Ordering number : ENN7234

Monolithic Linear IC

LA6393AT

High-Performance Dual Comparator for Parallel Comparator Circuits

Overview

The LA6393AT 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.

Functions and Features

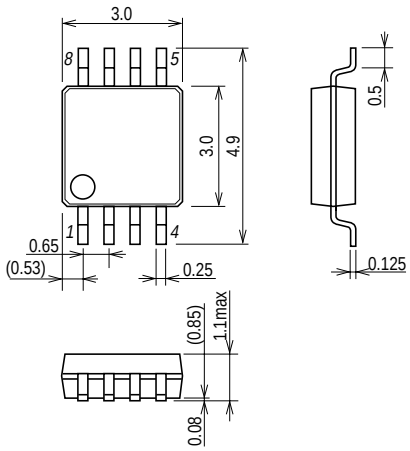
- Wide operating supply voltage range: 2.0 to 24.0 V (single voltage supply), ±1.0 to 12.0 V (dual voltage supply)
- Wide common-mode input voltage range: 0 to V_{CC} – 1.8 V
- Open collector outputs allow the use of wired OR circuits
- Low current drain for low-power operation (0.6 mA)
- Miniature flat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

Package Dimensions

unit: mm

3245A-MSOP8

[LA6393AT]



SANYO: MSOP8

Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max		36	V
Maximum differential input voltage	VID max		36	V
Maximum common-mode input voltage range	VICM max		–0.3 to +36	V
Allowable power dissipation	Pd max		160	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

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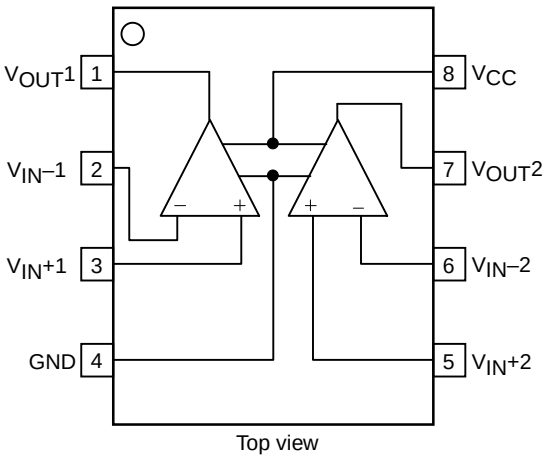
Electrical Characteristics at Ta = –40°C to +125°C, V_{CC} = 5 V

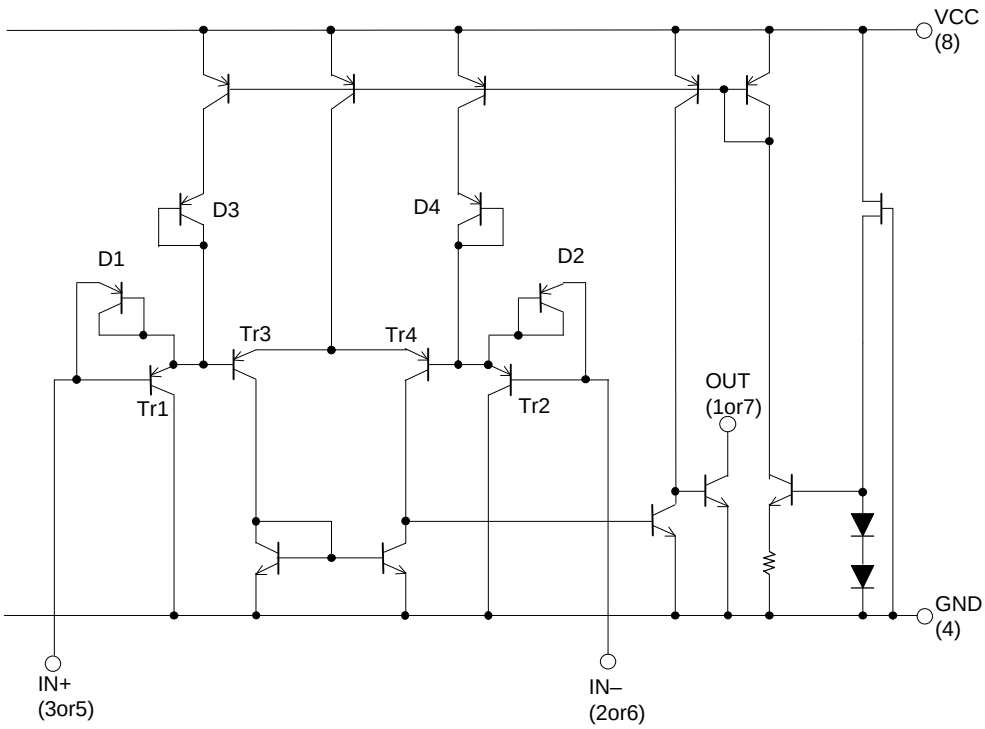
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input offset voltage	V_{IO}			±1	±5	mV
Input offset current	I_{IO}			±5	±50	nA
Input bias current	I_B			25	250	nA
Common-mode input voltage range	V_{ICM}		0		V_{CC} – 1.8	V
Current drain	I_{CC}	R_L = ∞		0.6	1	mA
Voltage gain	VG	R_L = 15 kΩ		200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

