BUFFERS/INVERTERS

Device Number MC54/MC74	Function	Functional Equivalent LSTTL Device 54/74	Functional Equivalent CMOS Device MC1XXXX or CDXXXX	Direct Pin Compatibility	Number of Pins
HC04A	Hex Inverter	LS04	*4069	LS/CMOS	14
HCT04A	Hex Inverter with LSTTL–Compatible Inputs	LS04	*4069	LS/CMOS	14
HCU04	Hex Unbuffered Inverter	LS04	4069	LS/CMOS	14
HCU04A	Hex Unbuffered Inverter	LS04	4069	LS/CMOS	14
HC14A	Hex Schmitt–Trigger Inverter	LS14	4584	LS/CMOS	14
HCT14A	Hex Schmitt–Trigger Inverter with LSTTL–Compatible Inputs	LS14	4584	LS/CMOS	14
HC125A	Quad 3–State Noninverting Buffer	LS125,LS125A		LS	14
HC126A	Quad 3–State Noninverting Buffer	LS126,LS126A		LS	14
HC240A	Octal 3–State Inverting Buffer/Line Driver/Line Receiver	LS240		LS	20
HCT240A	Octal 3–State Inverting Buffer/Line Driver/Line Receiver with LSTTL–Compatible Inputs	LS240		LS	20
HC241A	Octal 3–State Noninverting Buffer/Line Driver/Line Receiver	LS241		LS	20
HCT241A	Octal 3–State Noninverting Buffer/Line Driver/Line Receiver with LSTTL–Compatible Inputs	LS241		LS	20
HC244A	Octal 3–State Noninverting Buffer/Line Driver/Line Receiver	LS244		LS	20
HCT244A	Octal 3–State Noninverting Buffer/Line Driver/Line Receiver with LSTTL–Compatible Inputs	LS244		LS	20
HC245A	Octal 3–State Noninverting Bus Transceiver	LS245		LS	20
HCT245A	Octal 3–State Noninverting Bus Transceiver with LSTTL–Compatible Inputs	LS245		LS	20
HC365	Hex 3–State Noninverting Buffer with Common Enables	LS365,LS365A		LS	16
HC366	Hex 3–State Inverting Buffer with Common Enables	LS366,LS366A		LS	16
HC367	Hex 3–State Noninverting Buffer with Separate 2–Bit and 4–Bit Sections	LS367,LS367A	4503	LS/CMOS	16
HC368	Hex 3–State Inverting Buffer with Separate 2–Bit and 4–Bit Sections	LS368,LS368A		LS	16
HC540A	Octal 3–State Inverting Buffer/Line Driver/Line Receiver	LS540		LS	20
HC541A	Octal 3–State Noninverting Buffer/Line Driver/Line Receiver	LS541		LS	20
HCT541A	Octal 3–State Noninverting Buffer/Line Driver/Line Receiver with LSTTL–Compatible Inputs	LS541		LS	20
HC640A	Octal 3–State Inverting Bus Transceiver	LS640		LS	20
HC4049	Hex Inverting Buffer/Logic–Level Down Converter		4049	CMOS	16
HC4050	Hex Noninverting Buffer/Logic–Level Down Converter		4050	CMOS	16

BUFFERS/INVERTERS (Continued)

HC Devices Have CMOS–Compatible Inputs. HCT Devices Have LSTTL–Compatible Inputs.

Device	HC HCT 04A	HCU 04	HCU 04A	HC 14A	HC 125A	HC 126A	HC HCT 240A	HC HCT 241A	HC HCT 244A	HC HCT 245A
# Pins	14	14	14	14	14	14	20	20	20	20
Quad Device Hex Device Octal Device Nine–Wide Device	●	●	●	●	●	●	●	●	●	●
Noninverting Outputs Inverting Outputs	●	●	●	●	●	●	●	●	●	●
Single Stage (unbuffered)		●	●							
Schmitt Trigger				●						
3–State Outputs Open–Drain Outputs Common Output Enables Active–Low Output Enables Active–High Output Enables Separate 4–Bit Sections Separate 2–Bit and 4–Bit Sections					● ● 	● ● 	● ● ● ● 	● ● ● ● ● 	● ● ● ● 	● ● ●
Transceiver Direction Control										● ●
Logic–Level Down Converter										

HC Devices Have CMOS–Compatible Inputs. HCT Devices Have LSTTL–Compatible Inputs.

