

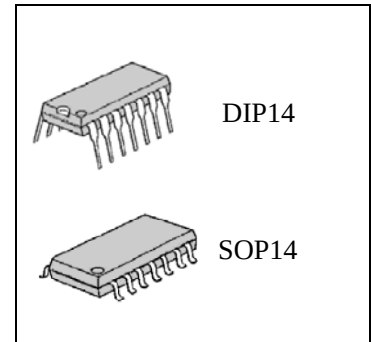
Low Power Offset Voltage Quad Comparators

Features

- Wide Supply Voltage Range
 - Single Supply: 2.0V to 36V
 - Dual Supplies: $\pm 1.0\text{V}$ to $\pm 18\text{V}$
- Very Low Supply Current Drain: 0.8mA
 - Independent of Supply Voltage
- Low Input Bias Current: 25nA (Typical)
- Low Input Offset Current: $\pm 5\text{nA}$ (Typical)
- Low Input Offset Voltage: $\pm 2\text{mV}$ (Typical)
- Input Common Mode Voltage Range Includes Ground
- Differential Input Voltage Range Equals to the Power Supply Voltage
- Low Output Saturation Voltage: 250mV at 4mA
- Open Collector Output

Applications

- Battery Charger
- Cordless Telephone
- Switching Power Supply
- DC-DC Module
- PC Motherboard



Functional Block Diagram

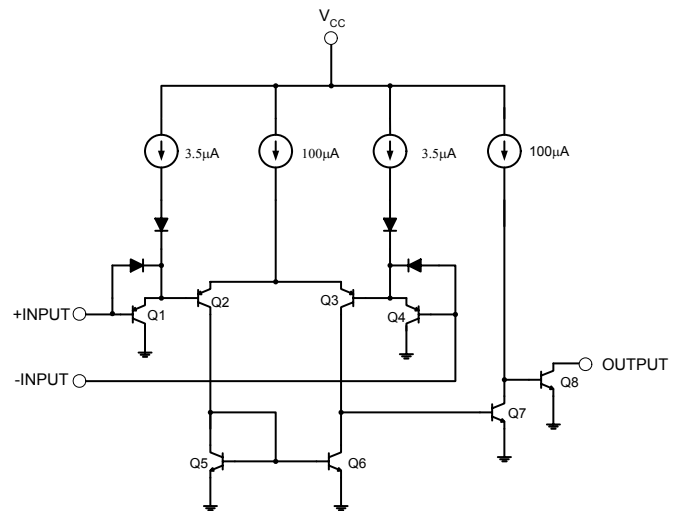


Figure 1. Functional Block Diagram of LM339 (Each Comparator)

