

Quad Comparator

IR2339/IR2339N

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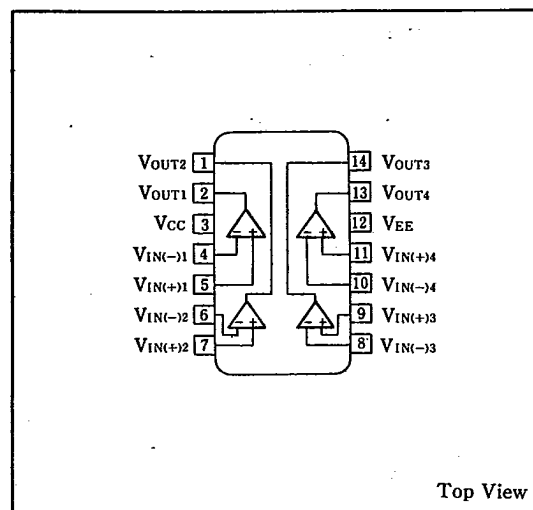
Description

The IR2339/IR2339N is a high performance quad comparator, which operates from a single power supply to a wide range of voltages. Its outputs are compatible with DTL, TTL and MOS logic circuits.

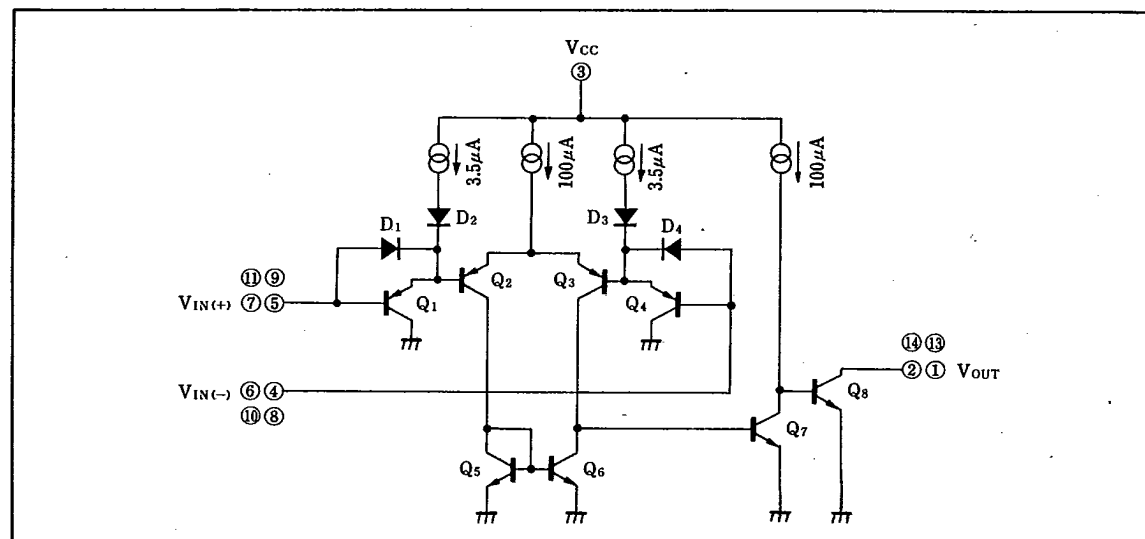
Features

1. Single or dual supply
2. Wide power range supply
 $2\sim 36V$:single supply
 $\pm 1\sim \pm 18V$:dual supply
3. Low supply current drain independent of supply voltage 0.8mA (TYP.)
4. Wide common-mode input voltage range
 $0\sim (V_{CC}-1.5V)$: single supply
5. 14-pin dual-in-line package (IR2339)
 14-pin small-outline package (IR2339N)

