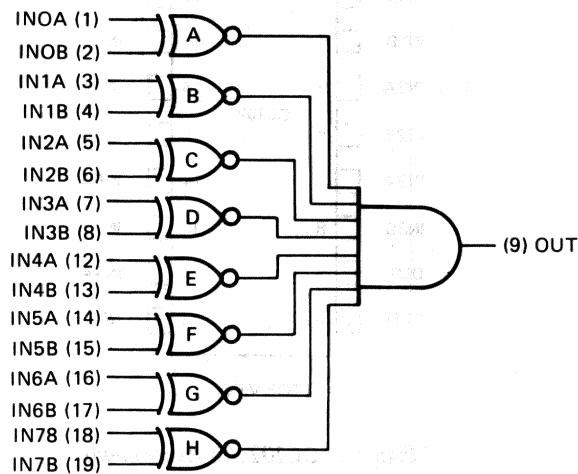


• Features

- High-speed, 8-channel equals checker function
- TTL compatible inputs and output

• Description

The DC102 equals checker, contained in a 20-pin dual-inline package (DIP), provides eight dual-input channels to compare data in pairs for equality. The equals checker output is a low level when any one or more input pairs are not at equal logic levels. Figure 1 is a simplified logic diagram of the DC102.



NOTE:
Numbers in () Denote Terminal Numbers.

Figure 1 • DC102 Simplified Logic Diagram

The DC102 is provided in the following two variations. Refer to Table 3 for the ac parameters for each variation.

- DC102: Digital part no. 1913888-00 and 1913888-01

• Pin and Signal Description

The input and output signals and the power and ground connections for the DC102 20-pin DIP are shown in Figure 2 and summarized in Table 1.

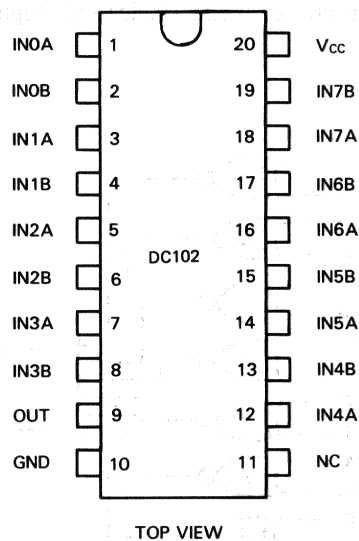


Figure 2 • DC102 Pin Assignments

Table 1 • DC102 Pin and Signal Summary

Pin	Signal	Input/Output*	Definition/Function
1,2	IN0A,IN0B	input	Input A0 and B0—Dual data inputs to gate A
3,4	IN1A,IN1B	input	Input A1 and B1—Dual data inputs to gate B
5,6	IN2A,IN2B	input	Inputs A2 and B2—Dual data inputs to gate C
7,8	IN3A,IN3B	input	Inputs A3 and B3—Dual data inputs to gate D
12,13	IN4A,IN4B	input	Inputs A4 and B4—Dual data inputs to gate E
14,15	IN5A,IN5B	input	Inputs A5 and B5—Dual data inputs to gate F
16,17	IN6A,IN6B	input	Inputs A6 and B6—Dual data inputs to gate G
18,19	IN7A,IN7B	input	Input A7 and B7—Dual data inputs to gate H
9	OUT	output**	Equals function output
11	NC		No connection
10	GND	input	Ground—Ground reference
20	V	input	Voltage—Power supply voltage

*All signals are TTL levels

**Open collector

Functional Description

Figure 3 is a functional symbol of the DC102 that shows the input signal groups.

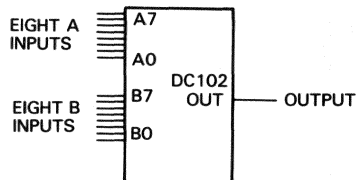


Figure 3 • DC102 Functional Symbol

• Specifications

The mechanical, electrical, and environmental characteristics and specifications for the DC102 are described in the following paragraphs. The test conditions for the electrical values are as follows unless specified otherwise. Refer to Digital specification A-PS-2100002-GS for the general specifications of integrated circuits.

-
- Power supply voltage (V_{cc}): 5.0 V \pm 5%
 - Temperature range (T_A): 0°C to 70°C
-

Mechanical Configuration

The physical dimensions of the DC102 20-pin DIP are contained in Appendix E.

Absolute Maximum Ratings

Stresses greater than the absolute maximum ratings may cause permanent damage to the device. Exposure to the absolute maximum ratings for extended periods may adversely affect the reliability of the device.