Pin Configuration

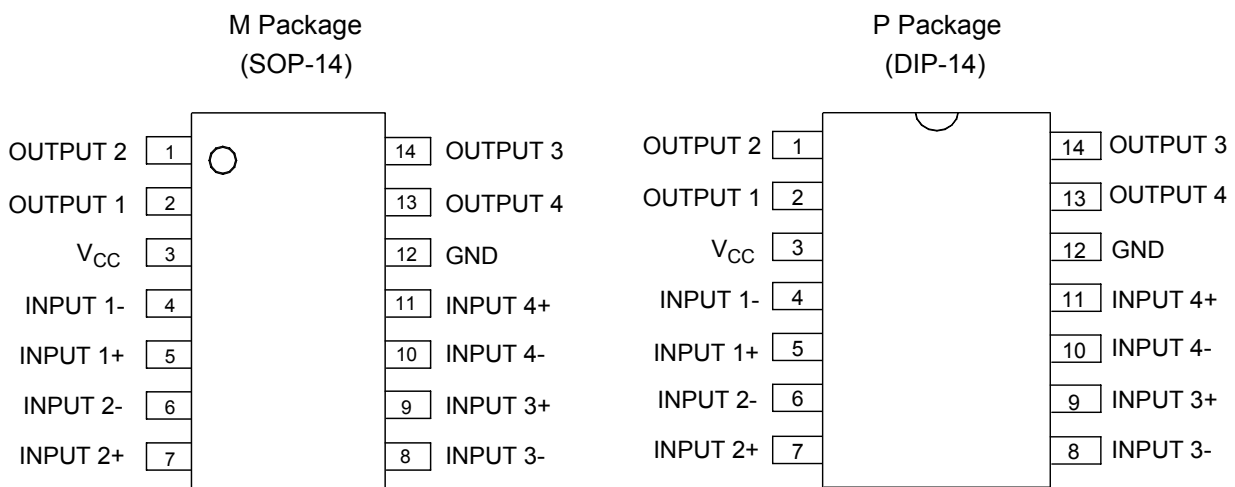


Figure 2 Pin Configuration of LM339 (Top)

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Recommended Operating Conditions

Parameter	Symbol	Min	Max	Unit
Supply Voltage	V_{CC}	2	36	V
Operating Temperature Range	T_A	-40	85	°C

Absolute Maximum Ratings (Note 1)

Parameter	Symbol	Value		Unit
Supply Voltage	V_{CC}	36		V
Differential Input Voltage	V_{ID}	36		V
Input Voltage	V_{IN}	-0.3 to 36		V
Input Current ($V_{IN} < -0.3V$) (Note 2)	I_{IN}	50		mA
Power Dissipation ($T_A=25^{\circ}C$)	P_D	DIP-14	1050	mW
		SOP-14	890	
Output Short Circuit to Ground		Continuous		
Operating Junction Temperature	T_J	150		°C
Storage Temperature Range	T_{STG}	-65 to 150		°C
Lead Temperature (Soldering, 10 seconds)	T_{LEAD}	260		°C

Electrical Characteristics

$V_{CC}=5V$, $GND=0V$, $T_A=25^{\circ}C$, unless otherwise specified.

Parameter	Conditions	Min	Typ	Max	Unit
Input Offset Voltage	(Note 3)		2.0	5.0	mV
Input Bias Current	I_{IN+} or I_{IN-} with output in linear range, $V_{CM}=0V$ (Note 4)		25	250	nA
Input Offset Current	$I_{IN+}-I_{IN-}$, $V_{CM}=0V$		5.0	50	nA
Input Common Mode Voltage Range	$V_{CC}=15V$ (Note 5)	0		$V_{CC}-1.5$	V
Supply Current	$R_L=\infty$, $V_{CC}=5V$		0.8	2.0	mA
	$R_L=\infty$, $V_{CC}=36V$		1.0	2.5	
Voltage Gain	$R_L \geq 15k\Omega$, $V_{CC}=15V$, $V_O=1V$ to $11V$	50	200		V/mV
Large Signal Response Time	V_{IN} =TTL logic swing, $V_{REF}=1.4V$, $V_{RL}=5V$, $R_L=5.1k\Omega$		300		ns
Response Time	$V_{RL}=5V$, $R_L=5.1k\Omega$ (Note 6)		1.3		μs
Output Sink Current	$V_{IN-}=1V$, $V_{IN+}=0$, $V_O \leq 1.5V$	6.0	16		mA
Saturation Voltage	$V_{IN-}=1V$, $V_{IN+}=0$, $I_{SINK} \leq 4mA$		250	400	mV
Output Leakage Current	$V_{IN-}=0$, $V_{IN+}=1V$, $V_O=5V$		0.1		nA
Thermal Resistance (Junction to Case)	DIP-14		40.60		°C/W
	SOP-14		60.24		

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Typical Performance Characteristics

