IC CHART

FOR

B+K PRECISION DYNASCAN CORPORATION

MODEL 552

CMOS

IC TESTER

6460 West Cortland Street
Chicago, Illinois 60635

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This IC chart is not meant to be used as a list of all testable IC's. Some applications may exist where the IC Tester cannot be used to test a listed device (see notes below). There are also many devices that are not listed that can be tested using the IC Tester (most CMOS dual in line package devices with 20 pins or less are testable). Because the number of devices that the IC Tester can test is so large, only the 4000 series devices (the most popular CMOS devices) have been included on this chart.

CAUTION

Do not attempt to test any IC that has voltages above +20 V or below -0.5 V as damage to the IC Tester may result.

NOTES

a = Tri-State Device - When the IC under test is a tri-state device, erroneous test results may occur. The IC Tester compares logic signals between the device under test and the reference IC, but a tri-state device in the high impedance state has no logic output. Because the IC Tester does not actually test the high impedance state of the device (it compares logic levels when the device is in the logic high or logic low state), only the low and high logic states can be tested.

b = Possible Analog Use - Device is used as a switch, multiplexer, or demultiplexer for analog or digital signals. If the device is used for analog signals, the IC Tester is not capable of testing the device (when used for this application). Also, many devices that can be used to switch analog signals can withstand voltages higher than +20 V and lower than -0.5 V. Testing devices used with such signals could result in damage to the IC Tester.

c = Edge Triggered Device - In some cases when high speed edge triggered devices (flip-flops, counters, etc...) are being tested, erroneous test results may occur. Because of the IC Tester's test cable and internal circuit board wiring, the device under test may trigger sufficiently before the reference IC to cause an erroneous reading.

d = Counter, Serial or Shift Register, or Flip-Flop - If an IC that is a counter, flip-flop, or serial or shift register does not show to be **GOOD** when first tested, resetting the IC's (both the IC under test and the reference IC) may be all that is necessary. Because the reference IC is plugged into the socket after the equipment under test is already running, the IC under test and the reference IC may not be in sync. Frequently, both devices can be reset by turning the power to the unit under test off and then powering up again. If this fails to give a **GOOD** indication after pressing the **TEST** button, it is necessary to reset the IC's manually. To reset most devices, either a high or low (depending on whether the RESET pin is "active high" or "active low") logic pulse must be applied to the RESET pin (or in the case of multiple counter IC's, there may be more than one RESET pin). The following IC chart indicates both the RESET pin number(s) and

whether a high or low logic pulse is needed to reset the device. Because both the IC under test and the reference IC are tied together, it is only necessary to pulse the IC under test. To reset the IC it is best to use a Digital Pulser Probe such as the B & K-Precision Model DP-101. As an alternative, it is possible to use a wire jumper to connect the RESET pin to VSS or VDD. However, this method is not recommended because it is so easy to accidentally short a wire jumper to another pin on the IC. If a wire jumper is used, it is only necessary to connect the RESET pin to VSS or VDD for a very brief period. When the symbol "@@" appears in the "CLEAR PIN #" column, it is necessary to check the data sheets for the device under test (method for "resetting" or "clearing" the device is not simply applying a pulse to a reset pin).

e = Storage Device - When testing memory devices (RAMs and ROMs), registers, or latches it is necessary that all data contained in the device under test also be contained in the reference IC. With registers and latches, this is usually acheived by simply clearing or setting the device in much the same manner as with counters. If a SET, RESET, or CLEAR pin(s) is present on the device, the pin(s) is listed on the IC chart along with whether the pulse needed is logic high or logic low. For other devices it will be necessary to consult the data sheet for that specific device to determine how to match the data in the reference IC with that in the IC under test.

f = CMOS To TTL Level Converter - Device uses a 5 V supply and converts CMOS level logic signals to TTL level logic signals.

g = Device Can Be Used As An Oscillator - This device has a secondary use as an oscillator. When this device is used as an oscillator, external components (resistors and capacitors) are used and the device cannot be tested by the IC Tester.

h = Open Drain Device - When this device does not have external pull-up resistors tied to its outputs, a high logic state (at the output) is seen as a high impedance (same as the third state in a tri-state device). See note "a" (Tri-state Devices) for such applications. If an external pull up resistor is used, the device acts as a normal logic device (logic high/logic low) but erroneous test results may still occur. While the IC Tester is capable of testing some open drain IC's, in certain conditions open drain IC's are not testable because of the high impedance at the output. This high impedance will cause the reference IC to override an open (blown) output on an open collector IC.

