



# LA6393D, 6393S

## 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.

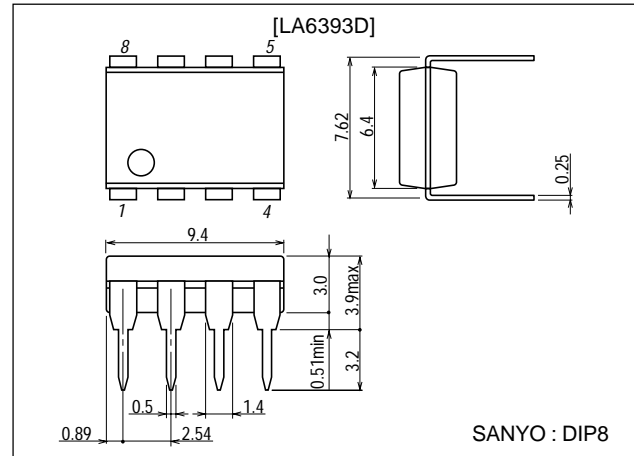
### Features

- 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.

### Package Dimensions

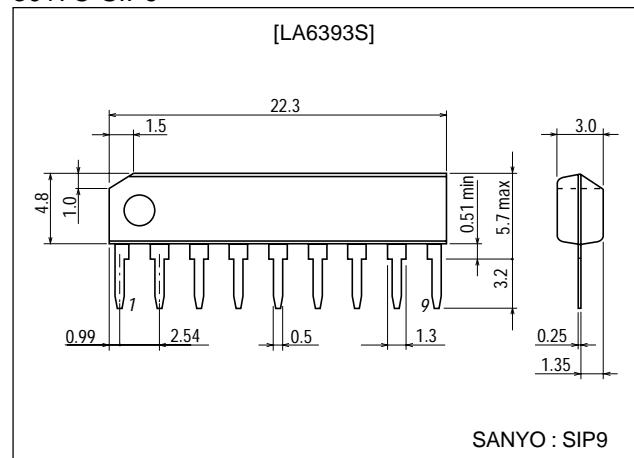
unit:mm

#### 3001B-DIP8



unit:mm

#### 3017C-SIP9



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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

## Specifications

### Absolute Maximum Ratings at Ta = 25°C

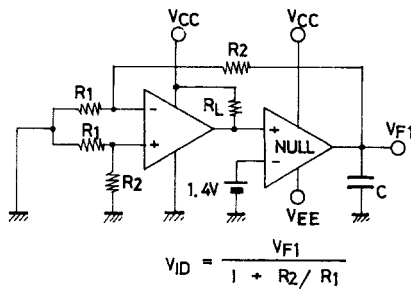
Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V <sub>CC</sub> max		36	V
Differential input voltage	V <sub>ID</sub>		36	V
Common-mode input voltage range	V <sub>ICM</sub>		-0.3 to +36	V
Allowable power dissipation	Pd max		570	mW
Operating temperature	Topr		-30 to +85	°C
Storage temperature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

### Operating Characteristics at Ta = 25°C, V<sub>CC</sub>=5V

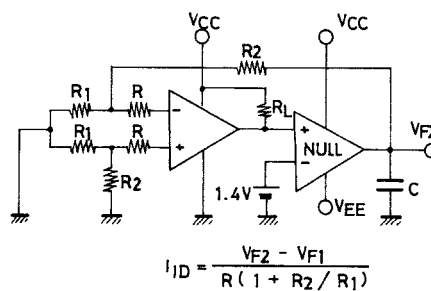
Parameter	Symbol	Conditions	Test Circuit	Ratings			Unit
				min	typ	max	
Input offset voltage	V <sub>IO</sub>		1		±1	±5	mV
Input offset current	I <sub>IO</sub>		2		±5	±50	nA
Input bias current	I <sub>B</sub>		3		25	250	nA
Common-mode input voltage range	V <sub>ICM</sub>			0		V <sub>CC</sub> -1.5	V
Supply current	I <sub>CC</sub>	R <sub>L</sub> =∞	4		0.6	1	mA
Voltage gain	V <sub>G</sub>	R <sub>L</sub> =15kΩ	5		200		V/mV
Response time		V <sub>RL</sub> =5V, R <sub>L</sub> =5.1kΩ	6		1.3		μs
Output sink current	I <sub>SINK</sub>	V <sub>IN</sub> <sup>-</sup> =1V, V <sub>IN</sub> <sup>+</sup> =0V, V <sub>O</sub> ≤1.5V	7	6	16		mA
Output saturation voltage	V <sub>OL</sub>	V <sub>IN</sub> <sup>-</sup> =1V, V <sub>IN</sub> <sup>+</sup> =0V, I <sub>SINK</sub> ≤3mA	8		0.2	0.4	V
Output leakage current	I <sub>LEAK</sub>	V <sub>IN</sub> <sup>-</sup> =0V, V <sub>IN</sub> <sup>+</sup> =1V, V <sub>O</sub> =5V	9		0.1		nA

