Ordering number:ENN999C

Monolithic Linear IC

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.

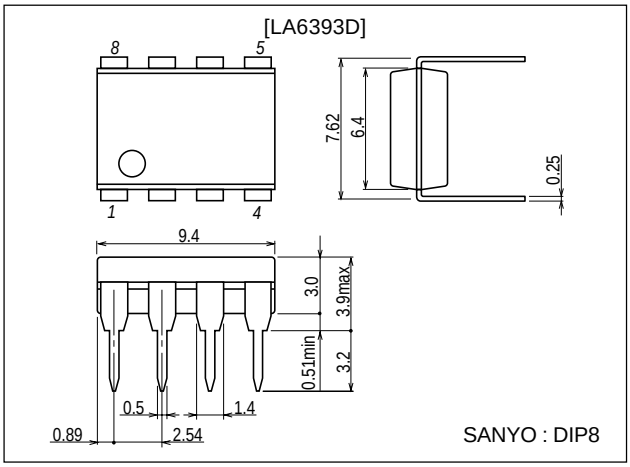
Features

- 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 : ±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.

Package Dimensions

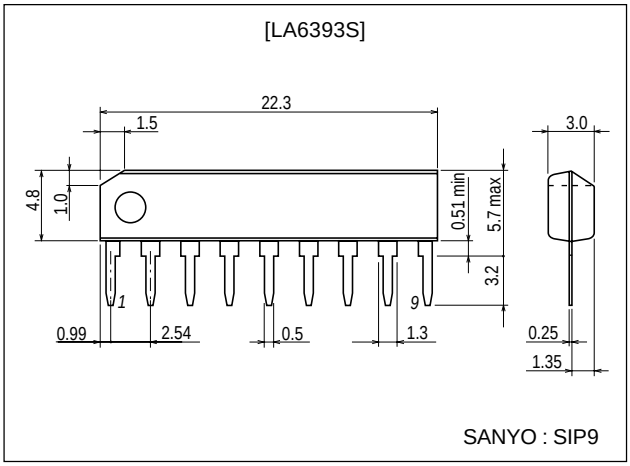
unit:mm

3001B-DIP8



unit:mm

3017C-SIP9



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Specifications

Absolute Maximum Ratings at Ta = 25˚C

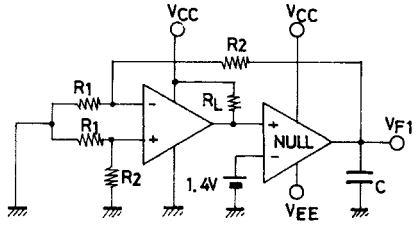
Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max		36	V
Differential input voltage	V_{ID}		36	V
Common-mode input voltage range	V_{ICM}		–0.3 to +36	V
Allowable power dissipation	Pd max		570	mW
Operating temperature	Topr		–30 to +85	˚C
Storage temperature	Tstg		–55 to +125	˚C

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 voltage	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

