IR9161/IR9161N Low Power Quad Comparator

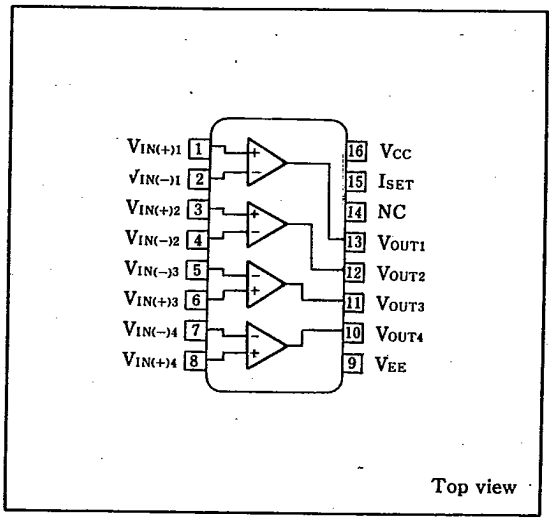
■ Description

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

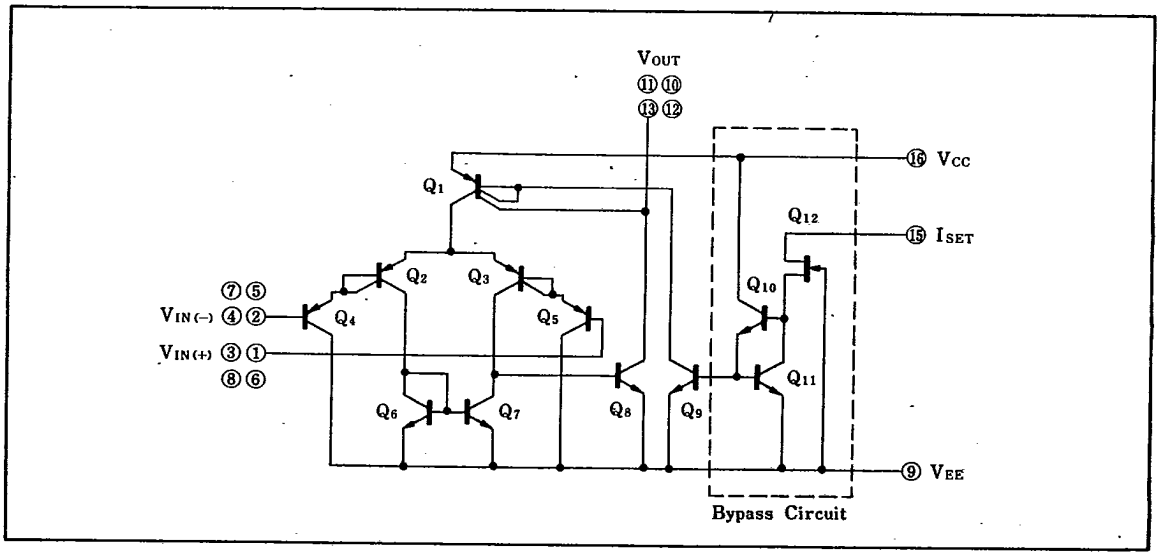
■ Features

1. Low power dissipation
2. Wide power supply range ±1.5V～±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℃)

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}~V_{CC}	V
Power dissipation	P_D	Ta≦+25℃	IR9161	650	mW
			IR9161N	360	
P_D derating ratio	ΔP_D/℃	Ta>+25℃	IR9161	6.5	mW/℃
			IR9161N	3.6	
Operating temperature	T_{opr}			0~+70	℃
Storage temperature	T_{stg}		IR9161	−55~+125	℃
			IR9161N	−55~+150	

■ Electrical Characteristics 1

(V_{CC}=3V, V_{EE}=−3V, I_{SET}=10μA, Ta=25℃)

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}≦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=10MΩ C_L=10pF		5.0		μs
Output saturation voltage	$V_{SAT(+)}$		2.5	2.9		V
	$V_{SAT(-)}$	R_L=1MΩ	−2.6	−2.95		