## Test Circuits

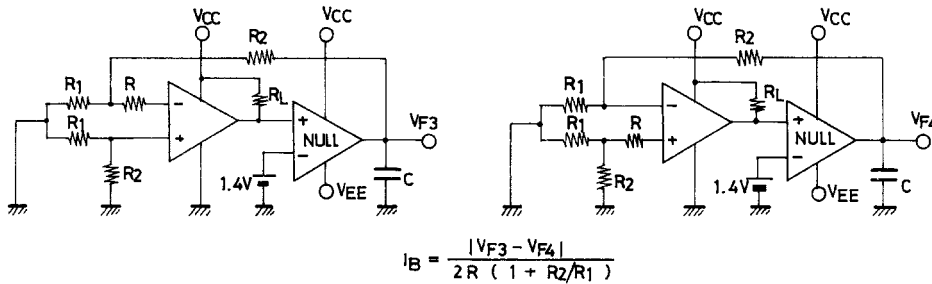
### 1. Input Offset Voltage



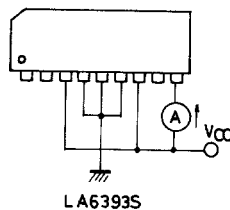
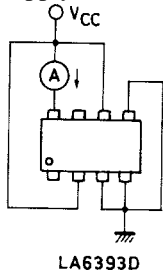
### 2. Input Offset Current



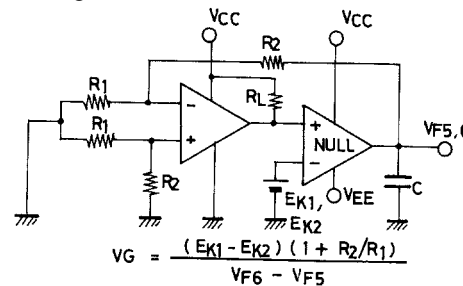
### 3. Input Bias Current



### 4. Supply Current

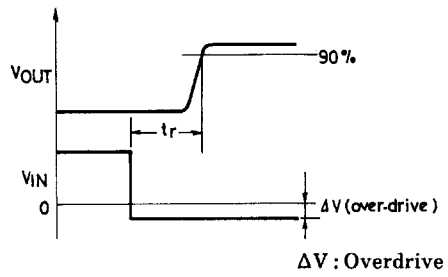
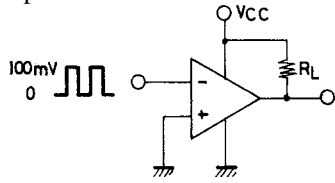


