



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 $T_a = 25^\circ C$

| 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 | $P_d\ max$ | | 300 | mW |
| Operating temperature | T_{opr} | | -40 to +125 | °C |
| Storage temperature | T_{stg} | | -55 to +150 | °C |

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Allowable Operating Ranges at $T_a = -40^{\circ}\text{C}$ to $+125^{\circ}\text{C}$

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

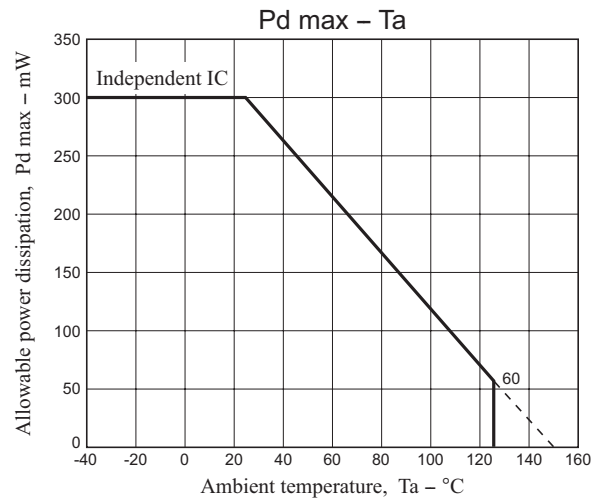
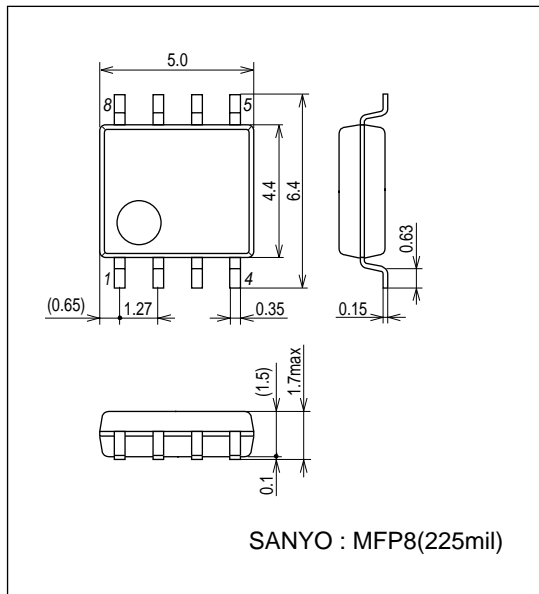
Electrical Characteristics at $T_a = 25^{\circ}\text{C}$, $V_{CC} = 5\text{V}$

| 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 | $R_L = 15\text{k}\Omega$ | | 200 | | V/mV |
| Response time | SR | $V_{RL} = 5\text{V}$, $R_L = 5.1\text{k}\Omega$ | | 1.3 | | μs |
| Output sink current | I_{SINK} | $V_{IN-} = 0.5\text{V}$, $V_{IN+} = 0\text{V}$, $V_O \leq 1.5\text{V}$ | 6 | 16 | | mA |
| Output saturation voltage | V_{OL} | $V_{IN-} = 0.5\text{V}$, $V_{IN+} = 0\text{V}$, $I_{SINK} \leq 3\text{mA}$ | | 0.2 | 0.4 | V |
| Output leakage current | I_{LEAK} | $V_{IN-} = 0\text{V}$, $V_{IN+} = 0.5\text{V}$, $V_O = 5\text{V}$ | | 0.1 | | nA |

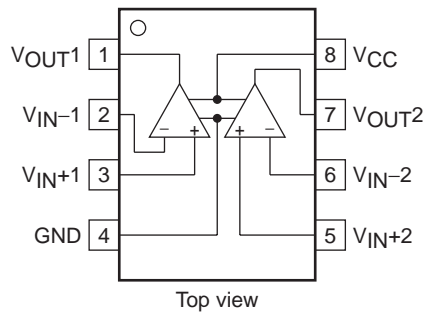
Package Dimensions

unit : mm (typ)

