Ordering number : EN7235C

SANYO Semiconductors
DATA SHEET

# LA6393AM — Monolithic Linear IC For Parallel Comparator Circuits High-Performance Dual Comparator

## Overview

The LA6393AM is a high-performance dual comparator that features the flexible operating characteristics of a wide supply voltage range (2 to 24 V for single voltage operation) and a wide operating temperature range (–40 to +125°C). It also features superlative input characteristics and low power, making it optimal for a wide range of applications including automotive and industrial applications.

## Features

- Wide operating supply voltage range: 2.0 to 24.0V (single voltage supply), ±1.0 to 12.0V (dual voltage supply)
- Wide common-mode input voltage range: 0 to $V_{CC}$-1.8V
- Open collector outputs allow the use of wired OR circuits
- Low current drain for low-power operation (0.6mA)
- Miniature flat package supports product miniaturization

## Specifications

### Maximum Ratings at Ta = 25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| Maximum supply voltage | $V_{CC}$ max | | 36 | V |
| Differential input voltage | VID | | 36 | V |
| Common-mode input voltage range | VICM | | -0.6 to +36 | V |
| Allowable power dissipation | Pd max | | 300 | mW |
| Operating temperature | Topr | | -40 to +125 | °C |
| Storage temperature | Tstg | | -55 to +150 | °C |

**Allowable Operating Ranges** at Ta = -40°C to +125°C

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Supply voltage | $V_{CC}$ | | 2 | | 24 | V |

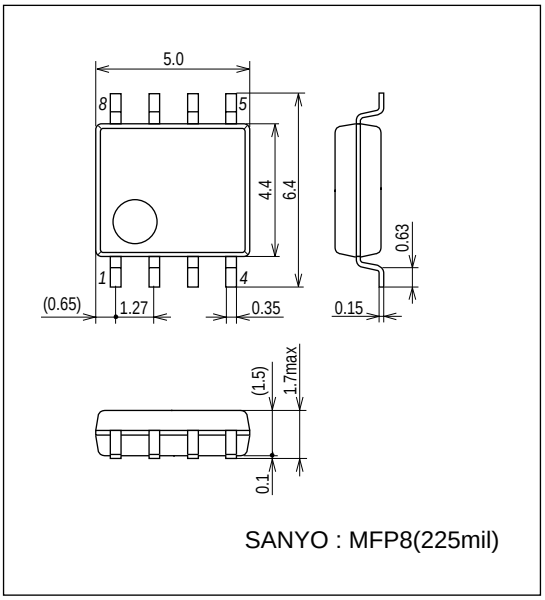
**Electrical Characteristics** at Ta = 25°C, $V_{CC}$ = 5V

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Input offset voltage | $V_{IO}$ | | | ±1 | ±5 | mV |
| Input offset current | $I_{IO}$ | | | ±5 | ±50 | nA |
| Input bias current | $I_B$ | | | 25 | 250 | nA |
| Common-mode input voltage range | $V_{ICM}$ | | 0 | | $V_{CC}$-1.8 | V |
| Current drain | $I_{CC}$ | $R_L = \infty$ | | 0.6 | 1 | mA |
| Voltage gain | $V_G$ | $R_L$ = 15kΩ | | 200 | | V/mV |
| Response time | SR | $V_{RL}$ = 5 V, $R_L$ = 5.1kΩ | | 1.3 | | μs |
| Output sink current | $I_{SINK}$ | $V_{IN}-$ = 0.5V, $V_{IN}+$ = 0V, $V_O \leq$ 1.5V | 6 | 16 | | mA |
| Output saturation voltage | $V_{OL}$ | $V_{IN}-$ = 0.5V, $V_{IN}+$ = 0V, $I_{SINK} \leq$ 3mA | | 0.2 | 0.4 | V |
| Output leakage current | $I_{LEAK}$ | $V_{IN}-$ = 0V, $V_{IN}-$ = 0.5V, $V_O$ = 5V | | 0.1 | | nA |