X = When an "X" appears in the "**NON STANDARD**" column, the device listed does not have standard VSS and VDD pins and the **MANUAL SELECT** switches must be used.

Other Considerations

External Components - Testing IC's that use external timing capacitors and resistors (such as one shots or multivibrators) is not recommended. Because the IC Tester ties the reference IC to the IC under test, the external capacitance and resistance are thrown off by the IC Tester. This may cause the circuit under test to operate improperly, resulting in erroneous test results.

Dynamic Testing - In order to properly test an IC, the device must be in use and the inputs and outputs should have changing states. If, for example, an IC output pin is shorted to ground, but the output of the IC is supposed to be low (due to the input data), the IC will show up on the IC Tester as **GOOD**. By making sure that all of the IC's inputs are active (changing states), this situation will be avoided.

Open Circuited Outputs - When an IC with an open circuited output is tested, false test results may occur. This is because a resistor is connected between the reference IC pin and the pin of the IC under test. The resistor allows the logic signal present at the output of the reference IC to also be seen at the output of the IC under test. Because the same logic is seen at the output of both devices, the IC Tester shows the IC under test to be **GOOD** even though it is not.

Loading Beyond Rated Fanout - In cases where the IC under test has been loaded close to its rated fanout, the IC Tester may further load the circuit under test (beyond the IC's rated fanout) and cause it to malfunction, possibly resulting in false test results.

IC TYPE #	DEVICE FUNCTION	NON STAN-DARD	VSS PIN #	VDD PIN #	CLEAR PIN #	TOTAL # OF PINS	NOTES
4000	Dual 3-Input NOR Gate & Inverter		7	14		14	
4001	Quad 2-Input NOR Gate		7	14		14	
4002	Dual 4-Input NOR Gate		7	14		14	
4006	18-Stage Shift Register		7	14	@@	14	c,d
4007	Dual Complementary Pair Plus Inverter		7	14		14	
4008	4-Bit Adder		8	16		16	
4009	Hex Buffer/Converter		8	16		16	
4010	Hex Buffer/Converter		8	16		16	
4011	Quad 2-Input NAND Gate		7	14		14	
4012	Dual 4-Input NAND Gate		7	14		14	

IC TYPE #	DEVICE FUNCTION	NON STAN-DARD	VSS PIN #	VDD PIN #	CLEAR PIN #	TOTAL # OF PINS	NOTES
4013	Dual D-Type Flip-Flop		7	14	4,10(H)	14	c,d
4014	8-Stage Static Shift Register		8	16	@@	16	c,d
4015	Dual 4-Stage Static Shift Register		8	16	6,14(H)	16	c,d
4016	Quad Bilateral Switch		7	14		14	b
4017	Decade Counter With 10 Decoded Outputs		8	16	15(H)	16	c,d
4018	Presettable Divide-By-N Counter		8	16	15(H)	16	c,d
4019	Quad AND/OR Select Gate		8	16		16	
4020	14-Stage Ripple-Carry Binary Counter/Divider		8	16	11(H)	16	c,d
4021	8-Stage Static Shift Register		8	16	@@	16	c,d
4022	Octal Counter With 8 Decoded Outputs		8	16	15(H)	16	c,d
4023	Triple 3-Input NAND Gate		7	14		14	
4024	7-Stage Ripple-Carry Binary Counter/Divider		7	14	2(H)	14	c,d
4025	Triple 3-Input NOR Gate		7	14		14	
4026	Decade Counter/Divider		8	16	15(H)	16	c,d
4027	Dual J-K Master-Slave Flip-Flop		8	16	4,12(H)	16	c,d
4028	BCD-To-Decimal Decoder		8	16		16	
4029	Presettable Up/Down Counter		8	16	@@	16	c,d

