



SANYO Semiconductors

DATA SHEET

LA6393T — Monolithic Linear IC High-Performance Dual Comparator

Overview

The LA6393T is a high-performance dual comparator that features the flexible operating characteristics of a wide supply voltage range (2.0 to 36.0V for single voltage operation) and a wide operating temperature range (−20 to +85°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

- Wide operating supply voltage range: 2.0 to 36.0V (single voltage supply), ±1.0 to 18.0V (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 (0.6mA)
- Miniature flat package supports product miniaturization

Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	V_{CC}		36	V
Differential input voltage	V_{ID}		36	V
Maximum input voltage	$V_{IN\ max}$		-0.3 to +36	V
Allowable power dissipation	$P_d\ max$	$T_a \leq 25^\circ\text{C}$	160	mW
Operating temperature	T_{opr}		-20 to +85	°C
Storage temperature	T_{stg}		-55 to +125	°C

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SANYO Semiconductor Co., Ltd.

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LA6393T

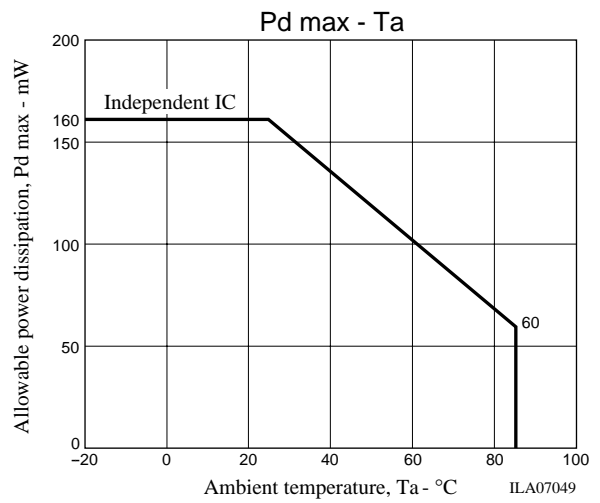
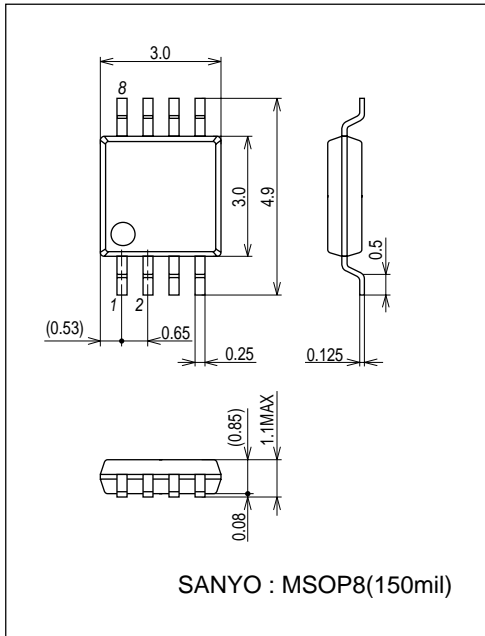
Electrical Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 5\text{V}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input offset voltage	V_{IO}			± 1	± 5	mV
Input bias current	I_B			25	250	nA
Input offset current	I_{IO}			± 5	± 50	nA
Common-mode input voltage range	V_{ICM}		0		$V_{CC}-1.5$	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	R_T	$R_L = 5.1\text{k}\Omega$, $V_{RL} = 5\text{V}$		1.3		μs
Output sink current	I_{SINK}	$V_{IN^-} = 1\text{V}$, $V_{IN^+} = 0\text{V}$, $V_O \leq 1.5\text{V}$	6	16		mA
Output saturation voltage	V_{OL}	$V_{IN^-} = 1\text{V}$, $V_{IN^+} = 0\text{V}$, $I_{SINK} \leq 3\text{mA}$		0.2	0.4	V
Output leakage current	I_{LEAK}	$V_{IN^-} = 0\text{V}$, $V_{IN^+} = 1\text{V}$, $V_O = 5\text{V}$		0.1		nA

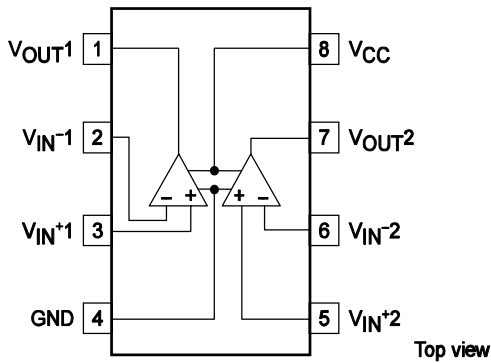
Package Dimensions

unit : mm (typ)