Device	HC 365	HC 366	HC 367	HC 368	HC 540A	HC HCT 541A	HC 640A	HC 4049	HC 4050
# Pins	16	16	16	16	20	20	20	16	16
Quad Device Hex Device Octal Device Nine–Wide Device	●	●	●	●	●	●	●	●	●
Noninverting Outputs Inverting Outputs	●	●	●	●	●	●	●	●	●
Single Stage (unbuffered)									
Schmitt Trigger									
3–State Outputs Open–Drain Outputs Common Output Enables Active–Low Output Enables Active–High Output Enables Separate 4–Bit Sections Separate 2–Bit and 4–Bit Sections	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●		
Transceiver Direction Control							● ●		
Logic–Level Down Converter								●	●

GATES

Device Number MC54/MC74	Function	Functional Equivalent LSTTL Device 54/74	Functional Equivalent CMOS Device MC1XXXX or CDXXXX	Direct Pin Compatibility	Number of Pins
HC00A	Quad 2–Input NAND Gate	LS00	4011	LS	14
HCT00A	Quad 2–Input NAND Gate with LSTTL–Compatible Inputs	LS00	4001	LS	14
HC02A	Quad 2–Input NOR Gate	LS02	4001	LS	14
HC03A	Quad 2–Input NAND Gate with Open–Drain Outputs	LS03	*4011	LS	14
HC08A	Quad 2–Input AND Gate	LS08	4081	LS	14
HCT08A	Quad 2–Input AND Gate with LSTTL–Compatible Inputs	LS08	4081	LS	14
HC10	Triple 3–Input NAND Gate	LS10	4023	LS	14
HC11	Triple 3–Input AND Gate	LS11	4073	LS	14
HC20	Dual 4–Input NAND Gate	LS20	4012	LS	14
HC27	Triple 3–Input NOR Gate	LS27	4025	LS	14
HC30	8–Input NAND Gate	LS30	4068	LS	14
HC32A	Quad 2–Input OR Gate	LS32	4071	LS	14
HCT32A	Quad 2–Input OR Gate with LSTTL–Compatible Inputs	LS32	4071	LS	14
HC51	2–Wide, 2–Input/2–Wide, 3–Input AND–NOR Gates	LS51	*4506	LS	14
★HC58	2–Wide, 2–Input/2–Wide, 3–Input AND–OR Gates		*4506		14
HC86/A	Quad 2–Input Exclusive OR Gate	LS86	4070	LS	14
HC132A	Quad 2–Input NAND Gate with Schmitt–Trigger Inputs	LS132	4093	LS	14
HC133	13–Input NAND Gate	LS133		LS	16
HC4002	Dual 4–Input NOR Gate	*LS25	4002	CMOS	14
HC4075	Triple 3–Input OR Gate		4075	CMOS	14
HC4078	8–Input NOR/OR Gate		4078	CMOS	14
★HC7266/A	Quad 2–input Exclusive NOR Gate	*LS266	4077	LS/CMOS	14

* Suggested alternative
★ Exclusive High–Speed CMOS design

GATES (Continued)

HC Devices Have CMOS–Compatible Inputs.

Device	HC HCT 00A	HC 02A	HC 03A	HC HCT 08A	HC 10	HC 11	HC 20	HC 27	HC 30	HC HCT 32A
# Pins	14	14	14	14	14	14	14	14	14	14
Single Device									•	
Dual Device							•			
Triple Device					•	•		•		
Quad Device	•	•	•	•						•
NAND	•		•		•		•		•	
NOR		•						•		
AND				•		•				
OR										•
Exclusive OR										
Exclusive NOR										
AND–NOR										
AND–OR										
2–Input	•	•	•	•						•
3–Input					•	•		•		
4–Input							•			
8–Input									•	
13–Input										
Schmitt–Trigger Inputs										
Open–Drain Outputs			•							

HC Devices Have CMOS–Compatible Inputs.