### 5. Voltage Gain

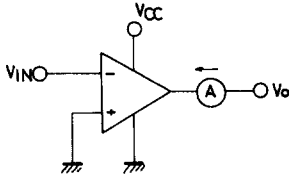


# LA6393D, 6393S

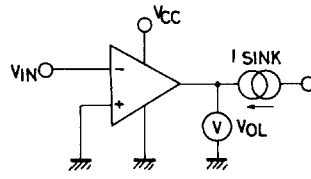
## 6. Response Time



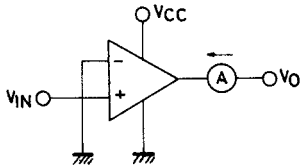
## 7. Output Sink Current



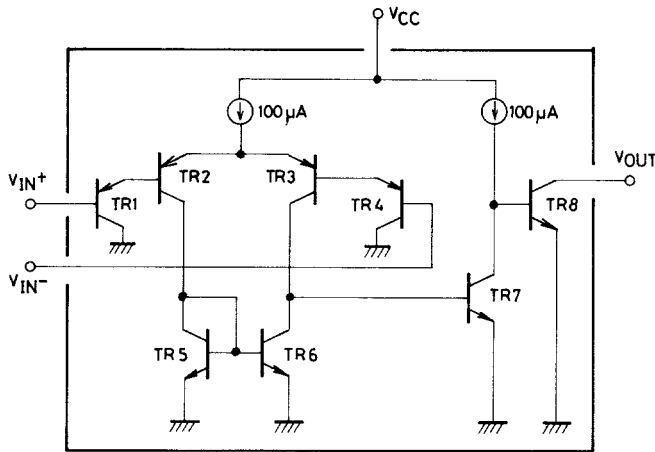
## 8. Output Saturation Voltage



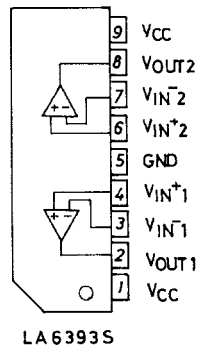
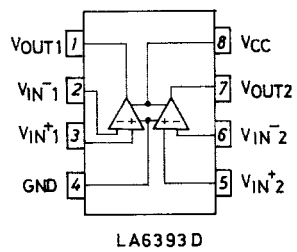
## 9. Output Leakage Current



