

# $\mu$ PC271 / 311

## Precision Voltage Comparators

### GENERAL DESCRIPTION

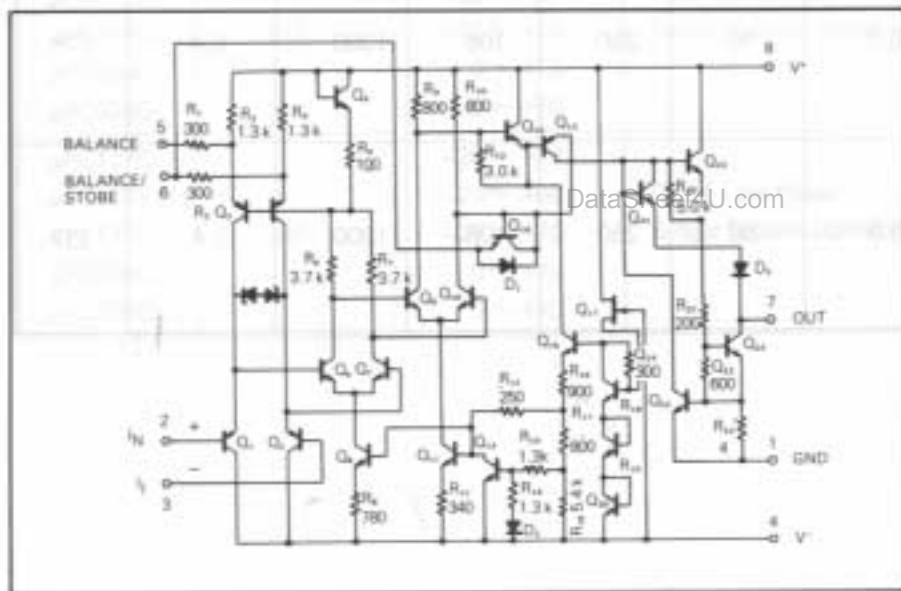
The  $\mu$ PC271/311 are voltage comparators that have input currents more than a hundred times lower than device like conventional standard type of 710. It is also designed to operate over a wide range of supply voltages; from  $\pm 15$  V op amp supplies down to the single 5 V supply used for IC logic. Its output is compatible with HNIL, DTL and TTL as well as MOS circuits.

Two kinds of ICs are available according to reliability, the  $\mu$ PC271 for industry, the  $\mu$ PC311 for commercial.

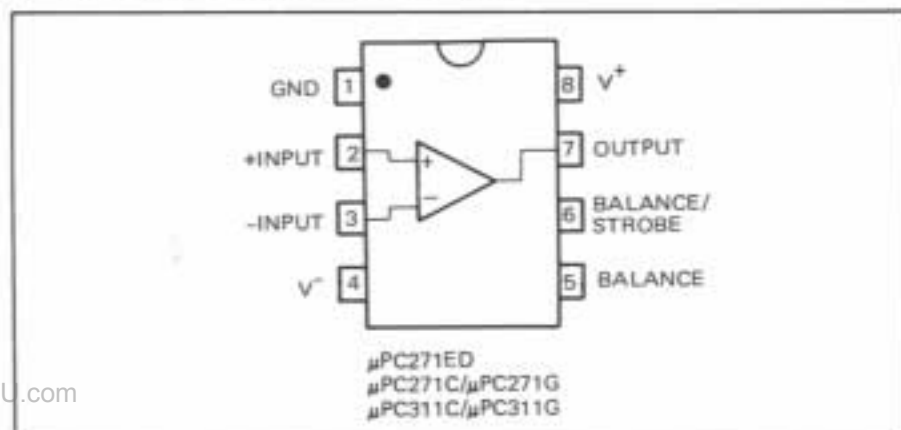
### FEATURES

- Operate from single 5 V supply
- Maximum input current: 250 nA
- Maximum offset current: 50 nA
- Fast transient response: 200 ns TYP.
- LM311 Direct Replacement

### EQUIVALENT CIRCUIT



### CONNECTION DIAGRAM (Top View)



### ORDERING INFORMATION

$\mu$ PC271ED



8 pin Ceramic DIP  
(Dual In-Line Package)

$\mu$ PC271C/ $\mu$ PC311C



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

$\mu$ PC271G/ $\mu$ PC311G



8 pin Plastic Molded Flat Package  
(MINI FLAT IC)

**ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)**

PARAMETER		$\mu$ PC271	$\mu$ PC311	UNIT
Voltage between V <sup>+</sup> and V <sup>-</sup>		36	36	V
Output to Negative Supply Voltage		40	40	V
Ground to Negative Supply Voltage		30	30	V
Differential Input Voltage		±30	±30	V
Input Voltage (Note 1)		±15	±15	V
Power Dissipation*	D Package	500	—	mW
	C Package	350	350	
	G Package	440	440	
Output Short Circuit Duration		10	10	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	-55 to +150	—	°C
	C or G Package	-55 to +125	-55 to +125	

Note 1. For supply voltages less than ±15 V, the absolute maximum input voltage is equal to the supply voltage.

\* See thermal information in chapter 11.

**ELECTRICAL CHARACTERISTICS (Ta = 25°C, V<sup>±</sup> = ±15 V)**

CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Input Offset Voltage		2.0	7.5	mV	V <sup>+</sup> - V <sup>-</sup> = 5 V ~ 30 V, R <sub>S</sub> ≤ 50 kΩ
Input Offset Current		6.0	50	nA	"
Input Bias Current		100	250	nA	"
Voltage Gain		200		V/mV	R <sub>L</sub> = 1.0 kΩ
Response Time		200		ns	Input step 100 mV, Overdrive 5 mV
Saturation Voltage		0.75	1.5	V	V <sub>IN</sub> ≥ 10 mV, I <sub>o</sub> = 50 mA
Strobe ON Current		3.0		mA	
Output Leakage Current		0.2	50	nA	V <sub>IN</sub> ≥ 10 mV, V <sub>o</sub> = 35 V
Positive Supply Current		5.1	7.5	mA	
Negative Supply Current		4.1	5.0	mA	
Input Offset Voltage			10	mV	V <sup>+</sup> - V <sup>-</sup> = 5 ~ 30 V, R <sub>S</sub> ≤ 50 kΩ, TA = 0 ~ 70°C
Input Offset Current			70	nA	"
Input Bias Current			300	nA	"
Input Voltage Range		±14		V	
Saturation Voltage		0.23	0.4	V	V <sup>+</sup> ≥ 4.5 V, V <sup>-</sup> = 0 V, V <sub>IN</sub> ≤ -10 mV, I <sub>o</sub> = 8 mA

