

- Member of the Texas Instruments *Widebus*™ Family
- State-of-the-Art *EPIC-II B*™ BiCMOS Design Significantly Reduces Power Dissipation
- Typical V_{OLP} (Output Ground Bounce) $< 1\text{ V}$ at $V_{CC} = 5\text{ V}$, $T_A = 25^\circ\text{C}$
- Distributed V_{CC} and GND Pin Configuration Minimizes High-Speed Switching Noise
- Flow-Through Architecture Optimizes PCB Layout
- High-Drive Outputs ($-32\text{-mA } I_{OH}$, $64\text{-mA } I_{OL}$)
- Packaged in Plastic 300-mil Shrink Small-Outline (SSOP) Packages

description

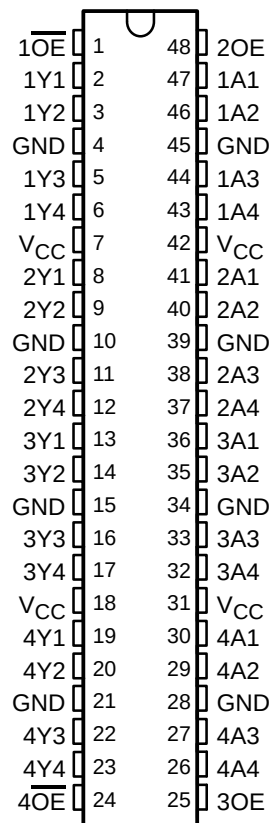
The SN74ABT16241 is a 16-bit buffer and line driver designed specifically to improve both the performance and density of 3-state memory address drivers, clock drivers, and bus-oriented receivers and transmitters. The device can be used as four 4-bit buffers, two 8-bit buffers, or one 16-bit buffer. This device provides true outputs and complementary output-enable ($\overline{OE}$ and $\overline{OE}$) inputs.

To ensure the high-impedance state during power up or power down, $\overline{OE}$ should be tied to V_{CC} through a pullup resistor; the minimum value of the resistor is determined by the current-sinking capability of the driver. OE should be tied to GND through a pulldown resistor; the minimum value of the resistor is determined by the current-sourcing capability of the driver.

The SN74ABT16241 is available in TI's shrink small-outline package (DL), which provides twice the I/O pin count and functionality of standard small-outline packages in the same printed-circuit-board area.

The SN74ABT16241 is characterized for operation from -40°C to 85°C .

DL PACKAGE
(TOP VIEW)



FUNCTION TABLE

INPUTS		OUTPUTS 1Y, 4Y	INPUTS		OUTPUTS 2Y, 3Y
$\overline{1OE}$, $\overline{4OE}$	1A, 4A		$\overline{2OE}$, $\overline{3OE}$	2A, 3A	
L	H	H	H	H	H
L	L	L	H	L	L
H	X	Z	L	X	Z

Widebus and EPIC-II B are trademarks of Texas Instruments Incorporated.

PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.



