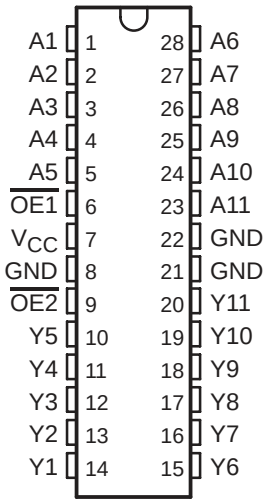
- **State-of-the-Art BiCMOS Design Significantly Reduces I_{CCZ}**
- **ESD Protection Exceeds 2000 V Per MIL-STD-883C, Method 3015; Exceeds 200 V Using Machine Model (C = 200 pF, R = 0)**
- **Output Ports Have Equivalent 33-Ω Series Resistors, So No External Resistors Are Required**
- **Packaged in Plastic Small-Outline (DW) Package**

DW PACKAGE
(TOP VIEW)



description

The SN74BCT2410 is a noninverting 11-bit buffer/line driver specifically designed to drive MOS DRAMs of up to 4 megabits. It is also suitable for use with wide data paths or buses carrying parity. The outputs, which are designed to source 1 mA and sink 12 mA, include 33-Ω series resistors to reduce overshoot and undershoot.

The output-enable ($\overline{OE1}$ and $\overline{OE2}$) inputs are routed internally to a two-input AND gate with active-low inputs. When both $\overline{OE1}$ and $\overline{OE2}$ are low, the Y outputs are active (high or low logic level). When either $\overline{OE1}$ or $\overline{OE2}$ is high, the Y outputs are in the high-impedance state.

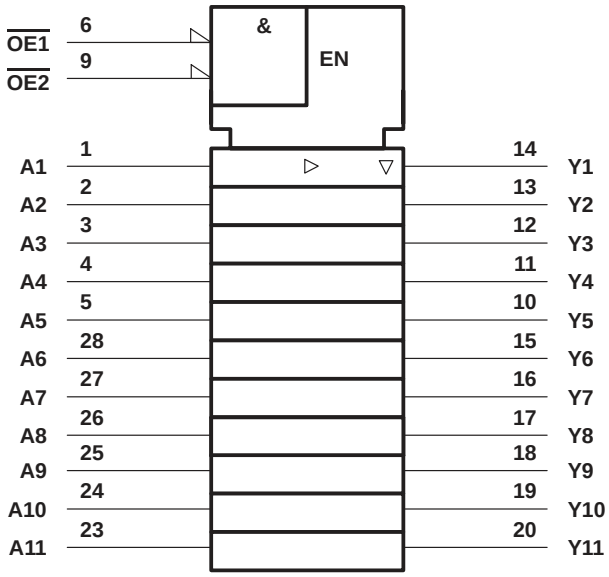
The multiple ground pins of the SN74BCT2410 reduce switching noise for more reliable system operation.

The SN74BCT2410 is characterized for operation from 0°C to 70°C.

FUNCTION TABLE

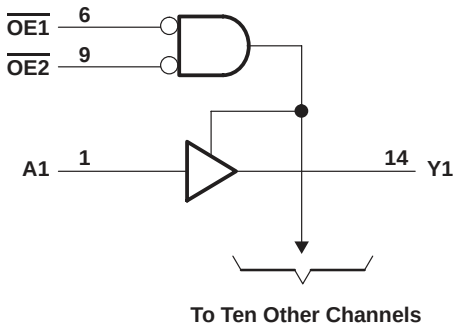
INPUTS			OUTPUT
$\overline{OE1}$	$\overline{OE2}$	A	Y
L	L	L	L
L	L	H	H
X	H	X	Z
H	X	X	Z

logic symbol†

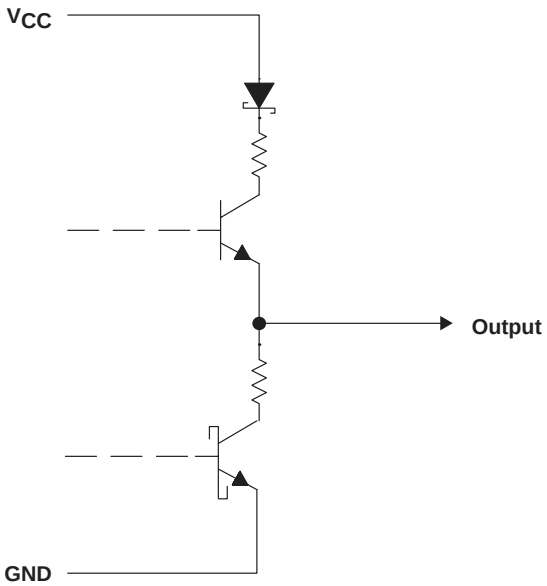


† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

logic diagram (positive logic)



