Ordering number : EN994E

SANYO Semiconductors
DATA SHEET

LA6339 — Monolithic Linear IC High-Performance Quad Comparator

Overview

The LA6339 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 ±18.0V).
- Wide common-mode input voltage range (0 to V_{CC}–1.5V).
- Open collector output enabling wired OR.
- Small current dissipation (0.8mA/V_{CC} = 5V, R_L = ∞) and low power.

Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max		36	V
Differential input voltage	V_{ID}		36	V
Common-mode input voltage	V_{ICM}		–0.3 to +36	V
Allowable power dissipation	Pd max		700	mW
Operating temperature	Topr		–30 to +85	°C
Storage temperature	Tstg		–55 to +125	°C

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52808 MS JK/40500TN (KT)/7087KI/4265MW/2173KI, TS No.994-1/4

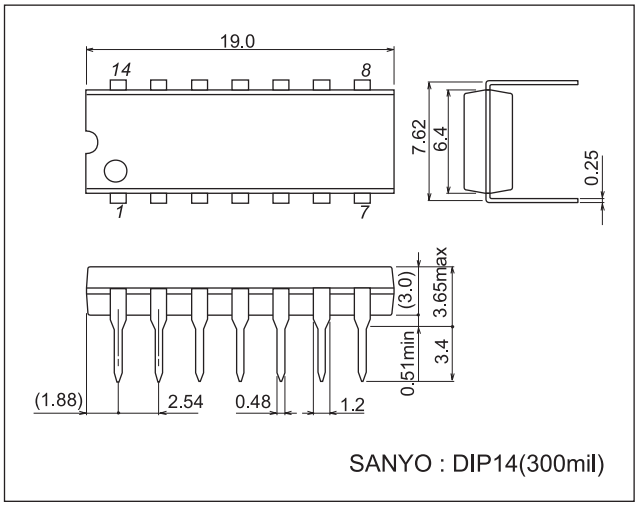
Electrical Characteristics at Ta = 25°C, V_{CC} = 5V

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	V_{ICM}			0		V_{CC}–1.5	V
Current drain	I_{CC}	$R_L = \infty$	4		0.8	2	mA
Voltage gain	VG	R_L = 15kΩ	5		200		V/mV
Response time		V_{RL} = 5V, R_L = 5.1kΩ	6		1.3		μs
Output sink current	I_{SINK}	V_{IN}^- = 1V, V_{IN}^+ = 0V, $V_O \leq$ 1.5V	7	6	16		mA
Output saturation voltage	V_{OL}	V_{IN}^- = 1V, V_{IN}^+ = 0V, $I_{SINK} \leq$ 3mA	8		0.2	0.4	V
Output leakage current	I_{LEAK}	V_{IN}^- = 0V, V_{IN}^+ = 1V, V_O = 5V	9		0.1		nA

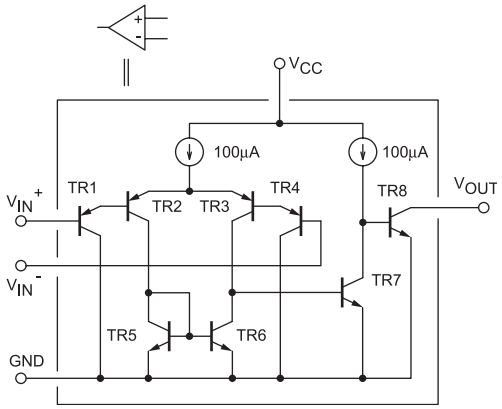
Package Dimensions

unit : mm (typ)

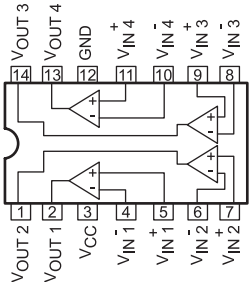
3003B



Equivalent Circuit (1 unit)