3245B

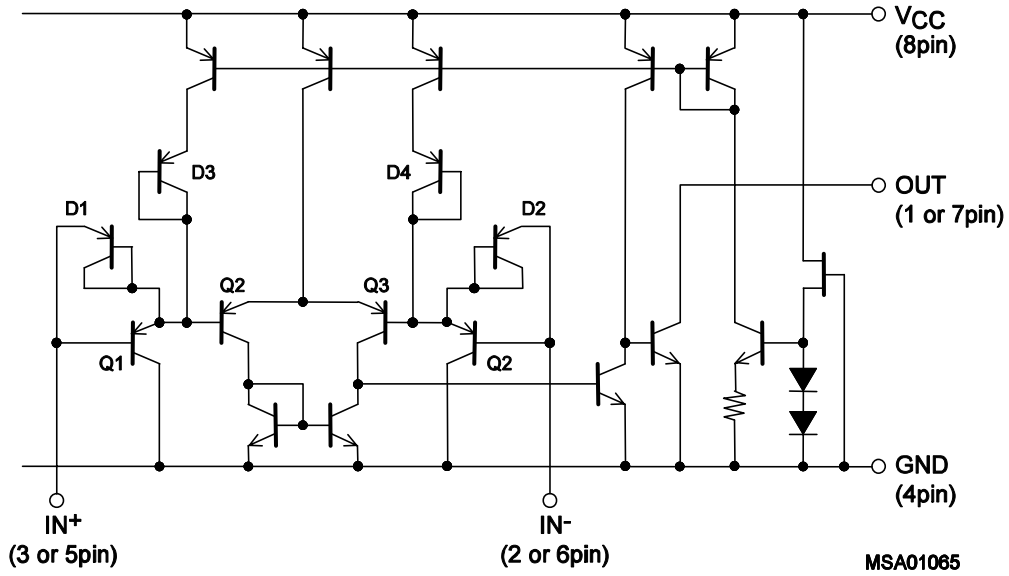


Pin Assignment



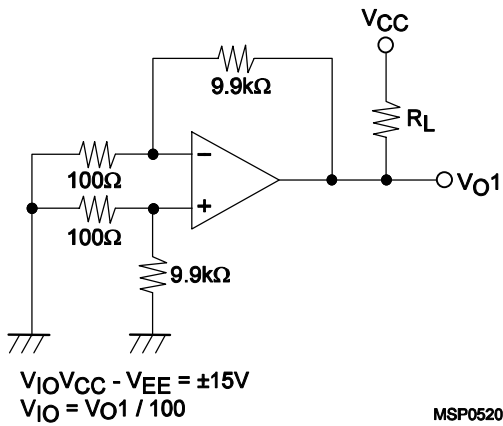
ILAO1067

Equivalent Circuit

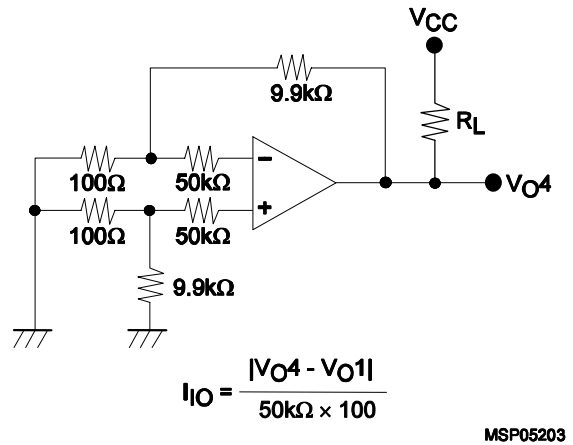


Test Circuits

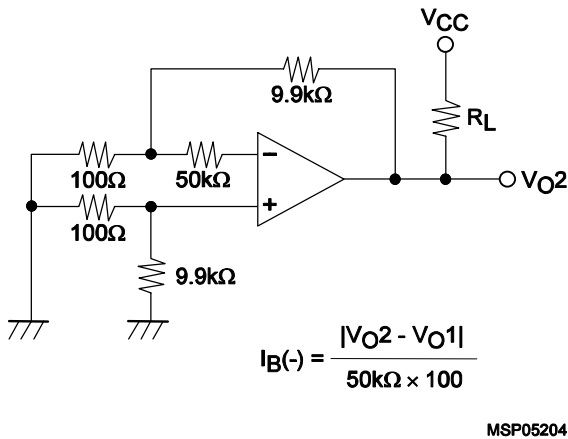
1. Input offset voltage V_{IO}



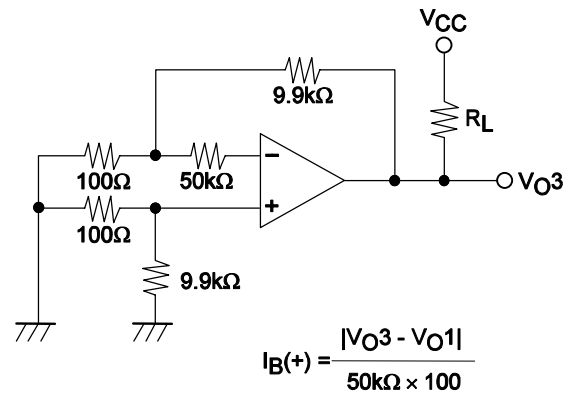
2. Input offset current I_{IO}



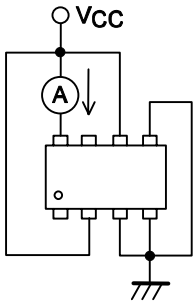
3. Input bias current $I_B (-)$



Input bias current $I_B (+)$

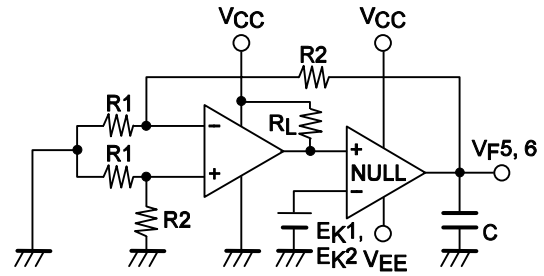


4. Current drain I_{CC}



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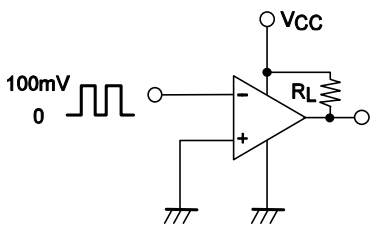
5. Voltage gain V_G



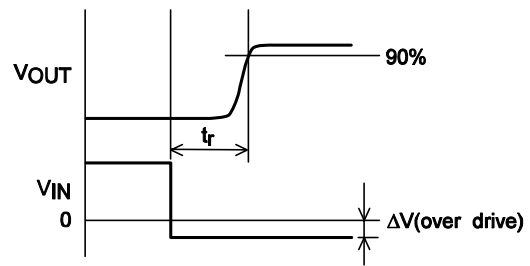
$$V_G = \frac{(E_{K1} - E_{K2})(1 + R_2 / R_1)}{V_{F6} - V_{F5}}$$

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6. Response time R_T