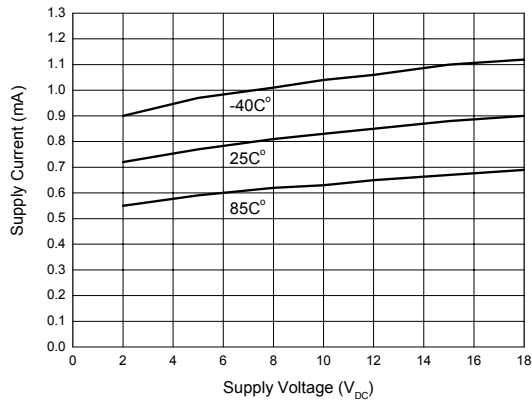


Figure 3. Supply Voltage vs. Supply Current

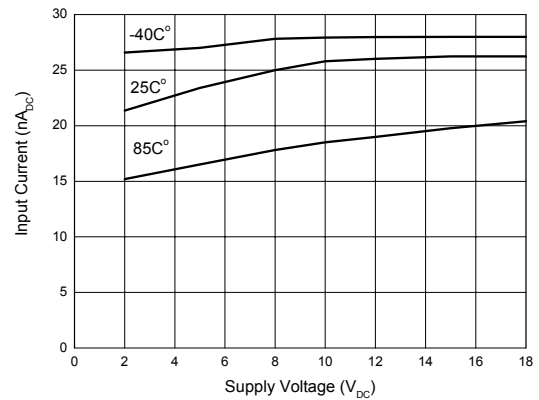


Figure 4. Supply Voltage vs. Input Current

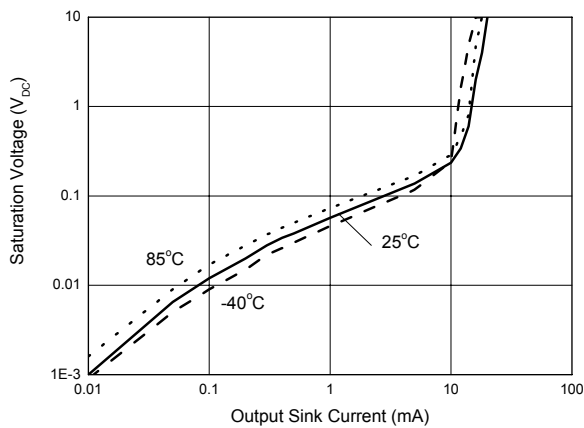


Figure 5. Output Sink Current vs. Saturation Voltage

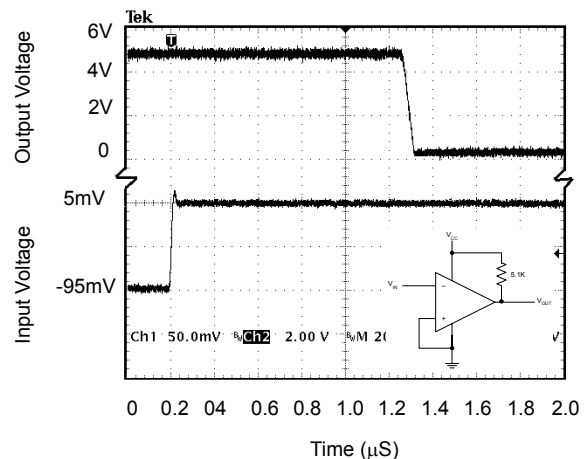