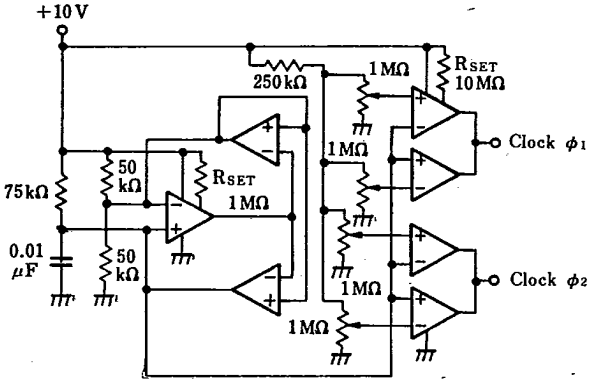
■ Electrical Characteristics 2

(V_{CC}=15V, V_{EE}=−15V, I_{SET}=100μA, Ta=25℃)

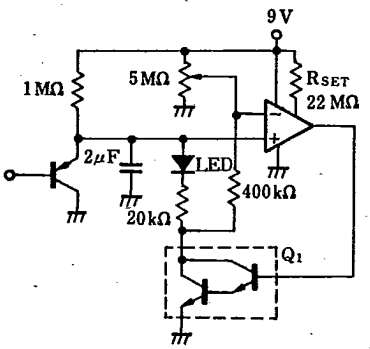
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input offset voltage	V_{IO}			1.5	6.0	mV
Input offset current	I_{IO}	V_{OUT}=0V		5.0	90	nA
Input bias current	I_B	V_{OUT}=0V		100	600	nA
In-phase input voltage	V_{ICM}	V_{IO}≦6mV	−15		+13	V
Major amplitude voltage gain	A_V		80	90		dB
Supply current	I_{CC}	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=2MΩ C_L=10pF		1.5		μs
Output saturation voltage	$V_{SAT(+)}$		14.5	14.9		V
	$V_{SAT(-)}$	R_L=1MΩ	−14.6	−14.9		

■ Application Circuit Example

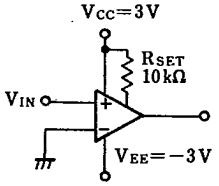
(1) A Versatile 2 ϕ pulse generator



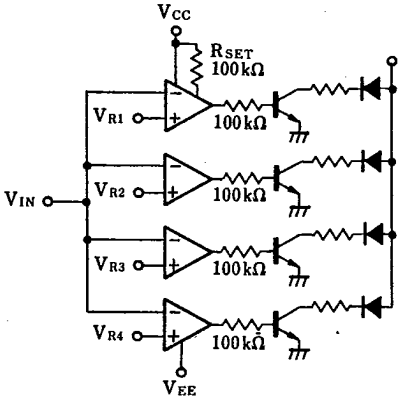
(2) Low battery indicator



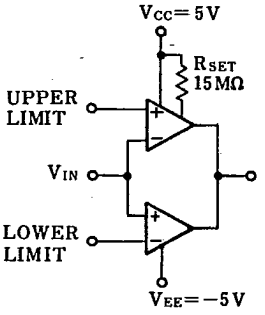
(3) Zero crossing detector



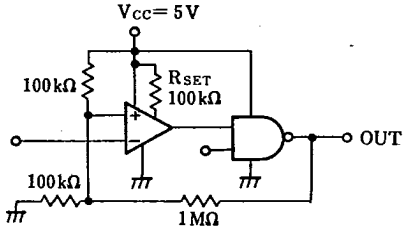
(4) Voltage level detector



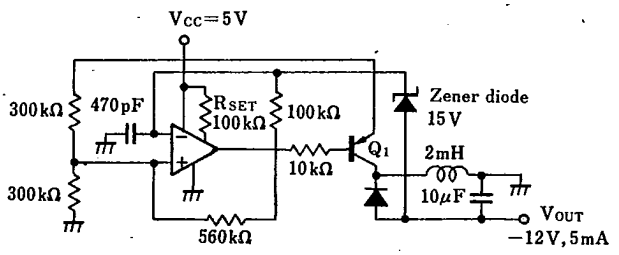
(5) Double-ended limit detector



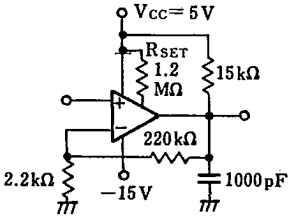
(6) CMOS line receiver



(7) Stabilizing DC/DC converter



(8) 40dB operational amplifier



(9) Sinusoidal wave oscillator