μPC271 / 311

Precision Voltage Comparators

GENERAL DESCRIPTION

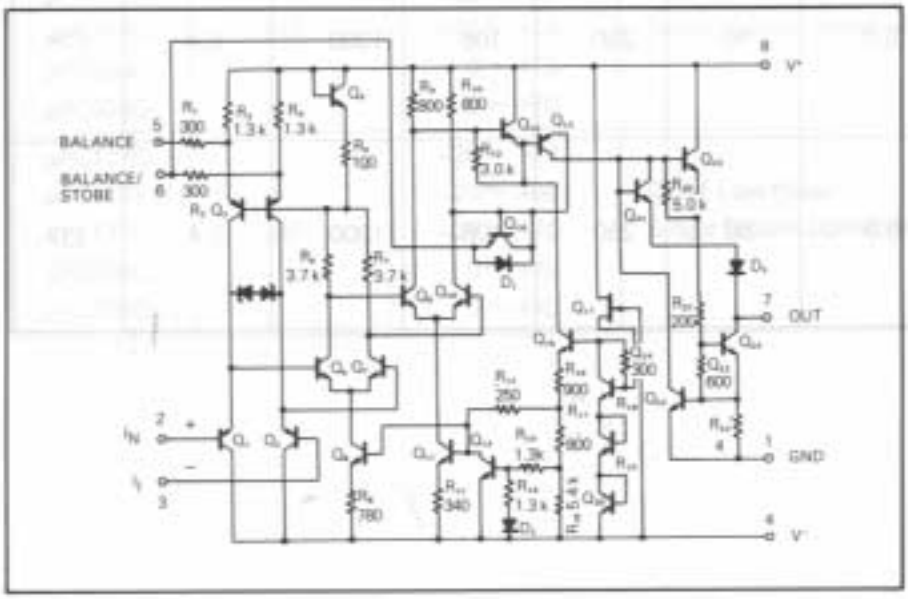
The μPC271/311 are voltage comparators that have input currents more than a hundred times lower than device like conventional standard type of 710. It is also designed to operate over a wide range of supply voltages; from ±15 V op amp supplies down to the single 5 V supply used for IC logic. Its output is compatible with HNIL, DTL and TTL as well as MOS circuits.

Two kinds of ICs are available according to reliability, the μPC271 for industry, the μPC311 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



ORDERING INFORMATION

μPC271ED

8 pin Ceramic DIP
(Dual In-Line Package)

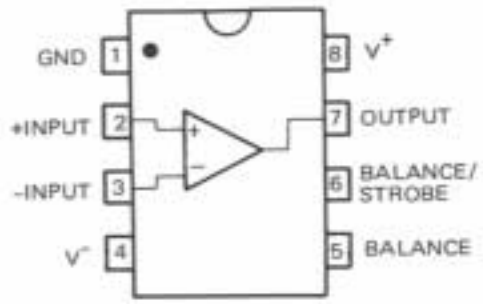
μPC271C/μPC311C

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

μPC271G/μPC311G

8 pin Plastic Molded Flat Package
(MINI FLAT IC)

CONNECTION DIAGRAM (Top View)



μPC271ED
μPC271C/μPC271G
μPC311C/μPC311G

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

PARAMETER		μPC271	μPC311	UNIT
Voltage between V^+ and V^-		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	

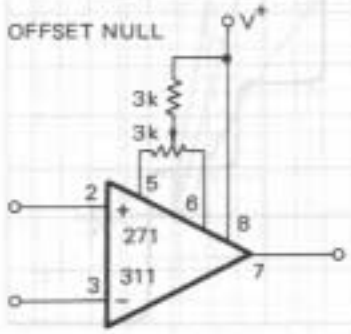
Note 1. For supply voltages less than ±15 V, the absolute maximum input voltage is equal to the supply voltage.

* See thermal information in chapter 11.

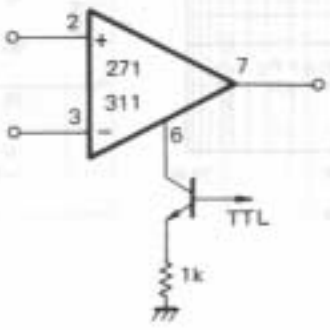
ELECTRICAL CHARACTERISTICS (Ta = 25°C, $V^{\pm}$ = ±15 V)

CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Input Offset Voltage		2.0	7.5	mV	$V^+ - V^-$ = 5 V ~ 30 V, Rs ≤ 50 kΩ
Input Offset Current		6.0	50	nA	"
Input Bias Current		100	250	nA	"
Voltage Gain		200		V/mV	R_L = 1.0 kΩ
Response Time		200		ns	Input step 100 mV, Overdrive 5 mV
Saturation Voltage		0.75	1.5	V	V_{IN} ≥ 10 mV, Io = 50 mA
Strobe ON Current		3.0		mA	
Output Leakage Current		0.2	50	nA	V_{IN} ≥ 10 mV, Vo = 35 V
Positive Supply Current		5.1	7.5	mA	
Negative Supply Current		4.1	5.0	mA	
Input Offset Voltage			10	mV	$V^+ - V^-$ = 5 ~ 30 V, Rs ≤ 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^+ ≥ 4.5 V, V^- = 0 V, V_{IN} ≤ −10 mV, Io = 8 mA

OFFSET NULL



STROBING



INCREASING INPUT STAGE CURRENT