



SANYO Semiconductors

DATA SHEET

LA6393JM

Monolithic Linear IC
— High-Performance Dual
Comparator

Overview

The LA6393JM 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 multi-signal parallel comparator circuits that require high-density assembly.

Functions

- High-performance dual operational amplifier
- Wide supply voltage range (Single supply : 2.0 to 36.0V, dual supplies : ± 1.0 to 18.0V).
- Wide common-mode input voltage range (0 to $V_{CC} - 1.8V$).
- Open collector output enabling wired OR.
- Small current drain (0.6mA) and low power.
- Mini flat package enabling compactness of sets.

Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{CC\ max}$		36	V
Differential input voltage	V_{ID}		36	V
Maximum input voltage	$V_{IN\ max}$		-0.3 to +36	V
Allowable power dissipation	$P_d\ max$	$T_a \leq 25^\circ\text{C}$	300	mW
Operating temperature	T_{opr}		-40 to +85	$^\circ\text{C}$
Storage temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

Recommended Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			Min	typ	Max	
Supply voltage	V_{CC}		2		24	V

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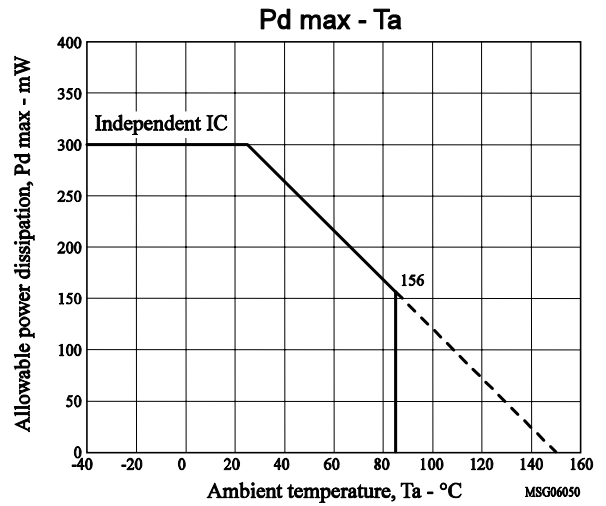
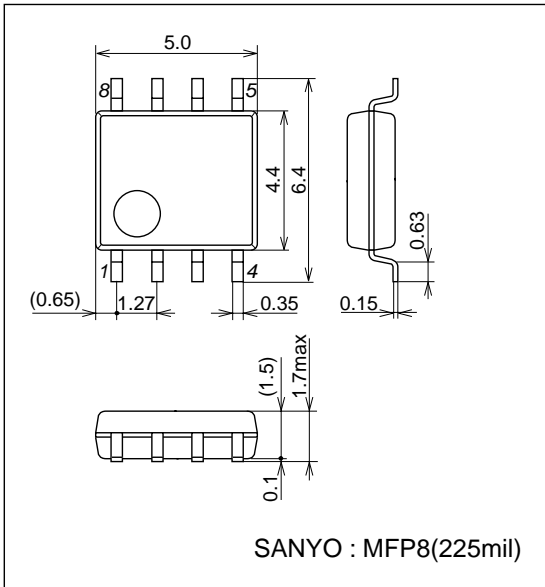
LA6393JM

