

IR9161/IR9161N Low Power Quad Comparator

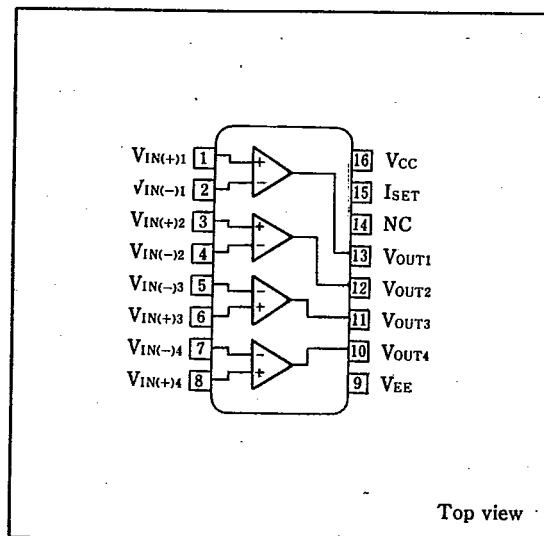
■ Description

The IR9161/IR9161N is a low power quad comparator capable of controlling a supply current, input bias current and output current by an external single resistor.

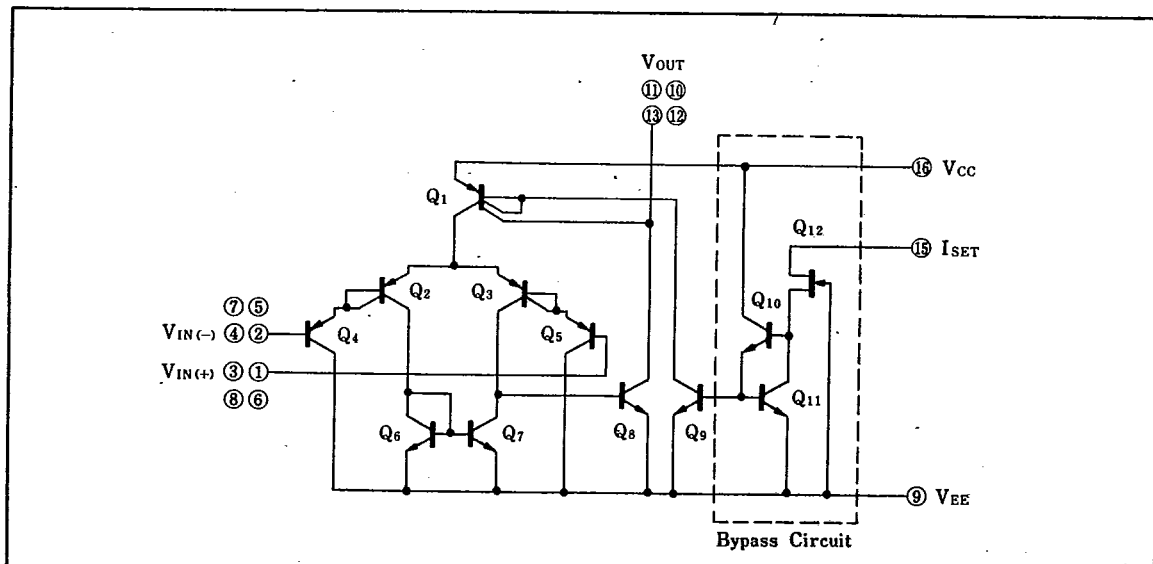
■ Features

1. Low power dissipation
2. Wide power supply range $\pm 1.5V \sim \pm 18V$
3. External control of electrical characteristics (supply current, input bias current etc.)
4. 16-pin dual-in-line package (IR9161)
16-pin small-outline package (IR9161N)

■ Pin Connections



■ Equivalent Circuit



■ Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Condition		Rating	Unit
Supply voltage	$V_{CC}-V_{EE}$			36	V
Differential input voltage	V_{ID}			± 30	V
In-phase input voltage	V_{ICM}			$V_{EE}\sim V_{CC}$	V
Power dissipation	P_D	$T_a\leq +25^{\circ}\text{C}$	IR9161 IR9161N	650 360	mW
P_D derating ratio	$\Delta P_D/^{\circ}\text{C}$	$T_a> +25^{\circ}\text{C}$	IR9161 IR9161N	6.5 3.6	
Operating temperature	T_{opr}			$0\sim +70$	$^{\circ}\text{C}$
Storage temperature	T_{stg}		IR9161 IR9161N	$-55\sim +125$ $-55\sim +150$	$^{\circ}\text{C}$

■ Electrical Characteristics 1

(V_{CC}=3V, V_{EE}=-3V, I_{SET}=10 μA, Ta=25°C)

Parameter	Symbol	Condition	MIN.	TYP.	MAX.	Unit
Input offset voltage	V_{IO}			1.0	6.0	mV
Input offset current	I_{IO}	$V_{OUT}=0V$		1.0	25	nA
Input bias current	I_B	$V_{OUT}=0V$		25	150	nA
In-phase input voltage	V_{ICM}	$V_{IO} \leq 6mV$	-3.0		1.3	V
Major amplitude voltage gain	A_V		70	76		dB
Supply current	I_{CC}	All input pins are grounded		0.21	0.35	mA
Common signal rejection ratio	CMR		70	77		dB
Supply voltage rejection ratio	SVR		65	80		dB
Rise time	t_r	$R_L=10M\Omega$ $C_L=10pF$		5.0		μs
Output saturation voltage	$V_{SAT(+)}$		2.5	2.9		V
	$V_{SAT(-)}$	$R_L=1M\Omega$	-2.6	-2.95		