Device	HC 51	HC 58	HC 86/A	HC 132A	HC 133	HC 4002	HC 4075	HC 4078	HC 7266/A
# Pins	14	14	14	14	16	14	14	14	14
Single Device					•			•	
Dual Device	•	•				•			
Triple Device							•		
Quad Device			•	•					•
NAND				•	•				
NOR						•		•	
AND									
OR							•	•	
Exclusive OR			•						
Exclusive NOR									•
AND–NOR	•								
AND–OR		•							
2–Input	•	•	•	•					•
3–Input	•	•					•		
4–Input						•			
8–Input								•	
13–Input					•				
Schmitt–Trigger Inputs				•					
Open–Drain Outputs									

SCHMITT TRIGGERS

Device Number MC54/MC74	Function	Functional Equivalent LSTTL Device 54/74	Functional Equivalent CMOS Device MC1XXXX or CDXXXX	Direct Pin Compatibility	Number of Pins
HC14A	Hex Schmitt–Trigger Inverter	LS14	4584	LS/CMOS	14
HCT14A	Hex Schmitt–Trigger Inverter with LSTTL–Compatible Inputs	LS14	4584	LS	14
HC132A	Quad 2–Input NAND Gate with Schmitt–Trigger Inputs	LS132	4093	LS	14

BUS TRANSCEIVERS

Device Number MC54/MC74	Function	Functional Equivalent LSTTL Device 54/74	Functional Equivalent CMOS Device MC1XXXX or CDXXXX	Direct Pin Compatibility	Number of Pins
HC245A	Octal 3–State Noninverting Bus Transceiver	LS245		LS	20
HCT245A	Octal 3–State Noninverting Bus Transceiver with LSTTL–Compatible Inputs	LS245		LS	20
HC640A	Octal 3–State Inverting Bus Transceiver	LS640		LS	20
HC646	Octal 3–State Noninverting Bus Transceiver and D Flip–Flop	LS646		LS	24

HC Devices Have CMOS–Compatible Inputs. HCT Devices Have LSTTL–Compatible Inputs.

Device	HC HCT 245A	HC 640A	HC 646
# Pins	20	20	24
Quad Device			
Octal Device	●	●	●
Buffer	●	●	
Storage Capability			●
Inverting Outputs		●	
Noninverting Outputs	●		●
Common Output Enable	●	●	●
Active–Low Output Enable	●	●	●
Active–High Output Enable			
Direction Control	●	●	●

LATCHES

Device Number MC54/MC74	Function	Functional Equivalent LSTTL Device 54/74	Functional Equivalent CMOS Device MC1XXXX or CDXXXX	Direct Pin Compatibility	Number of Pins
HC75	Dual 2–Bit Transparent Latch	LS75		LS	16
HC259	8–Bit Addressable Latch/1–of–8 Decoder	LS259		LS	16
HC373A	Octal 3–State Noninverting Transparent Latch	LS373,LS573		LS373	20
HCT373A	Octal 3–State Noninverting Transparent Latch with LSTTL–Compatible Inputs	LS373,LS573		LS373	20
HC533A	Octal 3–State Inverting Transparent Latch	LS533,LS563		LS533	20
HC563	Octal 3–State Inverting Transparent Latch	LS533,LS563		LS563	20
HC573A	Octal 3–State Noninverting Transparent Latch	LS373,LS573		LS573	20
HCT573A	Octal 3–State Noninverting Transparent Latch with LSTTL–Compatible Inputs	LS373,LS573		LS573	20

HC Devices Have CMOS–Compatible Inputs. HCT Devices Have LSTTL–Compatible Inputs.

