

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)

MRTL

MCC700 Series (+15 to +55°C)
MCC800 Series (0 to +100°C)
MCC900 Series (-55 to 125°C)

MRTL integrated circuits provide a broad line of low-cost, multi-function, digital circuits. Typical gate speed is 12 ns, with power dissipation averages of 19 mW (input high) and 5.0 mW (inputs low) per logic node.

Type			Function	Wafer Mask Set #	Chip Size (Mils)
+15 to +55°C	0 to +100°C	-55 to +125°C			
MCC700	MCC800	MCC900	Buffer	67D	25 x 35
MCC701	MCC801	MCC901	Counter Adapter	5MH	32 x 34
MCC702	MCC802	MCC902	R-S Flip Flop	6ML	25 x 30
MCC703	MCC803	MCC903	3-Input NOR Gate	2MH	25 x 27
MCC704	MCC804	MCC904	Half Adder	6JC	39 x 36
MCC705	MCC805	MCC905	Half Shift Register	C02	40 x 40
MCC706	MCC806	MCC906	Half Shift Register (w/o inverter)	8ME	40 x 40
MCC707	MCC807	MCC907	4-Input NOR Gate	B77	25 x 35
MCC708	MCC808*	MCC908	Half Adder	3JB	43 x 34
MCC709	MCC809*	MCC909	2-Input Buffer	C15	32 x 39
MCC710	MCC810*	MCC910	Dual 2-Input NOR Gate	7JC	38 x 31
MCC711	MCC811*	MCC911	4-Input OR/NOR Gate	4JC	48 x 57
MCC712	MCC812*	MCC912	Half Adder	3JB	43 x 34
MCC713	MCC813*	MCC913	Type D Flip Flop	1JD	48 x 57
MCC714	MCC814	MCC914	Dual 2-Input NOR Gate	9KM	30 x 37
MCC715	MCC815	MCC915	Dual 3-Input NOR Gate	1MF	35 x 33
Not Avail.	MCC816	MCC916	J-K Flip Flop	78M	43 x 43
MCC717	MCC817*	MCC917	Quad 2-Input NOR Gate	2KD	35 x 35
MCC718	MCC818*	MCC918	Dual 3-Input NOR Gate	1MF	35 x 33
MCC719	MCC819*	MCC919	Dual 4-Input NOR Gate	1MF	35 x 33
MCC720	MCC820*	MCC920	J-K Flip Flop	810	60 x 60
MCC721	MCC821*	MCC921	Dual 2-Input Gate Expander	7JC	38 x 31
MCC722	MCC822*	MCC922	J-K Flip Flop	87A	54 x 58
MCC723	Not Avail.	Not Avail.	J-K Flip Flop	78M	43 x 43
MCC724	MCC824	MCC924	Quad 2-Input NOR Gate	2KD	35 x 35
MCC725	MCC825	MCC925	Dual 4-Input NOR Gate	1MF	35 x 33
MCC726	MCC826	MCC926	J-K Flip Flop	12C	51 x 57
MCC727	MCC827	MCC927	Quad Inverter	12L	29 x 29
MCC728	MCC828*	MCC928	5-Input NOR Gate	774	45 x 45
MCC729	MCC829	MCC929	5-Input NOR Gate	B86	33 x 35
MCC764	MCC864*	MCC964	Dual Exclusive OR/NOR Gate	31A	42 x 49
MCC767	MCC867*	MCC967	Quad Latch	69A	60 x 64
MCC770	MCC870*	MCC970	BCD to Decimal Decoder	88G	54 x 71
MCC771	MCC871	MCC971	Quad Exclusive OR Gate	30A	47 x 55
MCC774	MCC874	MCC974	J-K Flip Flop	12C	51 x 57
MCC775	MCC875	MCC975	Dual Half Adder	19K	36 x 37
MCC776	MCC876*	MCC976	Dual J-K Flip Flop	E90	50 x 58
MCC777	MCC877	MCC977	Binary Up Counter	80D	72 x 80
MCC778	MCC878*	MCC978	Dual Type D Flip Flop	49D	45 x 73
MCC779	MCC879	MCC979	J-K Flip Flop, 1 Expander, 2 Buffers	2MK	39 x 46
MCC780	MCC880	MCC980	Decade Up Counter	80D	72 x 80
MCC781	MCC881*	MCC981	Dual Buffer	37B	43 x 45
MCC782	MCC882*	MCC982	J-K Flip Flop	28C	50 x 50
MCC783	MCC883	MCC983	Dual Half Shift Register	54K	43 x 37
MCC784	MCC884	MCC984	Dual Half Shift Register (w/inverter)	E24	42 x 63
MCC785	MCC885	MCC985	Quad 2-Input Expander	2KD	35 x 35
MCC786	MCC886	MCC986	Dual 4-Input Expander	1MF	35 x 33
MCC787	MCC887	MCC987	1 J-K Flip Flop, 1 Inverter, 2 Buffers	2MK	39 x 46
MCC788	MCC888	MCC988	Dual 3-Input Buffer, non-Inverting	19H	37 x 38
MCC789	MCC889	MCC989	Hex Inverter	3KD	34 x 36
MCC790	MCC890	MCC990	Dual J-K Flip Flop	9KE	48 x 51

*These device types are guaranteed over the operating range 0 to +75°C.

(continued)