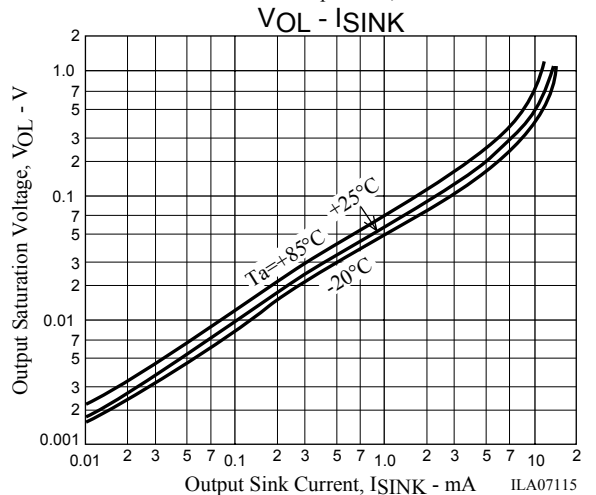
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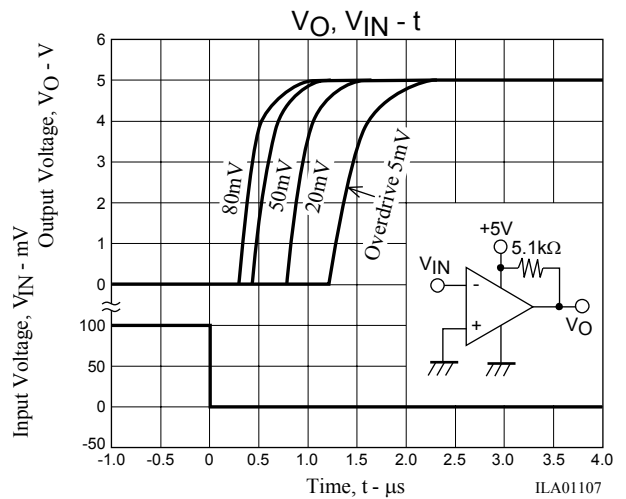
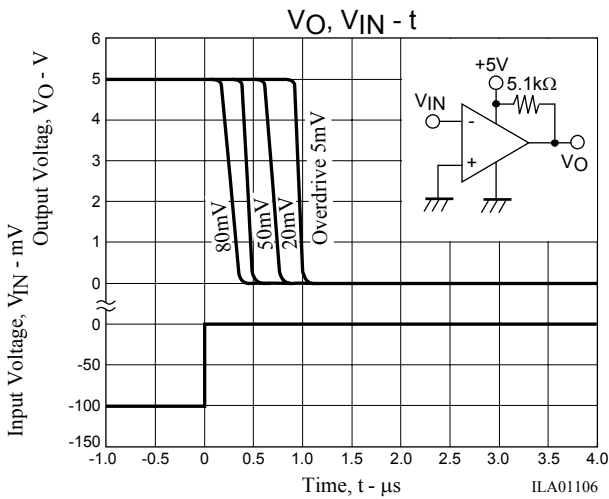
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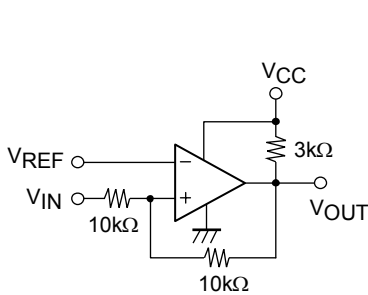
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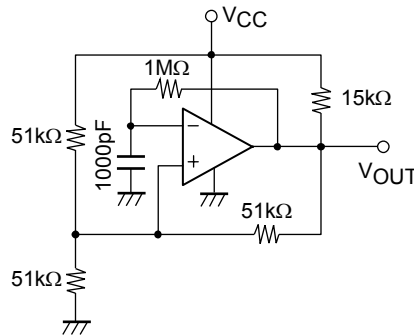
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Sample Application Circuits



Voltage comparator  
(with hysteresis)



Square wave generator

ILA07114

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