SN74ABT16241

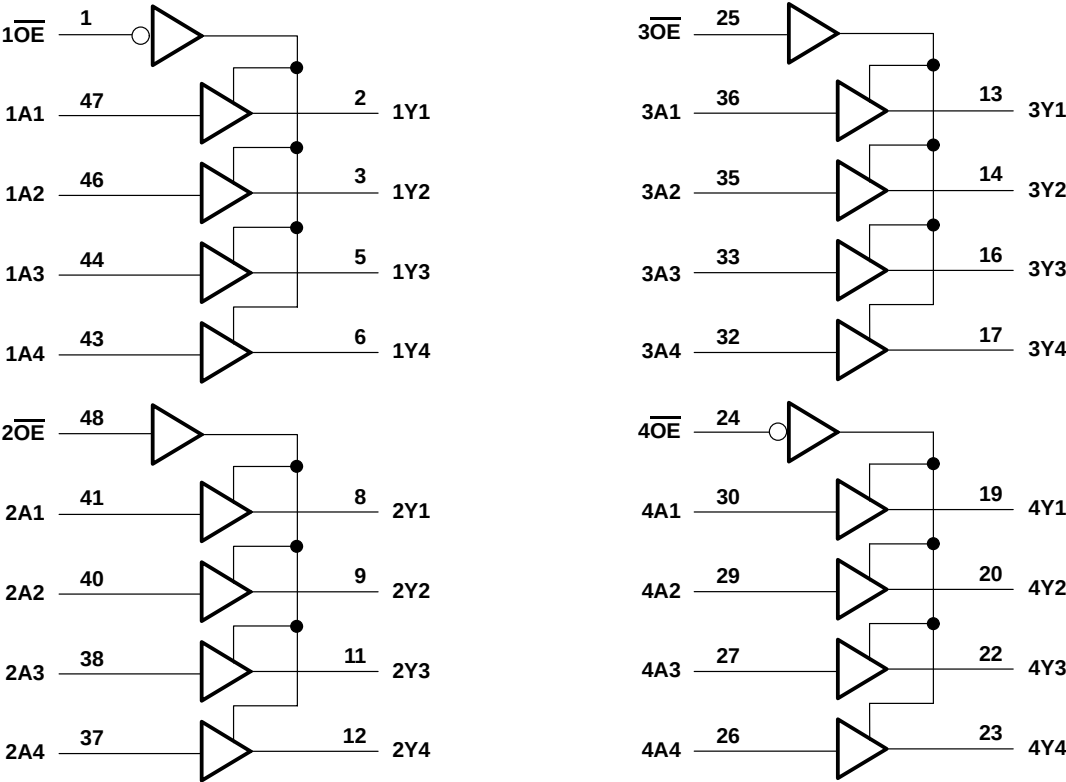
16-BIT BUFFER/DRIVER

WITH 3-STATE OUTPUTS

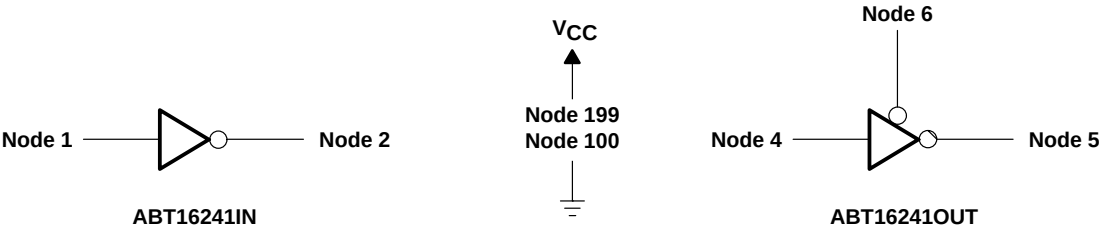
SCBS347 – MAY 1994

SPICE I/O MODEL

logic diagram (positive logic)



SPICE block diagram



SPICE FUNCTION TABLE

NODE		OPERATION	NODE			OPERATION
1	2		4	5	6	
L	H	Input	L	H	L	Output
H	L	Input	H	L	L	Output
			X	Z	H	Hi-Z

SPICE netlist

```

*      ABT16241 SPICE I/O MODEL SUBCIRCUIT
*      ADVANCED BUS INTERFACE
*      ADVANCED SYSTEM LOGIC, TEXAS INSTRUMENTS
*
*      SUBCIRCUITS:  ABT16241IN, ABT16241OUT
*
*      PACKAGE PARASITICS
*      .LIB 'PKGS.LIB'      SSOP48
*
*      PROCESS MODELS
*      .LIB 'EPIC2B.LIB'  NOMINAL_L13
*      .LIB 'EPIC2B.LIB'  STRONG_L13
*      .LIB 'EPIC2B.LIB'  WEAK_L13
*
*  ABT16241 INPUT SUBCIRCUIT
*  NODES:
*
*      INPUT NODE
*      |      |
*      |      | INTERNAL OUTPUT NODE
*      |      | |      |
*      |      | |      | VCC
*      |      | |      | |
*      |      | |      | | GND
*      |      | |      | | |
*      |      | |      | | |
*
*  .SUBCKT ABT16241IN
*  X_PKGIN      1      1001
*  X_PKGVCC     199    1199
*  X_PKG GND    100    1100
*  XABT16241IN 1001    2      1199  1100
*  .ENDS ABT16241IN
*
*  ABT16241 OUTPUT SUBCIRCUIT
*  NODES:
*
*      INTERNAL INPUT NODE
*      |      |
*      |      | OUTPUT NODE
*      |      | |      |
*      |      | |      | INTERNAL OE NODE
*      |      | |      | |      |
*      |      | |      | |      | VCC
*      |      | |      | |      | |
*      |      | |      | |      | | GND
*      |      | |      | |      | | |
*      |      | |      | |      | | |
*
*  .SUBCKT ABT16241OUT
*  X_PKGOUT     5      1005
*  X_PKGVCC     199    1199
*  X_PKG GND    100    1100
*  XABT16241OUT 4      1005  6      1199  1100
*  .ENDS ABT16241OUT
*
*  .SUBCKT ABT16241__IN
*  XP1      502  504  506  599  500
*  XP2      509  502  599  599  PM
*  XP3      506  509  599  599  PM
*  XP4      508  500  599  599  PM
*  XN1      502  504  500  500  NM
*  XN2      509  502  500  500  NM
*  XN4      599  500  508  500  NM
*  QA       599  508  507
*  QB       599  507  506
*  Q_ESD1    501  500  500
*  Q_ESD     504  505  500
*  XR1       506  507  507  507  RMOS
*  RESD1     501  504
*  RESD2     505  500
*  CBP       501  500
*  CL        502  500
*  .ENDS ABT16241__IN
*
*  .SUBCKT ABT16241__OUT
*  XP1      605  603  699  699  PM
*  XP4      601  603  621  699  PM
*  XP5      613  601  605  699  PM
*  XP10     618  603  699  699  PM
*  XP11     607  612  605  699  PM
*  XN1      607  601  608  600  NM
*
*  WP=200U      LP=0.8U
*  WP=20U       LP=0.8U
*  WP=85U       LP=0.8U
*  WP=50U       LP=0.8U
*  WN=220U      LN=0.8U
*  WN=20U       LN=0.8U
*  WN=20U       LN=0.8U
*  Q2_NPN       10
*  Q5_NPN       60
*  Q7_NPN       200
*  Q5_NPN       46
*  WR=4U        RES=6K
*  50
*  1K
*  0.3P
*  0.2P
*
*  WP=200U      LP=0.8U
*  WP=40U       LP=0.8U
*  WP=30U       LP=0.8U
*  WP=50U       LP=0.8U
*  WP=60U       LP=0.8U
*  WN=100U      LN=0.8U

