

T-79-08

# IR9022/IR9022N Low Power Dual Operational Amplifier

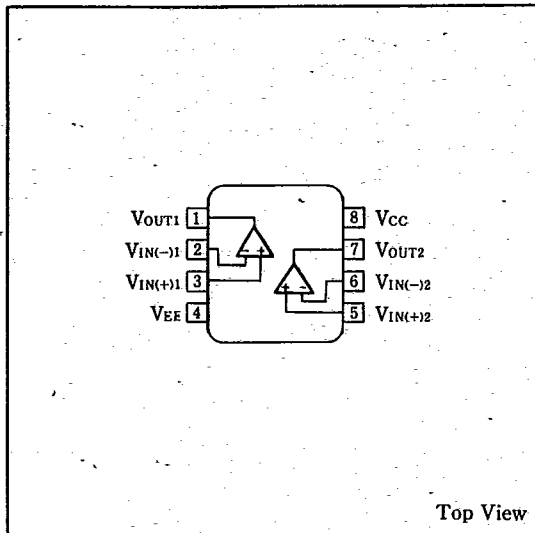
## ■ Description

The IR9022/IR9022N is a dual low power operational amplifier for use in variety of low power applications including battery-operated circuits.

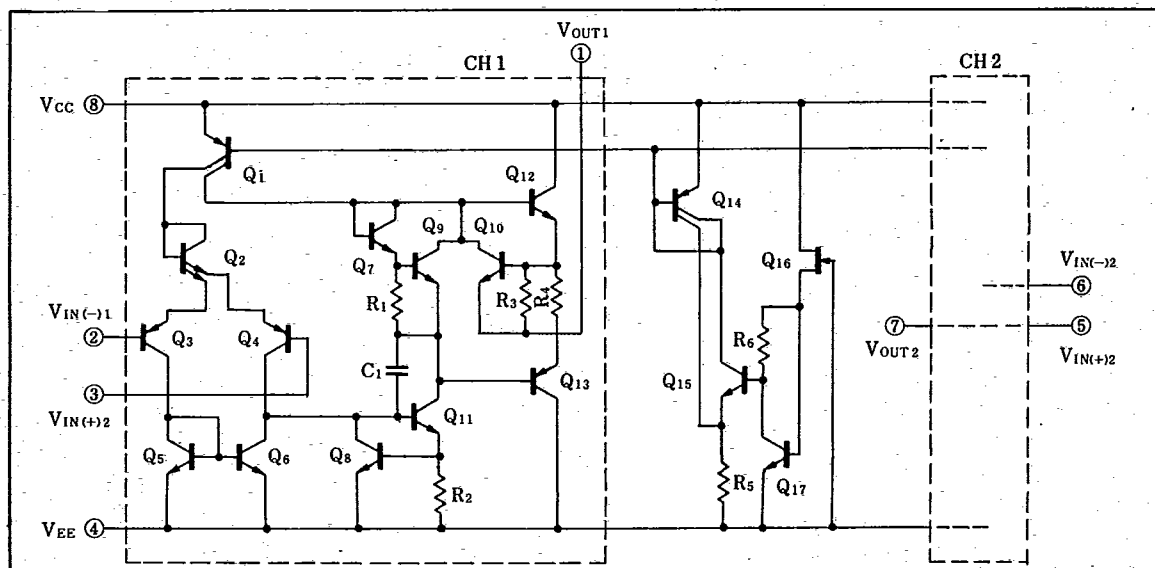
## ■ Features

1. Low power dissipation 3.9mW (TYP.)
2. No frequency compensation required
3. Short circuit protected outputs
4. 8-pin dual-in-line package (IR9022)  
8-pin small-outline package (IR9022N)

## ■ Pin Connections



## ■ Equivalent Circuit



SHARP

**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	$V_{ICM}$		±15	V	
Power dissipation	$P_D$	$T_a \leq 25^\circ\text{C}$	IR9022	500	mW
			IR9022N	500	
$P_D$ derating ratio	$\Delta P_D/^\circ\text{C}$	$T_a > 25^\circ\text{C}$	IR9022	5	mW/°C
			IR9022N	4	
Operating temperature	$T_{opr}$		-20 ~ +70	°C	
Storage temperature	$T_{stg}$		IR9022	-40 ~ +125	°C
			IR9022N	-55 ~ +150	

**Electrical Characteristics**

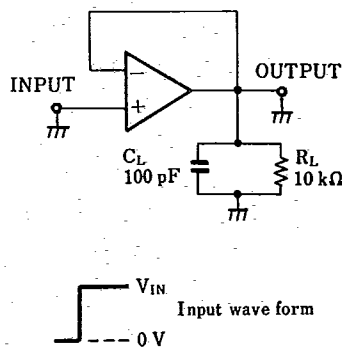
( $V_{CC}=15\text{V}$ ,  $V_{EE}=-15\text{V}$ ,  $T_a=25^\circ\text{C}$ )

Parameter	Symbol	Condition	MIN.	TYP.	MAX.	Unit
Input offset voltage	$V_{IO}$	$R_S \leq 10\text{k}\Omega$		1	5	mV
Input offset current	$I_{IO}$			15	80	nA
Input bias current	$I_B$			100	250	nA
In-phase input voltage	$V_{ICM}$		±12	±13		V
Major amplitude voltage gain	$A_V$	$R_L \geq 10\text{k}\Omega$ , $V_{OUT} = \pm 10\text{V}$	60	80		dB
Maximum output voltage	$V_{OM}$	$R_L = 10\text{k}\Omega$	20	26		V
Common signal rejection ratio	CMR	$R_S \leq 10\text{k}\Omega$	60	72		dB
Supply voltage rejection ratio	SVR	$R_S \leq 10\text{k}\Omega$		30	200	$\mu\text{V/V}$
Supply current	$I_{CC}$			130	250	$\mu\text{A}$
Power dissipation	$P_D$			3.9	7.5	mW
Output short circuit current	$I_{OS}$			±6		mA
Input conversion noise voltage	$V_{NI}$	$A_V = 20\text{dB}$ , $f = 1\text{kHz}$ , $B = 1\text{Hz}$		50		$\text{nV}/\sqrt{\text{Hz}}$
Slew rate	SR	$V_{IN} = 10\text{V}$ , $R_L = 10\text{k}\Omega$ , $C_L = 100\text{pF}$		0.5		$\text{V}/\mu\text{s}$
Rise time	$t_r$	$V_{IN} = 20\text{mV}$ , $R_L = 10\text{k}\Omega$ , $C_L = 100\text{pF}$		0.3		$\mu\text{s}$
Overshoot	OS	$V_{IN} = 20\text{mV}$ , $R_L = 10\text{k}\Omega$ , $C_L = 100\text{pF}$		5		%



**Test Circuit**

Overshoot, slew rate, rising time



**Electrical Characteristic Curve**

Power dissipation—Supply voltage Characteristics

