

Double comparator

summary:

The L M 3 9 3 is composed of two independent, precise voltage comparators with a dysregulated voltage of no more than 2.0mV.Works under a single or dual power supply. And the current size is not affected by the magnitude of the power supply voltage amplitude.These

main features:

•Wide voltage range of working power supply: single power supply: 2.0V[~]36V double power supply: 1.0V[~]18V±±

Small power supply current: 0.8mA is independent of the power supply voltage
Input bias current is low: 25nA
I ow input disorder current: 5 0nA

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Internal circuit diagrams





L M 393

Lead-out-end function symbol

Lead-end serial number	Work, ability	Characte r, No	Lead-end serial number	Work, ability	Characte r, No
1	Compensator 1 output	O U T1	5	Compator 2 positive phase input	IN2+
2	Compensator 1 reverse phase input	IN 1-	6	Compensator 2 reverse phase input	I N2-
3	Compensator 1 positive phase input	I N1+	7	Compensator 2 output	O U T2
4	the earth	GND	8	source	Vc c

Limit (absolute maximum rating, Tamb=25°C)

Reference, number, name, name			Nu	Single	
		number	The most, small	The most, big	position
supply voltage	Dual power voltage	Vc c	-	±18	V
	Single power voltage			36	
Input the differential voltage		V IDR		36	V
Input the common-mode voltage		V ICR	-0.3	36	V
Output the short-circuit-to-ground current		IOG		20	mA
Maximum working temperature temperature) T J (MAX		125	°C
power dissipation (*)	P D		570	mW	
Working ring, boundary temperature		T a m b	0	70	°C
storage temperature		Tstg	-65	150	°C

Electrical characteristics (Vcc=5V, Tamb=25°C)

Special, sex	test condition	Fu, number	Fan, The most , smal I	Regu Value Code , type	lation, The most, big	Single, position
Input the	T a=25°C	VIO		±1.0	±5.0	mV
dysregulated	≤≤0°C T a 70°C				±9.0	111 V
voltage						
input offset current	T a=25°C	UO		±5.0	±50	n A
	≤≤0°C T a 70°C	110			±150	
input bias current	T a=25°C	LID		25	250	n A
	≤≤0°C T a 70°C				400	
Input the common	T a=25°C	VICR	0		Vc c-1.5	• •

mode voltage range	≤≤0°C T a 70°C		0		Vc c-2.0	
course current	∞ R L = Dual comparator	T		0.4	1.0	
source current	∞ R L = Dual-comparator, Vcc=30V	1 cc			2.5	mA
voltage gain	$\ge \Omega R L$ 15K, Vcc=15V	G v	50	200		V /mV
Large signal response time	V IN =TTL Logical pendulum amplitude, V REF =1.4V, V RL =5.0V, and R L =5.1K Ω	t _{RES}		300		n s
response time	V RL =5.0V , R L =5.1K Ω	t _{RES}		1.3		n s
Input the differential voltage		VID			Vc c	V

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Output sink current		$\geq V IN (-) 1.0V, V IN (+) = 0V,$ Vo 1.5V≤	I SIN K	6.0	16		mA
output satu	ration		VSAT		150	400	mV
voltage	≥≤V IN (-) 1.0V, V IN (+) =0V, I SINK 4.0mA 0°C T a 70°C≤≤				700	111 V	
Output the 1	leakage	\geq V IN (+) 1.0V , V IN (-) =0V , Vo=5.0V	I OL		0.1		n A
current	C	≥V IN (+) 1.0V , V IN (-) =0V , Vo=30V 0°C T a 70°C≤≤				1000	





Square-wave oscillator, a time-delay generator

direction for use:

The LM393 is a high-gain, wide-band device that, and like most comparators, easily generates oscillations if coupled is parasitic capacitance from the output to the input. This phenomenon occurs only in the gap of the output voltage transition when the comparator changes the state. Power supply plus bypass filtering does not solve this problem, and the design of the standard PC plates is helpful to reduce the input-output parasitic capacitance coupling. Ω Reducing the input resistance to less than 10K reduces the feedback signal, and increasing even a small amount of positive feedback (lag back from 1.0 to 10 mV) can lead to rapid conversion, making it impossible to produce oscillations due to the parasitic capacitance.Unless the lag is utilized, inserting directly into the IC and adding the resistance to the pin causes the input-the output to oscillate over a very short transition period, and the lag will not be required if the input signal is a pulse waveform and the rise and descent times are quite fast.

All the unused pins of the comparator must be grounded.

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LM393The bias network establishes that its static current is independent of the supply voltage range of 2.0 to 30 V.

Usually the power supply is not required with a bypass capacitance.

Differential input voltage can be greater than Vcc without damaging the device. The protective part must be able to prevent the input voltage from exceeding minus 0.3V to the negative end.

The output part of the LM393 is a collector open circuit, emitter-grounded NPN output transistor that can be provided or functional with a multi-collector electrode output. The output load resistance is connected to any supply voltage within the allowable supply voltage range, independent of the voltage value of the Vcc end. This output can serve as a simple open circuit to the ground SPS (when no load resistance is not applied), and the trap current of the output part is limited by the possible value of the drive and the device. β When the limit current (16mA) is reached, the output transistor will exit and the output voltage will rise quickly. The output saturation voltage is limited by the SAT of the output transistor of about 60. Ω_{γ} When the load current is small, the low regulated voltage of the output transistor (about 1.0mV) allows the output level at zero level.

Package information



NOTES: 1. DIMENSION L TO CENTER OF LEAD WHEN

FORMED PARALLEL 2. PACKAGE CONTOUR OPTIONAL (ROUND OR SQUARE CORNERS).

 DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.

	MILLIN	NETERS	INCHES		
DIM	MIN	MAX	MIN	MAX	
A	9.40	10.16	0.370	0.400	
B	6.10	6.60	0.240	0.260	
C	3.94	4.45	0.155	0.175	
D	0.38	0.51	0.015	0.020	
F	1.02	1.78	0.040	0.070	
G	2.54	BSC	0.100	BSC	
H	0.76	1.27	0.030	0.050	
1	0.20	0.30	0.008	0.012	
K	2.92	3.43	0.115	0.135	
L	7.62	BSC	0.300	BSC	
M		10°		10	
N	0.76	1.01	0.030	0.040	



- NOTES: 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982. 2. CONTROLLING DIMENSION: MILLIMETER. 3. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION. 4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE
- MAXIMUM MOLD PROTHUSION 0.15 (0.000) PER SIDE.
 DIMENSION D DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 (0.005) TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.
 751-01 THRU 751-06 ARE OBSOLETE. NEW STANDARD IS 751-07.

	MILLIM	ETERS	INCHES		
DIM	MIN	MAX	MIN	MAX	
A	4.80	5.00	0.189	0.197	
B	3.80	4.00	0.150	0.157	
C	1.35	1.75	0.053	0.069	
D	0.33	0.51	0.013	0.020	
G	1.27	BSC	0.050 BSC		
н	0.10	0.25	0.004	0.010	
J	0.19	0.25	0.007	0.010	
K	0.40	1.27	0.016	0.050	
M	0.0	8 *	0.0	8	
N	0.25	0.50	0.010	0.020	
8	5.80	6.20	0.228	0.244	

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