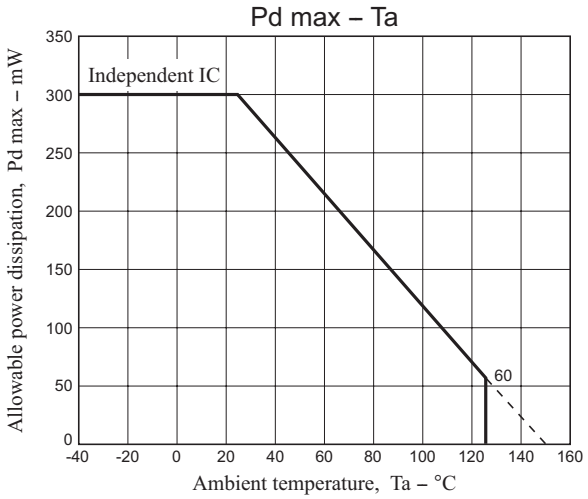
## Package Dimensions

unit : mm (typ)

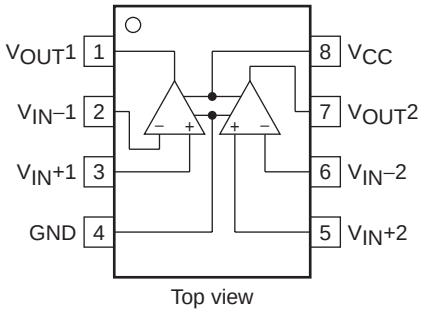
3032D




SANYO : MFP8(225mil)