Device	HC 75	HC 259	HC HCT 373A	HC 533A	HC 563	HC HCT 573A
# Pins	16	16	20	20	20	20
Single Device		●				
Dual Device	●					
Octal Device			●	●	●	●
Number of Bits Controlled by Latch Enable:						
2	●					
8			●	●	●	●
Transparent	●		●	●	●	●
Addressable		●				
Readback Capability						
Noninverting Outputs	●	●	●			●
Inverting Outputs	●			●	●	
Common Latch Enable, Active–Low	●		●		●	●
3–State Outputs			●	●	●	●
Common Output Enable, Active–Low			●		●	●

These devices are identical in function and are different in pinout only: HC/HCT373A and HC/HCT573A

FLIP–FLOPS

Device Number MC54/MC74	Function	Functional Equivalent LSTTL Device 54/74	Functional Equivalent CMOS Device MC1XXXX or CDXXXX	Direct Pin Compatibility	Number of Pins
HC73	Dual J–K Flip–Flop with Reset	LS73,LS73A, LS107,LS107A	*4027	LS73, LS73A	14
HC74A	Dual D Flip–Flop with Set and Reset	LS74,LS74A	*4013	LS	14
HCT74A	Dual D Flip–Flop with Set and Reset with LSTTL–Compatible Inputs	LS74,LS74A	4013	LS	14
HC107	Dual J–K Flip–Flop with Reset	LS73,LS73A, LS107,LS107A	*4027	LS107, LS107A	14
HC109	Dual J–$\overline{K}$ with Set and Reset	LS109,LS109A	*4027	LS	16
HC112	Dual J–K Flip–Flop with Set and Reset	LS76,LS76A, LS112, LS112A	*4027	LS112, LS112A	16
HC173	Quad 3–State D Flip–Flop with Common Clock and Reset	LS173,LS173A	4076	LS/CMOS	16
HC174A	Hex D Flip–Flop with Common Clock and Reset	LS174	4174	LS/CMOS	16
HCT174A	Hex D Flip–Flop with Common Clock and Reset with LSTTL–Compatible Inputs	LS174	4174	LS	16
HC175/A	Quad D Flip–Flop with Common Clock and Reset	LS175	4175	LS/CMOS	16
HC273A	Octal D Flip–Flop with Common Clock and Reset	LS273		LS	20
HCT273A	Octal D Flip–Flop with Common Clock and Reset with LSTTL–Compatible Inputs	LS273		LS	20
HC374A	Octal 3–State Noninverting D Flip–Flop	LS374,LS574		LS374	20
HCT374A	Octal 3–State Noninverting D Flip–Flop with LSTTL–Compatible Inputs	LS374,LS574		LS374	20
HC534A	Octal 3–State Inverting D Flip–Flop	LS534,LS564		LS534	20
HC564	Octal 3–State Inverting D Flip–Flop	LS534,LS564		LS564	20
HC574A	Octal 3–State Noninverting D Flip–Flop	LS374,LS574		LS574	20
HCT574A	Octal 3–State Noninverting D Flip–Flop with LSTTL–Compatible Inputs	LS374,LS574		LS	20
HC646	Octal 3–State Noninverting Bus Transceiver and D Flip–Flop	LS646		LS	24

* Suggested alternative

FLIP–FLOPS (Continued)

HC Devices Have CMOS–Compatible Inputs. HCT Devices Have LSTTL–Compatible Inputs.

Device	HC 73	HC HCT 74A	HC 107	HC 109	HC 112	HC 173	HC HCT 174A	HC 175/A
# Pins	14	14	14	16	16	16	16	16
Type	J–K	D	J–K	J–$\overline{K}$	J–K	D	D	D
Dual Device	●	●	●	●	●			
Quad Device						●		●
Hex Device							●	
Octal Device								
Common Clock	●		●		●	●	●	●
Negative–Transition Clocking		●		●				
Positive–Transition Clocking						●	●	●
Common, Active–Low Data Enables						●		
Noninverting Outputs	●	●	●	●	●	●	●	●
Inverting Outputs	●	●	●	●	●			●
3–State Outputs						●		
Common, Active–Low Output Enables						●		
Common Reset						●	●	●
Active–Low Reset	●	●	●	●	●		●	●
Active–High Reset						●		
Active–Low Set		●		●	●			
Transceiver								
Direction Control								

HC Devices Have CMOS–Compatible Inputs. HCT Devices Have LSTTL–Compatible Inputs.