Figure 6. Response Time for 5mV Input Overdrive - Negative Transition

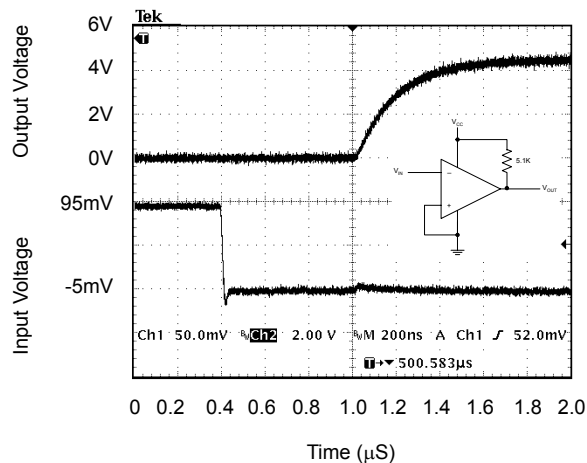


Figure 7. Response Time for 5mV Input Overdrive - Positive Transition

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Typical Application

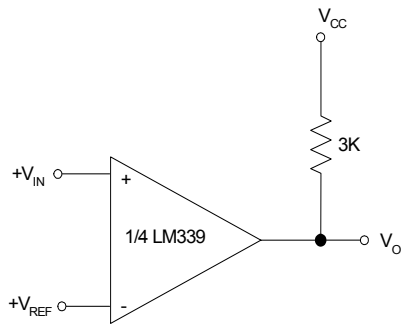


Figure 8. Basic Comparator

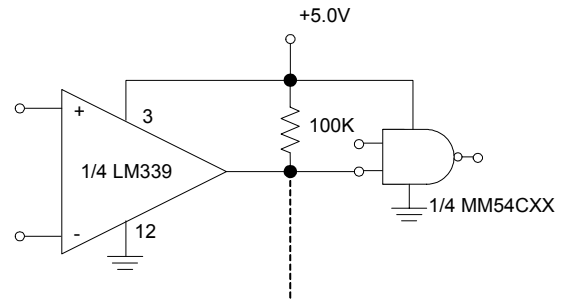


