

## QUADRUPLE DIFFERENTIAL COMPARATORS

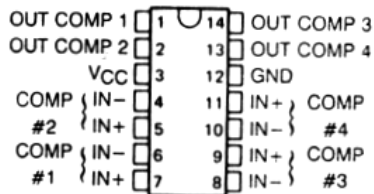
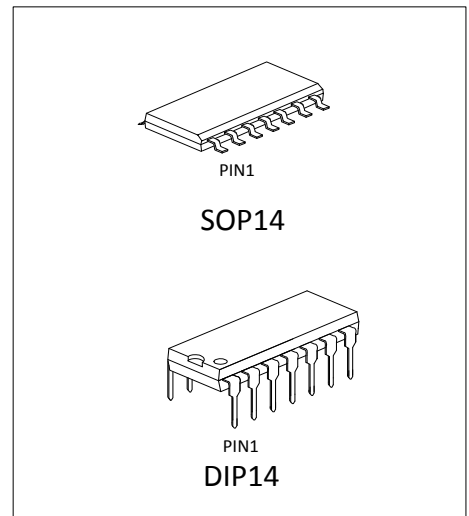
### DESCRIPTION

The LM339A 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



### ORDERING INFORMATION

DEVICE	Package Type	MARKING	Packing	Packing Qty
LM339AN	DIP14	LM339A	TUBE	1000/box
LM339AM/TR	SOP14	LM339A	REEL	2500/reel

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

\* Full range (MIN to MAX), for the LM339A is  $-40^{\circ}C$  to  $125^{\circ}C$ . 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.

**SWITCHING CHARACTERISTICS,  $V_{CC}=5V$ ,  $T_A=25^{\circ}C$** 

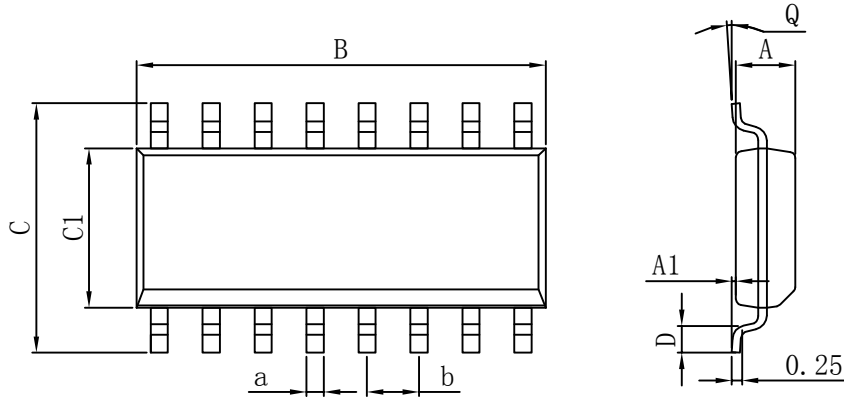
PARAMETER	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Response time	$R_L$ connected to $5V$ through $5.1k\Omega$ , $C_L=15pF$ * (See Note 1)	100-mV input step with 5-mV overdrive		1.3		$\mu s$
		TTL-level input step		0.3		

\*  $C_L$  includes probe and jig capacitance.

NOTE 1: The response time specified is the interval between the input step function and the instant, when the output crosses  $1.4V$ .

PACKAGE

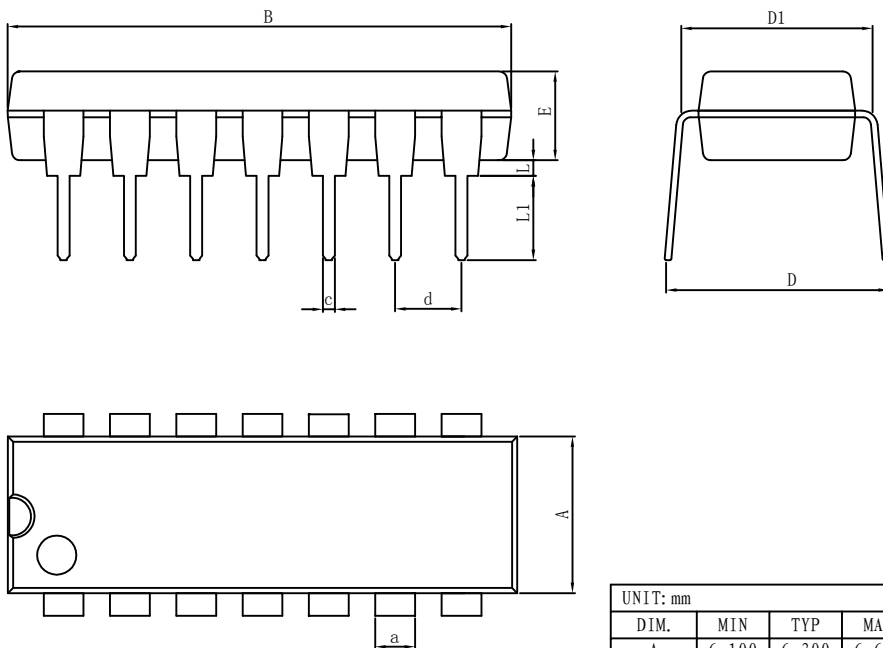
SOP14



UNIT: mm

DIM.	MIN	TYP	MAX	DIM.	MIN	TYP	MAX
A	4.520	4.570	4.620	a	0.400	0.420	0.440
A1	0.100	-	0.250	b	1.260	1.270	1.280
B	8.500	8.750	9.000	Q	0°	-	8°
C	5.800	6.100	6.250				
C1	3.800	3.900	4.000				
D	0.400	-	0.950				

DIP14



UNIT: mm

DIM.	MIN	TYP	MAX	DIM.	MIN	TYP	MAX
A	6.100	6.300	6.680	a	1.504	1.524	1.544
B	18.940	19.200	19.560	c	0.437	0.457	0.477
D	8.200	8.700	9.200	d	2.530	2.540	2.550
D1	7.42	7.62	7.82	L	0.500	-	0.800
E	3.100	3.300	3.550	L1	3.000	3.200	3.600

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