



LA6339M

High-Performance Quad Comparator

Overview

The LA6339M is a high-performance quad 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 multisignal parallel comparator circuits that require high-density assembly.

Features

- Wide supply voltage range (Single supply : 2.0 to 36.0V, dual supplies : ± 1.0 to ± 18.0 V).
- Wide common-mode input voltage range (0 to $V_{CC}-1.5$ V).
- Open collector output enabling wired OR.
- Small current drain ($0.8\text{mA}/V_{CC}=5\text{V}$, $R_L=\infty$) and low power.
- Mini flat package enabling compactness of sets.

Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{CC\text{ max}}$		36	V
Differential input voltage	V_{ID}		36	V
Common-mode input voltage range	V_{ICM}		-0.3 to +36	V
Allowable power dissipation	$P_d\text{ max}$		330	mW
Operating temperature	T_{opr}		-30 to +85	$^\circ\text{C}$
Storage temperature	T_{stg}		-55 to +125	$^\circ\text{C}$

Operating 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	± 5	mV
Input offset current	I_{IO}		2		± 5	± 50	nA
Input bias current	I_B		3		25	250	nA
Common-mode input voltage range	V_{ICM}			0		$V_{CC}-1.5$	V
Current drain	I_{CC}	$R_L=\infty$	4		0.8	2	mA
Voltage gain	V_G	$R_L=15\text{k}\Omega$	5		200		V/mV
Response time		$V_{RL}=5\text{V}$, $R_L=5.1\text{k}\Omega$	6		1.3		μs
Output sink current	I_{SINK}	$V_{IN^-}=1\text{V}$, $V_{IN^+}=0\text{V}$, $V_O\leq 1.5\text{V}$	7	6	16		mA
Output saturation voltage	V_{OL}	$V_{IN^-}=1\text{V}$, $V_{IN^+}=0\text{V}$, $I_{SINK}\leq 3\text{mA}$	8		0.2	0.4	V
Output leakage current	I_{LEAK}	$V_{IN^-}=0\text{V}$, $V_{IN^+}=1\text{V}$, $V_O=5\text{V}$	9		0.1		nA

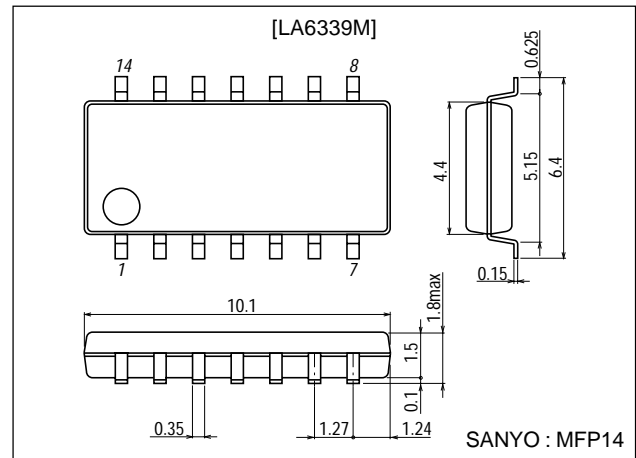
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Package Dimensions