Device	HC HCT 273A	HC HCT 374A	HC 534A	HC 564	HC HCT 574A	HC 646
# Pins	20	20	20	20	20	24
Type	D	D	D	D	D	D
Dual Device						
Quad Device						
Hex Device						
Octal Device	●	●	●	●	●	●
Common Clock	●	●	●	●	●	●
Negative–Transition Clocking						
Positive–Transition Clocking	●	●	●	●	●	●
Common, Active–Low Data Enables						
Noninverting Outputs	●	●			●	●
Inverting Outputs			●	●		
3–State Outputs		●	●	●	●	●
Common, Active–Low Output Enables		●	●	●	●	●
Common Reset	●					
Active–Low Reset	●					
Active–High Reset						
Active–Low Set						
Transceiver						●
Direction Control						●

These devices are identical in function and are different in pinout only: HC73 and HC107
HC374A and HC574A
HC534A and HC564

DIGITAL DATA SELECTORS/MULTIPLEXERS

Device Number MC54/MC74	Function	Functional Equivalent LSTTL Device 54/74	Functional Equivalent CMOS Device MC1XXXX or CDXXXX	Direct Pin Compatibility	Number of Pins
HC151	8–Input Data Selector/Multiplexer	LS151	*4512	LS	16
HC153	Dual 4–Input Data Selector/Multiplexer	LS153	4539	LS/CMOS	16
HC157A	Quad 2–Input Noninverting Data Selector/Multiplexer	LS157	*4519	LS	16
HCT157A	Quad 2–Input Data Selector/Multiplexer with LSTTL–Compatible Inputs	LS157	*4519	LS	16
HC158/A	Quad 2–Input Data Selector/Multiplexer	LS158		LS	16
HC251	8–Input Data Selector/Multiplexer with 3–State Outputs	LS251	*4512	LS	16
HC253	Dual 4–Input Data Selector/Multiplexer with 3–State Outputs	LS253	*4539	LS/CMOS	16
HC257	Quad 2–Input Data Selector/Multiplexer with 3–State Outputs	LS257	*4519	LS	16

* Suggested alternative

HC Devices Have CMOS–Compatible Inputs.

Device	HC 151	HC 153	HC HCT 157A	HC HCT 157A	HC 158 158A	HC 251	HC 253	HC 257
# Pins	16	16	16	16	16	16	16	16
Description	One of 8 inputs is selected	One of 4 inputs is selected	One of two 4–bit words is selected	One of two 4–bit words is selected	One of two 4–bit words is selected	One of 8 inputs is selected	14 One of 4 inputs is selected	One of two 4–bit words is selected
Single Device Dual Device Quad Device	●	●	●	●	●	●	●	●
Data Latch with Active–Low Latch Enable								
Common Address 1–Bit Binary Address 2–Bit Binary Address 3–Bit Binary Address	●	● ●	● ●	● ●	● ●	●	● ●	● ●
Address Latch (Transparent) Address Latch (Non–transparent) Active–Low Address Latch Enable								●
Noninverting Output Inverting Output	● ●	●	●	●	●	● ●	●	●
3–State Outputs						●	●	●
Common Output Enable Active–High Output Enable Active–Low Output Enable	●	●	● ●	● ●	● ●	●	●	● ●

DECODERS/DEMULTIPLEXERS/DISPLAY DRIVERS

Device Number MC54/MC74	Function	Functional Equivalent LSTTL Device 54/74	Functional Equivalent CMOS Device MC1XXXX or CDXXXX	Direct Pin Compatibility	Number of Pins
HC42	1–of–10 Decoder	LS42	*4028	LS	16
HC137	1–of–8 Decoder/Demultiplexer with Address Latch	LS137	*4028	LS	16
HC138A	1–of–8 Decoder/Demultiplexer	LS138	*4028	LS	16
HCT138A	1–of–8 Decoder/Demultiplexer with LSTTL–Compatible Inputs	LS138	*4028	LS	16
HC139A	Dual 1–of–4 Decoder/Demultiplexer	LS139	4556	LS/CMOS	16
HC147	Decimal–to–BCD Encoder	LS147		LS	16
HC154	1–of–16 Decoder/Demultiplexer	LS154,*LS159	*4515	LS	24
⋆HC237	1–of–8 Decoder/Demultiplexer with Address Latch	*LS137	*4208		16
HC259	8–Bit Addressable Latch/1–of–8 Decoder	LS259		LS	16
HC4511	BCD–to–Seven–Segment Latch/Decoder/Display Driver	*LS47,*LS48, *LS49	4511	CMOS	16
HC4514	1–of–16 Decoder/Demultiplexer with Address Latch	*LS154,*LS159	4514,*4515	CMOS	24