IC TYPE #	DEVICE FUNCTION	NON STAN-DARD	VSS PIN #	VDD PIN #	CLEAR PIN #	TOTAL # OF PINS	NOTES
4030	Quad Exclusive-OR Gate		7	14		14	
4031	64-Stage Static Shift Register		8	16	@@	16	c,d
4032	Positive Logic Triple Serial Adder		8	16		16	
4033	Decade Counter/Divider		8	16	15(H)	16	c,d
4035	4-Stage Parallel In/Parallel Out Shift Register		8	16	5(H)	16	c,d
4038	Negative Logic Triple Serial Adder		8	16		16	
4040	12-Stage Ripple-Carry Binary Counter/Divider		8	16	11(H)	16	c,d
4041	Quad True/Complement Buffer		7	14		14	
4042	Quad Clocked D Latch		8	16	@@	16	c,d
4043	Quad NOR R/S Latch		8	16	@@	16	a
4044	Quad NAND R/S Latch		8	16	@@	16	a
4045	21-Stage Counter	X	14	3	@@	16	c,d
4048	Multifunction Expandable 8-Input Gate		8	16		16	a
4049	Hex Inverting Buffer/Converter	X	8	1(VCC=5 V)		16	f
4050	Hex Non-Inverting Buffer/Converter	X	8	1(VCC=5V)		16	f
4063	4-Bit Magnitude Comparator		8	16		16	
4066	Quad Bilateral Switch		7	14		14	b

IC TYPE #	DEVICE FUNCTION	NON STAN-DARD	GND PIN #	VCC PIN #	CLEAR PIN #	TOTAL # OF PINS	NOTES
4068	8-Input NAND/AND Gate		7	14		14	
4069	Hex Inverter		7	14		14	
4070	Quad Exclusive-OR Gate		7	14		14	
4071	Quad 2-Input OR Gate		7	14		14	
4072	Dual 4-Input OR Gate		7	14		14	
4073	Triple 3-Input AND Gate		7	14		14	
4075	Triple 3-Input OR Gate		7	14		14	
4076	4-Bit D-Type Register		8	16	15(H)	16	a,c,e
4077	Quad Exclusive-NOR Gate		7	14		14	
4078	8-Input NOR/OR Gate		7	14		14	
4081	Quad 2-Input AND Gate		7	14		14	
4082	Dual 4-Input AND Gate		7	14		14	
4085	Dual 2-Wide 2-Input AND-OR-INVERT Gate		7	14		14	
4086	Expandable 4-Wide 2-Input AND-OR-INVERT Gate		7	14		14	
4089	Binary Rate Multiplier		8	16	13(H)	16	c,d
4093	Quad 2-Input NAND Schmitt Trigger		7	14		14	
4094	8-Stage Shift-And-Store Bus Register		8	16	@@	16	a,c,d,e

IC TYPE #	DEVICE FUNCTION	NON STAN-DARD	VSS PIN #	VDD PIN #	CLEAR PIN #	TOTAL # OF PINS	NOTES
4095	Gated J-K Master-Slave Flip-Flop		7	14	2(H)	14	c,d
4096	Gated J-K Master-Slave Flip-Flop		7	14	2(H)	14	c,d
4099	8-Bit Addressable Latch		8	16	2(H)	16	c,e
4502	Strobed Hex Inverter/Buffer		8	16		16	a
4503	Hex Buffer		8	16		16	a
4505	64-Bit Random Access Memory		7	14	@@	14	a,e
4510	BCD Presettable Up/Down Counter		8	16	9(H)	16	c,d
4511	BCD-To-7-Segment Latch Decoder Driver		8	16	@@	16	c,e
4512	8-Channel Data Selector		8	16		16	a
4516	Binary Presettable Up/Down Counter		8	16	9(H)	16	c,d
4517	Dual 64-Stage Static Shift Register		8	16	@@	16	a,c,d
4518	Dual BCD Up-Counter		8	16	7,15(H)	16	c,d
4519	Quad 2-Input Multiplexer		8	16		16	
4520	Dual Binary Up-Counter		8	16	7,15(H)	16	c,d
4522	Programmable 4-Bit BCD Down Counter		8	16	10(H)	16	c,d
4526	Programmable 4-Bit Binary Down Counter		8	16	10(H)	16	c,d
4527	BCD Rate Multiplier		8	16	13(H)	16	c,d
4531	13-Input Parity Checker/Generator		8	16		16	
4532	8-Bit Priority Encoder		8	16		16	