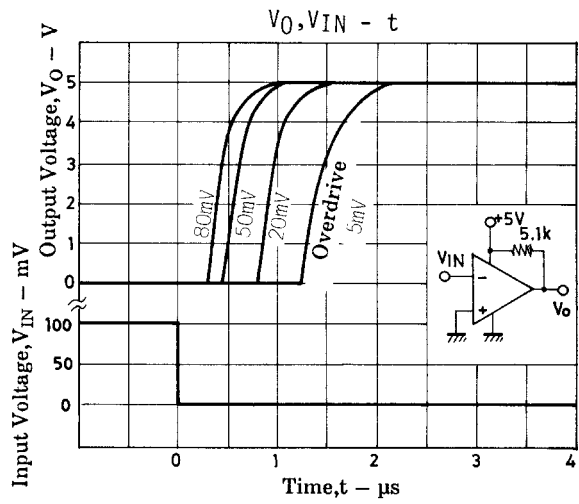
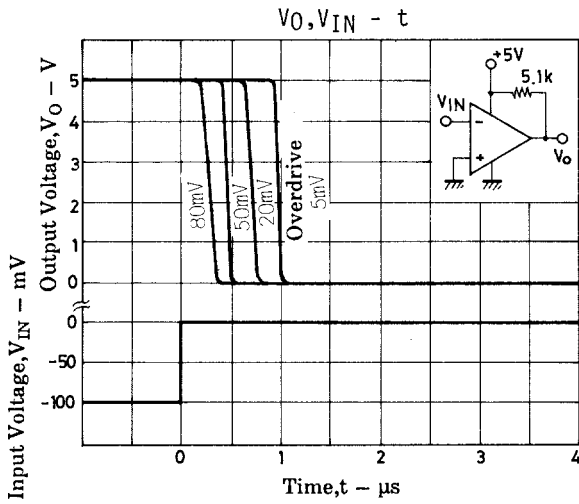
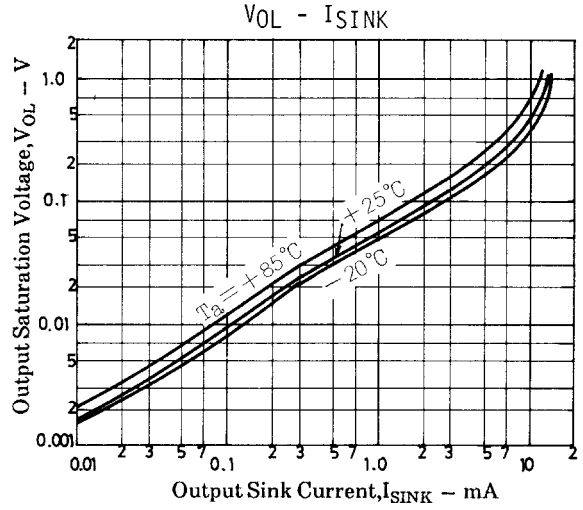
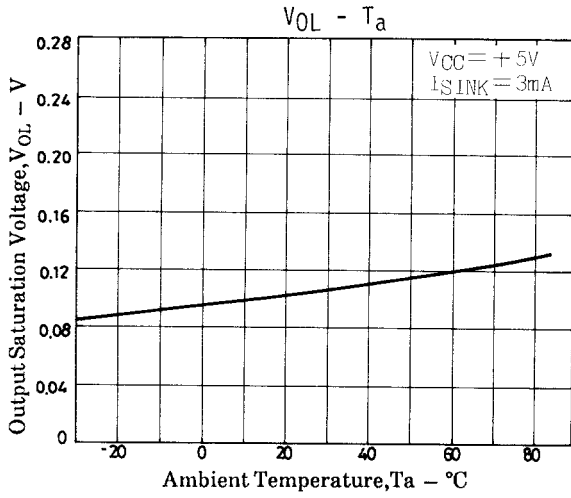
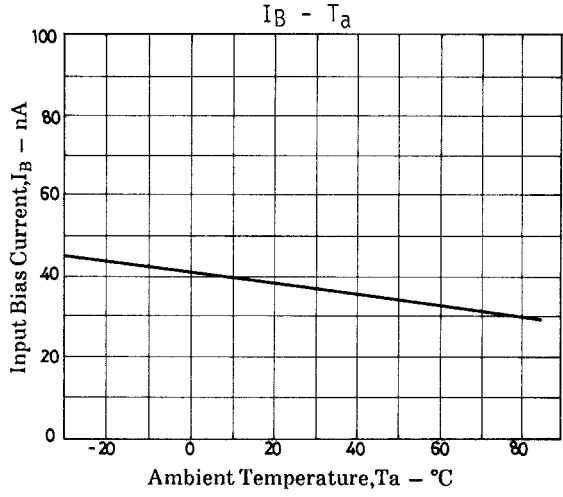
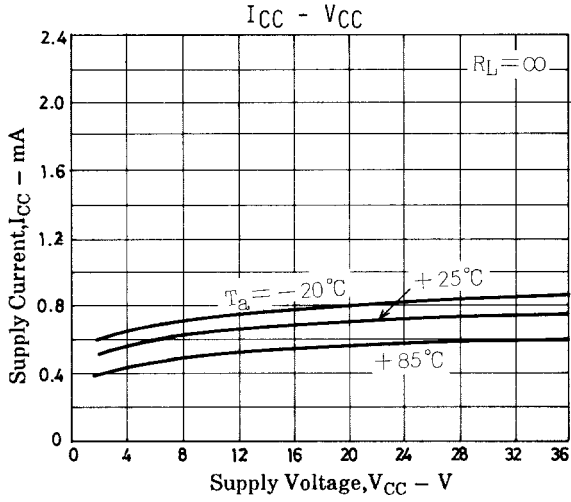
## Equivalent Circuit



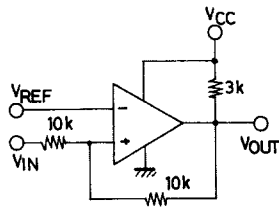
## Pin Assignment



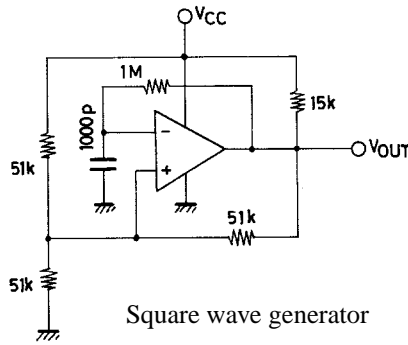
Main Characteristics



Sample Application Circuits



Voltage comparator  
(with hysteresis)



Square wave generator

Unit (resistance:  $\Omega$ , capacitance: F)

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