* Suggested alternative
⋆ Exclusive High–Speed CMOS design

DECODERS/DEMULTIPLEXERS/DISPLAY DRIVERS (Continued)

HC Devices Have CMOS–Compatible Inputs.

Device	HC 42	HC 137	HC HCT 138A	HC 139A	HC 147	HC 154
# Pins	16	16	16	16	16	24
Input Description	BCD Address	3–Bit Binary Address	3–Bit Binary Address	2–Bit Binary Address	Any Combination of 9 Inputs	4–Bit Binary Address
Output Description	One of 10	One of 8	One of 8	One of 4	BCD Address of Highest Input	One of 16
Single Device Dual Device	●	●	●	 ●	●	●
Address Input Latch Active–High Latch Enable Active–Low Latch Enable		 ● ●				
Active–Low Inputs					●	
Active–Low Outputs Active–High Outputs	●	●	●	●	●	●
Active–Low Output Enable Active–High Output Enable		● ●	● ●	●		●
Active–Low Reset						
Active–Low Blanking Input Active–High Blanking Input						
Active–Low Lamp–Test Input						
Phase Input (for LCD's)						

● Implies the device has two such enables

HC Devices Have CMOS–Compatible Inputs.

Device	HC 237	HC 259	HC 4511	HC 4514
# Pins	16	16	16	24
Input Description	3–Bit Binary Address	3–Bit Binary Address	BCD Data	4–Bit Binary Address
Output Description	One of 8	One of 8	7–Segment Display	One of 16
Single Device Dual Device	●	●	●	●
Address Input Latch Active–High Latch Enable Active–Low Latch Enable	● ●		● ●	● ●
Active–Low Inputs				
Active–Low Outputs Active–High Outputs	●	●	●	●
Active–Low Output Enable Active–High Output Enable	● ●	●		●
Active–Low Reset		●		
Active–Low Blanking Input Active–High Blanking Input			●	
Active–Low Lamp–Test Input			●	
Phase Input (for LCD's)				

ANALOG SWITCHES/MULTIPLEXERS/DEMULTIPLEXERS

Device Number MC54/MC74	Function	Functional Equivalent LSTTL Device 54/74	Functional Equivalent CMOS Device MC1XXXX or CDXXXX	Direct Pin Compatibility	Number of Pins
HC4016/A	Quad Analog Switch/Multiplexer/Demultiplexer		4016,4066	CMOS	14
HC4051	8–Channel Analog Multiplexer/Demultiplexer		4051	CMOS	16
HC4052	Dual 4–Channel Analog Multiplexer/Demultiplexer		4052	CMOS	16
HC4053	Triple 2–Channel Analog Multiplexer/Demultiplexer		4053	CMOS	16
HC4066/A	Quad Analog Switch/Multiplexer/Demultiplexer		4066,4016	CMOS	14
⋆HC4316/A	Quad Analog Switch/Multiplexer/Demultiplexer with Separate Analog and Digital Power Supplies		*4016		16
⋆HC4351	8–Channel Analog Multiplexer/Demultiplexer with Address Latch		*4051		20
⋆HC4353	Triple 2–Channel Analog Multiplexer/Demultiplexer with Address Latch		*4053		20

* Suggested alternative
⋆ High–Speed CMOS design only

HC Devices Have CMOS–Compatible Inputs.

