DESCRIPTION

The LM339DR-CN is quad independent precision voltage comparators capable of single or split supply operation. The LM339DR-CN is designed to permit a common mode range−to−ground level with single supply operation. Input offset voltage specifications as low as 3.0 mV make this device an excellent selection for many applications in consumer,automotive, andindustrial electronics.

The LM339DR-CN is available in a SOP14 package.

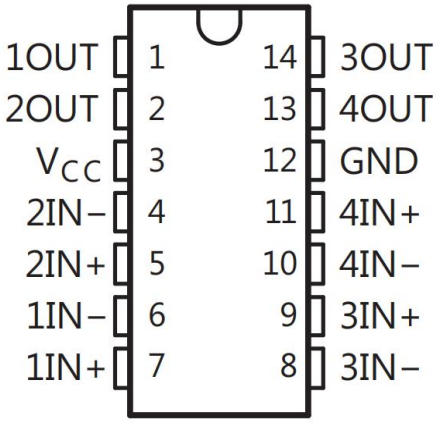
FEATURES

- Wide Supply Range:
  – Single Supply: 3.0V to 36V
  – Split Supply: ±1.5V to ±18V
- Low Input Bias Current: 25nA Typ
- Low Input Offset Current: ±5nA Typ

APPLICATIONS

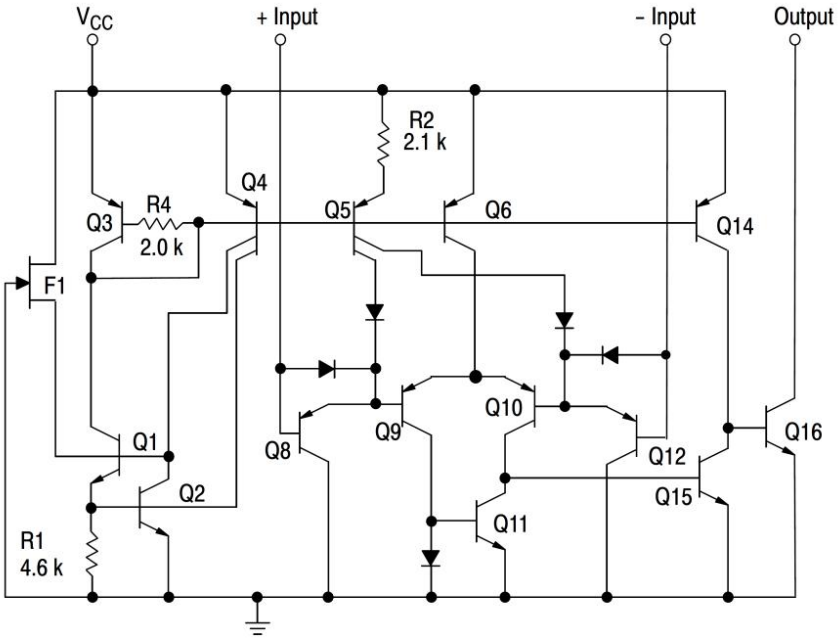
- Industrial Equipment
- Automotive
- Power Monitoring
- Peak Detectors
- Logic Voltage Conversion

Pin Configuration



SOP14

Simplified Schematic(Each Comparator)



Absolute Maximum Ratings

Over operating free-air temperature range (unless otherwise noted)

PARAMETER		MIN	MAX	UNIT
Supply Voltage	Signal-supply		36	V
	Dual-supply		±18	V
Differential input voltage			±36	V
Input voltage range		-0.3	36	V
Output voltage			36	V
Input common mode voltage			V_{CC} - 1.5	V
Output Current			20	mA
Maximum Junction Temperature			+150	℃
Storage Temperature Range		-65	+150	℃
Lead Temperature(soldering, 10sec)			+260	℃

Recommended Operating Conditions

Over operating free-air temperature range (unless otherwise noted)

PARAMETER		MIN	TYP	MAX	UNIT
Supply Voltage, Vs=(V+) - (V-)	Signal-supply	3		32	V
	Dual-supply	±1.5		±16	V
Operating Temperature Range		-20	+25	+85	℃