3032D

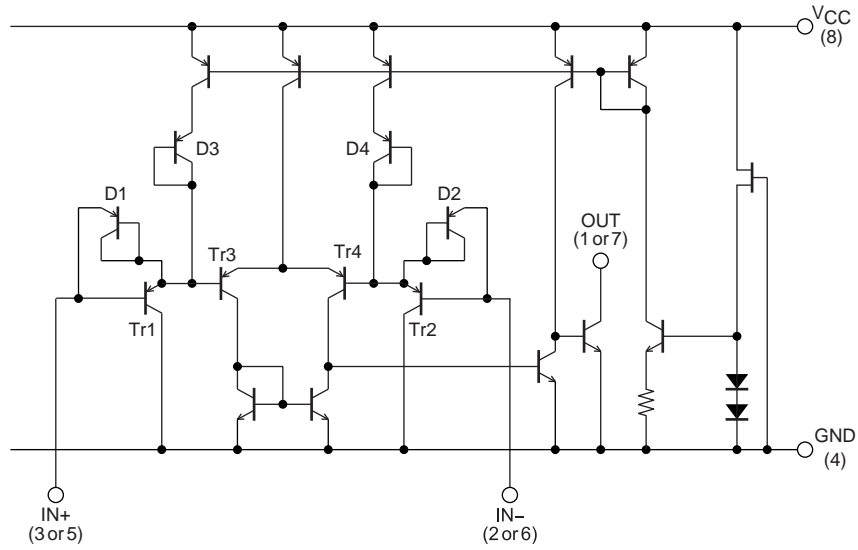


Pin Assignment



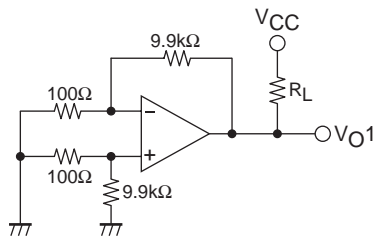
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Equivalent Circuit



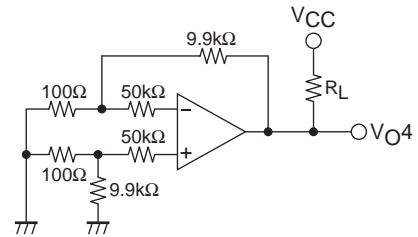
Test Circuit

1. Input offset voltage



$\cdot V_{IO}$ is $V_{CC}/V_{EE} = \pm 15V$
 $V_{IO} = V_{O1}/100$

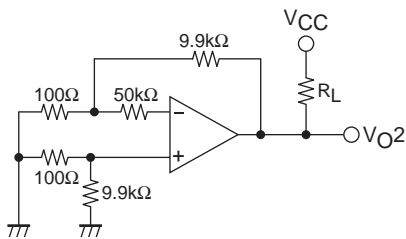
2. Input offset current



$\cdot I_{IO} = \frac{|V_{O4} - V_{O1}|}{50k\Omega \times 100}$

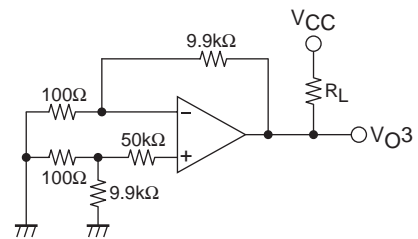
3. Input bias current

$I_{B(-)}$



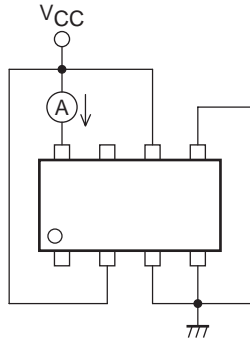
$\cdot I_{B(-)} = \frac{|V_{O2} - V_{O1}|}{50k\Omega \times 100}$

