

# LINEAR INTEGRATED CIRCUIT CHIPS

## GENERAL DESCRIPTION

Motorola now offers a very broad selection of linear integrated circuit chips. Among the types of circuits which compose the linear family there are:

- A. Operational Amplifiers
- B. Voltage Regulators
- C. Comparators
- D. Drivers and Receivers
- E. Sense Amplifiers
- F. D/A and A/D Converters

As a general rule of thumb, all linear chips from Motorola are 100% unit probed to the D.C. parameters given in Volume 6 of the Semiconductor Data Library. For specific information on electrical parameters which are probed contact the nearest Motorola Sales Office.

## STANDARD FEATURES FOR LINEAR INTEGRATED CIRCUIT CHIPS

All linear integrated circuit chips . . .

- are 100% electrically tested to sufficient parameter limits (min/max) to permit distinct identification as either premium or industrial versions
- employ phosphorsilicate passivation which protects the entire active surface area including metallization interconnects during shipping and handling
- are 100% visually inspected to a modified criteria per MIL-STD-883, Method 2010, Condition B
- incorporate a minimum of 4000 Å gold backing to ensure positive adherence bonding

## GENERAL PHYSICAL CHARACTERISTICS OF LINEAR CHIPS

The following characteristics represent the vast majority of all Motorola linear chips. Since an individual chip type may vary slightly, contact your local sales office for information regarding physical characteristics critical to a specific application. The overall size and final metallization patterns are shown in the following pages; however the geometries shown and MIC numbers listed are current at the date of printing. Since we are constantly striving to improve the quality, performance, and yield of our linear devices we cannot be responsible for changes at future dates. Please contact your local Motorola Sales representative for the most current information.

- A. Chips thickness:  $8 \pm 1$  mil
- B. Passivation: Phosphorsilicate
- C. Passivation thickness:  $5k\text{Å} \pm 1k\text{Å}$
- D. Metallization: Aluminum
- E. Metallization thickness:  $12k\text{Å} \pm 2k\text{Å}$
- F. Back metallization: Gold, alloyed
- G. Bonding pad dimensions:  
Typical 4.0 mil x 5.0 mil

H. Overall chip dimensions:

See pages that follow for individual device type.  
Tolerance of  $\pm 5$  mils should be allowed.

## HANDLING PRECAUTIONS

Although passivation on all chips provides protection in shipping and handling, care should be exercised to prevent damaging the face of the chip. A vacuum pickup is most useful for this purpose; tweezers are not recommended.

There are four basic requirements for handling devices in a prudent manner:

1. Store the chips in a covered or sealed container
2. Store devices in an environment of no more than 30% relative humidity
3. Process the chips in a non-inert atmosphere not exceeding  $100^{\circ}\text{C}$ , or in an inert atmosphere not exceeding  $400^{\circ}\text{C}$ .
4. Processing equipment should conform to the minimum standards that are normally employed by semiconductor manufacturers.

Motorola's engineering staff is available for consultation in the event of correlation or processing problems encountered in the use of Motorola linear chips. For assistance, please contact your nearest Motorola sales representative.

## CHIP AND WAFER PACKAGING

### Chips

Motorola's linear integrated circuit chips come packaged to the customer in the Multi-Pak carrier. Refer to page 1-11, Figure 7.

### Wafers

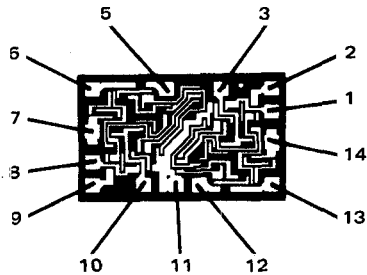
Motorola's linear integrated circuit wafers come packaged to the customer in the Wafer-Pak plastic bow. The wafer has been probed and rejects are designated by a red color dot on the die surface. Refer to page 1-8, Figure 2.

## HOW TO ORDER LINEAR CHIPS OR WAFERS FROM MOTOROLA

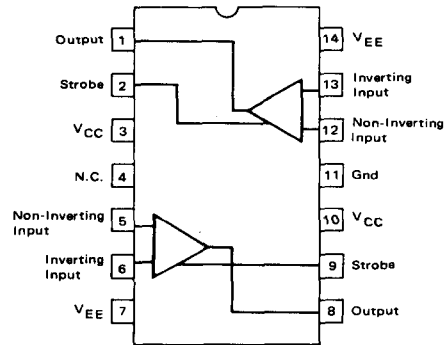
1. Remove all suffix package designators from the desired device type. (EXAMPLE: MC1741CP1 now becomes MC1741C)
2. Add a C to the prefix designator if individual chips are desired. (EXAMPLE: MC1741C now is MCC1741C)  
Add a W to the prefix designator if a wafer is desired. (EXAMPLE: MC1741C now is MCW1741C)
3. When ordering chips, two options are available:
  - a. The -1 suffix designator will deliver to you 10 chips per Multi-Pak, up to 1000 chips.  
(EXAMPLE: MCC1741C-1)

**MCC1514/MCC1414 Dual Differential Voltage Comparator**

35 x 56

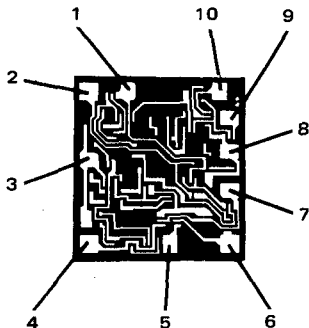


**PIN CONNECTIONS**



**MCC1520/MCC1420 Differential Output Operational Amplifier**

51 x 47



**PIN CONNECTIONS**

