

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: $5k\text{Å} \pm 1k\text{Å}$
- 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 ± 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)

MHTL

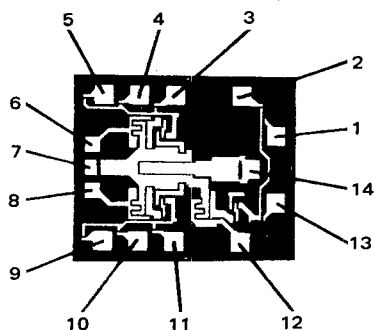
MCC660 Series (–30 to +75°C)

Motorola's MHTL integrated circuits are especially designed to meet the requirements of industrial applications because of the outstanding noise immunity. MHTL circuits provide error-free operation in high noise environments far beyond the tolerance of other integrated circuit families. Multifunction packages and broad operating temperature range further tailor this family to the industrial designer's requirements.

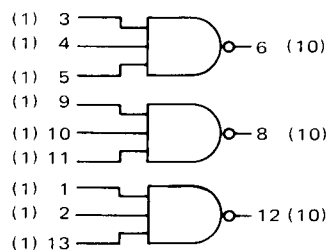
Type	Function	Wafer Mask Set #	Chip Size (Mils)
MCC660	Exp. Dual 4-Input Gate (active pullup)	8MG	45x43
MCC661	Exp. Dual 4-Input Gate (passive pullup)	8MG	45x43
MCC662	Exp. Dual 4-Input Line Driver	1TT	38x44
MCC663	Dual J-K Flip-Flop	2EA	61x62
MCC664	Master Slave R-S Flip-Flop	85M	60x50
MCC665	Triple Level Translator	5MG	40x40
MCC666	Triple Level Translator	4MF	42x49
MCC667	Dual Monostable Multivibrator	1GD	53x57
MCC668	Quad 2-Input Gate (passive pullup)	8MG	45x43
MCC669	Dual 4-Input Expander	59H	30x30
MCC670	Triple 3-Input Gate (passive pullup)	76H	50x58
MCC671	Triple 3-Input Gate (active pullup)	76H	50x58
MCC672	Quad 2-Input Gate (active pullup)	8MG	45x43
MCC673	Dual 2-Input AOI Gate	8MG	45x43
MCC674	Dual 2-Input AOI Gate	8MG	45x43
MCC675	Dual Pulse Stretcher	1MH	55x58
MCC676	BCD-to-Decimal Decoder-Driver	2ME	58x63
MCC677	Hex Inverter With Strobe (active pullup)	95R	52x54
MCC678	Hex Inverter With Strobe (without output resistors)	95R	54x52
MCC679	Dual Lamp Driver	6BE	48x56
MCC680	Hex Inverter	95R	52x54
MCC681	Hex Inverter (O.C.)	95R	52x54
MCC682	Quad Latch	2AP	64x67
MCC683	Quad 2-Input Exclusive OR	8TJ	53x61
MCC684	Decade Counter	3TA	85x86
MCC685	Binary Counter	3TA	85x86
MCC686	4-Bit Shift Register	3TA	85x86
MCC688	Dual J-K Flip-Flop	9TW	68x68
MCC689	Hex Inverter (high voltage)	48W	53x55
MCC690	Hex Inverter (active pullup)	48W	53x55
MCC691	Hex Inverter/Translator	48W	53x55
MCC696	Dual Line Driver Receiver	9DD	58x59
MCC697	Hex Inverter (Passive Pullup)	95R	54x52
MCC699	Dual 2-Input Power AND Gate	3NB	64x66

MCC670
Triple 3-Input Gate (passive pullup)

50 x 58
(76H)



PIN CONNECTIONS

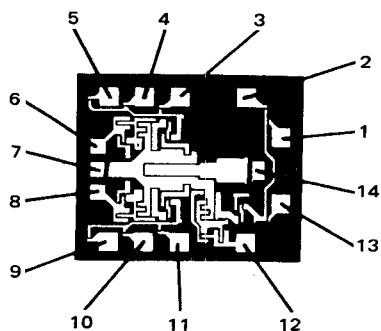


$t_{pd} = 125 \text{ ns typ}$
 $P_D = 132 \text{ mW typ/pkg (Inputs High)}$
 $39 \text{ mW typ/pkg (Input Low)}$

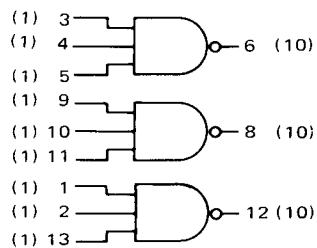
$V_{CC} = \text{Pin 14}$
 $GND = \text{Pin 7}$

MCC671
Triple 3-Input Gate (active pullup)

50 x 58
(76H)



PIN CONNECTIONS



$t_{pd} = 110 \text{ ns typ}$
 $P_D = 132 \text{ mW typ/pkg (Inputs High)}$
 $39 \text{ mW typ/pkg (Input Low)}$

$V_{CC} = \text{Pin 14}$
 $GND = \text{Pin 7}$