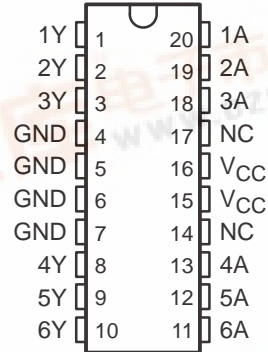


3.3-V HEX INVERTER/CLOCK DRIVER

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- Replaces 74AC11203
- Low-Skew Propagation Delay Specifications for Clock Driver Applications
- Operates at 3.3-V  $V_{CC}$
- Flow-Through Architecture Optimizes PCB Layout
- Center-Pin  $V_{CC}$  and GND Pin Configurations Minimize High-Speed Switching Noise
- EPIC™ (Enhanced-Performance Implanted CMOS) 1- $\mu$ m Process
- 500-mA Typical Latch-Up Immunity at 125°C
- Packaged in Plastic Small-Outline Package

DW PACKAGE (TOP VIEW)



NC – No internal connection

description

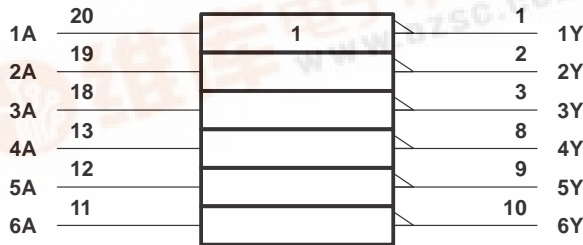
The CDC203 contains six independent inverters. The device performs the Boolean function  $Y = \bar{A}$ . It is designed specifically for applications requiring low skew between switching outputs.

The CDC203 is characterized for operation from 25°C to 70°C.

FUNCTION TABLE

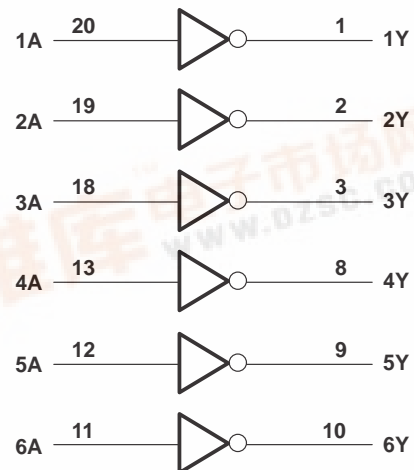
INPUT A	OUTPUT Y
H	L
L	H

logic symbol†



† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

logic diagram (positive logic)



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# CDC203

## 3.3-V HEX INVERTER/CLOCK DRIVER

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### absolute maximum ratings over operating free-air temperature range (unless otherwise noted)†

Supply voltage range, $V_{CC}$	-0.5 V to 7 V
Input voltage range, $V_I$ (see Note 1)	-0.5 V to $V_{CC} + 0.5$ V
Output voltage range, $V_O$ (see Note 1)	-0.5 V to $V_{CC} + 0.5$ V
Input clamp current, $I_{IK}$ ( $V_I < 0$ or $V_I > V_{CC}$ )	$\pm 20$ mA
Output clamp current, $I_{OK}$ ( $V_O < 0$ or $V_O > V_{CC}$ )	$\pm 50$ mA
Continuous output current, $I_O$ ( $V_O = 0$ to $V_{CC}$ )	$\pm 50$ mA
Continuous current through $V_{CC}$ or GND	$\pm 150$ mA
Maximum power dissipation at $T_A = 55^\circ\text{C}$ (in still air) (see Note 2)	1.6 W
Storage temperature range, $T_{stg}$	$-65^\circ\text{C}$ to $150^\circ\text{C}$

† Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

- NOTES: 1. The input and output negative-voltage ratings may be exceeded if the input and output clamp-current ratings are observed.  
 2. The maximum package power dissipation is calculated using a junction temperature of  $150^\circ\text{C}$  and a board trace length of 750 mils. For more information, refer to the *Package Thermal Considerations* application note in the 1994 *ABT Advanced BiCMOS Technology Data Book*, literature number SCBD002B.