Electrical Characteristics

(At T_A=+25℃, V_{CC}=5V, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS		MIN	TYP	MAX	UNIT
Input Offset Voltage	V_{IO}	T_A=25℃		-	±1	±5	mV
		-20℃≤ T_A ≤+85℃		-	-	±7	
Input Offset Current	I_{IO}	T_A=25℃		-	±5	±50	nA
		-20℃≤ T_A ≤+85℃		-	-	±150	
Input Bias Current	I_{IB}	T_A=25℃		-	25	250	nA
		-20℃≤ T_A ≤+85℃		-	-	400	
Input common mode voltage range	V_{ICR}	T_A=25℃		0	-	V_{CC} - 1.5	V
		-20℃≤ T_A ≤+85℃		0	-	V_{CC} - 2.0	
Supply Current	I_{CC}	R_L=∞, V_{CC}=5V		-	0.4	1.0	mA
		R_L=∞, V_{CC}=30V		-	0.45	2.5	
Voltage Gain	G_V	RL ≥ 15KΩ, V_{CC}=15V		50	200	-	V/mV
Response time	t_{RES}	V_{RL}=5V, R_L=5.1KΩ	TTL input with V_{REF}=1.4V	-	0.3	-	us
			Input overdrive=5mV, Input step=100mV	-	1.3	-	
Input differential voltage	V_{ID}	-		-0.3	-	V_{CC}	V

Low-level output current	I_{SINK}	IN- ≥ 1.0V, IN+ = 0V, V_O ≤ 1.5V	6	16	-	mA
Output saturation voltage	V_{SAT}	IN- ≥ 1.0V, IN+ = 0V, I_{SINK}≤4.0mA,	-	150	400	mV
		IN- ≥ 1.0V, IN+ = 0V, I_{SINK}≤4.0mA, -20℃≤ T_A ≤ +85℃	-	-	700	
Output Leakage Current	I_{OL}	IN+ ≥ 1.0V, IN- = 0V, V_O = 5V	-	0.1	-	uA
		IN+ ≥ 1.0V, IN- = 0V, V_O = 30V -20℃≤ T_A ≤ +85℃	-	-	1	

Typical Applications

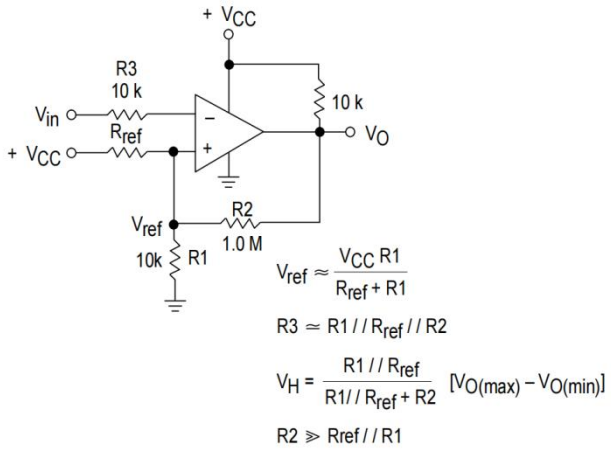


Figure 1. Inverting Comparator with Hysteresis

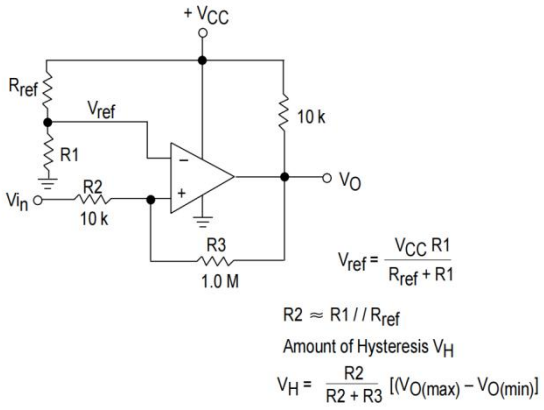
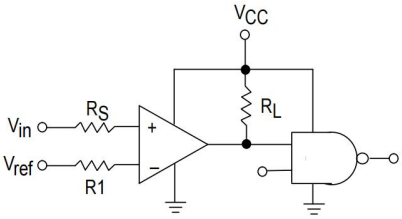


