

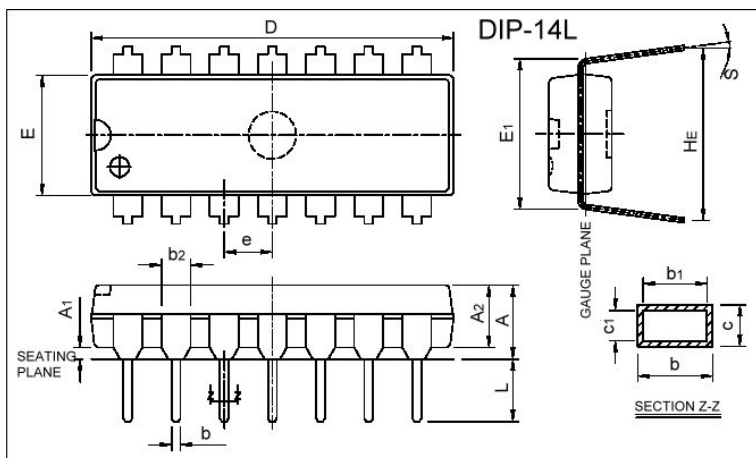
Description

The SHLM339 consists of four independent voltage comparators, designed specifically to operate from a single power supply over a wide voltage range.

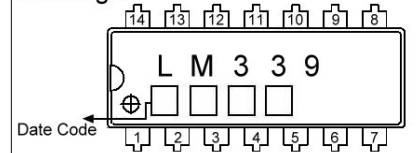
Features

- *Single or dual supply operation.
- *Wide operating supply range ($V_{CC}=2V\sim 36V$).
- *Input common-mode voltage includes ground.
- *Low supply current drain $I_{CC}=0.8mA$ (Typical).
- *Low input bias current $I_{bias}=25nA$ (Typical)
- *Output compatible with TTL, DTL, and CMOS logic system.

Package Dimensions

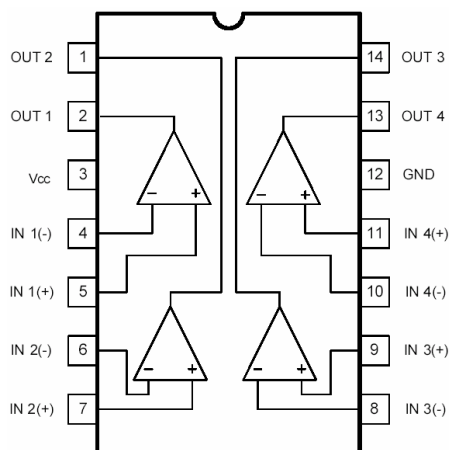


Marking :

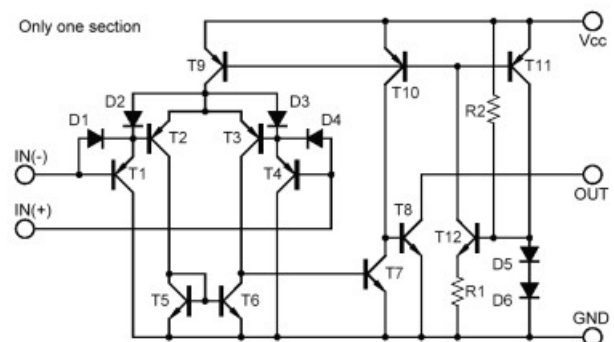


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	-	5.334	c1	0.203	0.279
A1	0.381	-	D	18.92	19.69
A2	3.175	3.429	E	6.096	6.604
b	0.406	0.508	E1	7.493	8.001
b1	0.356	0.508	e	2.413	2.667
b2	1.270	1.778	HE	8.509	9.525
c	0.203	0.356	L	3.175	3.683
			S	0'	15'