Pin Connections



Equivalent Circuit



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Absolute Maximum Ratings

Absolute Maximum Ratings					
Parameter	Symbol	Condition		Rating	Unit
Supply voltage	$V_{CC}-V_{EE}$			36	V
Differential input voltage	V_{ID}			36	V
Input voltage	V_{IN}			-0.3 ~ +36	V
Power dissipation	P_D	$T_a \leq 25^{\circ}C$	IR2339	570	mW
			IR2339N	325	
P_D derating ratio	$\Delta P_D/^{\circ}C$	$T_a > 25^{\circ}C$	IR2339	5.7	mW/ $^{\circ}C$
			IR2339N	3.3	
Operating temperature	T_{OPR}			-30 ~ +85	$^{\circ}C$
Storage temperature	T_{stg}		IR2339	-55 ~ +125	$^{\circ}C$
			IR2339N	-55 ~ +150	

Electrical Characteristics

(V_{CC}=5V, T_a=25°C)

Parameter	Symbol	Condition	MIN.	TYP.	MAX.	Unit	Note
Input offset voltage	V_{IO}	$V_{OUT}=1.4\text{V}$, $V_{REF}=1.4\text{V}$, $R_S=0\Omega$		2	5	mV	
Input offset current	I_{IO}	$V_{OUT}=1.4\text{V}$		5	50	nA	
Input bias current	I_B	$V_{OUT}=1.4\text{V}$		25	250	nA	1
In-phase input voltage	V_{ICM}		0		$V_{CC}-1.5$	V	
Major amplitude voltage gain	A_V	$R_L=15\text{k}\Omega$		106		dB	
Supply current	I_{CC}	$R_L=\infty$		0.8	2	mA	
Response time		$R_L=5.1\text{k}\Omega$, $V_{RL}=5\text{V}$		1.3		μs	2
Output sink current	I_{sink}	$V_{REF}=0\text{V}$, $V_{IN}=1\text{V}$, $V_{OUT}=1.5\text{V}$	6	16		mA	
Output saturation voltage	V_{SAT}	$V_{REF}=0\text{V}$, $V_{IN}=1\text{V}$, $I_{sink}=3\text{mA}$		0.2	0.4	V	
Output leakage current	I_{OL}	$V_{IN}=0\text{V}$, $V_{REF}=1\text{V}$		0.1	1	μA	
		$V_{OUT}=5\text{V}$		0.1			
Differential input voltage	V_{ID}	$V_{CC}=5\sim 30\text{V}$ Keep $V_{IN'S} \geq 0V_{DC}$ (or V_{EE} if used)			V_{CC}	V	3

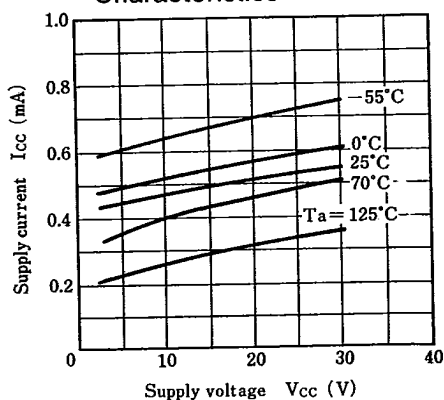
Note1) Determined by the flow-out current(input stage organized as PNP transistor)

Note2) The value when the input amplitude is 100mV and the overdrive 5mV. By increasing the amount of overdrive, reduction of the response time is possible.

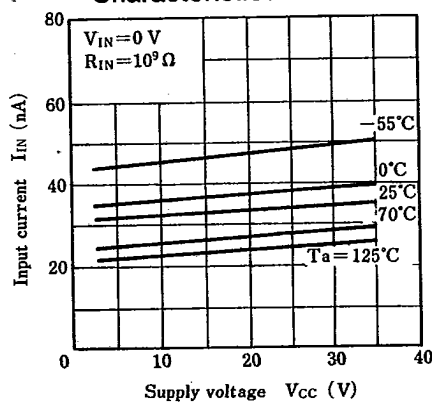
Note3) The input voltage is allowed to exceed V_{CC}. When either of the input terminal voltages is within the in-phase voltage range, the comparator comes in the right output state.
But make sure that the input should never be allowed to exceed the maximum rated voltage.

Electrical Characteristic Curves

Supply current—Supply voltage
Characteristics



Input current—Supply voltage
Characteristics



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