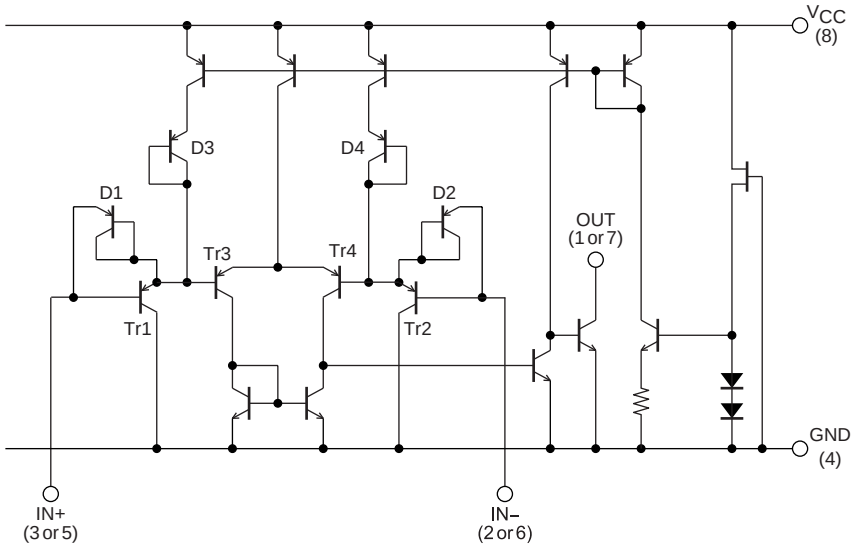



## Pin Assignment



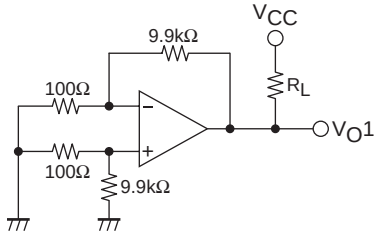

Top view

## Equivalent Circuit




## Test Circuit

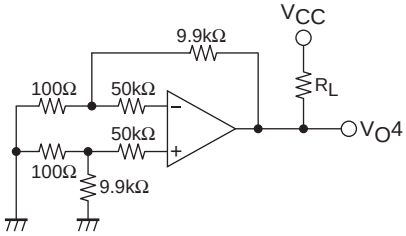
1. Input offset voltage




・$V_{IO}$ is $V_{CC}/V_{EE}=\pm 15V$

$V_{IO}=V_O1/100$

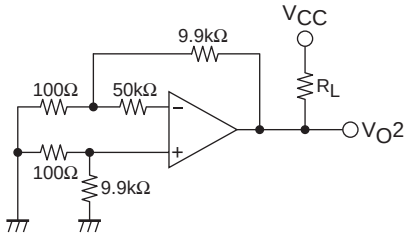
2. Input offset current




$$\cdot I_{IO}=\frac{|V_O4-V_O1|}{50k\Omega\times 100}$$

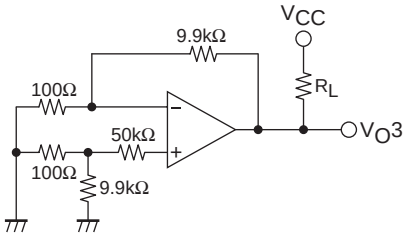
3. Input bias current

$I_B(-)$



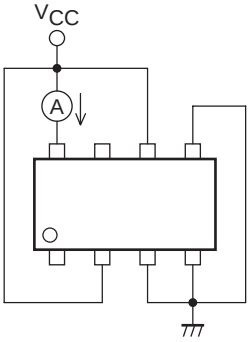

$$\cdot I_{B(-)}=\frac{|V_O2-V_O1|}{50k\Omega\times 100}$$

$I_B(+)$

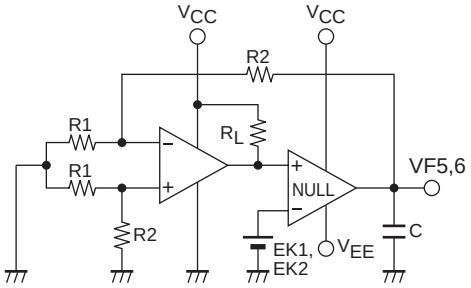



$$\cdot I_{B(+)}=\frac{|V_O3-V_O1|}{50k\Omega\times 100}$$

4. Current drain