Device	HC 4016/A	HC 4051	HC 4052	HC 4053	HC 4066/A
# Pins	14	16	16	16	14
Description	4 Independently Controlled Switches	A 3–Bit Address Selects One of 8 Switches	A 2–Bit Address Selects One of 4 Switches	A 3–Bit Address Selects Varying Combinations of the 6 Switches	4 Independently Controlled Switches
Single Device		●			
Dual Device			●		
Triple Device				●	
Quad Device	●				●
1–to–1 Multiplexing	●				●
2–to–1 Multiplexing				●	
4–to–1 Multiplexing			●		
8–to–1 Multiplexing		●			
Active–High ON/OFF Control	●				●
Common Address Inputs			●	●	
2–Bit Binary Address			●		
3–Bit Binary Address		●		●	
Address Latch with Active–Low Latch Enable					
Common Switch Enable		●	●	●	
Active–Low Enable		●	●	●	
Active–High Enable					
Separate Analog and Control Reference Power Supplies		●	●	●	
Switched Tubs (for R_{ON} and Prop. Delay Improvement)					●

ANALOG SWITCHES/MULTIPLEXERS/DEMULTIPLEXERS (Continued)

HC Devices Have CMOS–Compatible Inputs.

Device	HC 4316/A	HC 4351	HC 4353
# Pins	16	20	20
Description	4 Independently Controlled Switches (Has a Separate Analog Lower Power Supply)	A 3–Bit Address Selects One of 8 Switches (Has an Address Latch)	A 3–Bit Address Selects Varying Combinations of the 6 Switches (Has an Address Latch)
Single Device		●	
Dual Device			
Triple Device			●
Quad Device	●		
1–to–1 Multiplexing	●		
2–to–1 Multiplexing			●
4–to–1 Multiplexing			
8–to–1 Multiplexing		●	
Active–High ON/OFF Control	●		
Common Address Inputs			●
2–Bit Binary Address			
3–Bit Binary Address		●	●
Address Latch with Active–Low Latch Enable		●	●
Common Switch Enable	●	●●	●●
Active–Low Enable	●	●	●
Active–High Enable		●	●
Separate Analog and Control Reference Power Supplies	●	●	●
Switched Tubs (for R_{ON} and Prop. Delay Improvement)			

●● implies the device has two such enables

SHIFT REGISTERS

Device Number MC54/MC74	Function	Functional Equivalent LSTTL Device 54/74	Functional Equivalent CMOS Device MC1XXXX or CDXXXX	Direct Pin Compatibility	Number of Pins
HC164/A	8–Bit Serial–Input/Parallel–Output Shift Register	LS164	*4034	LS	14
HC165	8–Bit Serial– or Parallel–Input/Serial–Output Shift Register	LS165	*4021	LS	16
HC194	4–Bit Bidirectional Universal Shift Register	LS194,LS194A	4194	LS/CMOS	16
HC195	4–Bit Universal Shift Register	LS196,LS195A	*4035	LS	16
HC299	8–Bit Bidirectional Universal Shift Register with Parallel I/O	LS299		LS	20
HC589/A	8–Bit Serial– or Parallel–Input/Serial–Output Shift Register with 3–State Output	LS589		LS	16
HC595A	8–Bit Serial–Input/Serial– or Parallel–Output Shift Register with Latched 3–State Outputs	LS595	*4034	LS	16
HC597/A	8–Bit Serial– or Parallel–Input/Serial–Output Shift Register with Input Latch	LS597		LS	16

* Suggested alternative
⋆ Exclusive High–Speed CMOS design

HC Devices Have CMOS–Compatible Inputs.