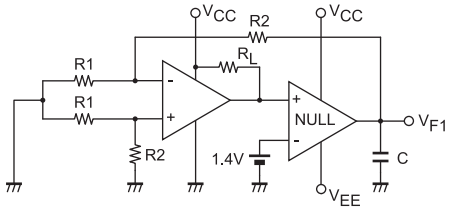


Pin Assignment



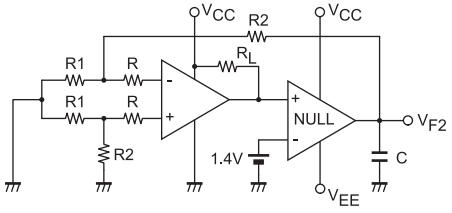
Test Circuits

1. Input Offset Voltage



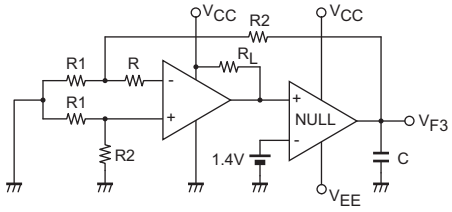
$$V_{IO} = \frac{V_{F1}}{1+R2/R1}$$

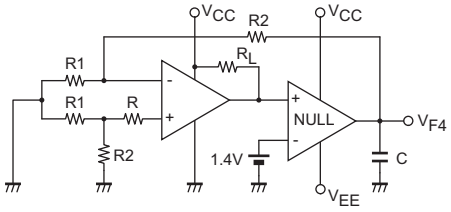
2. Input Offset Current



$$V_{IO} = \frac{V_{F2}-V_{F1}}{R(1+R2/R1)}$$

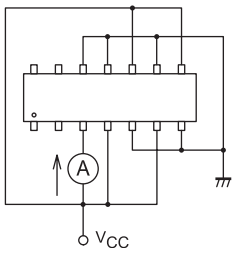
3. Input Bias Current



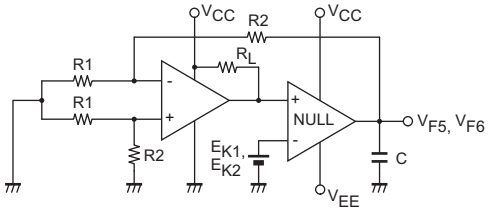


$$I_B = \frac{|V_{F3}-V_{F4}|}{2R(1+R2/R1)}$$

4. Current Drain

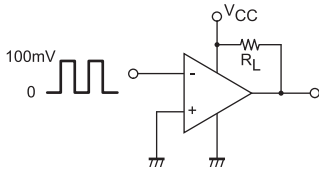


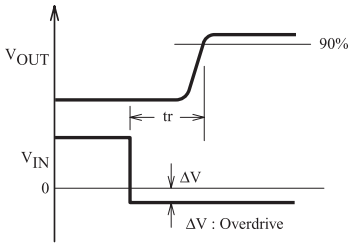
5. Voltage Gain



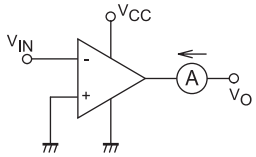
$$VG = \frac{(E_{K1}-E_{K2})(1+R2/R1)}{V_{F6}-V_{F5}}$$

