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 ± 1 mil
B. Passivation: Phosphorsilicate
C. *Passivation thickness:* 5kÅ ± 1kÅ
D. Metallization: Aluminum
E. Metallization thickness: 12kÅ ± 2kÅ
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 ±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°C, or in an inert atmosphere not exceeding 400°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)

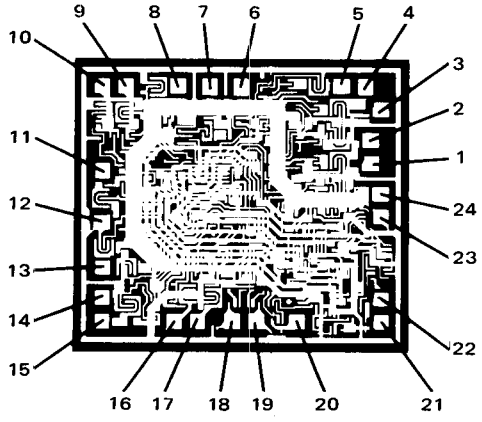
MCC8300 Series (0 to +75°C)
MCC9300 Series (–55 to +125°C)

These complex functions are designed for digital applications in the medium to high-speed range, with significant reduction in package count and increased logic per function over devices in the basic MTTL and MDTL families. They are direct replacements for F8300/9300 Series devices.

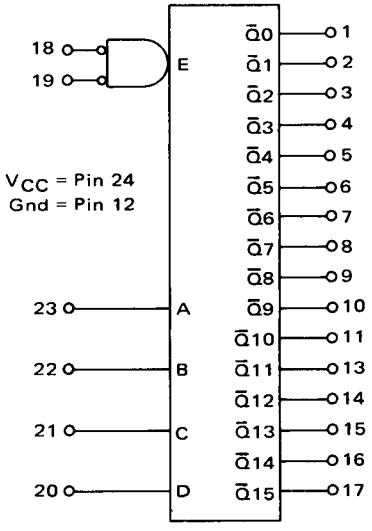
Type		Function	Wafer Mask Set #	Chip Size (Mils)
0 to 75°C	–55 to +125°C			
MCC8300	MCC9300	Universal 4-Bit Shift Register	99T	69x82
MCC8301	MCC9301	BCD-to-Decimal Decoder	77H	70x85
MCC8304	MCC9304	Dual Full Adder	10T	65x66
MCC8306	MCC9306	Preset. Decade Up/Down Counter	43P	84x125
MCC8307	MCC9307	BCD to Seven Segment Decoder	94M	73x73
MCC8308	MCC9308	Dual 4-Bit Latch	44P	74x98
MCC8309	MCC9309	Dual 4-Channel Data Selector	09T	64x65
MCC8310	MCC9310	Preset. Decade Counter	96R	75x102
MCC8311	MCC9311	One of 16 Decoder	11T	77x87
MCC8312	MCC9312	8-Channel Data Selector	21L	60x62
MCC8314	MCC9314	Quad Latch	69P	63x68
MCC8316	MCC9316	Presettable 4 Bit Binary Counter	96R	75x102
MCC8317	MCC9317	Seven Segment Decoder/Driver	12T	80x88
MCC8318	MCC9318	8-Input Priority Encoder	90P	68x70
MCC8322	MCC9322	Quad 2-Input Data Selector/Multiplexer	62V	52x57
MCC8324	MCC9324	5 Bit Comparator	8CM	65x66
MCC8328	MCC9328	Dual 8-Bit Shift Register	13M	70x88
MCC8601	MCC9601	*Retriggerable Monostable Multivibrator*	70K	48x54
MCC8602	MCC9602	Dual Retriggerable Resettable Monostable Multi.	41R	57x67

MCC8311/MCC9311
One of 16 Decoder

77 x 87
(11T)

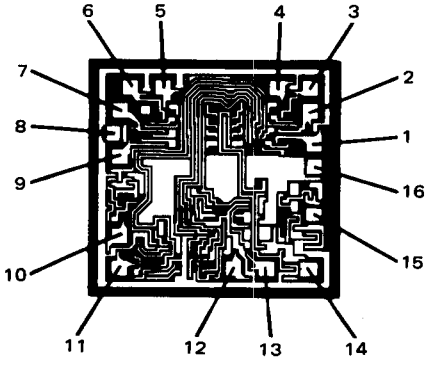


PIN CONNECTIONS

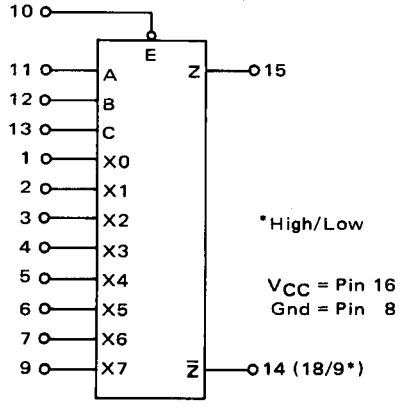


MCC8312/MCC9312
8-Channel Data Selector

60 x 62
(21L)



PIN CONNECTIONS



$Z = E \bullet (\bar{A}\bar{B}\bar{C}X0 + A\bar{B}\bar{C}X1 + \bar{A}B\bar{C}X2 + AB\bar{C}X3 + \bar{A}\bar{B}CX4 + A\bar{B}CX5 + \bar{A}BCX6 + ABCX7)$

$\bar{Z} = E \bullet (\bar{A}\bar{B}\bar{C}\bar{X0} + A\bar{B}\bar{C}\bar{X1} + \bar{A}B\bar{C}\bar{X2} + AB\bar{C}\bar{X3} + \bar{A}\bar{B}C\bar{X4} + A\bar{B}C\bar{X5} + \bar{A}BC\bar{X6} + ABC\bar{X7})$

7