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

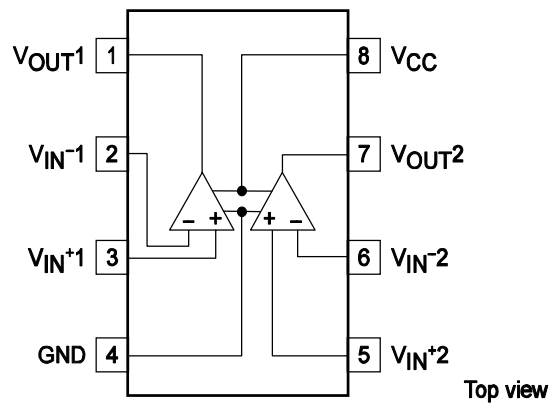
Parameter	Symbol	Conditions	Test Circuit	Ratings			Unit
				min	typ	max	
Input offset voltage	V_{IO}		1		± 2	± 7	mV
Input offset current	I_{IO}		2		± 5	± 50	nA
Input bias current	I_B		3		45	250	nA
Common-mode input voltage range	V_{ICM}			0		$V_{CC}-1.8$	V
Current drain	I_{CC}	$R_L = \infty$	4		0.5	1.2	mA
Voltage gain	V_G	$R_L = 15\text{k}\Omega$	5		200		V/mV
Response time	R_T	$V_{RL} = 5\text{V}$, $R_L = 5.1\text{k}\Omega$	6		1.3		μs
Output sink current	I_{SINK}	$V_{IN^-} = 0.5\text{V}$, $V_{IN^+} = 0\text{V}$, $V_O \leq 1.5\text{V}$	7	6	16		mA
Output saturation voltage	V_{OL}	$V_{IN^-} = 0.5\text{V}$, $V_{IN^+} = 0\text{V}$, $I_{SINK} \leq 3\text{mA}$	8		0.2	0.4	V
Output leakage current	I_{LEAK}	$V_{IN^-} = 0\text{V}$, $V_{IN^+} = 0.5\text{V}$, $V_O = 5\text{V}$	9		0.1		nA

Package Dimensions

unit : mm
3032D

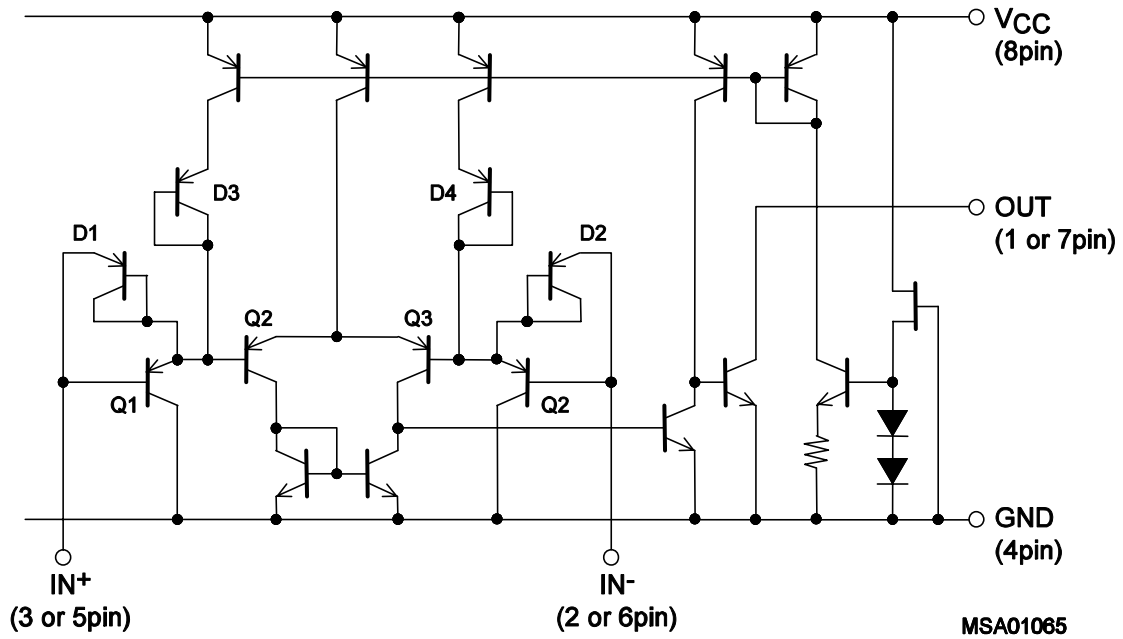


Pin Assignment



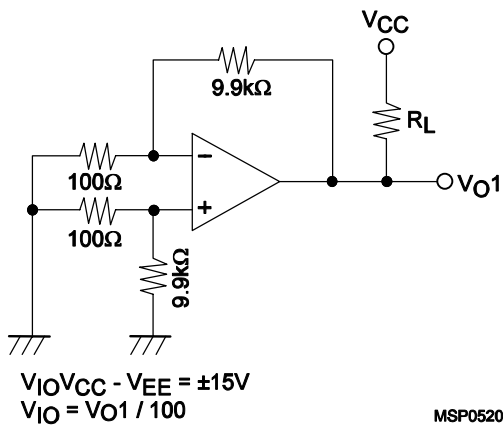
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Equivalent Circuit

