

NEC
NEC Electronics Inc.

μ PC393
DUAL LOW-POWER
VOLTAGE COMPARATOR

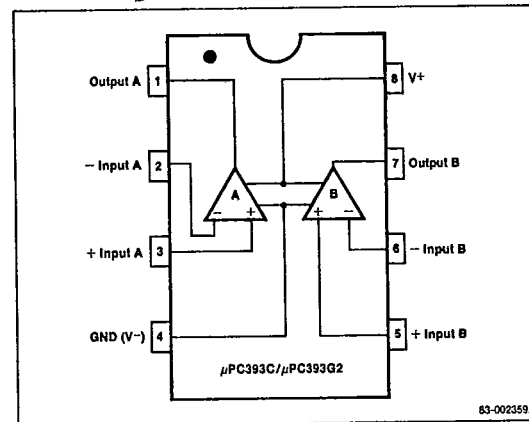
Description

The μ PC393 is a dual comparator designed to operate from either single or split power supplies from +2 V to ± 18 V. It features low power supply current drain and input common mode voltage which includes ground, even when operated from a single supply. The μ PC393 is designed for Commercial temperature ranges.

Features

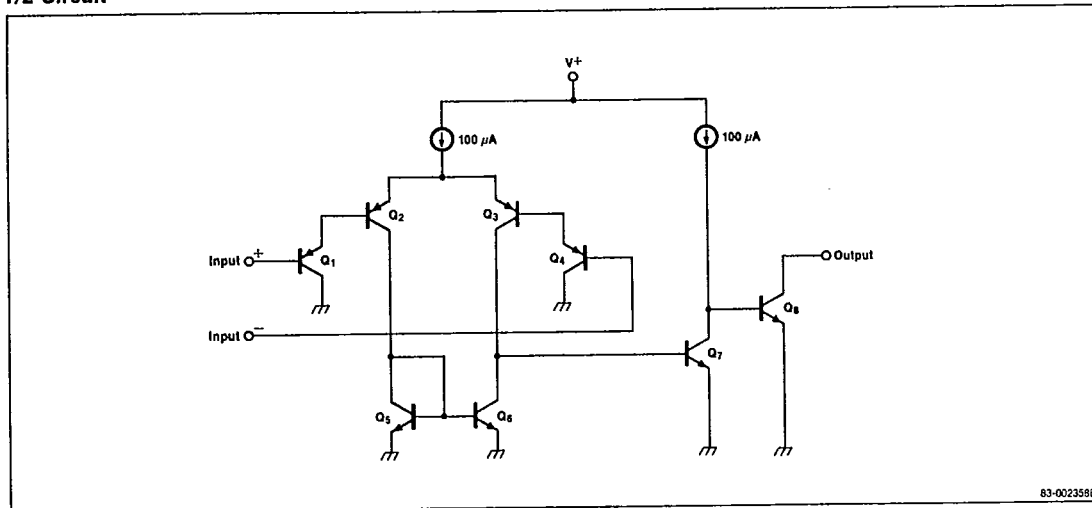
- Input common-mode voltage range includes ground
- Wide power supply range:
Single supply 2 V to 36 V DC
Dual supplies ± 1 V to ± 18 V DC
- Low power consumption
- Compatible with all forms of logic
- Open collector output
- LM393 direct replacement

Pin Configuration



Equivalent Circuit

1/2 Circuit



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6427525 N E C ELECTRONICS INC

81C 10223 DT-73-53

μPC393



Absolute Maximum Ratings

$T_A = 25^\circ\text{C}$

Voltage Between V^+ and V^-	36 V
Differential Input Voltage	36 V
Common Mode Input Voltage	-0.3 to +36 V
Power Dissipation, C Package	350 mW
Power Dissipation, G2 Package	440 mW
Output Short Circuit to Ground	Indefinite
Operating Temperature Range, C or G2 Package	0 to +70°C
Storage Temperature Range, C or G2 Package	-55 to +125°C

Ordering Information

Part Number	Package	Operating Temperature Range
μPC393C	Plastic DIP	0°C to +70°C
μPC393G2	Plastic Miniflat	0°C to +70°C

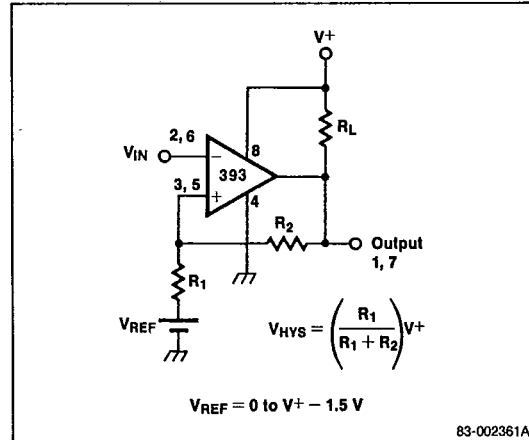
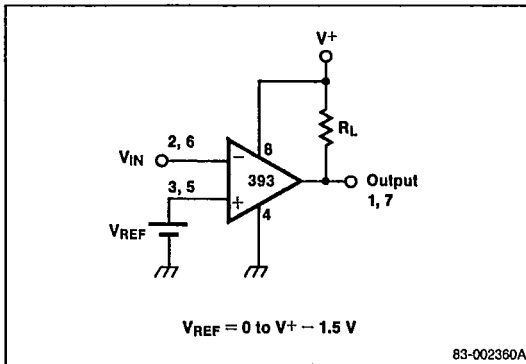
Comment: Stress above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Electrical Characteristics