$I_{B(+)}$

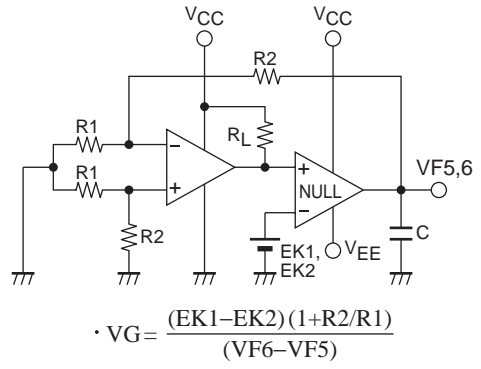


$\cdot I_{B(+)} = \frac{|V_{O3} - V_{O1}|}{50k\Omega \times 100}$

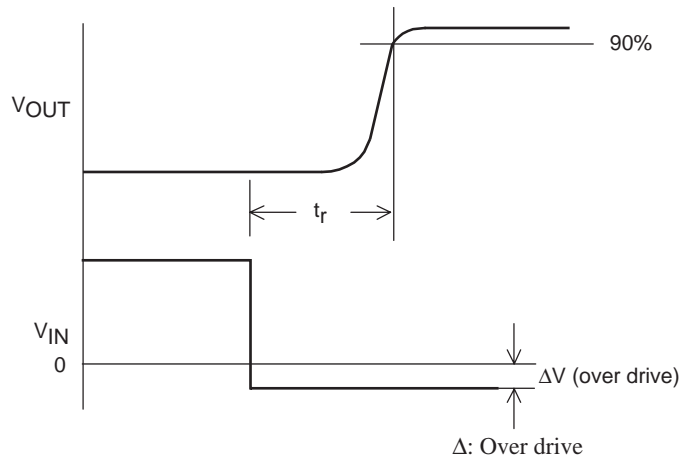
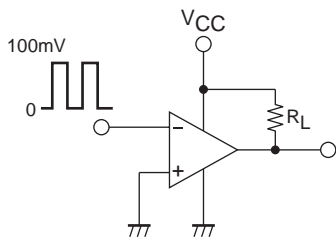
4. Current drain