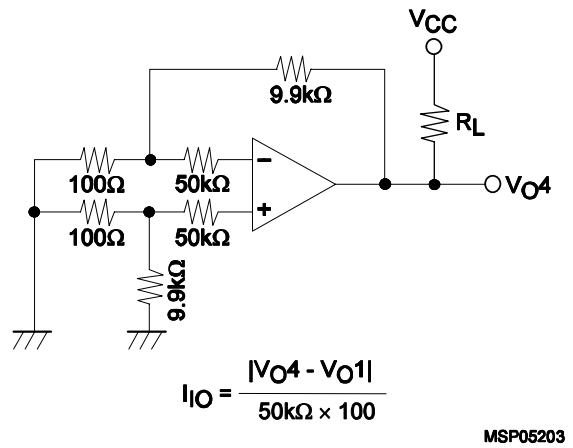


Test Circuits

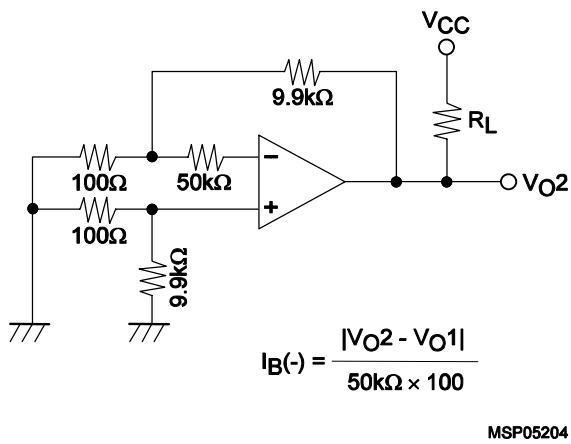
1. Input offset voltage V_{IO}



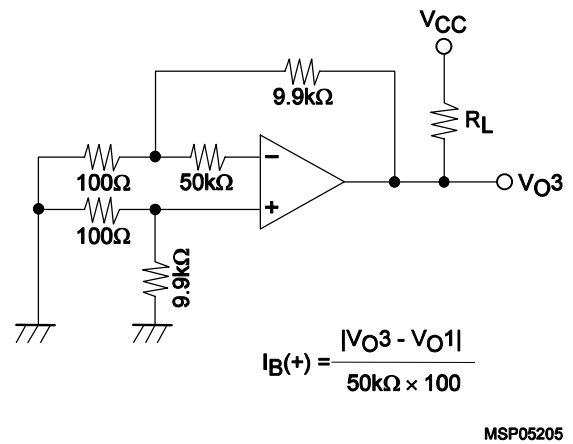
2. Input offset current I_{IO}



3. Input bias current $I_B (-)$

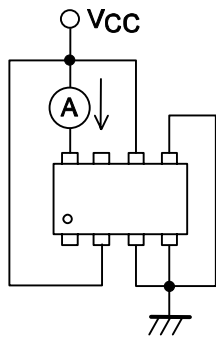


Input bias current $I_B (+)$



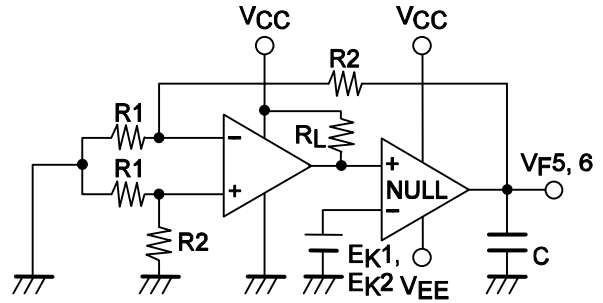
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4. Current drain I_{CC}



