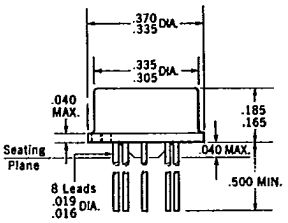
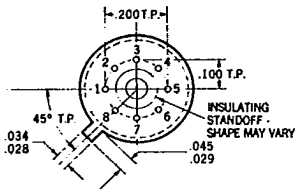
ECG940

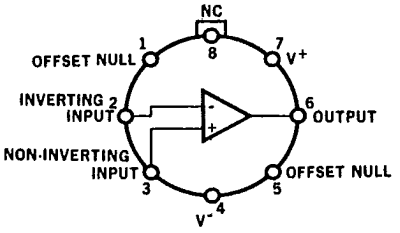
FET INPUT OPERATIONAL AMPLIFIER

- HIGH INPUT IMPEDANCE . . . 1,000,000 MΩ
- NO FREQUENCY COMPENSATION REQUIRED
- SHORT-CIRCUIT PROTECTION
- OFFSET VOLTAGE NULL CAPABILITY
- LARGE COMMON-MODE AND DIFFERENTIAL VOLTAGE RANGES
- NO LATCH UP





The ECG940 is a high performance FET input operational amplifier constructed on a single silicon chip. It is intended for a wide range of analog applications where very high input impedance is required and features very low input offset current and very low input bias current. High slew rate, high common mode voltage range and absence of "latch up" make the ECG940 ideal for use as a voltage follower. The high gain and wide range of operating voltages provide superior performance in active filters, integrators, summing amplifiers, sample and holds, transducer amplifiers, and other general feedback applications. The ECG940 is short circuit protected and has the same pin configuration as the popular ECG941 operational amplifier. No external components for frequency compensation are required as the internal 6 dB/octave roll-off insures stability in closed loop applications.



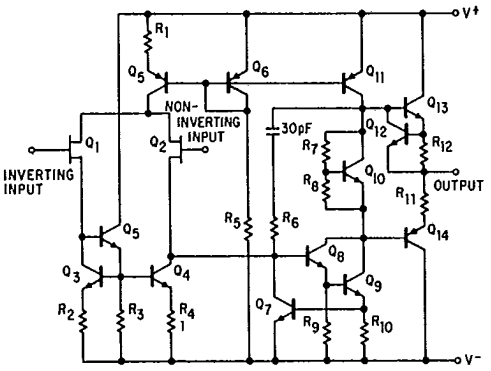
NOTE: PIN 4 CONNECTED TO CASE

Absolute Maximum Ratings

Supply Voltage..... ±22 V
Internal Power Dissipation (Note 1)
..... 500 mW
Differential Input Voltage .....±30 V
Input Voltage (Note 2).....±15 V
Voltage Between Offset Null and V+
.....±0.5 V
Storage Temperature Range
.... -65°C to +150°C
Operating Temperature Range
..... 0°C to +70°C
Lead Temperature (Soldering, 60 Seconds)
..... 300°C
Output Short-Circuit Duration (Note 3)
Indefinite

NOTES:
(1) Rating applies for ambient temperatures to +70°C.
(2) For supply voltages less than ±15 V, the absolute maximum input voltage is equal to the supply voltage.
(3) Short circuit may be to ground or either supply. Rating applies to +70°C ambient temperature.

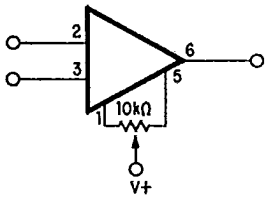
EQUIVALENT CIRCUIT



ELECTRICAL CHARACTERISTICS ($V_S = \pm 15$ V, $T_C = 25°C$ unless otherwise specified)

PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Input Offset Voltage	$R_S \leq 100$ kΩ		30		mV
Input Offset Current			60		pA
Input Current (either input)			0.1	2.0	nA
Input Resistance			1,000,000		MΩ
Large Signal Voltage Gain	$R_L \geq 2$ kΩ, $V_{out} = \pm 10$ V		1,000,000		
Output Resistance			75		Ω
Output Short-Circuit Current			20		mA
Supply Current			4.2	8.0	mA
Power Consumption			126	240	mW
Slew Rate			6.0		V/μs
Unity Gain Bandwidth			1.0		MHz
Transient Response (Unity Gain)	$C_L \leq 100$ pF, $R_L = 2$ kΩ, $V_{in} = 100$ mV				
Risetime			300		ns
Overshoot			10		%
The following specifications apply for $0°C \leq T_A \leq +70°C$:					
Input Voltage Range			±12		V
Common Mode Rejection Ratio			80		dB
Supply Voltage Rejection Ratio			70		μV/V
Large Signal Voltage Gain			500,000		
Output Voltage Swing	$R_L \geq 10$ kΩ	±12	±14		V
	$R_L \geq 2$ kΩ	±10	±13		V
Input Offset Voltage			30		mV
Input Offset Current			60		pA
Input Current (either input)			1.1	10	nA

VOLTAGE OFFSET NULL CIRCUIT



TRANSIENT RESPONSE TEST CIRCUIT