### recommended operating conditions

		MIN	NOM	MAX	UNIT
$V_{CC}$	Supply voltage	3	3.3	3.6	V
$V_{IH}$	High-level input voltage	$V_{CC} = 3$ V	2.1		V
		$V_{CC} = 3.6$ V	2.5		
$V_{IL}$	Low-level input voltage	$V_{CC} = 3$ V		0.9	V
		$V_{CC} = 3.6$ V		1.1	
$V_I$	Input voltage	0		$V_{CC}$	V
$V_O$	Output voltage	0		$V_{CC}$	V
$I_{OH}$	High-level output current	$V_{CC} = 3$ V		-12	mA
		$V_{CC} = 3.6$ V		-12	
$I_{OL}$	Low-level output current	$V_{CC} = 3$ V		12	mA
		$V_{CC} = 3.6$ V		12	
$\Delta t/\Delta v$	Input transition rise or fall rate	0		10	ns/V
$f_{clock}$	Input clock frequency			40	MHz
$T_A$	Operating free-air temperature	25		70	$^\circ\text{C}$

CDC203  
3.3-V HEX INVERTER/CLOCK DRIVER

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electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

PARAMETER	TEST CONDITIONS	V <sub>CC</sub>	TA = 25°C			MIN	MAX	UNIT
			MIN	TYP	MAX			
V <sub>OH</sub>	I <sub>OH</sub> = -50 μA	3 V	2.9			2.9		V
		3.6 V	3.5			3.5		
	I <sub>OH</sub> = -12 mA	3 V	2.58			2.48		
		3.6 V	3.18			3.08		
V <sub>OL</sub>	I <sub>OL</sub> = 50 μA	3 V	0.1			0.1		V
		3.6 V	0.1			0.1		
	I <sub>OL</sub> = 12 mA	3 V	0.36			0.44		
		3.6 V	0.36			0.44		
I <sub>I</sub>	V <sub>I</sub> = V <sub>CC</sub> or GND	3.6 V	±0.1			±1		μA
I <sub>CC</sub>	V <sub>I</sub> = V <sub>CC</sub> or GND, I <sub>O</sub> = 0	3.6 V	4			40		μA
C <sub>i</sub>	V <sub>I</sub> = V <sub>CC</sub> or GND	3.3 V	4					pF

switching characteristics over recommended operating free-air temperature range,  
V<sub>CC</sub> = 3.3 V ± 0.3 V (see Note 3 and Figures 1 and 2)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	MIN	MAX	UNIT
t <sub>PLH</sub>	A	Y	3.5	6.1	ns
t <sub>PHL</sub>			3.5	6.1	
t <sub>sk(o)</sub>	A	Y		0.7	ns

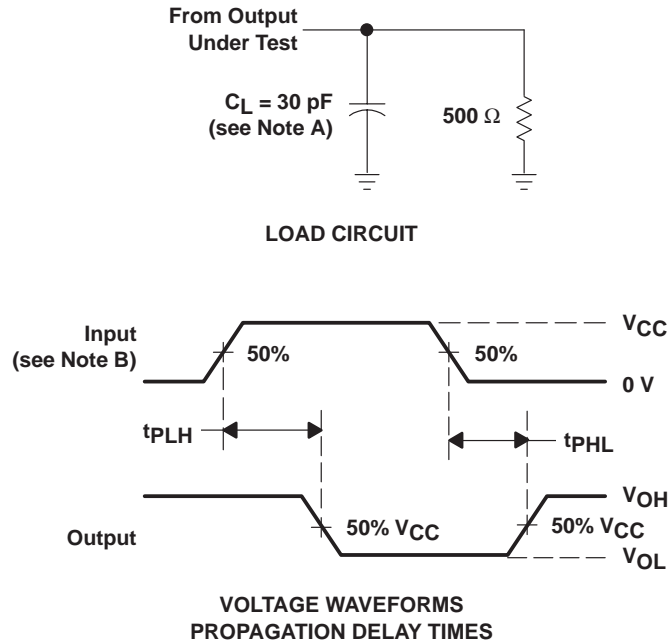
NOTE 3: All specifications are valid only for all outputs switching in phase simultaneously.