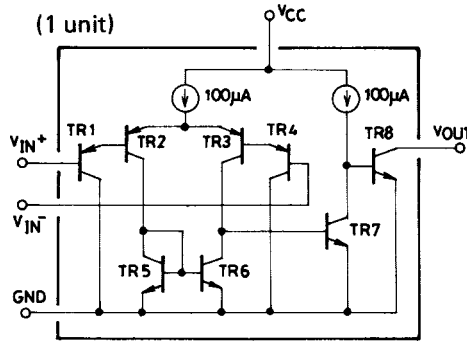
unit:mm

3034A-MFP14

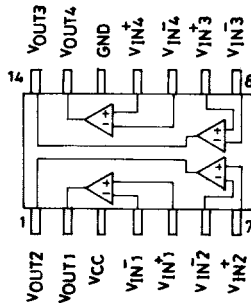


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Equivalent Circuit

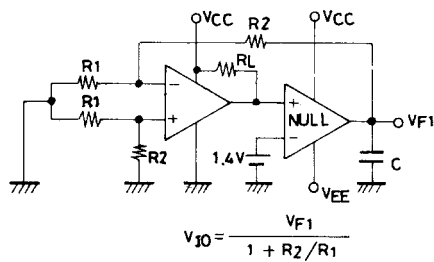


Pin Assignment

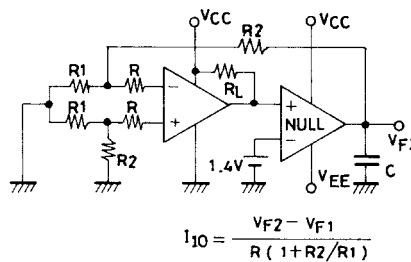


Test Circuits

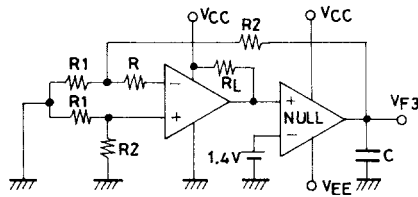
1. Input Offset Voltage



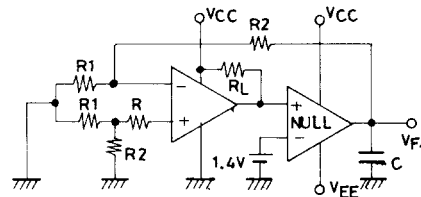
2. Input Offset Current



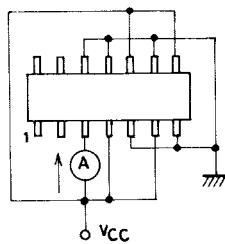
3. Input Bias Current



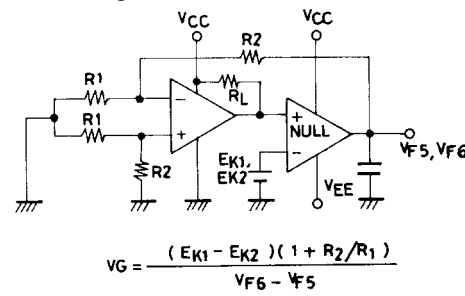
$$I_B = \frac{|VF3 - VF4|}{2R(1 + R2/R1)}$$



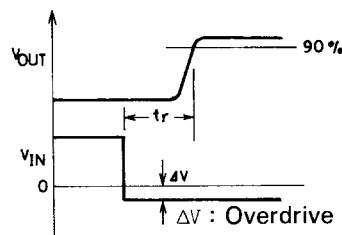
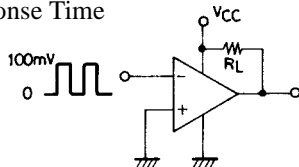
4. Current Drain



