

BiMOS Operational Amplifier with MOSFET Input/Bipolar Output

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Features

- MOSFET Input Stage
 - Very High Input Impedance (Z_{IN}) -1.5T Ω (Typ.)
 - Very Low Input Current (I_i) -10pA (Typ.) at $\pm 15V$
 - Wide Common Mode Input Voltage Range (VICR) - Can be Swung 0.5V Below Negative Supply Voltage Rail
 - Output Swing Complements Input Common Mode Range
- Directly Replaces Industry Type 741 in Most Applications

Applications

- Ground-Referenced Single Supply Amplifiers in Automobile and Portable Instrumentation
- Sample and Hold Amplifiers
- Long Duration Timers/Multivibrators (μ seconds-Minutes-Hours)
- Photocurrent Instrumentation
- Peak Detectors
- Active Filters
- Comparators
- Interface in 5V TTL Systems and Other Low Supply Voltage Systems
- All Standard Operational Amplifier Applications
- Function Generators
- Tone Controls
- Power Supplies
- Portable Instruments
- Intrusion Alarm Systems

Description

The CA3140A and CA3140 are integrated circuit operational amplifiers that combine the advantages of high voltage PMOS transistors with high voltage bipolar transistors on a single monolithic chip. Because of this unique combination of technologies, this device can now provide designers, for the first time, with the special performance features of the CA3130 CMOS operational amplifiers and the versatility of the 741 series of industry standard operational amplifiers.

The CA3140A and CA3140 BiMOS operational amplifiers feature gate protected MOSFET (PMOS) transistors in the input circuit to provide very high input impedance, very low input current, and high speed performance. The CA3140A and CA3140 operate at supply voltage from 4V to 36V (either single or dual supply). These operational amplifiers are internally phase compensated to achieve stable operation in unity gain follower operation, and additionally, have access terminal for a supplementary external capacitor if additional frequency roll-off is desired. Terminals are also provided for use in applications requiring input offset voltage nulling. The use of PMOS field effect transistors in the input stage results in common mode input voltage capability down to 0.5V below the negative supply terminal, an important attribute for single supply applications. The output stage uses bipolar transistors and includes built-in protection against damage from load terminal short circuiting to either supply rail or to ground.

The CA3140 Series has the same 8-lead pinout used for the "741" and other industry standard op amps. The CA3140A and CA3140 are intended for operation at supply voltages up to 36V ($\pm 18V$).

Ordering Information

PART NUMBER	TEMP. RANGE	PACKAGE
CA3140AE	-55°C to +125°C	8 Lead Plastic DIP
CA3140AM	-55°C to +125°C	8 Lead SOIC
CA3140AS	-55°C to +125°C	8 Pin Can, Lead Formed
CA3140AT	-55°C to +125°C	8 Pin Can
CA3140BT	-55°C to +125°C	8 Pin Can
CA3140E	-55°C to +125°C	8 Lead Plastic DIP
CA3140M	-55°C to +125°C	8 Lead SOIC
CA3140M96	-55°C to +125°C	8 Lead SOIC*
CA3140T	-55°C to +125°C	8 Pin Can

* Denotes Tape and Reel

Pinouts

