SN74BCT25240 25- Ω OCTAL BUFFER/DRIVER WITH 3-STATE OUTPUTS

SCBS101B - JUNE 1990 - REVISED NOVEMBER 1993

 State-of-the-Art BiCMOS Design Significantly Reduces I_{CCZ} 	DW OR NT PACKAGE (TOP VIEW)		
 ESD Protection Exceeds 2000 V Per MIL-STD-883C, Method 3015; Exceeds 200 V Using Machine Model (C = 200 pF, R = 0) 	1Y1	24 10E 23 1A1 22 1A2	
Designed to Facilitate Incident-Wave Switching for Line Impedances of 25 Ω or Greater	1Y3 L 4 GND L 5 1Y4 L 6 2Y1 L 7	21 V _{CC} 20 1A3 19 1A4 18 2A1	
 Distributed V_{CC} and GND Pins Minimize Noise Generated by the Simultaneous Switching of Outputs 	GND [8 2Y2 [9 2Y3 [10	17 2A2	
 Package Options Include Plastic Small-Outline (DW) Packages and Standard 	GND [11 2Y4 [12	14 2 <u>A4</u>	

description

Plastic 300-mil DIPs (NT)

This 25- Ω octal buffers and line driver is designed specifically to improve both the performance and density of 3-state memory address drivers, clock drivers, and bus-oriented receivers and transmitters.

The SN74BCT25240 is capable of sinking 188-mA I_{OL} , which facilitates switching 25- Ω transmission lines on the incident wave. The distributed V_{CC} and GND pins minimize switching noise for more reliable system operation.

When the output-enable $(1\overline{OE} \text{ and } 2\overline{OE})$ inputs are low, the device transmits the inverted A-input data to the Y outputs. When $1\overline{OE}$ and $2\overline{OE}$ are high, the outputs are in the high-impedance state. $1\overline{OE}$ affects only the 1Y outputs; $2\overline{OE}$ affects only the 2Y outputs.

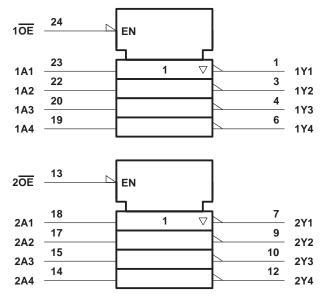
The SN74BCT25240 is characterized for operation from 0°C to 70°C.

FUNCTION TABLE (each buffer/driver)

INP	JTS	OUTPUT
OE	Α	Υ
Ĺ	Н	L
L	L	Н
Н	X	Z

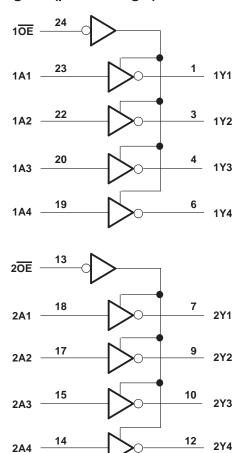


logic symbol†



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

logic diagram (positive logic)



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

Supply voltage range, V _{CC}	
Input voltage range, V _I (see Note 1)	0.5 V to 7 V
Voltage applied to any output in the disabled or power-off state, VO	–0.5 V to 5.5 V
Voltage 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 mÅ
Current into any output in the low state, IO	376 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
Vcc	Supply voltage	4.5	5	5.5	V
VIH	High-level input voltage	2			V
V_{IL}	Low-level input voltage			0.5	V
lik	Input clamp current			-18	mA
ЮН	High-level output current			-80	mA
IOL	Low-level output current			188	mA
TA	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
VIK	V _{CC} = 4.5 V,	$I_{I} = -18 \text{ mA}$			-1.2	V
V	V _{CC} = 4.75 V,	I _{OH} = – 3 mA	2.7			.,
VOH	$V_{CC} = 4.5 \text{ V},$	$I_{OH} = -80 \text{ mA}$	2			V
V	V 45V	I _{OL} = 94 mA		0.42	0.55	
V _{OL}	V _{CC} = 4.5 V	I _{OL} = 188 mA			0.7	V
lį	V _{CC} = 5.5 V,	V _I = 5.5 V			0.1	mA
lН	V _{CC} = 5.5 V,	V _I = 2.7 V			20	μΑ
IIL	V _{CC} = 5.5 V,	V _I = 0.5 V			-0.6	mA
lozh	V _{CC} = 5.5 V,	V _O = 2.7 V			50	μΑ
lozL	V _{CC} = 5.5 V,	V _O = 0.5 V			-50	μΑ
ICCL	$V_{CC} = 5.5 \text{ V},$	Outputs open		90	127	mA
ICCH	$V_{CC} = 5.5 \text{ V},$	Outputs open		39	55	mA
ICCZ	V _{CC} = 5.5 V,	Outputs open		7	10	mA
Ci	V _{CC} = 5 V,	V _I = 2.5 V or 0.5 V		6.5		pF
Co	V _{CC} = 5 V,	V _O = 2.5 V or 0.5 V		16.5	·	pF

 $[\]uparrow$ All typical values are at V_{CC} = 5 V, T_A = 25°C.

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	TO	V _{CC} = 5 V, T _A = 25°C			MIN	MAX	UNIT
	(INPUT)	(OUTPUT)	MIN	TYP	MAX			
^t PLH	А	V	0.6	2.8	4.4	0.6	5	
^t PHL		Y	0.5	2.1	3.6	0.5	3.7	ns
^t PZH		V	1.8	4.3	6.2	1.8	7.2	
^t PZL	ŌĒ	Y	3.7	6.5	8.7	3.7	10.3	ns
^t PHZ	ŌĒ	V	1.2	3.9	5.7	1.2	6.7	20
t _{PLZ}	OE	ſ	2.7	5.8	8.2	2.7	8.9	ns

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







ti.com 18-Sep-2008

PACKAGING INFORMATION

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins Package Qty	Eco Plan ⁽²⁾	Lead/Ball Finish	MSL Peak Temp ⁽³⁾
SN74BCT25240DW	OBSOLETE	SOIC	DW	24	TBD	Call TI	Call TI
SN74BCT25240NT	OBSOLETE	PDIP	NT	24	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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