IC TYPE #	DEVICE FUNCTION	NON STAN-DARD	VSS PIN #	VDD PIN #	CLEAR PIN #	TOTAL # OF PINS	NOTES
4539	Dual 4-Input Multiplexer		8	16		16	
4543	BCD-To-7-Segment Latch/Decoder/Driver		8	16	@@	16	c,e
4555	Dual Binary To 1-Of-4 Decoder/Demultiplexer		8	16		16	
4556	Dual Binary To 1-Of-4 Decoder/Demultiplexer		8	16		16	
4557	1-To-64 Bit Variable Shift Register		8	16	3(H)	16	c,d
4585	4-Bit Magnitude Comparator		8	16		16	
4710	Register Stack/64-Bit Random Access Memory		9	18	@@	18	a,e
4720	256-Bit Random Access Memory		8	16	@@	16	e
4723	Dual 4-Bit Addressable Latch		8	16		16	
4724	8-Bit Addressable Latch		8	16	15(H)	16	c,e
4725	64-Bit Random Access Memory		8	16	@@	16	a,e
4727	7-Stage Counter	X	1	7	@@	14	c,d
4731	Quad 64-Bit Static Shift Register		7	14	@@	14	c,d,e
4737	Quad Static Decade Counter	X	1	10	13(H)	18	a,c,d
40014	Hex Schmitt Trigger		7	14		14	
40085	4-Bit Magnitude Comparator		8	16		16	

IC TYPE #	DEVICE FUNCTION	NON STAN-DARD	VSS PIN #	VDD PIN #	CLEAR PIN #	TOTAL # OF PINS	NOTES
40097	Hex Non-Inverting Buffer		8	16		16	a
40098	Hex Inverting Buffer		8	16		16	a
40100	32-Stage Static Left/ Right Shift Register		8	16	@@	16	c,d,e
40101	9-Bit Parity Generator/Checker		7	14		14	
40102	2-Decade 8-Stage Presettable Synchronous Down Counter		8	16	2(L)	16	c,d
40103	8-Bit 8-Stage Presettable Synchronous Down Counter		8	16	2(L)	16	c,d
40104	4-Bit Bidirectional Universal Shift Register		8	16	@@	16	a,c,d
40105	FIFO Register		8	16	9(H)	16	a,c,d
40106	Hex Schmitt Triggers		7	14		14	
40107	Dual 2-Input NAND Buffer/ Driver (plastic package)	X	4	8		8	h
40107	Dual 2-Input NAND Buffer/ Driver (ceramic package)		7	14		14	h
40110	Decade Up-Down Counter/ Latch/Display Driver		8	16	5(H)	16	c,d,e
40147	10-Line To 4-Line BCD Priority Encoder		8	16		16	

IC TYPE #	DEVICE FUNCTION	NON STAN-DARD	VSS PIN #	VDD PIN #	CLEAR PIN #	TOTAL # OF PINS	NOTES
40160	Decade Synchronous Programmable 4-Bit Counter		8	16	1(L)	16	c,d
40161	Binary Synchronous Programmable 4-Bit Counter		8	16	1(L)	16	c,d
40162	Decade Synchronous Programmable 4-Bit Counter		8	16	1(L)	16	c,d
40163	Binary Synchronous Programmable 4-Bit Counter		8	16	1(L)	16	c,d
40174	Hex D-Type Flip-Flop		8	16	1(L)	16	c,d
40175	Quad D-Type Flip-Flop		8	16	1(L)	16	c,d
40182	Look-Ahead Carry Generator		8	16		16	
40192	BCD Presettable Up/Down Counter		8	16	14(H)	16	c,d
40193	Binary Presettable Up/Down Counter		8	16	14(H)	16	c,d
40194	4-Bit Bidirectional Universal Shift Register		8	16	1(L)	16	c,d
40195	4-Bit Universal Shift Register		8	16	1(L)	16	c,d
40240	Octal Inverting Buffer		10	20		20	a
40244	Octal Non-Inverting Buffer		10	20		20	a
40245	Octal Bus Transceiver		10	20		20	a
40257	Quad 2-Line To 1-Line Data Selector/Multiplexer		8	16		16	a

IC TYPE #	DEVICE FUNCTION	NON STAN-DARD	VSS PIN #	VDD PIN #	CLEAR PIN #	TOTAL # OF PINS	NOTES
40373	Octal Transparent Latch		10	20	@@	20	a,c,e
40374	Quad D-Type Flip-Flop		10	20	@@	20	a,c,d