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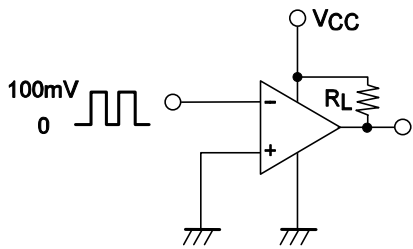
5. Voltage gain V_G



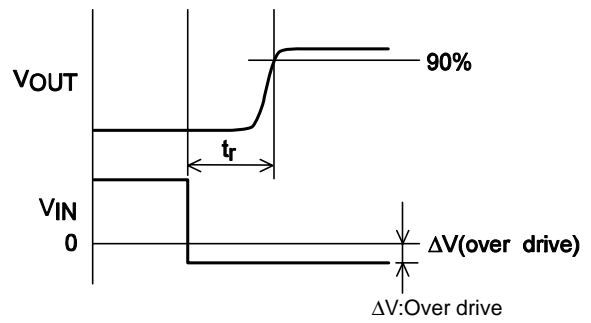
$$V_G = \frac{(E_{K1} - E_{K2}) (1 + R_2 / R_1)}{V_{F6} - V_{F5}}$$

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6. Response time R_T

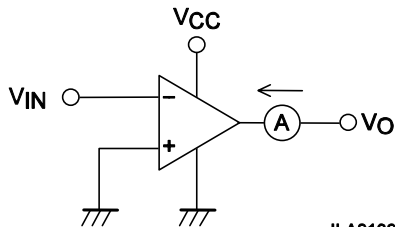


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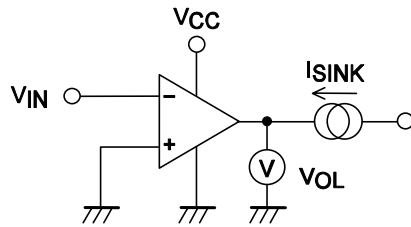
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7. Output sink current I_{SINK}



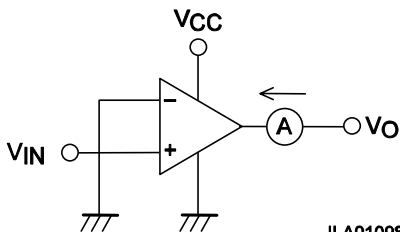
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8. Output saturation voltage V_{OL}



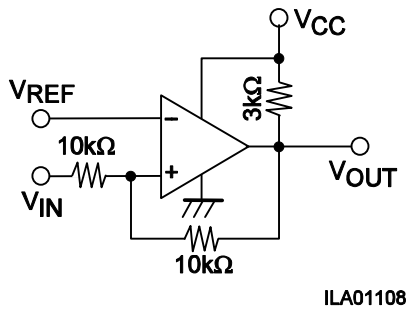
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9. Output leakage current I_{LEAK}

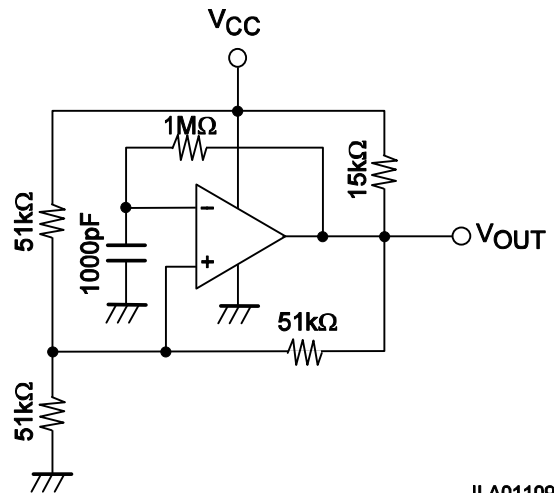


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Application Circuit Examples

Voltage comparator
(with hysteresis)

Square wave generator



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