



# LA6393M

## High-Performance Dual Comparator

### Overview

The LA6393M is a high-performance dual comparator that is capable of operating from a single power supply over a wide range of 2V to 36V. Because of its excellent input characteristics and low power, it can be very conveniently applied to multisignal parallel comparator circuits that require high-density assembly.

### Features

- Wide supply voltage range (Single supply : 2.0 to 36.0V, dual supplies :  $\pm 1.0$  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.
- Mini flat package enabling compactness of sets.

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{CC\text{ max}}$		36	V
Differential input voltage	$V_{ID}$		36	V
Common-mode input voltage range	$V_{ICM}$		-0.3 to +36	V
Allowable power dissipation	$P_d\text{ max}$		300	mW
Operating temperature	$T_{opr}$		-30 to +85	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-55 to +125	$^\circ\text{C}$

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

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
Current drain	$I_{CC}$	$R_L=\infty$	4		0.6	1	mA
Voltage gain	$V_G$	$R_L=15k\Omega$	5		200		V/mV
Response time		$V_{RL}=5V$ , $R_L=5.1k\Omega$	6		1.3		$\mu\text{s}$
Output sink current	$I_{SINK}$	$V_{IN^-}=1V$ , $V_{IN^+}=0V$ , $V_O\leq 1.5V$	7	6	16		mA
Output saturation voltage	$V_{OL}$	$V_{IN^-}=1V$ , $V_{IN^+}=0V$ , $I_{SINK}\leq 3mA$	8		0.2	0.4	V
Output leakage current	$I_{LEAK}$	$V_{IN^-}=0V$ , $V_{IN^+}=1V$ , $V_O=5V$	9		0.1		nA

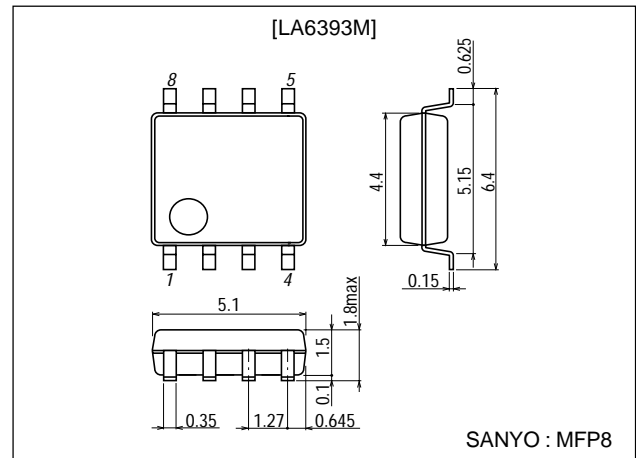
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### Package Dimensions

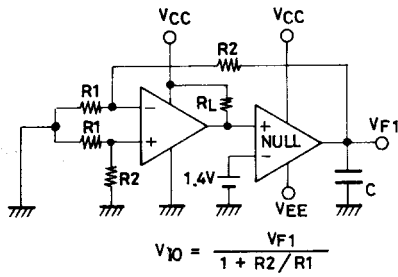
unit:mm

3032B-MFP8

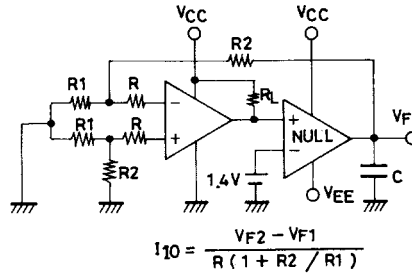


Test Circuits

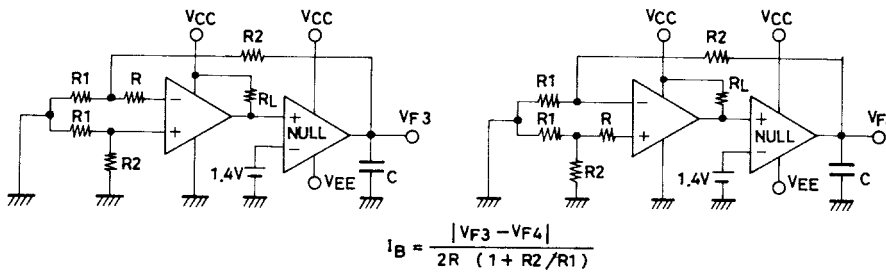
1. Input offset voltage



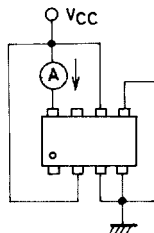
2. Input offset current



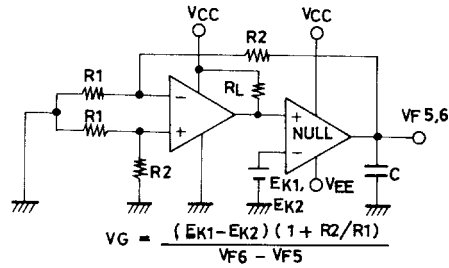
3. Input bias current



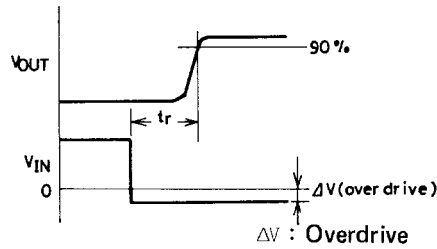
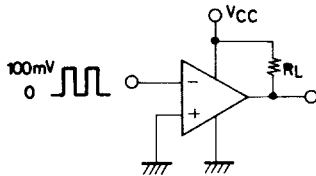
4. Current drain