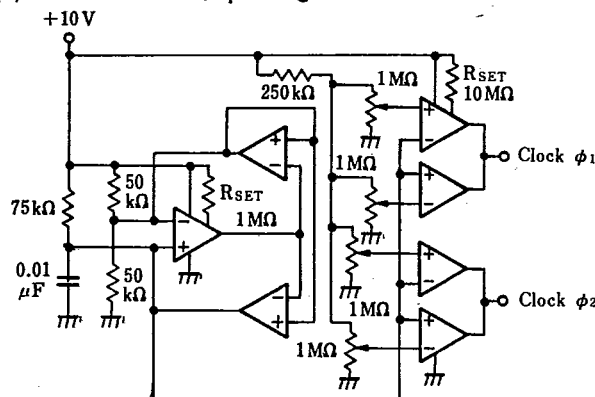
■ Electrical Characteristics 2

(V_{CC}=15V, V_{EE}=-15V, I_{SET}=100 μA, Ta=25°C)

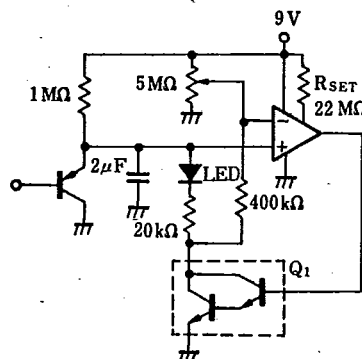
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input offset voltage	V_{IO}			1.5	6.0	mV
Input offset current	I_{IO}	$V_{OUT}=0V$		5.0	90	nA
Input bias current	I_B	$V_{OUT}=0V$		100	600	nA
In-phase input voltage	V_{ICM}	$V_{IO} \leq 6mV$	-15		+13	V
Major amplitude voltage gain	A_V		80	90		dB
Supply current	I_{CC}	All input pins are grounded		2.1	3.5	mA
Common signal rejection ratio	CMR		75	90		dB
Supply voltage rejection ratio	SVR		65	80		dB
Rise time	t_r	$R_L=2M\Omega$ $C_L=10pF$		1.5		μs
Output saturation voltage	$V_{SAT(+)}$		14.5	14.9		V
	$V_{SAT(-)}$	$R_L=1M\Omega$	-14.6	-14.9		

(1) A Versatile 2 ϕ pulse generator

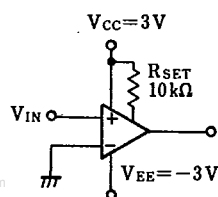
(1) A Versatile 2 ϕ pulse generator



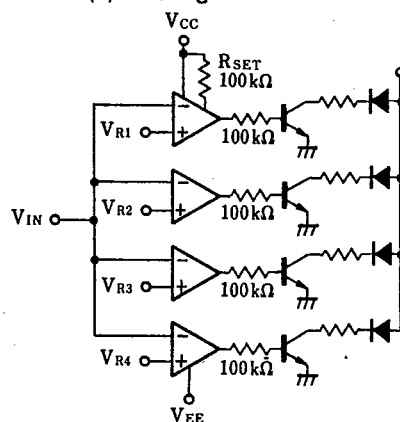
(2) Low battery indicator



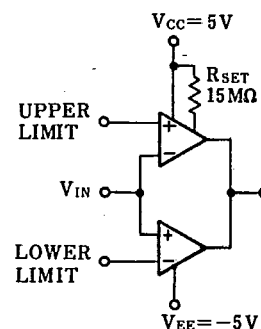
(3) **Zero crossing detector**



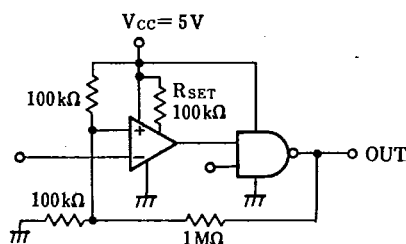
(4) Voltage level detector



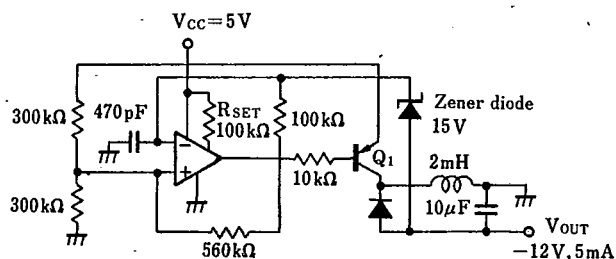
(5) **Double-ended limit detector**



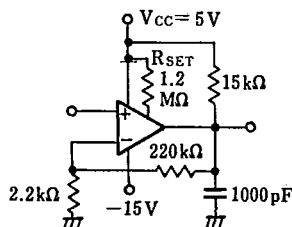
(6) CMOS line receiver



(7) Stabilizing DC/DC converter



(8) 40dB operational amplifier



(9) Sinusoidal wave oscillator