Pin Assignment



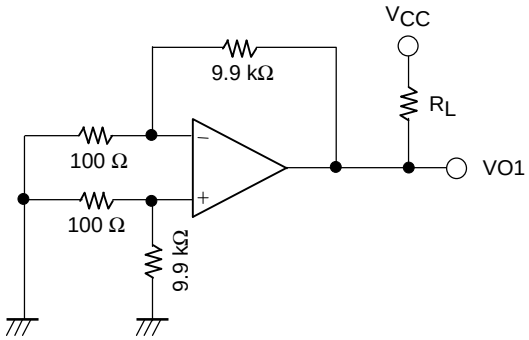
Top view

Equivalent Circuit Block Diagram



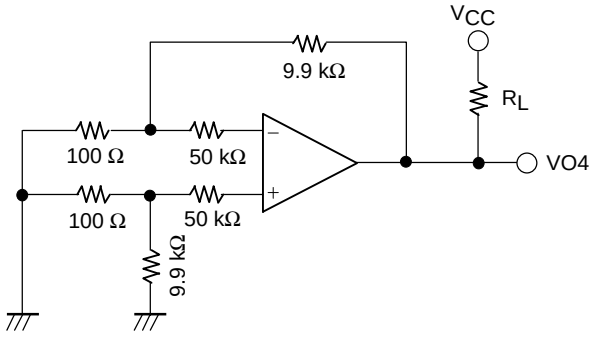
Test Circuits

1. Input offset voltage



VIO $V_{CC}/V_{EE} = \pm 15$ V
VIO = VO1/100

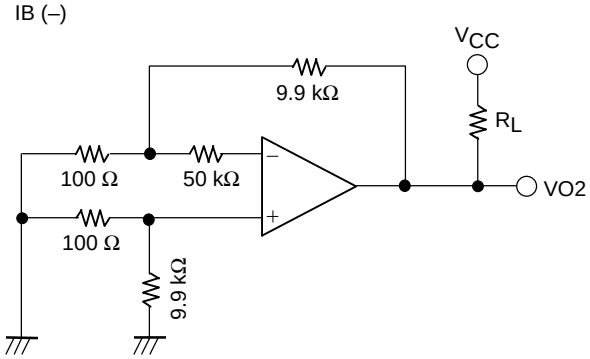
2. Input offset current



$$IIO = \frac{|VO4 - VO1|}{50\ k\Omega \times 100}$$

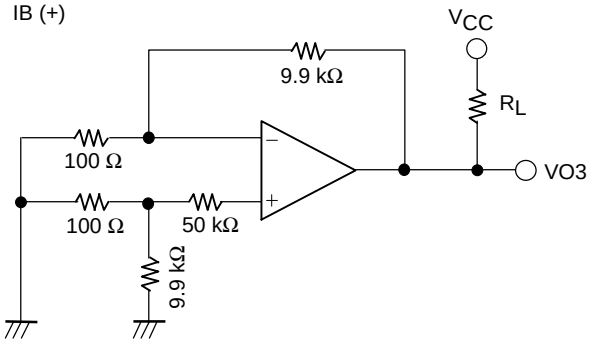
3. Input bias current

IB (–)



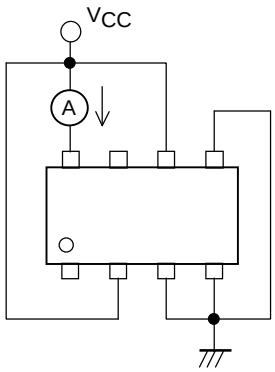
$$IB(-) = \frac{|VO2 - VO1|}{50\ k\Omega \times 100}$$

IB (+)