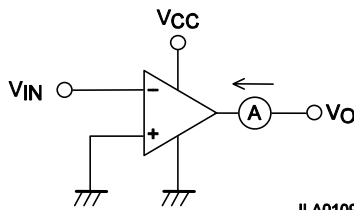


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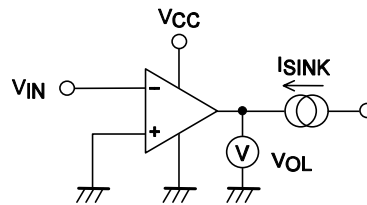
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7. Output sink current I_{SINK}



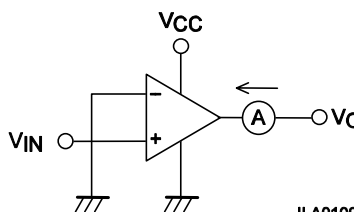
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8. Output saturation voltage V_{OL}



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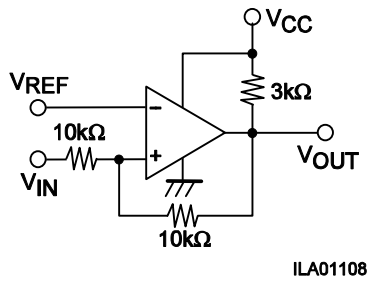
9. Output leakage current I_{LEAK}



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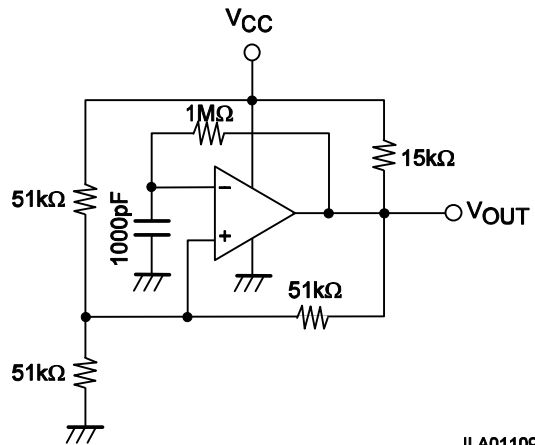
Application Circuit Examples

Voltage comparator
(with hysteresis)



ILA01108

Square wave generator



ILA01109

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