Pin Configurations



Block Diagram



Absolute Maximum Ratings at $T_a = 25^\circ C$

Parameter	Symbol	Value	Unit
Supply Voltage	V_{CC}	± 18 or 36	V
Differential Input Voltage	$V_{i(Diff)}$	36	V
Input voltage	V_{IN}	-0.3~36	V
Power Dissipation	PD	570	mW
Operating Temperature	T_{opr}	0 ~ +70	$^\circ C$
Storage Temperature	T_{stg}	-65 ~ 150	$^\circ C$

Electrical Characteristics ($V_{CC}=5V$, $T_a=25^\circ C$, All voltage referenced to GND unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input offset voltage	V_{IO}	$V_{CC}=5 \sim 30$, $V_{IC} = V_{ICR(min)}$ $V_O=1.4V$, $R_S=0$	-	± 2	± 5	mV
Input offset current	I_{IO}	$V_O=1.4V$	-	± 5	± 50	nA
Input bias current	I_{BIAS}	$V_O=1.4V$	-	-25	-250	nA
Common-mode input voltage range (Note1)	V_{ICR}		0	-	$V_{CC}-1.5$	V
Supply current	I_{CC}	$R_L=\infty$, $V_{CC}=5V$	-	0.8	2.0	mA
		$R_L=\infty$, $V_{CC}=30V$ (Full Range)	-	-	2.5	mA
Large signal differential Voltage amplification	A_{VD}	$V_{CC}=15V$, $V_O=1.4V \sim 11.4V$ $R_L \geq 15K\Omega$ to V_{CC}	50	200	-	V/mV
Response time	t_{RES}	TTL-level input step (Note2) $V_{RL}=5V$, $R_L=5.1 K\Omega$, $C_L=15pF$	-	350	-	ns
		100mV input step with (Note2) 5mV overdrive $V_{RL}=5V$, $R_L=5.1K\Omega$, $C_L=15pF$	-	1400	-	ns
Low-level output current	I_{OL}	$V_{IN(-)}=1V$, $V_{IN(+)}=0V$ $V_{OL}=1.5V$	6	18	-	mA
Low-level output voltage1	V_{OL}	$V_{IN(-)}=1V$, $V_{IN(+)}=0V$ $I_{OL}=4mA$	-	150	400	mV
High-level output current	I_{OH}	$V_{IN(+)}=1V$, $V_{OH}=5V$	-	0.1	-	nA
		$V_{IN(-)}=0V$, $V_{OH}=30V$ (Full Range)	-	-	1.0	μA

Note 1.The voltage at either input or common-mode should not be allowed to negative by more than 0.3V. The upper and of the common-mode voltage range is $V_{CC} - 1.5V$, but either or both input can go to 30V without damage.

2.The response time specified is the interval between the input step function and instant when the output crosses 1.4V.