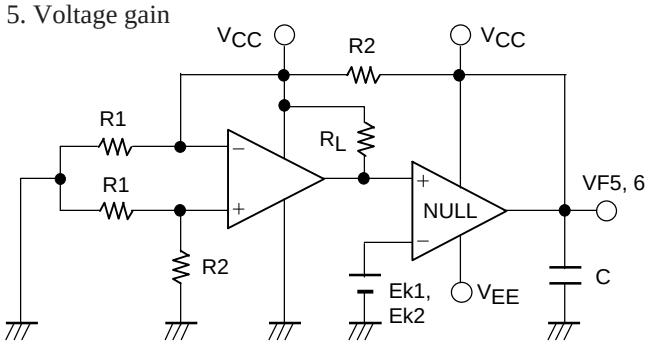


$$IB(+) = \frac{|VO3 - VO1|}{50\ k\Omega \times 100}$$

4. Current drain

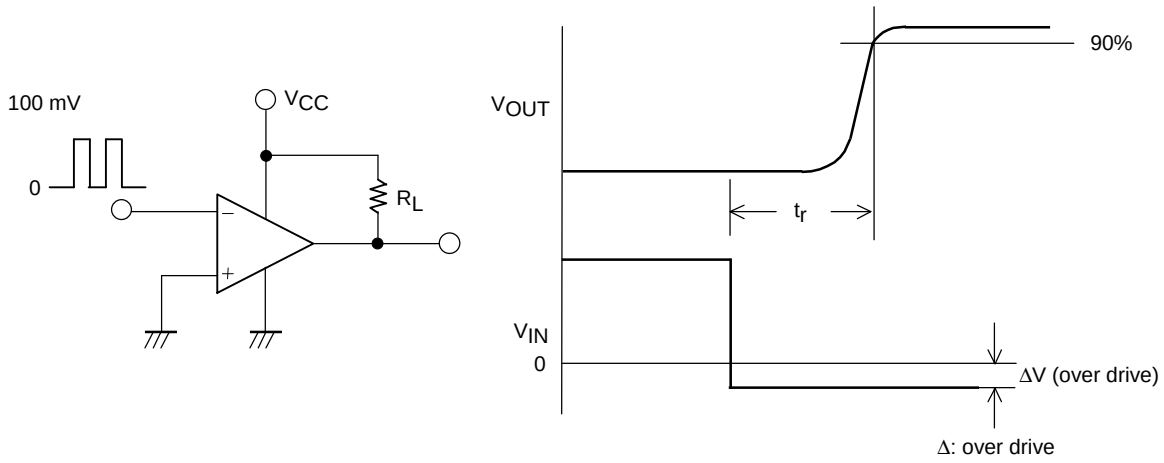


5. Voltage gain

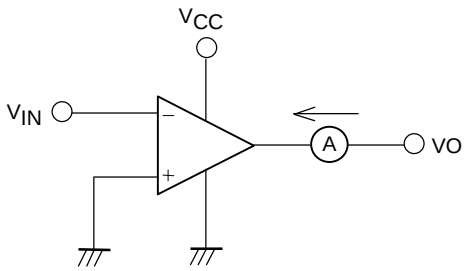


$$VG = \frac{(EK1 - EK2)\ (1 + R2/R1)}{(VF6 - VF5)}$$

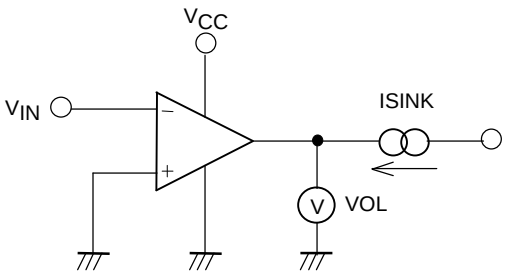
6. Response time



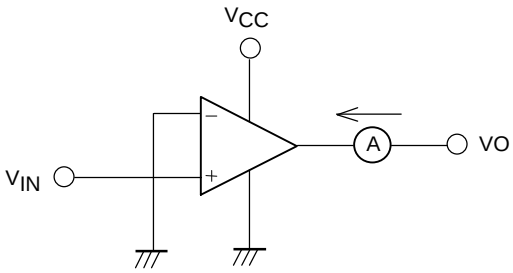
7. Output sink current