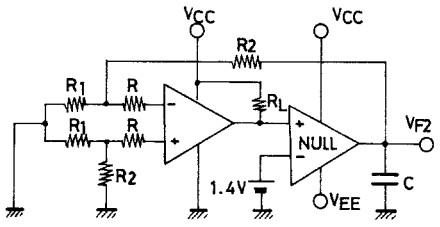
Test Circuits

1. Input Offset Voltage



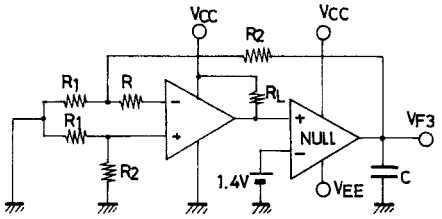
$$V_{ID} = \frac{V_{F1}}{1 + R_2/R_1}$$

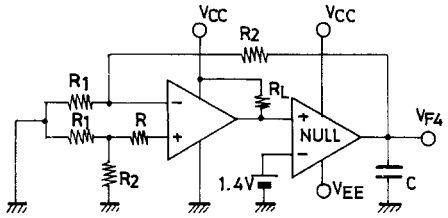
2. Input Offset Current



$$I_{ID} = \frac{V_{F2} - V_{F1}}{R\,(1 + R_2/R_1)}$$

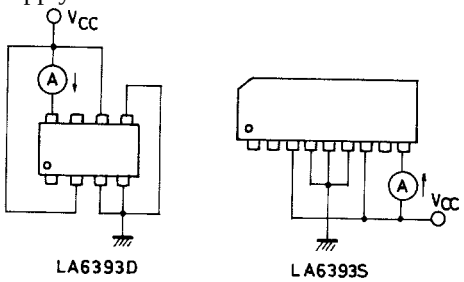
3. Input Bias Current



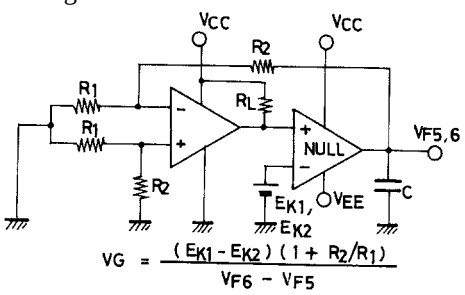


$$I_B = \frac{|V_{F3} - V_{F4}|}{2R\,(1 + R_2/R_1)}$$

4. Supply Current

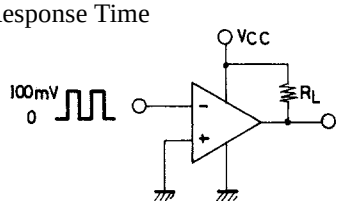


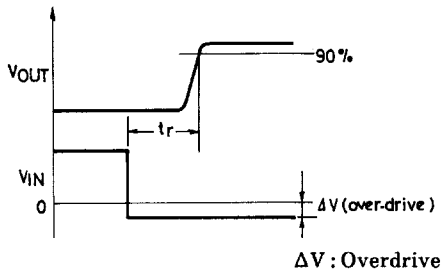
5. Voltage Gain



$$VG = \frac{(E_{K1} - E_{K2})\,(1 + R_2/R_1)}{V_{F6} - V_{F5}}$$

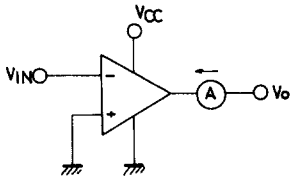
6. Response Time



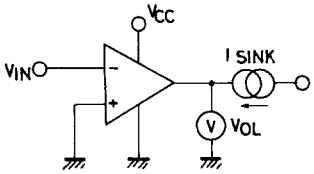


ΔV : Overdrive

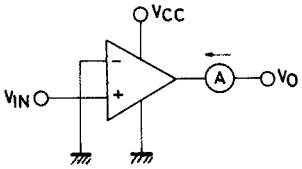