-
- Supply voltage (V_{cc}): 7.0 V
 - Operating temperature (T_A): 0°C to 70°C
 - Relative humidity: 0 to 95% (noncondensing)
-

Recommended Operating Conditions

-
- Supply voltage (V_{cc}): 5 V \pm 5%
 - Supply current (I_{cc}): 160 mA
-

dc Electrical Characteristics

The dc electrical parameters of the DC102 for the operating voltage and temperature ranges specified are listed in Table 2. Refer to Appendix C for the test circuits configurations referenced in the tables.

Table 2 • DC102 dc Input and Output Parameters

Parameter	Symbol	Test Condition	Requirements		Units	Test Circuit
			Min.	Max.		
Low-level input voltage	V_{IL}		—	0.8	V	C1,C2
High-level input voltage	V_{IH}		2.0		V	C1
Low-level input current	I_{IL}	$V_{IL} = 0.4\text{ V}$ $V_{CC} = 5.25\text{ V}$	0.1	-0.2	mA	C4
High-level input current	I_{IH}	$V_{IH} = 2.7\text{ V}$ $V_{CC} = 5.25\text{ V}$	-0.1	0.2	mA	C4
Input current at maximum input voltage	I_I	$V_{IH} = 7\text{ V}$ $V_{CC} = 5.25\text{ V}$	—	10	mA	C4
Low-level output voltage	V_{OL}	$V_{CC} = 4.75\text{ V}$ $I_{OL} = 150\text{ mA}$ Pin 1 = 0.8 V All other inputs = 2.0 V	—	0.55	V	C2
		$V_{CC} = 4.75\text{ V}$ $I_{OL} = 120\text{ mA}$ Pin 1 = 0.8 V All other inputs = 2.0 V	—	0.5	V	C2
Output reverse current	I_{OH}	$V_{CC} = 4.75\text{ V}$ $V_{OH} = 3.75\text{ V}$ All inputs = 2.0 V	—	0.1	mA	C1
Input clamp voltage	V_I	$V_{CC} = 4.75\text{ V}$ $I_I = -18\text{ mA}$	—	-1.2	V	C3
Supply current	I_{CC}	$V_{CC} = 5.25\text{ V}$ Pin 1 = V_{IH} , all other inputs = V_{IL} *	—	160	mA	C7

*Connect 33 Ω resistor from V_{CC} to OUT (Pin 9)

ac Electrical Characteristics

The voltage waveforms and propagation delays symbols for the input and output signals are shown in Figure 4 and defined in Table 3. Refer to Figure 5 for the load circuit used in measuring the propagation delays. The following test conditions apply to the ac propagation delay measurements.

- $V_{IL} = 0\text{ V}$ to 0.8 V , $V_{IH} = 2.0\text{ V}$ to 3.5 V for inputs not being tested.
- The DC102 must meet the speed requirements for the specified input voltage range and performance must not be degraded by momentary negative voltage spikes on the inputs.
- The nominal test conditions are $V_{in}(0) = 0\text{ V}$, $V_{in}(1) = 3.0\text{ V}$, $V_{IL} = 0.5\text{ V}$ and $V_{IH} = 2.7\text{ V}$.

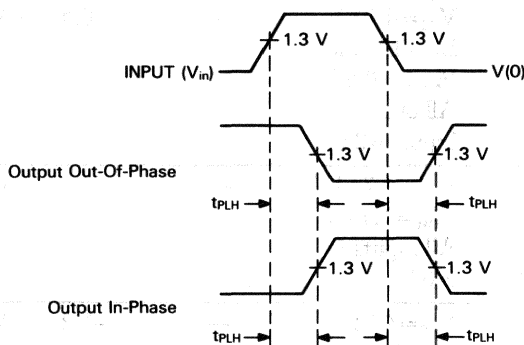
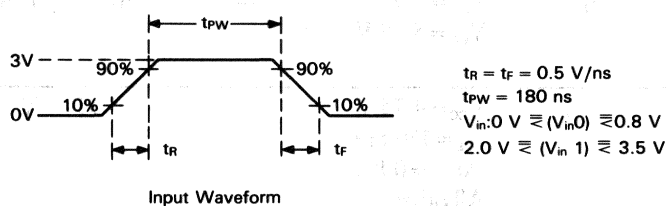


Figure 4 • DC102 ac Signal Timing Delay

Table 3 • DC102 ac Propagation Delay

Symbol	Definition	Requirements				Units
		1913888-00*		1913888-01**		
		Min.	Max.	Min.	Max.	
t_{PLH}	Low-to-high level output	—	20	—	13	ns
t_{PHL}	High-to-low level output	—	20	—	13	ns

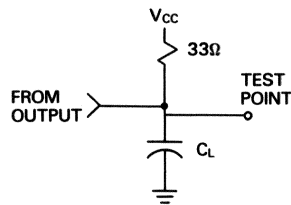
* $C_L = 150\text{pF}$ ** $C_L = 100\text{pF}$ 

Figure 5 • DC102 ac Load Circuit