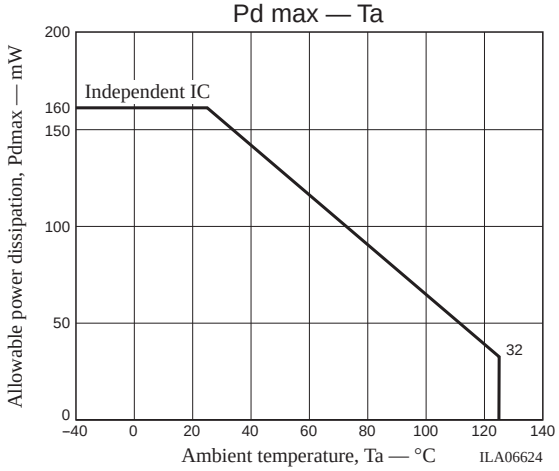
8. Output saturation voltage



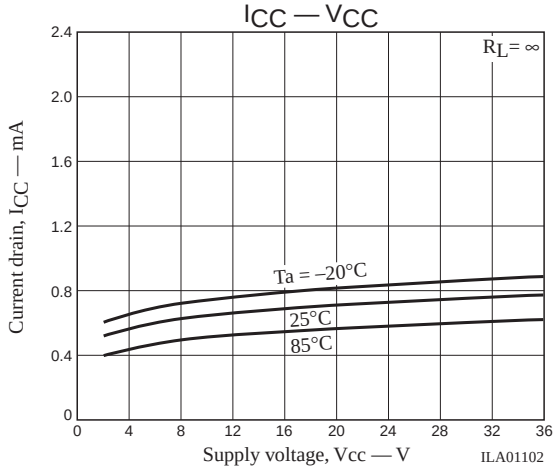
9. Output leakage current



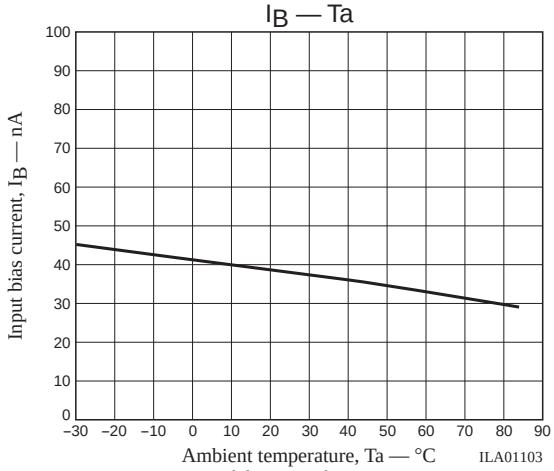
Pd max — Ta



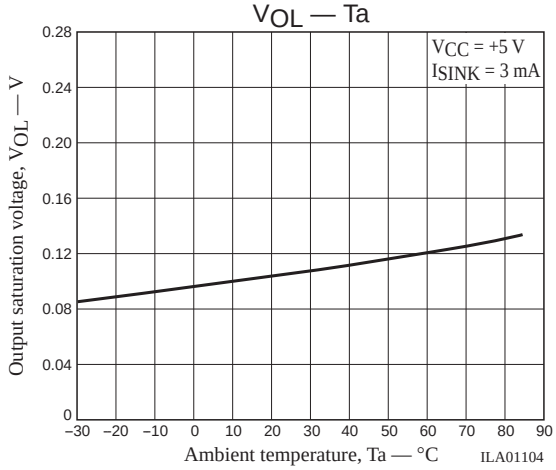
I_{CC} — V_{CC}



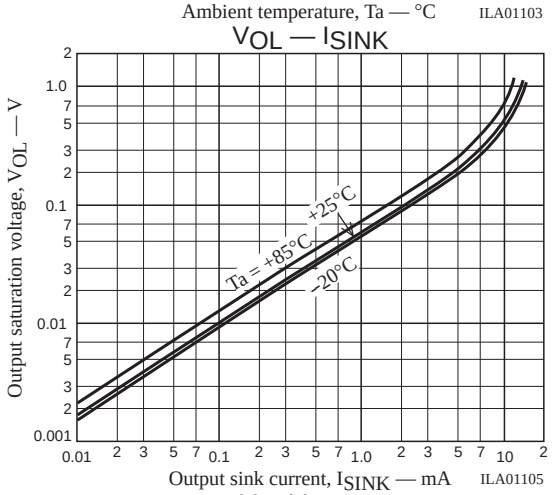
I_B — Ta



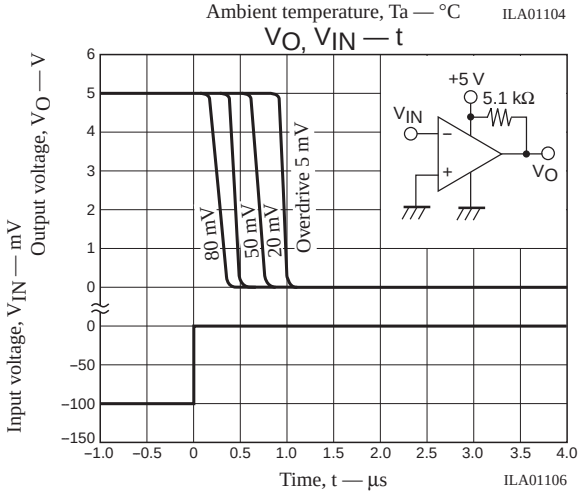
V_{OL} — Ta



V_{OL} — I_{SINK}



V_O, V_{IN} — t



V_O, V_{IN} — t