# CDC203

## 3.3-V HEX INVERTER/CLOCK DRIVER

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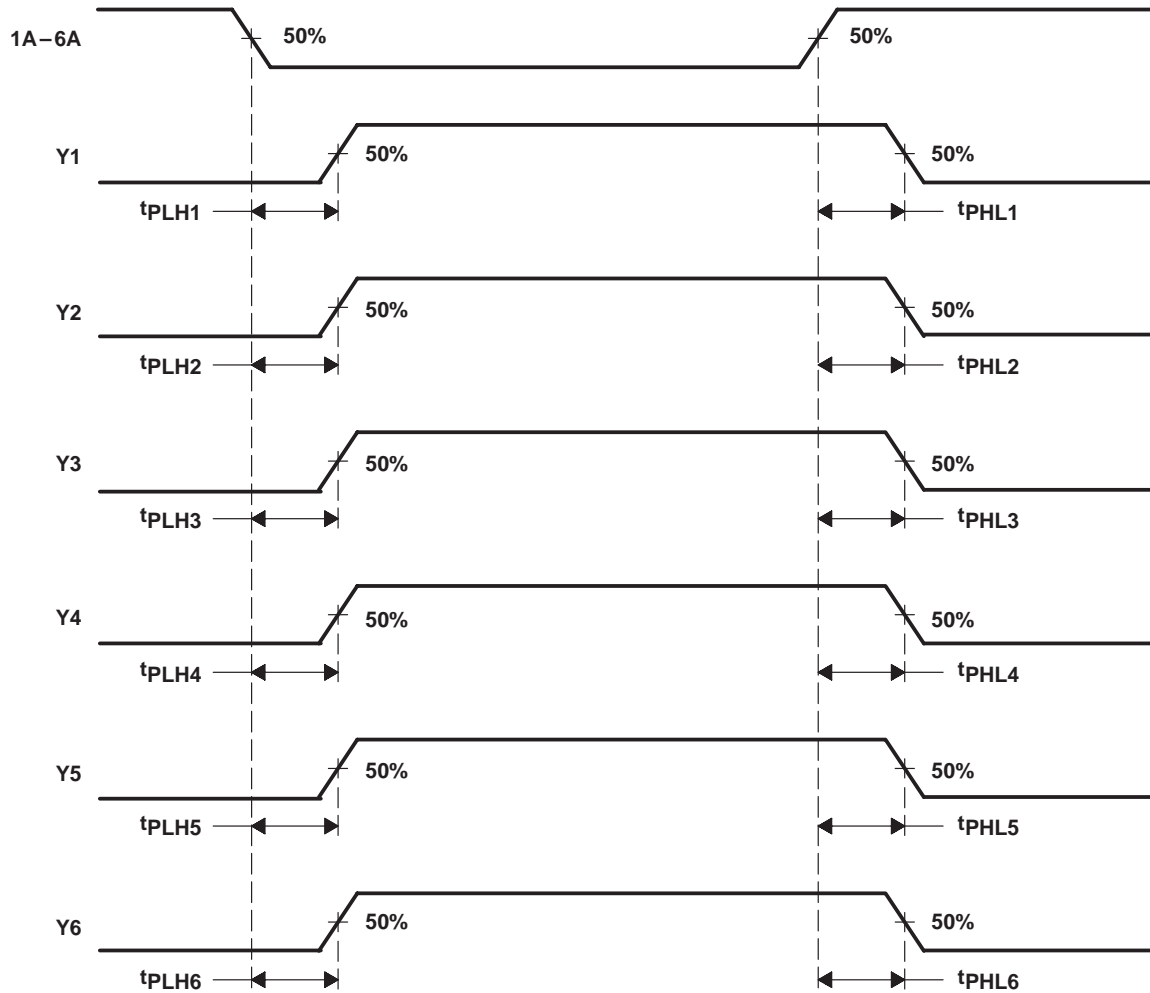
### PARAMETER MEASUREMENT INFORMATION



- NOTES: A.  $C_L$  includes probe and jig capacitance.  
B. Input pulses are supplied by generators having the following characteristics:  $PRR \leq 10 \text{ MHz}$ ,  $Z_O = 50 \Omega$ ,  $t_r = 3 \text{ ns}$ ,  $t_f = 3 \text{ ns}$ .  
C. The outputs are measured one at a time with one input transition per measurement.

Figure 1. Load Circuit and Voltage Waveforms

PARAMETER MEASUREMENT INFORMATION



NOTE A: Output skew,  $t_{sk(o)}$ , is calculated as the greater of:

- The difference between the fastest and slowest of  $t_{PLHn}$  ( $n = 1, 2, \dots, 6$ )
- The difference between the fastest and slowest of  $t_{PHLn}$  ( $n = 1, 2, \dots, 6$ )

Figure 2. Waveforms for Calculation of  $t_{sk(o)}$

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