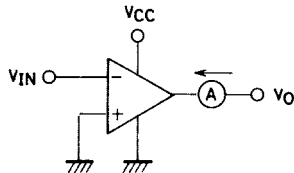
5. Voltage gain



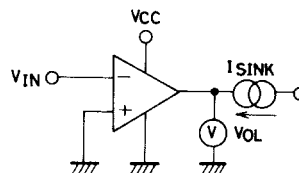
6. Response time



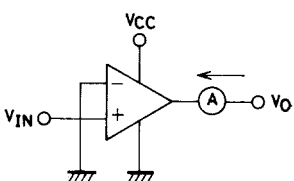
7. Output sink current



8. Output saturation voltage

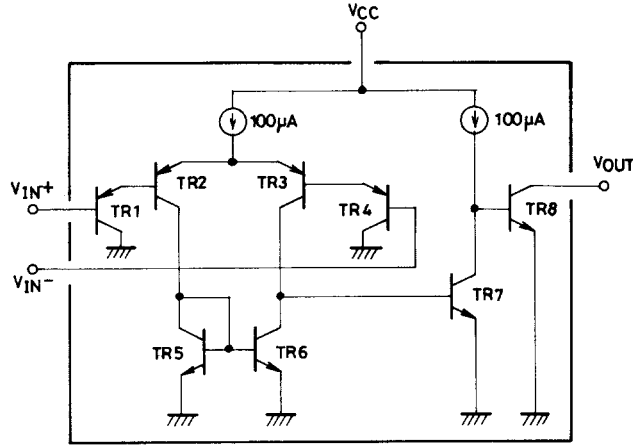


9. Output leakage current

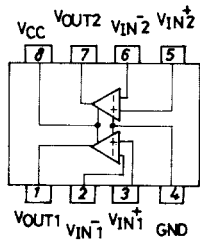


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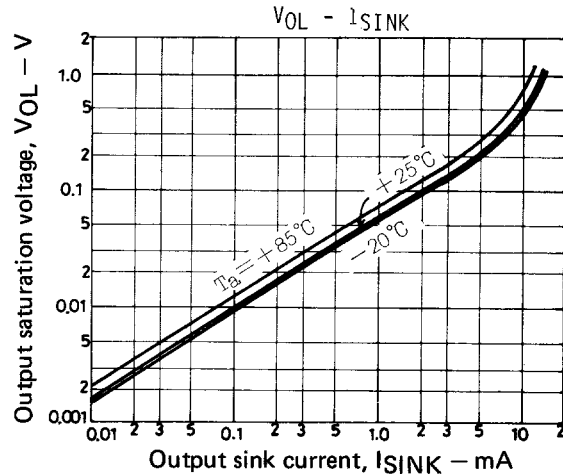
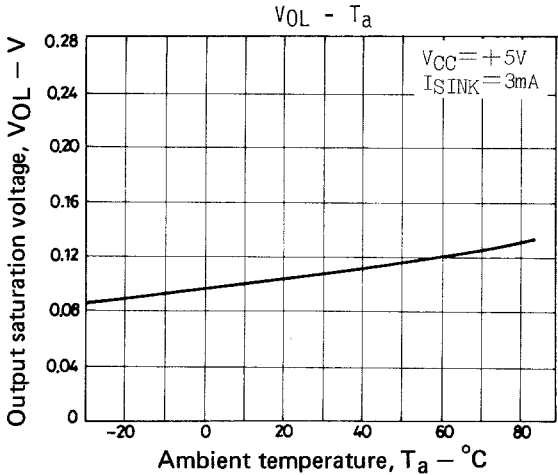
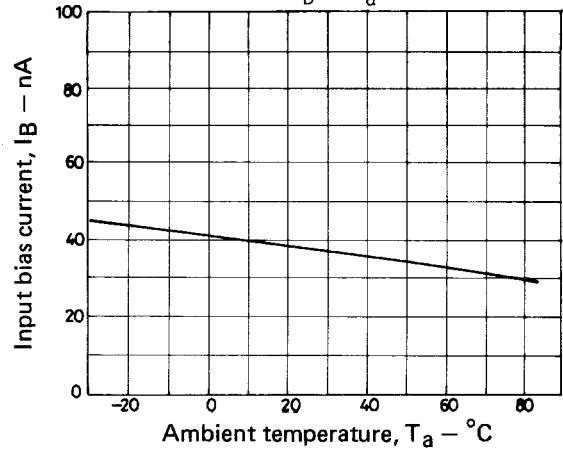
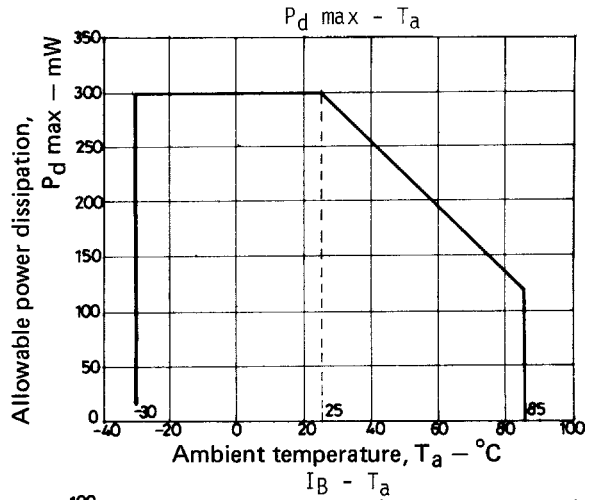
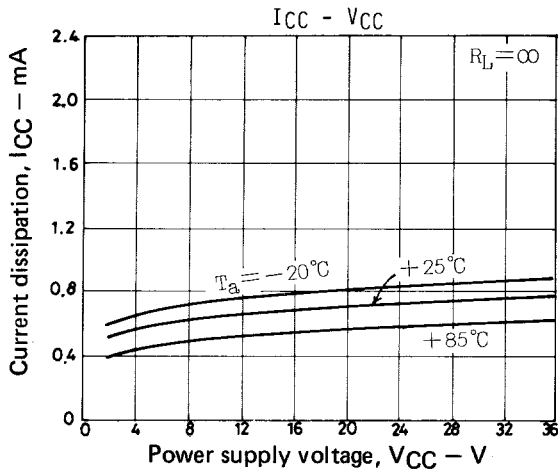
## Equivalent Circuit