Figure 2. Noninverting Comparator with Hysteresis



RS = Source Resistance
R1 ≃ RS

Logic	Device	V_{CC} (V)	R_L kΩ
CMOS	1/4 MC14001	+15	100
TTL	1/4 MC7400	+5.0	10

Figure 3. Driving Logic

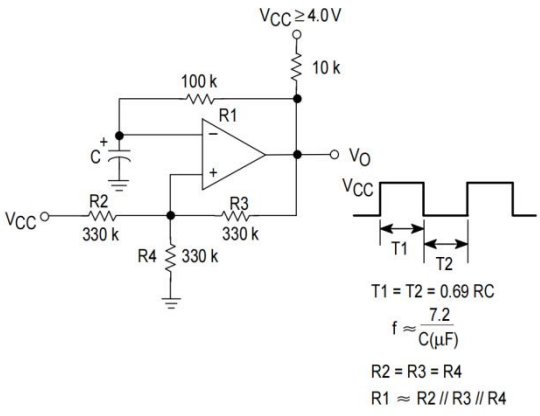
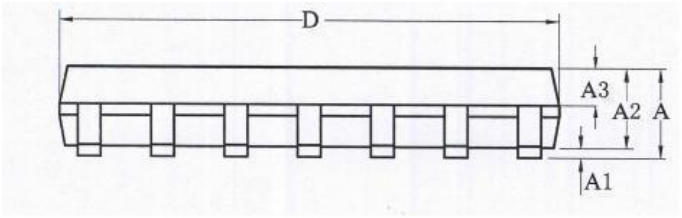
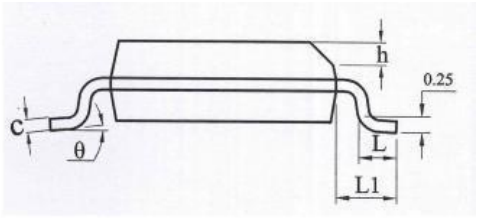


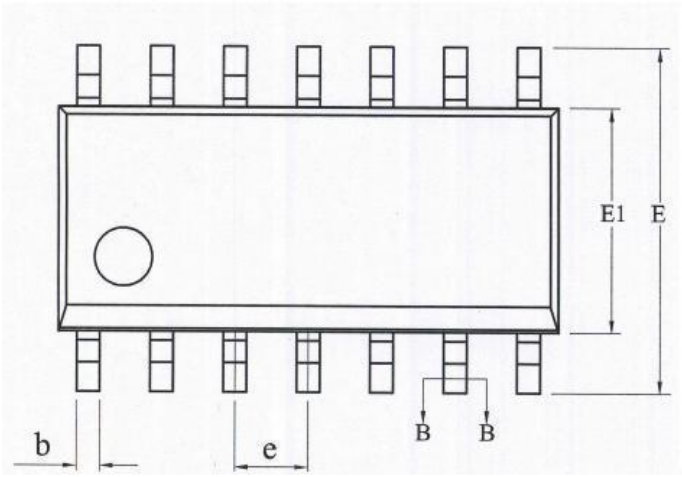
Figure 4. Squarewave Oscillator

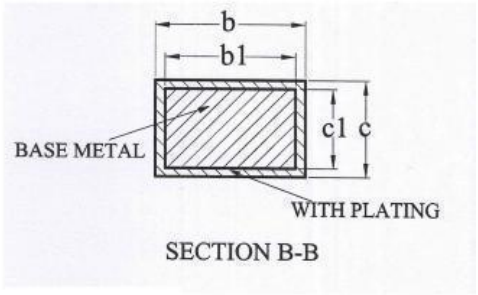
PACKAGE OUTLINE DIMENSIONS

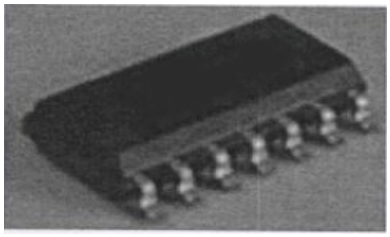
SOP14











SYMBOL	MILLIMETER			SYMBOL	MILLIMETER		
	MIN	NOM	MAX		MIN	NOM	MAX
A	-	-	1.75	D	8.55	8.65	8.75
A1	0.10	-	0.225	E	5.80	6.00	6.20
A2	1.30	1.40	1.50	E1	3.80	3.90	4.00
A3	0.60	0.65	0.70	e	1.27BSC		
b	0.39	-	0.47	h	0.25	-	0.50
b1	0.38	0.41	0.44	L	0.50	-	0.80
c	0.20	-	0.24	L1	1.05REF		
c1	0.19	0.20	0.21	θ	0	-	8°

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