Low Power Quad Comparators

GENERAL DESCRIPTION

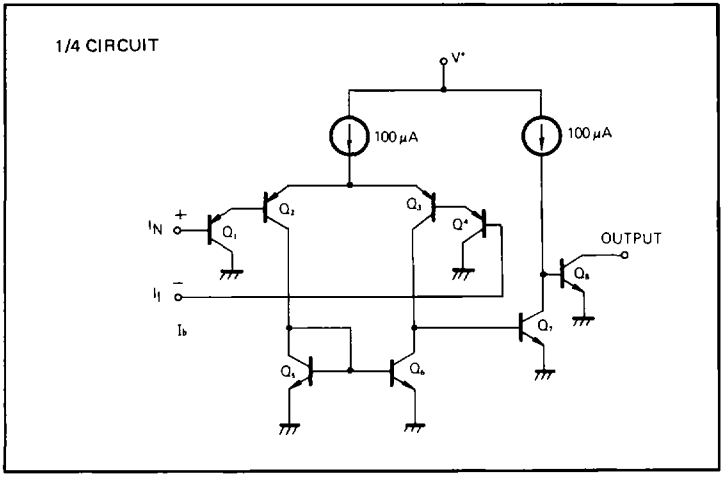
The μPC177/339 are quad comparators which are designed to operate from a single power supply over a wide range of voltages. Operation from split power supplies, is also possible and the power supply current drain is very low. Further advantage, the input common-mode voltage includes ground, even though operated from a single power supply voltage.

Two kinds of ICs are available according to reliability, the μPC177 for industry, the μPC339 for commercial.

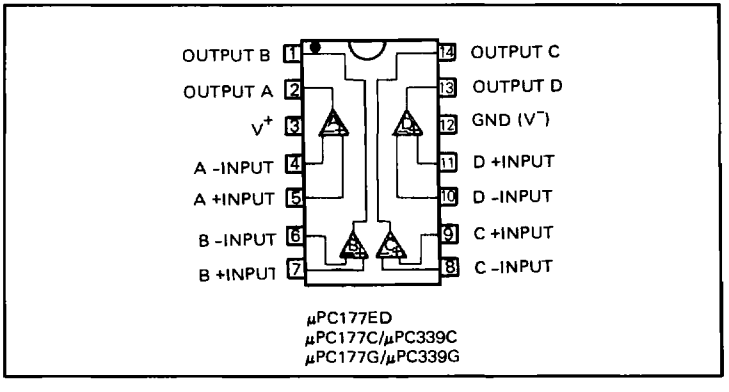
FEATURES

- Input Common-Mode Voltage Range Includes Ground
- Wide Power Supply Range
  - Single Supply 2 V to 36 V DC
  - Dual Supplies ±1 V to ±18 V DC
- Low Power Consumption
- Compatible with All Forms Logic
- Open Collector Output
- LM339 Direct Replacement

EQUIVALENT CIRCUIT



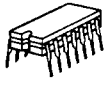
CONNECTION DIAGRAM (Top View)



μPC177ED
μPC177C/μPC339C
μPC177G/μPC339G

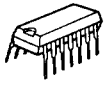
ORDERING INFORMATION

μPC177ED



14 pin Ceramic DIP
(Dual In-Line Package)

μPC177C/μPC339C



14 pin Plastic Molded DIP
(Dual In-Line Package)

μPC177G/μPC339G

14 pin Plastic Molded Flat Package
(MINI FLAT IC)

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ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

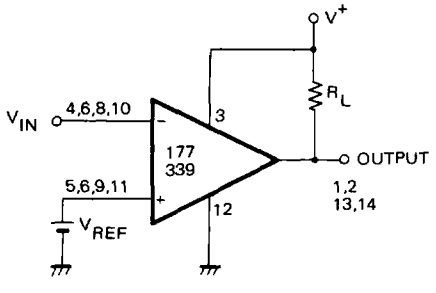
PARAMETER		μPC177	μPC339	UNIT
Voltage between V^+ and V^-		36	36	V
Differential Input Voltage		36	36	V
Common Mode Input Voltage		−0.3 to +36	−0.3 to +36	V
Power Dissipation*	D Package	900	–	mW
	C Package	570	570	
	G Package	550	550	
Output Short Circuit to Ground		Indefinite	Indefinite	s
Operating Temperature Range	D Package	−20 to +80	–	°C
	C or G Package	−20 to +70	0 to +70	
Storage Temperature Range	D Package	−20 to +80	–	°C
	C or G Package	−55 to +125	−55 to +125	

* See thermal information in chapter 11.