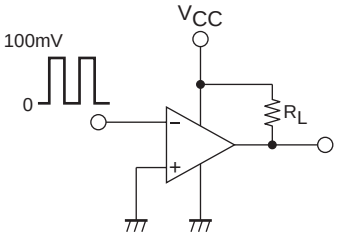


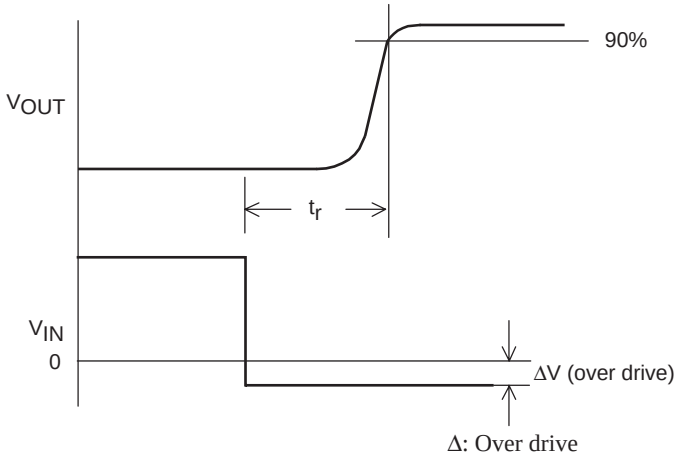

5. Voltage gain



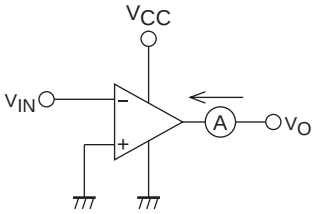

$$\cdot VG = \frac{(EK1-EK2)(1+R2/R1)}{(VF6-VF5)}$$

4. response time

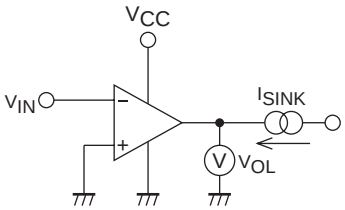


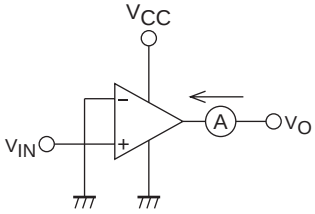

7. Output sink current



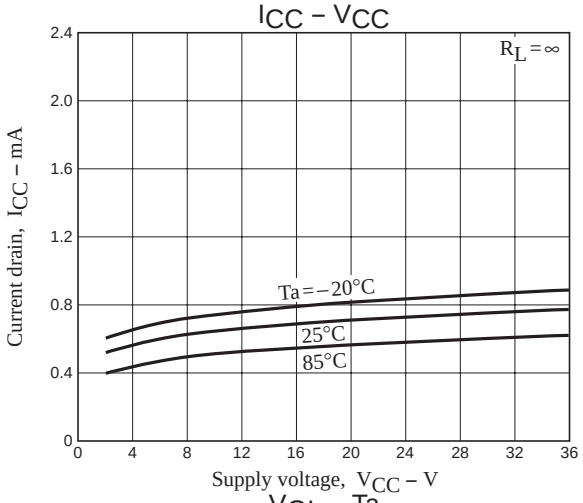

8. Output saturation voltage



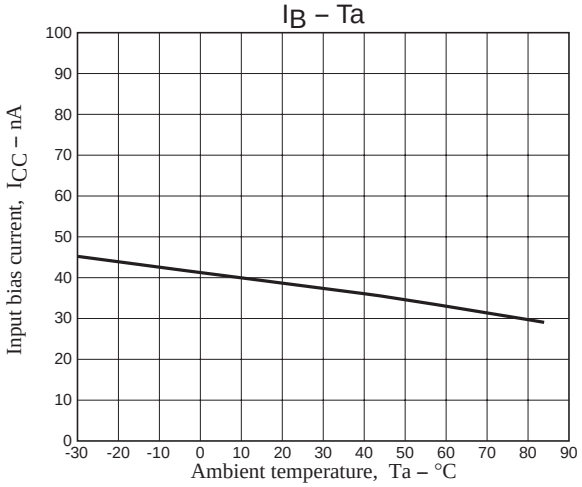

9. Output leakage current



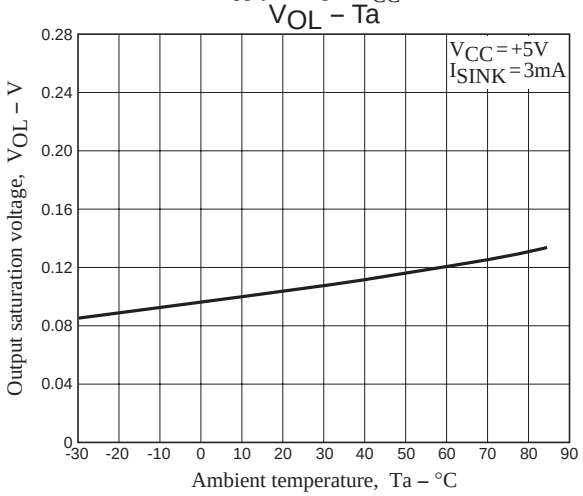
$I_{CC} - V_{CC}$



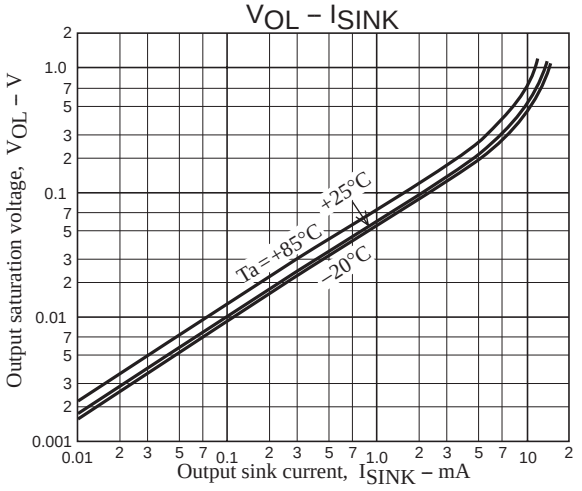

$I_B - Ta$



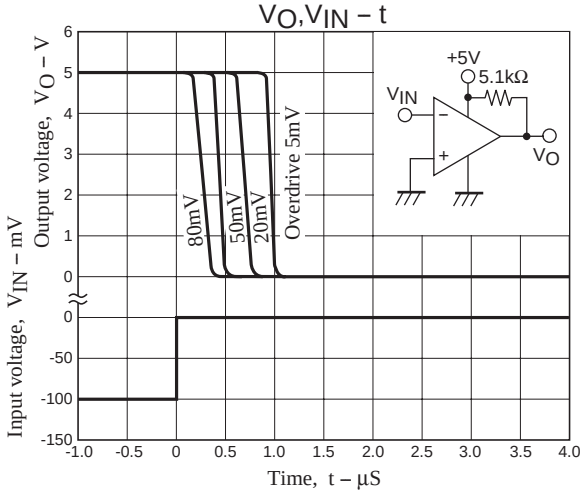

$V_{OL} - Ta$




$V_{OL} - I_{SINK}$




$V_O, V_{IN} - t$




$V_O, V_{IN} - t$