7. Output Sink Current



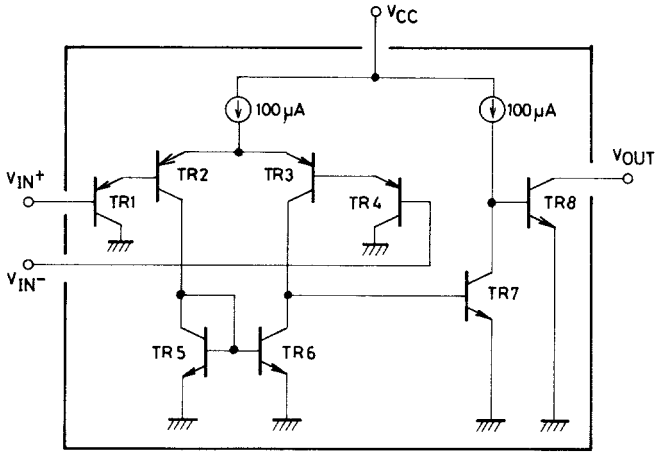
8. Output Saturation Voltage



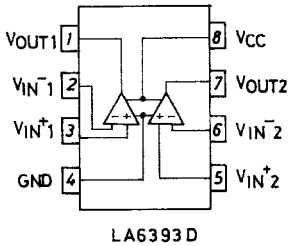
9. Output Leakage Current



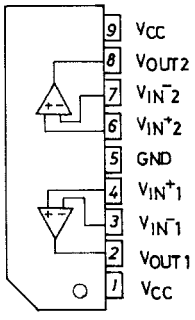
Equivalent Circuit



Pin Assignment

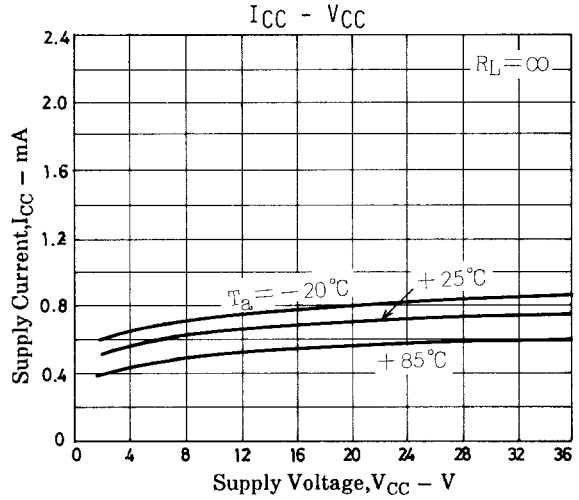


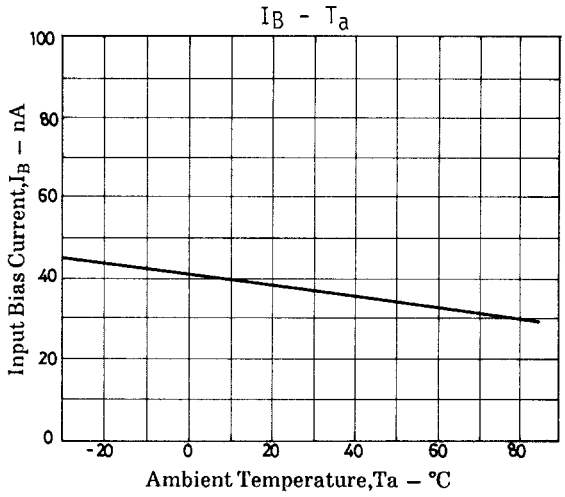
LA6393D

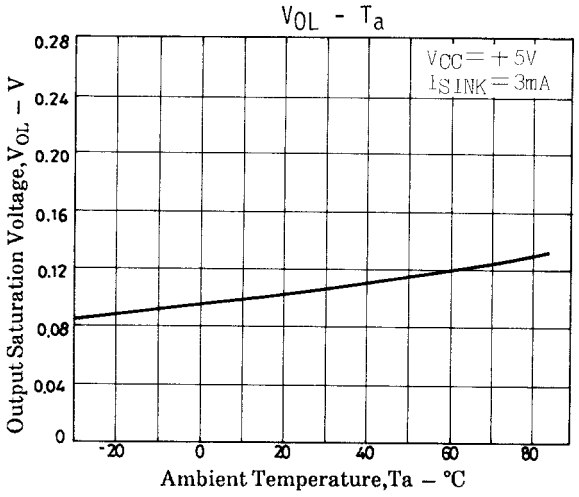


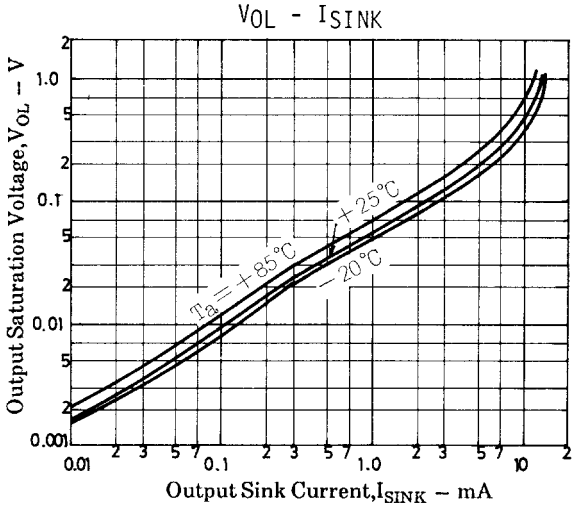
LA6393S

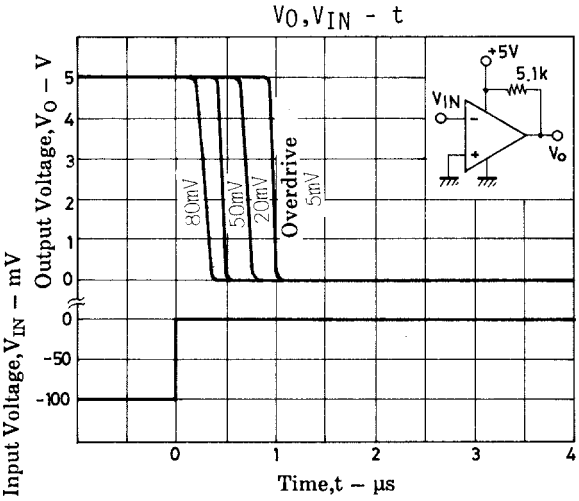
Main Characteristics

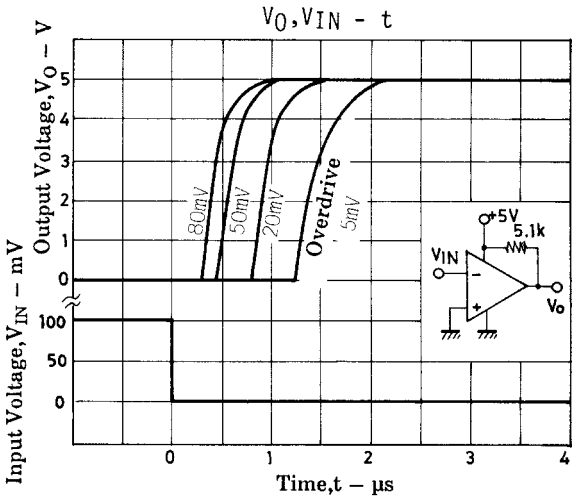




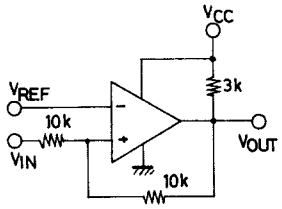




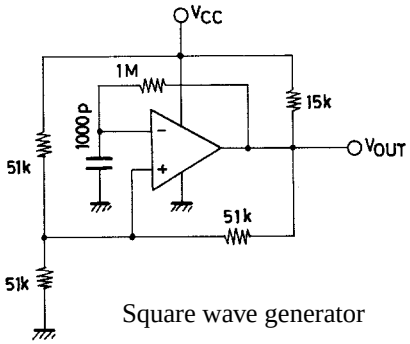




Sample Application Circuits



Voltage comparator
(with hysteresis)



Square wave generator

Unit (resistance: Ω, capacitance: F)