Figure 9. Driving CMOS/TTL

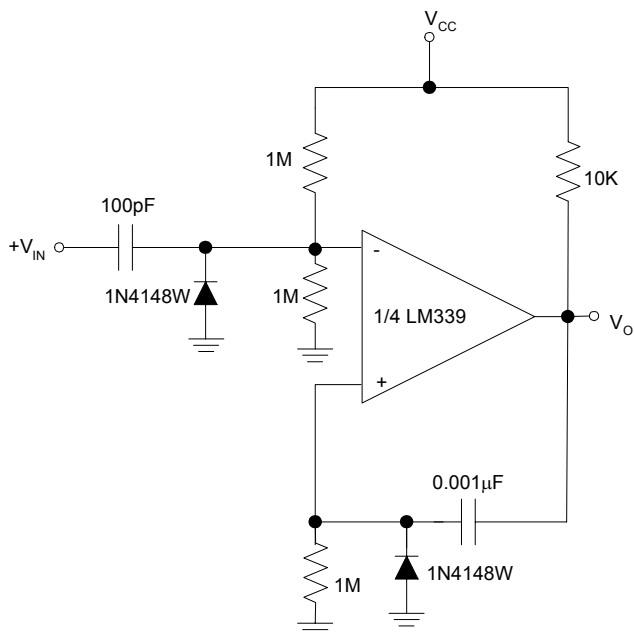


Figure 10. One Shot Multivibrator

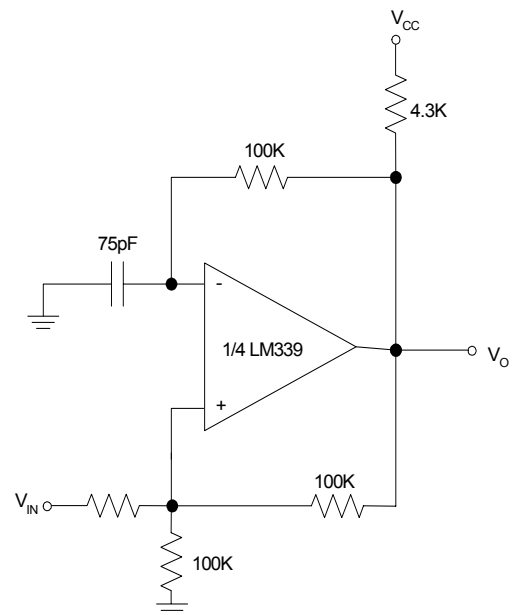
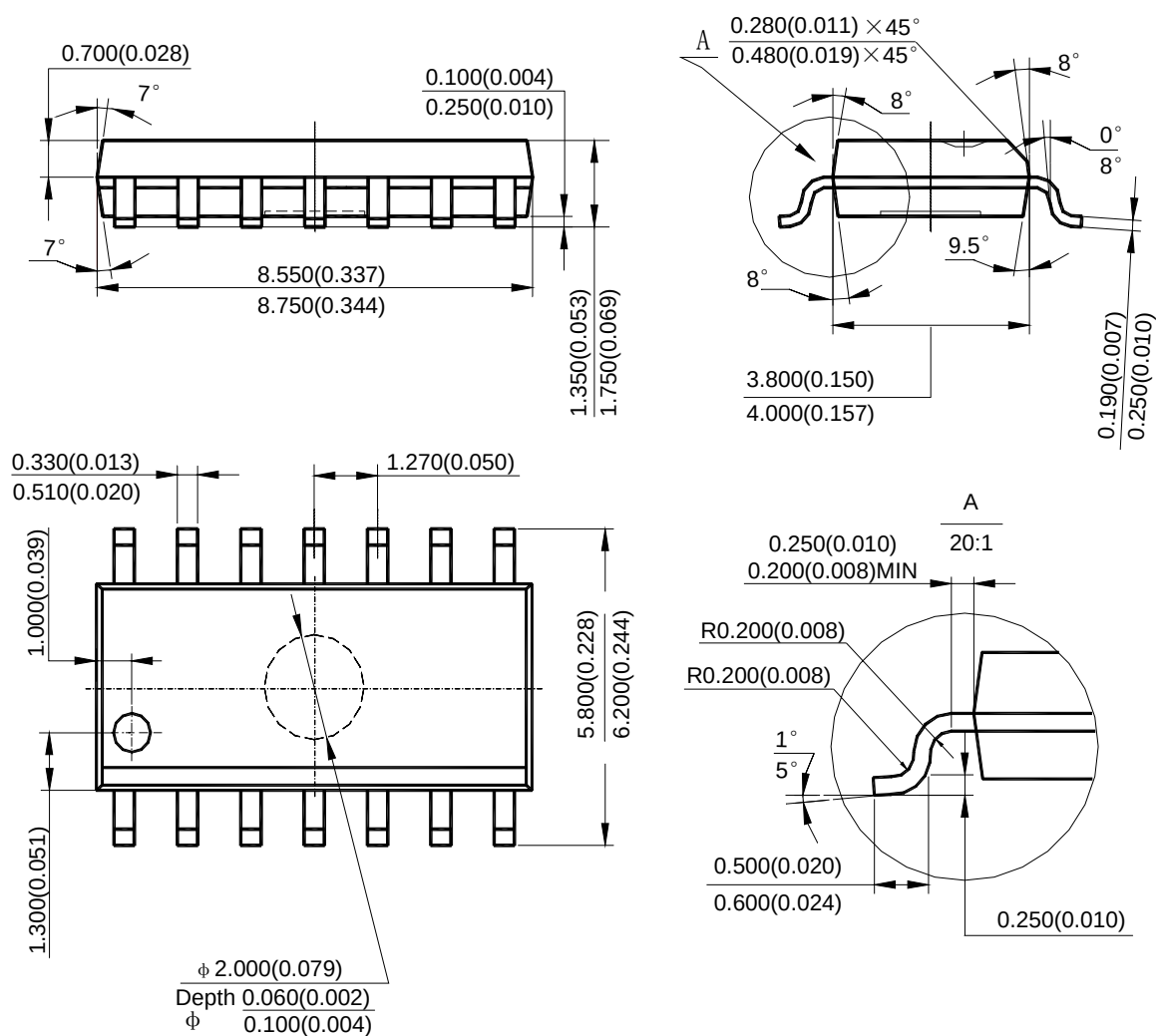


Figure 11. Squarewave Oscillator

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SOP-14 Package Outline Dimensions

Unit: mm(inch)