Typical performance Characteristics

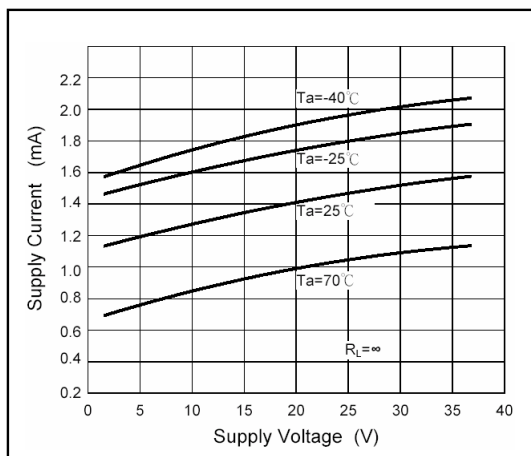


Fig 1. Supply Current

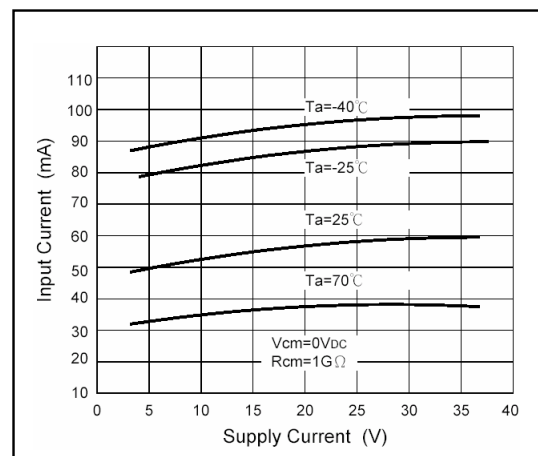


Fig 2. Input Current

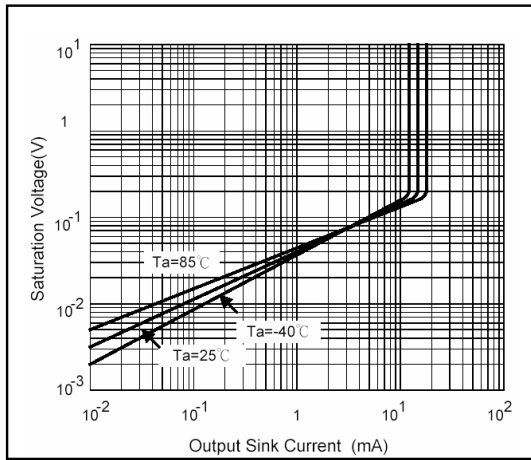


Fig 3. Output Saturation Voltage

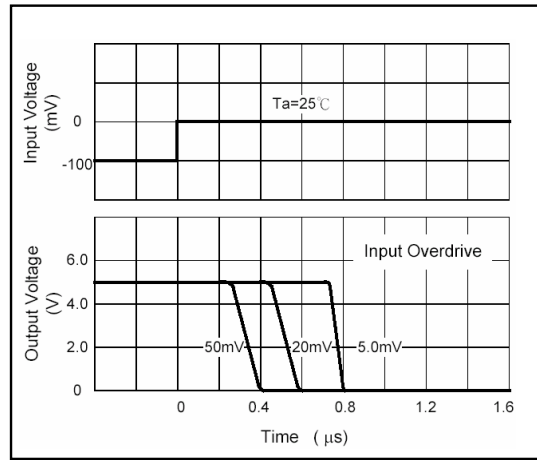


Fig 4. Response Time For Various Input Overdrive Negative Transition

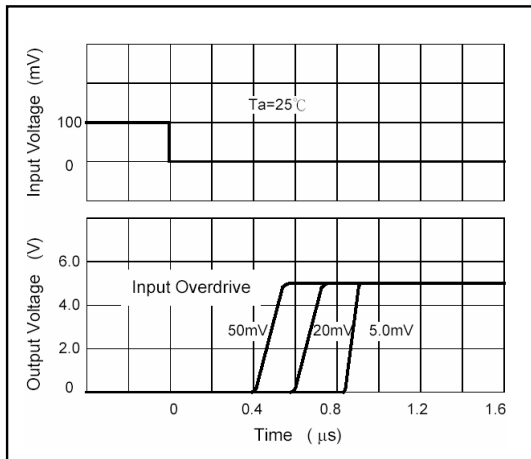


Fig 5. Response Time For Various Input Overdrive Positive Transition

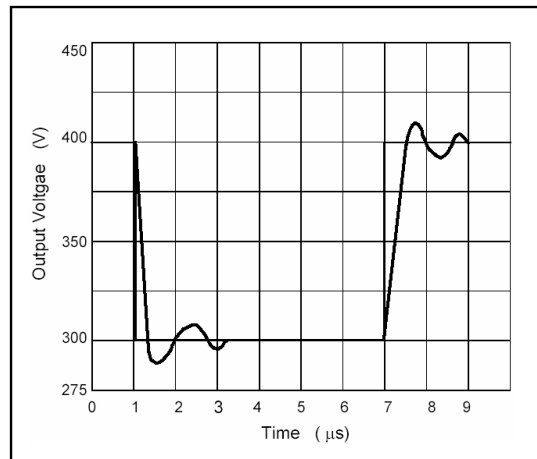


Fig 6. Voltage Follower Pulse Response (Small Signal)