5. Voltage Gain

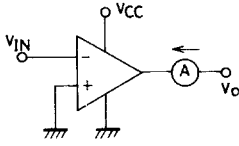


6. Response Time

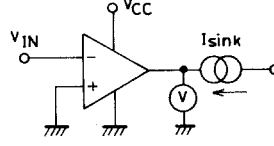


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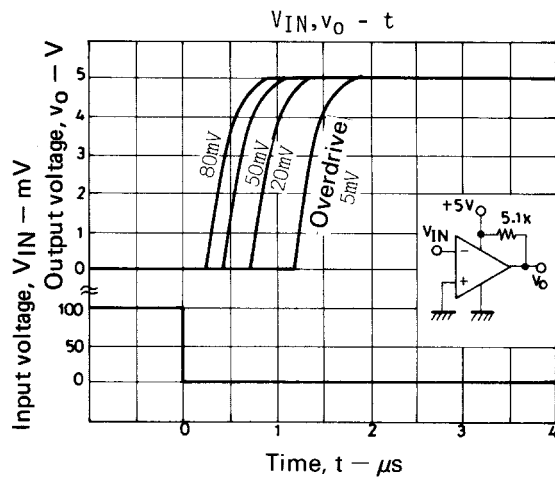
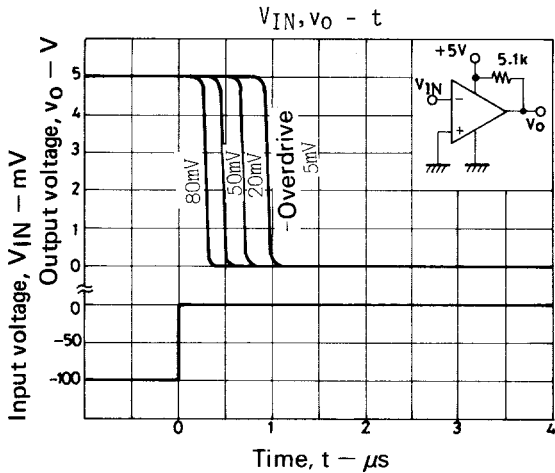
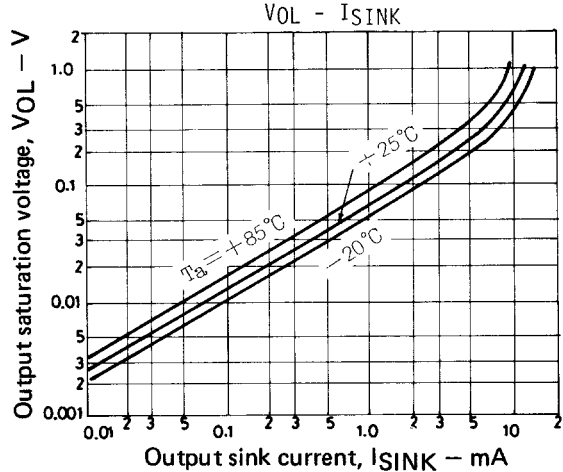
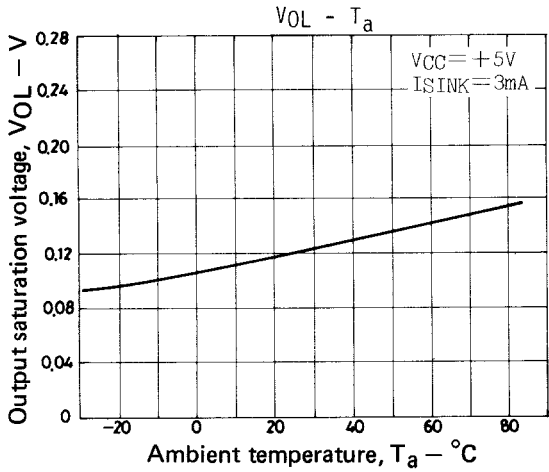
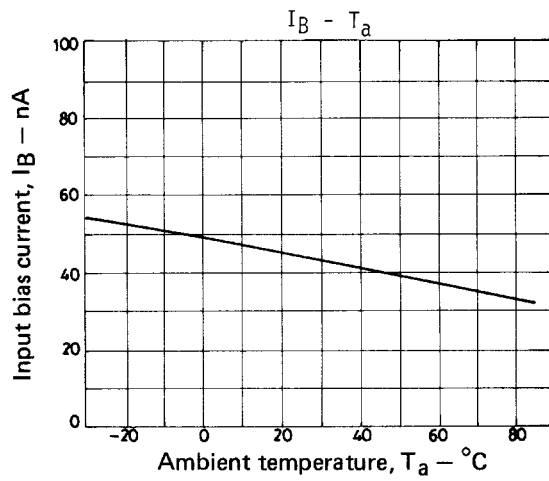
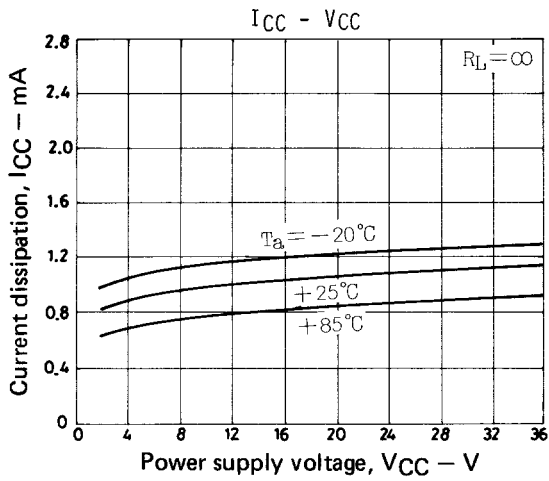
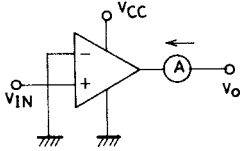
7. Output Sink Current



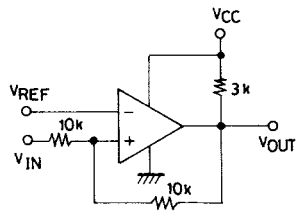
8. Output Saturation Voltage



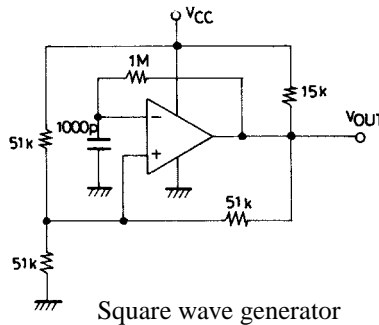
9. Output Leakage Current



Sample Application Circuits



Voltage comparator
(with hysteresis)



Square wave generator

Unit (resistance: Ω , capacitance: F)

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