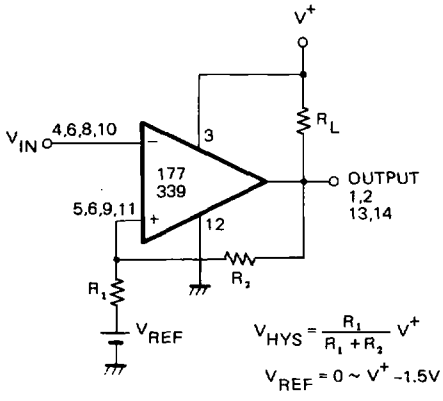
ELECTRICAL CHARACTERISTICS (Ta = 25°C, V^+ = 5 V)

CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Input Offset Voltage		2	5	mV	Vo = 1.4 V, V_{REF} = 1.4 V, Rs = 0 Ω
Input Bias Current		25	250	nA	Vo ≈ 1.4 V
Input Offset Current		5	50	nA	Vo ≈ 1.4 V
Common Mode Input Voltage Range	0		V^+−1.5	V	
Supply Current		0.8	2	mA	R_L = ∞
Voltage Gain		200		V/mV	R_L = 15 kΩ
Large Signal Response Time		1.3		μs	R_L = 5.1 kΩ, V_{RL} = 5V
Output Sing Current	6	16		mA	$V_{IN(-)}$ = 1 V, $V_{IN(+)}$ = 0 V, Vo ≤ 1.5 V
Saturation Voltage		0.2	0.4	V	$V_{IN(-)}$ = 1 V, $V_{IN(+)}$ = 0V, I_{sink} = 3 mA
Output Leakage Current		0.1		nA	$V_{IN(+)}$ = 1 V, $V_{IN(-)}$ = 0 V, Vo = 5 V

TYPICAL APPLICATIONS



V_{REF} = 0 ~ V^+ -1.5 V

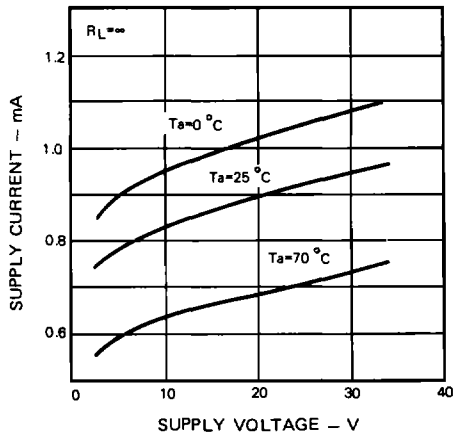


$V_{HYS} = \frac{R_1}{R_1 + R_2} V^+$

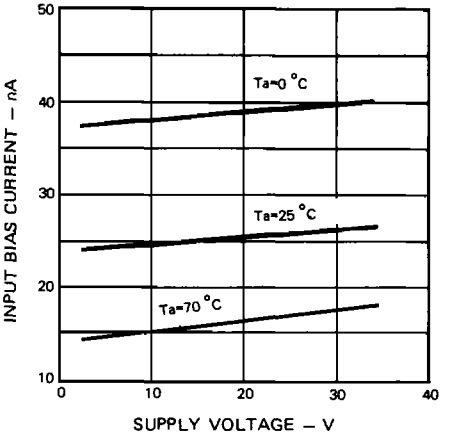
V_{REF} = 0 ~ V^+ -1.5V

TYPICAL PERFORMANCE CHARACTERISTICS (Ta=25 °C)

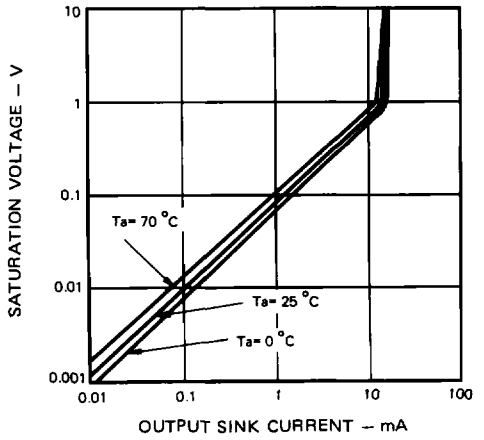
SUPPLY CURRENT



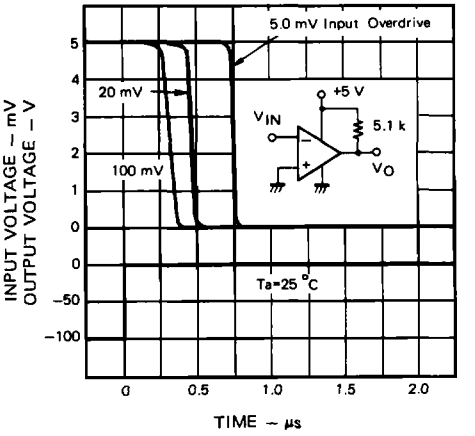
INPUT BIAS CURRENT



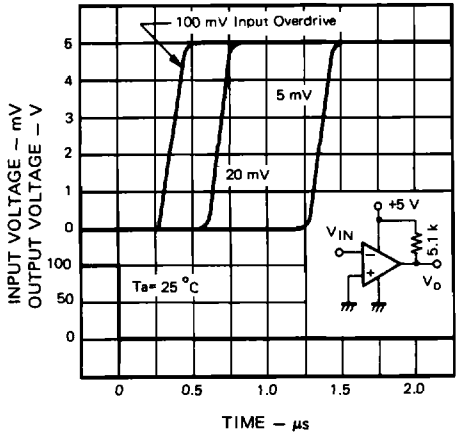
OUTPUT SATURATION VOLTAGE



RESPONSE TIME FOR VARIOUS INPUT OVERDRIVES



RESPONSE TIME FOR VARIOUS INPUT OVERDRIVES



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