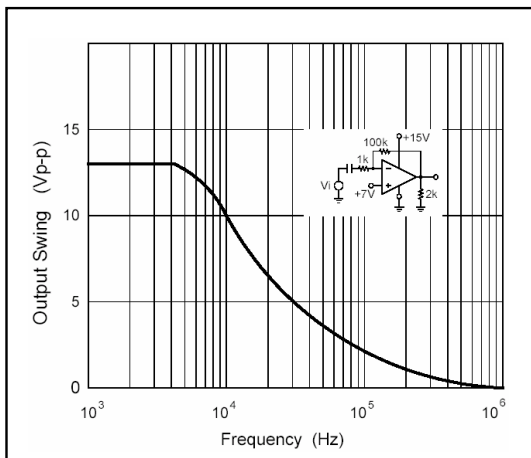


Fig 7. Large Signal Frequency Response

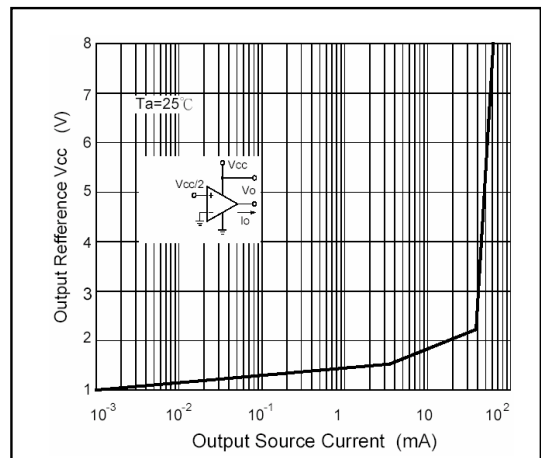
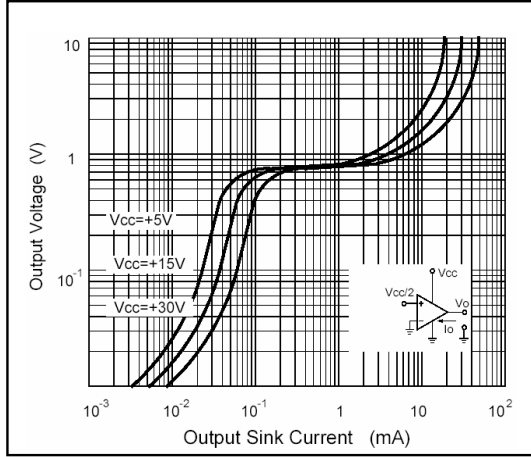


Fig 8. Output Characteristics Current Sourcing



**Fig 9. Output Characteristics
Current Sinking**

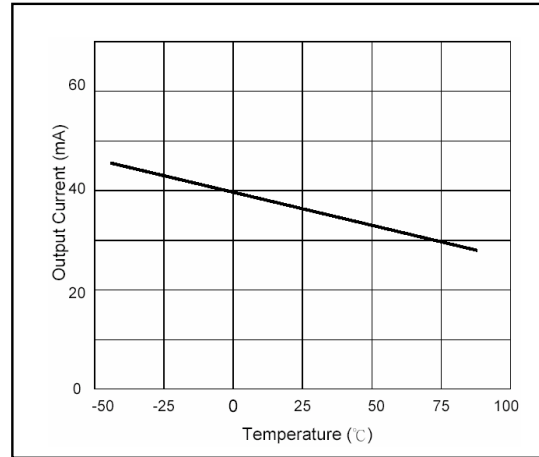


Fig 10. Current Limiting