

Quad Differential Comparators



Rev.1. Jan. 2010.



VSP MIKRON

LM339M

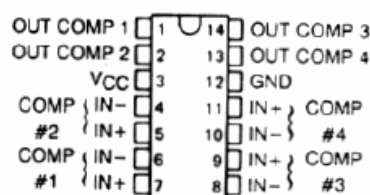
DESCRIPTION

The LM339 consists of four independent voltage comparators. These were designed specifically to operate from a single power supply over a wide range of voltages. Operation from split power supplies is also possible and the low power supply current drain is independent of the magnitude of the power supply voltage. The outputs can be connected to other open-collector outputs to achieve wired-AND relationships.

FEATURES

- Wide supply voltage range
- Low supply current drain independent of supply voltage.
- Low input biasing current
- Low input offset current
- Low input offset voltage
- Input common-mode voltage range includes GND
- Differential input voltage range equal to the power supply voltage
- Low output saturation voltage
- Output voltage compatible with TTL, MOS and CMOS logic

PACKAGE INFORMATION



ELECTRICAL CHARACTERISTICS

at specified free-air temperature, $V_{CC}=5V$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS*		MIN	TYP	MAX	UNIT
V_{IO} Input offset voltage	$V_{CC}=5V$ to $30V$ $V_{IC}=V_{ICRmin}$, $V_O=1.4V$	$25\text{ }^\circ\text{C}$ Full range		2 9	5 9	mV
I_{IO} Input offset current	$V_O=1.4V$	$25\text{ }^\circ\text{C}$ Full range		5 150	50 150	nA
I_{IB} Input bias current	$V_O=1.4V$	$25\text{ }^\circ\text{C}$ Full range		-25 -400	-250 -400	nA
V_{ICR} Common-mode input voltage range**		$25\text{ }^\circ\text{C}$ Full range	0 to $V_{CC}-1.5$ 0 to $V_{CC}-2$			V
A_{VD} Large-signal differential voltage amplification	$V_{CC}=15V$, $V_O=1.4V$ to $11.4V$, $R_L \geq 15k\Omega$ to V_{CC}	$25\text{ }^\circ\text{C}$	50	200		V/mV
I_{OH} High-level output current	$V_{OH}=5V$, $V_{ID}=1V$ $V_{OH}=30V$, $V_{ID}=1V$	$25\text{ }^\circ\text{C}$ Full range		0.1 1	50 1	nA μA
V_{OL} Low-level output voltage	$I_{OL}=4\text{mA}$, $V_{ID}=-1V$	$25\text{ }^\circ\text{C}$ Full range		150 700	400 700	mV
I_{OL} Low-level output current	$V_{OL}=1.5V$, $V_{ID}=-1V$	$25\text{ }^\circ\text{C}$	6			mA
I_{CC} Supply current	$R_L = \infty$	$V_{CC}=5V$ $V_{CC}=30V$	$25\text{ }^\circ\text{C}$ Full range	0.8 2.5	2 2.5	mA

* Full range (MIN to MAX), for the LM339 is $0\text{ }^\circ\text{C}$ to $70\text{ }^\circ\text{C}$. All characteristics are measured with zero common-mode input voltage unless otherwise specified.

** The voltage at either input or common-mode should not be allowed to go negative by more than $0.3V$. The upper end of the common-mode voltage range is $V_{CC}-1.5V$, but either or both inputs can go to $30V$ without damage.

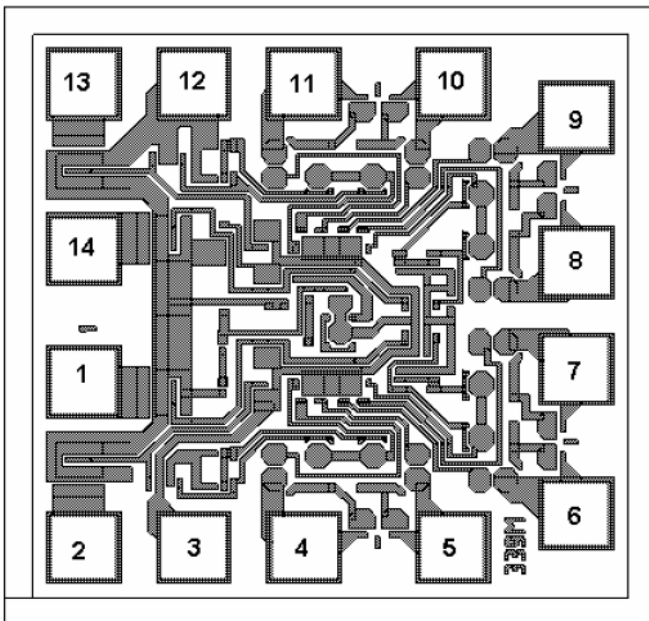
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Pad Location



Chip Size: 0.92 x 0.90 mm²

Wafer Thickness: 460±30µm (or 350±30µm, 280±30µm)

Top metal: AlSi

Backside metal: - (or Ti-Ni (V)-Ag)

Wafer size: 100 mm

PAD LOCATION COORDINATES

Pad N	Pad Name	Pad size (µm x µm)	Coordinates, mkm	
			X	Y
1	#1 OUT	95 x 95	112	353
2	#2 OUT	95 x 95	112	112
3	V _{CC}	95 x 95	267	112
4	#2 IN-	95 x 95	422	112
5	#2 IN+	95 x 95	633	112
6	#1 IN-	95 x 95	807	161
7	#1 IN+	95 x 95	807	372
8	#3 IN-	95 x 95	807	527
9	#3 IN+	95 x 95	807	738
10	#4 IN-	95 x 95	633	787
11	#4 IN+	95 x 95	422	787
12	GND	95 x 95	267	787
13	#4 OUT	95 x 95	112	787
14	#3 OUT	95 x 95	112	546