schematic of each output



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 7 V
Voltage range applied to any output in the disabled or power-off state, V_O . . . . . −0.5 V to 5.5 V
Voltage range applied to any output in the high state, V_O . . . . . −0.5 V to V_{CC}
Input clamp current, I_{IK} (V_I < 0) . . . . . −30 mA
Current into any output in the low state, I_O . . . . . 60 mA
Operating free-air temperature range . . . . . 0°C to 70°C
Storage temperature range . . . . . −65°C to 150°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

NOTE 1: The input negative-voltage rating may be exceeded if the input clamp-current rating is observed.

recommended operating conditions (see Note 2)

		MIN	NOM	MAX	UNIT
V_{CC}	Supply voltage	4.5	5	5.5	V
V_{IH}	High-level input voltage	2			V
V_{IL}	Low-level input voltage			0.8	V
I_{IK}	Input clamp current			−18	mA
I_{OH}	High-level output current			−12	mA
I_{OL}	Low-level output current			12	mA
T_A	Operating free-air temperature	0		70	°C

NOTE 2: Unused or floating inputs must be held high or low.

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

PARAMETER	TEST CONDITIONS		MIN	TYP‡	MAX	UNIT
V_{IK}	V_{CC} = 4.5 V,	I_I = −18 mA			−1.2	V
V_{OH}	V_{CC} = 4.5 V	I_{OH} = −3 mA	2.5	3.5		V
		I_{OH} = −12 mA	2	3.1		
V_{OL}	V_{CC} = 4.5 V,	I_{OL} = 12 mA		0.42	0.8	V
I_I	V_{CC} = 5.5 V,	V_I = 5.5 V			0.1	mA
I_{IH}	V_{CC} = 5.5 V,	V_I = 2.7 V			20	µA
I_{IL}	V_{CC} = 5.5 V,	V_I = 0.5 V			−0.1	mA
I_{OZH}	V_{CC} = 5.5 V,	V_O = 2.7 V			50	µA
I_{OZL}	V_{CC} = 5.5 V,	V_O = 0.5 V			−50	µA
I_O§	V_{CC} = 5.5 V,	V_O = 2.25 V	−15		−70	mA
I_{CCL}	V_{CC} = 5.5 V,	V_O = 0			40	mA
I_{CCH}	V_{CC} = 5.5 V,	V_O = 0			40	mA
I_{CCZ}	V_{CC} = 5.5 V,	V_O = 0			6.5	mA
C_i	V_{CC} = 5 V,	V_I = 2.5 V or 0.5 V		6		pF
C_o	V_{CC} = 5 V,	V_O = 2.5 V or 0.5 V		10		pF

‡ All typical values are at V_{CC} = 5 V, T_A = 25°C.

§ Not more than one output should be tested at a time, and the duration of the test should not exceed one second.

switching characteristics over recommended ranges of supply voltage and operating free-air temperature, C_L = 50 pF (unless otherwise noted) (see Note 3)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V_{CC} = 5 V, T_A = 25°C			MIN	MAX	UNIT
			MIN	TYP	MAX			
t_{PLH}	A	Y	2	4.9	6.5	2	8.5	ns
t_{PHL}			2.3	5.6	7.5	2.3	8.5	
t_{PZH}	$\overline{OE}$	Y	4.5	10.3	13	4.5	16.5	ns
t_{PZL}			2	11.4	16	2	19	
t_{PHZ}	$\overline{OE}$	Y	3.4	7	9.5	3.4	12	ns
t_{PLZ}			5.3	9.2	11.5	5.3	13.5	

NOTE 3: Load circuits and voltage waveforms are shown in Section 1.

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish	MSL Peak Temp (3)
SN74BCT2410DW	OBSOLETE	SOIC	DW	28		TBD	Call TI	Call TI

(1) The marketing status values are defined as follows:
ACTIVE: Product device recommended for new designs.
LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.
NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.
PREVIEW: Device has been announced but is not in production. Samples may or may not be available.
OBSOLETE: TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check http://www.ti.com/productcontent for the latest availability information and additional product content details.
TBD: The Pb-Free/Green conversion plan has not been defined.
Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.
Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.
Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

(3) MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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