Device	HC 164/A	HC 165	HC 194	HC 195	HC 299	HC 589/A	HC 595A	HC 597/A
# Pins	14	16	16	16	20	16	16	16
4–Bit Register			●	●				
8–Bit Register	●	●			●	●	●	●
Serial Data Input	●	●	●	●	●●	●	●	●
Parallel Data Inputs		●	●	●	●	●		●
Serial Output Only		●				●		●
Parallel Outputs	●		●	●	●		●	
Inverting Output		●		●				
Noninverting Output	●	●	●	●	●	●	●	●
Serial Shift/Parallel Load Control		●	●	●	●	●		●
Shifts One Direction Only	●	●		●		●	●	●
Shifts Both Directions			●		●			
Positive–Transition Clocking	●	●	●	●	●	●	●	●
Active–High Clock Enable		●						
Input Data Enable	●							
Data Latch with Active–High Latch Clock						●		●
Output Latch with Active–High Latch Clock							●	
3–State Outputs					●	●	●	
Active–Low Output Enable					●●	●	●	
Active–Low Reset	●		●	●	●		●	●

COUNTERS

Device Number MC54/MC74	Function	Functional Equivalent LSTTL Device 54/74	Functional Equivalent CMOS Device MC1XXXX or CDXXXX	Direct Pin Compatibility	Number of Pins
HC160	Presettable BCD Counter with Asynchronous Reset	LS160,LS160A	4160	LS/CMOS	16
HC161A	Presettable 4–Bit Binary Counter with Asynchronous Reset	LS161,LS161A	4161	LS/CMOS	16
HCT161A	Presettable 4–Bit Binary Counter with Asynchronous Reset with LSTTL–Compatible Inputs	LS161,LS161A	4161	LS/CMOS	16
HC162	Presettable BCD Counter with Synchronous Reset	LS162,LS162A	4162	LS/CMOS	16
HC163A	Presettable 4–Bit Binary Counter with Synchronous Reset	LS163,LS163A	4163	LS/CMOS	16
HC390/A	Dual 4–Stage Binary Ripple Counter with ÷ 2 and ÷ 5 Sections	LS390		LS	16
HC393/A	Dual 4–Stage Binary Ripple Counter	LS393	*4520	LS	14
HC4017	Decade Counter		4017	CMOS	16
HC4020/A	14–Stage Binary Ripple Counter		4020	CMOS	16
HC4040/A	12–Stage Binary Ripple Counter		4040	CMOS	16
HC4060/A	14–Stage Binary Ripple Counter with Oscillator		4060	CMOS	16

* Suggested alternative

HC Devices Have CMOS–Compatible Inputs.

Device	HC 160	HC 161A	HC 162	HC HCT 163A	HC 390/A	HC 393/A	HC 4017	HC 4020/A	HC 4040/A	HC 4060/A
# Pins	16	16	16	16	16	14	16	16	16	16
Single Device	●	●	●	●			●	●	●	●
Dual Device					●	●				
Ripple Counter					●	●		●	●	●
Number of Ripple Counter Internal Stages					4	4		14	12	14
Number of Stages with Available Outputs					4	4		12	12	10
Count Up	●	●	●	●	●	●	●	●	●	●
4–Bit Binary Counter		●		●		●				
BCD Counter	●		●		●					
Decimal Counter							●			
Separate ÷ 2 Section					●					
Separate ÷ 5 Section					●					
On–Chip Oscillator Capability										●
Positive–Transition Clocking	●	●	●	●			●			
Negative–Transition Clocking					●	●	●	●	●	●
Active–High Clock Enable							●			
Active–Low Clock Enable							●			
Active–High Count Enable	●●	●●	●●	●●						
Active–High Reset	●	●	●	●	●	●	●	●	●	●
4–Bit Binary Preset Data Inputs		●		●						
BCD Preset Data Inputs	●		●							
Active–Low Load Preset	●	●	●	●						
Carry Output	●	●	●	●						

●● implies the device has two such enables

MISCELLANEOUS DEVICES

Device Number MC54/MC74	Function	Functional Equivalent LSTTL Device 54/74	Functional Equivalent CMOS Device MC1XXXX or CDXXXX	Direct Pin Compatibility	Number of Pins
HC85	4–Bit Magnitude Comparator	LS85	*4585	LS	16
HC280	9–Bit Odd/Even Parity Generator/Checker	LS280	*4531	LS	14
HC688	8–Bit Equality Comparator	LS688		LS	20
HC4046A	Phase–Locked Loop		4046	CMOS	16
HC4538A	Dual Precision Monostable Multivibrator (Retriggerable, Resettable)	*LS423	4538,4528	CMOS	16