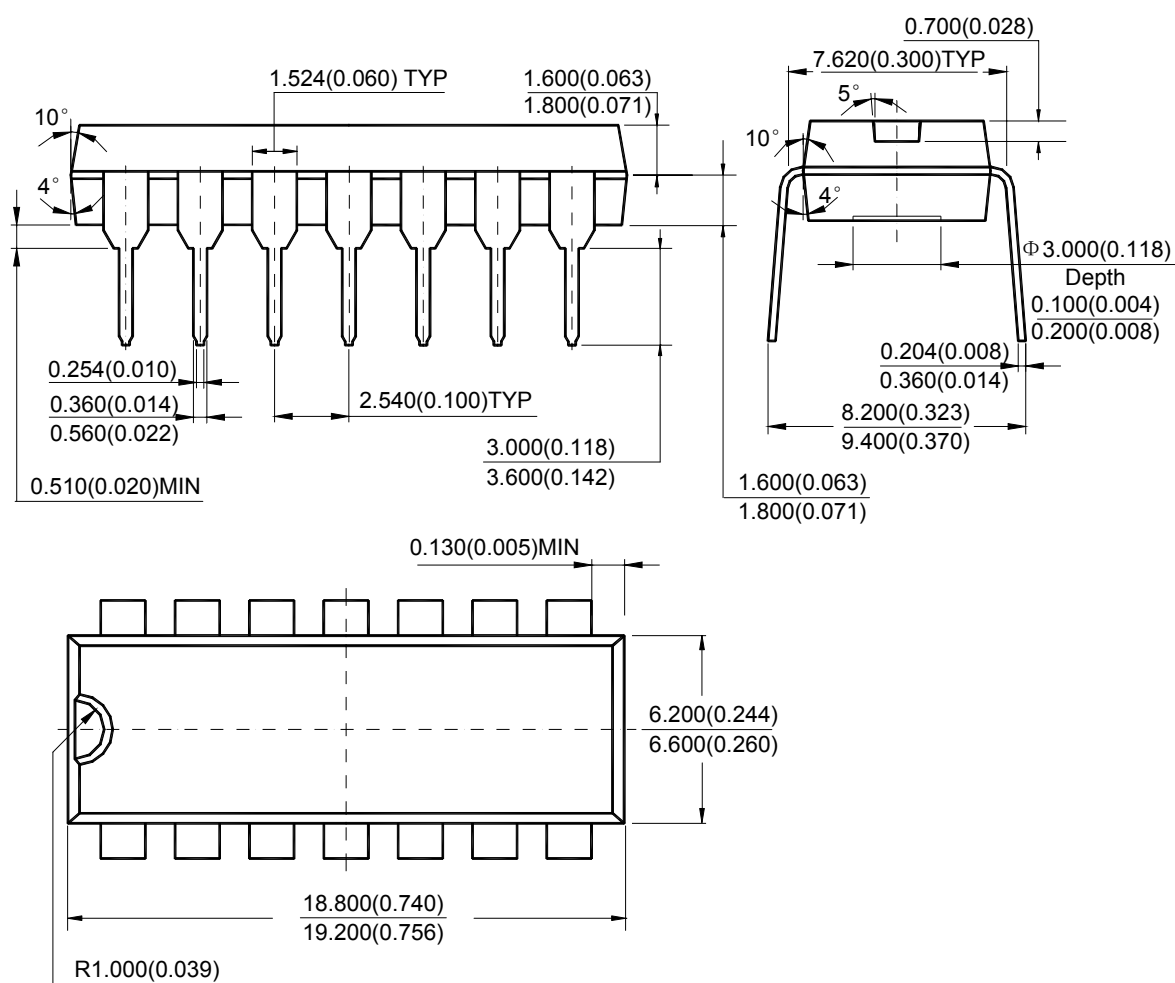


Note: Eject hole, oriented hole and mold mark is optional.

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DIP-14 Package Outline Dimensions

Unit: mm(inch)



Note: Eject hole, oriented hole and mold mark is optional.