$T_A = 25^\circ\text{C}$, $V^+ = 5\text{ V}$

Parameter	Symbol	Limits			Unit	Test Conditions
		Min.	Typ.	Max.		
Input Offset Voltage	V_{IO}		2	5	mV	$V_0 = 1.4\text{ V}$, $V_{REF} = 1.4\text{ V}$, $R_S = 0\Omega$
Input Bias Current	I_b		25	250	nA	$V_0 = 1.4\text{ V}$
Input Offset Current	I_{IO}		5	50	nA	$V_0 = 1.4\text{ V}$
Common Mode Input Voltage Range	V_{ICM}	0				
Supply Current	I_{CC}		0.6	1	mA	$R_L = \infty$
Voltage Gain	A_{VOL}		106		dB	$R_L = 15\text{ k}\Omega$
Large Signal Response Time	t_{RLS}		1.3		μs	$R_L = 5.1\text{ k}\Omega$, $V_{RL} = 5\text{ V}$
Output Sink Current	I_{OSINK}	6	16		mA	- INPUT = 1 V, + INPUT = 0 V, $V_0 \leq 1.5\text{ V}$
Saturation Voltage	V_{SAT}		0.2	0.4	V	- INPUT = 1 V, + INPUT = 0 V, $I_{OSINK} = 3\text{ mA}$
Output Leakage Current	I_{OLEAK}		0.1		nA	+ INPUT = 1 V, - INPUT = 0 V, $V_0 \leq 5\text{ V}$

Typical Applications



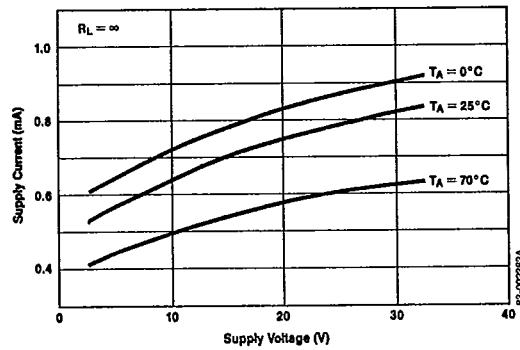


μ PC393

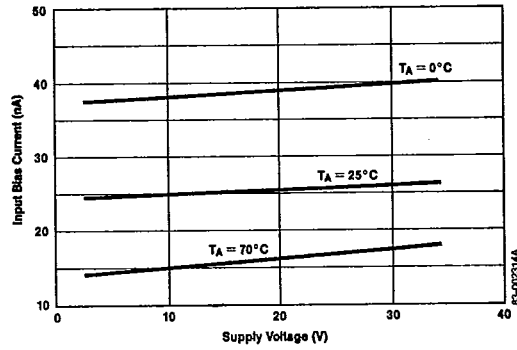
Operating Characteristics

$T_A = 25^\circ\text{C}$

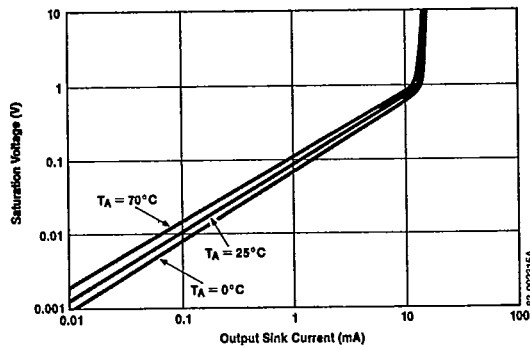
Supply Current



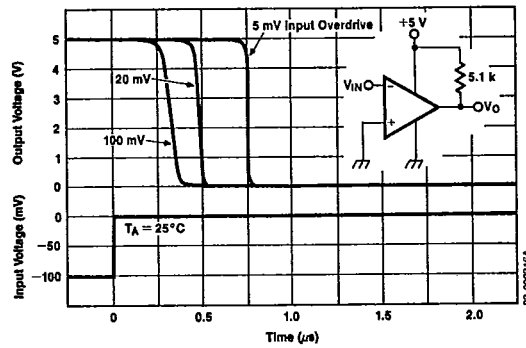
Input Bias Current



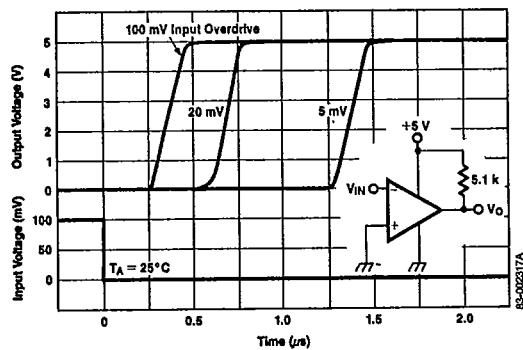
Output Saturation Voltage



Response Time for Various Input Overdrives



Response Time for Various Input Overdrives



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