6. Response Time

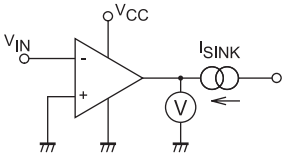




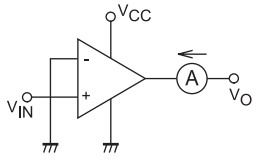
7. Output Sink Current

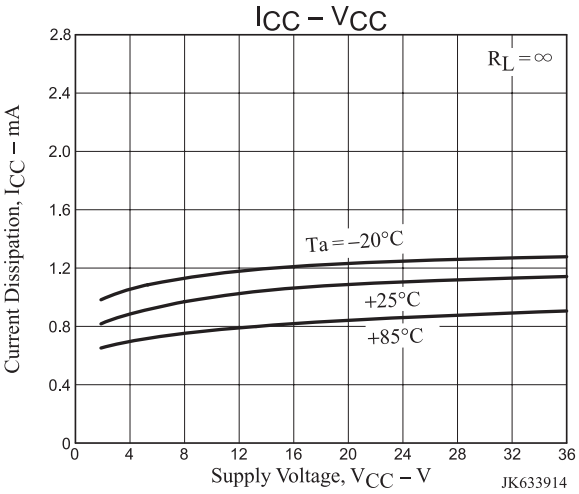


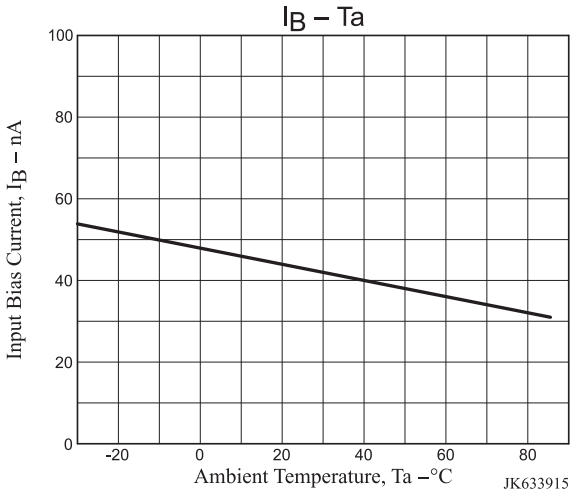
8. Output Saturation Voltage

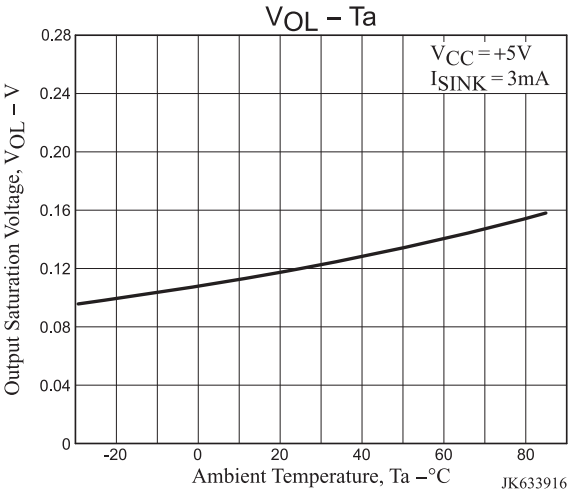


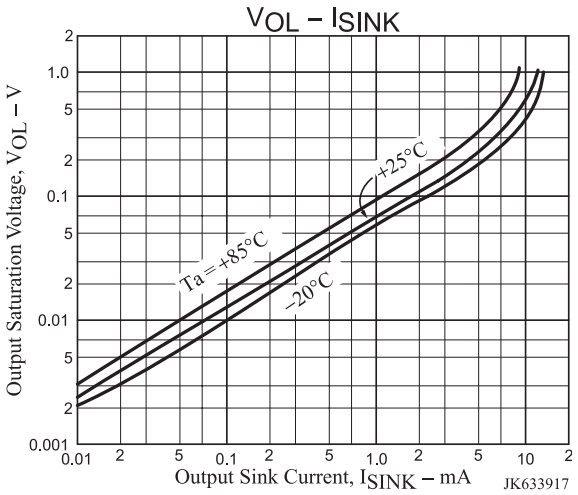
9. Output Leakage Current

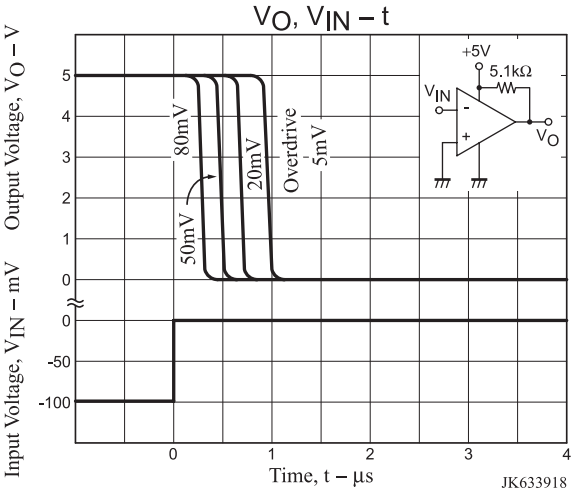


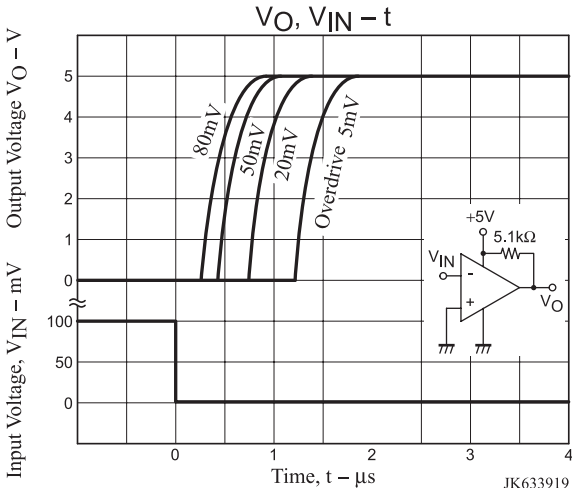

ICC – VCC
RL = ∞
Ta = –20°C
+25°C
+85°C
Current Dissipation, ICC – mA
Supply Voltage, VCC – V
JK633914


IB – Ta
Input Bias Current, IB – nA
Ambient Temperature, Ta –°C
JK633915

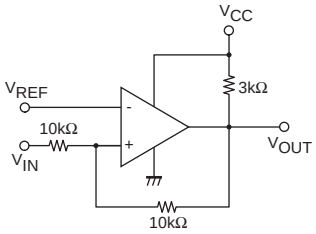

VOL – Ta
VCC = +5V
ISINK = 3mA
Output Saturation Voltage, VOL – V
Ambient Temperature, Ta –°C
JK633916


VOL – ISINK
+25°C
Ta = +85°C
–20°C
Output Saturation Voltage, VOL – V
Output Sink Current, ISINK – mA
JK633917

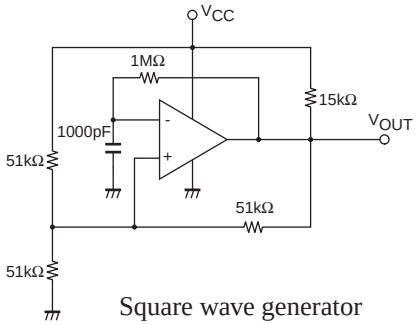

VO, VIN – t
+5V
5.1kΩ
VIN
VO
80mV
50mV
20mV
Overdrive 5mV
Output Voltage VO – V
Input Voltage, VIN – mV
Time, t – µs
JK633918


VO, VIN – t
80mV
50mV
20mV
Overdrive 5mV
+5V
5.1kΩ
VIN
VO
Output Voltage VO – V
Input Voltage, VIN – mV
Time, t – µs
JK633919

Sample Application Circuits



Voltage comparator
(with hysteresis)



Square wave generator