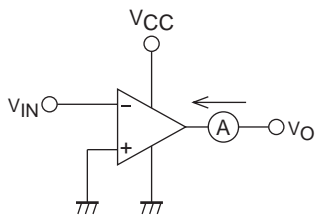
5. Voltage gain



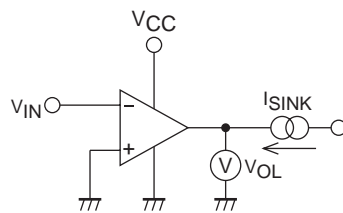
4. response time



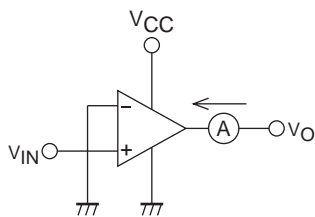
7. Output sink current



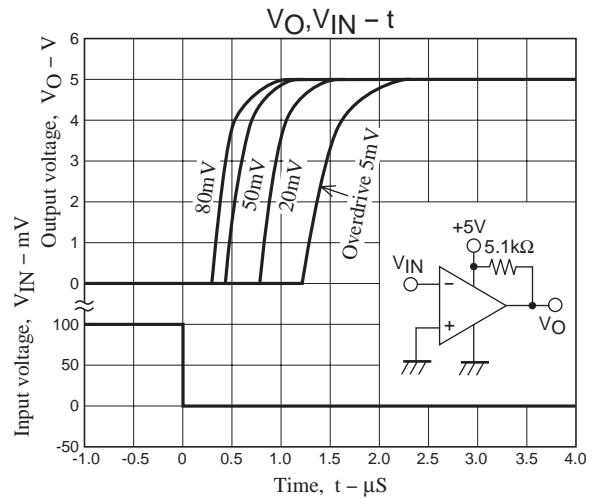
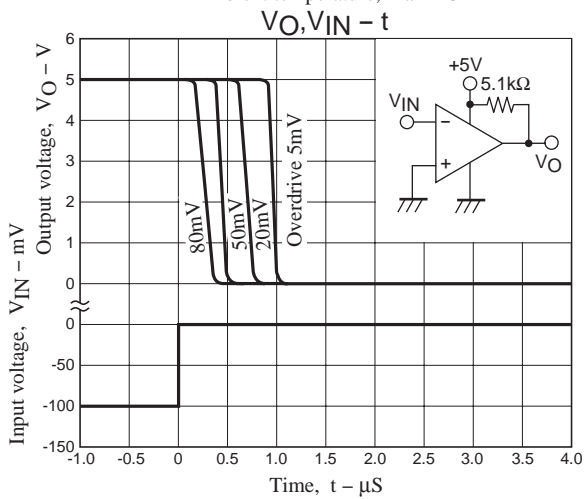
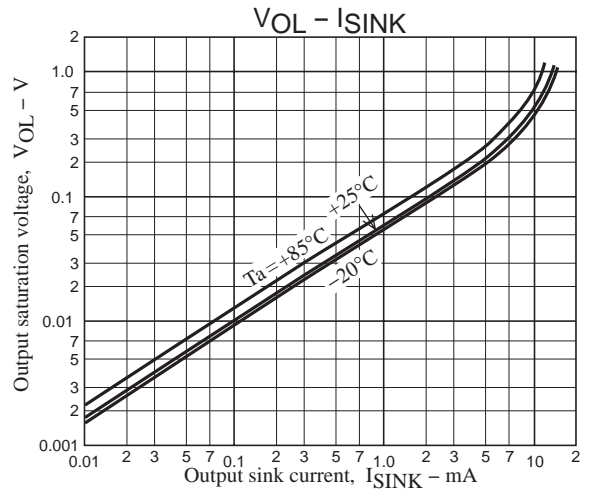
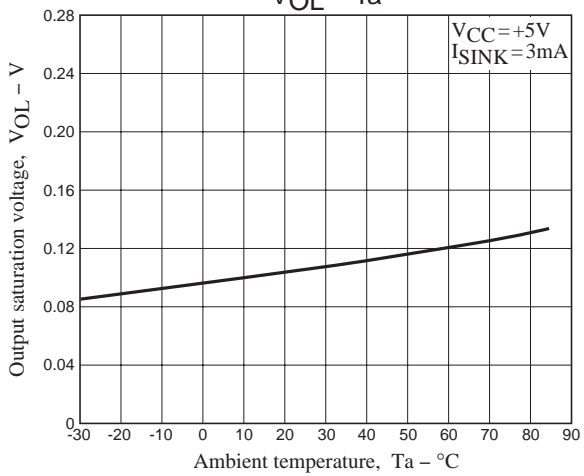
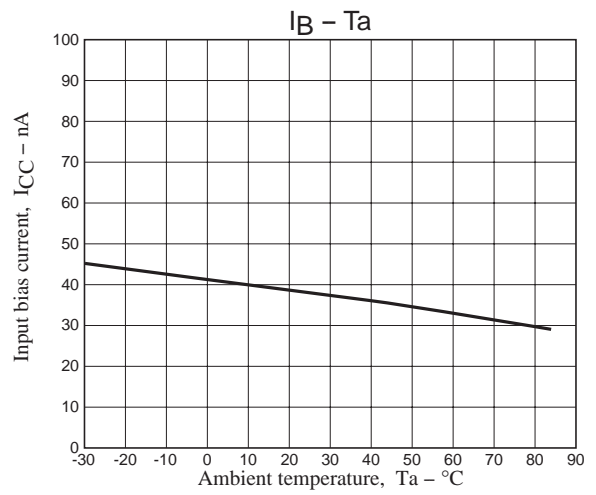
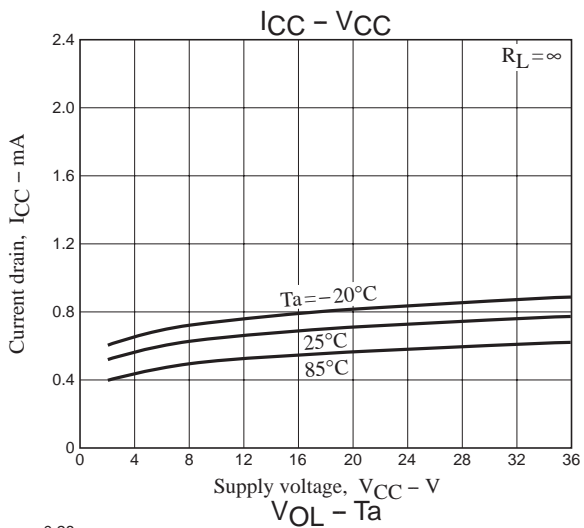
8. Output saturation voltage



9. Output leakage current



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