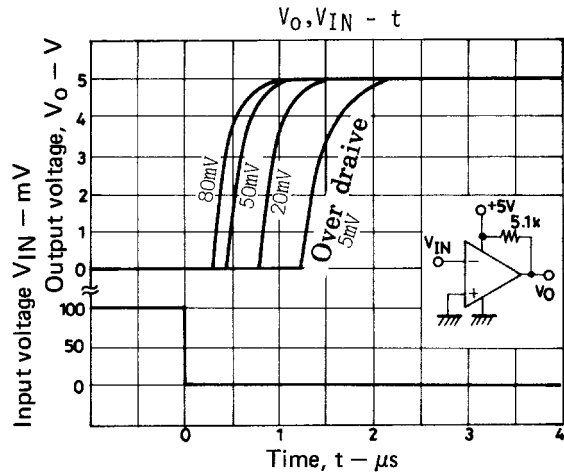
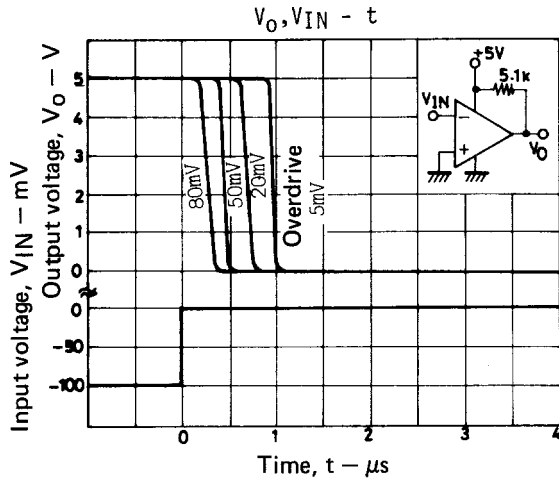


## Pin Assignment

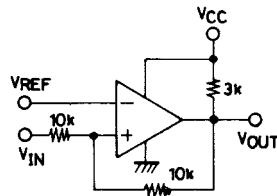


## Main Characteristics

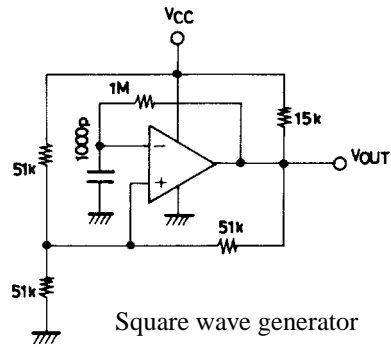




Sample Application Circuits



Voltage comparator (with hysteresis)



Square wave generator

Unit (resistance: Ω, capacitance: F)

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