```

SN74ABT16241
16-BIT BUFFER/DRIVER
WITH 3-STATE OUTPUTS

SCBS347 – MAY 1994

SPICE I/O MODEL

SPICE netlist (continued)

```

XN2      606  619  607  600  NM      WN=50U      LN=0.8U
XN3      608  609  600  600  NM      WN=25U      LN=0.8U
XN4      608  603  600  600  NM      WN=80U      LN=0.8U
XN6      613  603  600  600  NM      WN=25U      LN=0.8U
XN7      602  621  600  600  NM      WN=100U     LN=0.8U
XN8      621  603  600  600  NM      WN=10U      LN=0.8U
XN9      601  622  621  600  NM      WN=20U      LN=0.8U
XN10     619  619  620  600  NM      WN=25U      LN=0.8U
XN11     620  604  602  600  NM      WN=25U      LN=0.8U
XN12     613  601  600  600  NM      WN=40U      LN=0.8U
QM1      616  615  602      Q9_NPN      200
QM2      602  608  600      Q11_NPN     600
QM3      614  613  615      Q4_NPN      15
QD4      614  614  616      Q2_NPN      8
QDR1     615  615  613      Q2_NPN      8
D1       613  614      D1_GDS     156
D2       699  617      D9_GSD     4700
XR1      606  605  605  605  RMOS     WR=6U      RES=1K
XR2      607  606  606  606  RMOS     WR=4U      RES=3K
XR3      614  605  605  605  RMOS     WR=6U      RES=1K
R4       616  617      10
XR10     619  618  618  618  RMOS     WR=3U      RES=20K
XPVREF   670  603  699  699  PM       WP=50U     LP=0.8U
XNVREF   671  671  600  600  NM       WN=30U     LN=0.8U
XRVREF1  604  670  670  670  RMOS     WR=3U      RES=20K
XRVREF2  671  604  604  604  RMOS     WR=3U      RES=1.5K
XNCLAMP  673  612  674  600  NM       WN=250U    LN=0.8U
DCLAMP1  608  673      D6_GSD     800
DCLAMP2  674  602      D6_GSD     800
XPNOR1   675  609  699  699  PM       WP=30U     LP=0.8U
XPNOR2   612  611  675  699  PM       WP=30U     LP=0.8U
XNNOR1   612  611  600  600  NM       WN=6U      LN=0.8U
XNNOR2   612  609  600  600  NM       WN=6U      LN=0.8U
XP_INV1  609  601  699  699  PM       WP=20U     LP=0.8U
XN_INV1  609  601  600  600  NM       WN=10U     LN=0.8U
XP_INV2  622  603  699  699  PM       WP=15U     LP=0.8U
XN_INV2  622  603  600  600  NM       WN=5U      LN=0.8U
XP_INV3  610  603  699  699  PM       WP=4U      LP=0.8U
XN_INV3  610  603  600  600  NM       WN=4U      LN=0.8U
XP_INV4  611  610  699  699  PM       WP=4U      LP=0.8U
XN_INV4  611  610  600  600  NM       WN=4U      LN=0.8U
CBP      602  600      0.3P
.ENDS ABT16241__OUT
*
```



IMPORTANT NOTICE

Texas Instruments (TI) reserves the right to make changes to its products or to discontinue any semiconductor product or service without notice, and advises its customers to obtain the latest version of relevant information to verify, before placing orders, that the information being relied on is current.

TI warrants performance of its semiconductor products and related software to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are utilized to the extent TI deems necessary to support this warranty. Specific testing of all parameters of each device is not necessarily performed, except those mandated by government requirements.

Certain applications using semiconductor products may involve potential risks of death, personal injury, or severe property or environmental damage ("Critical Applications").

TI SEMICONDUCTOR PRODUCTS ARE NOT DESIGNED, INTENDED, AUTHORIZED, OR WARRANTED TO BE SUITABLE FOR USE IN LIFE-SUPPORT APPLICATIONS, DEVICES OR SYSTEMS OR OTHER CRITICAL APPLICATIONS.

Inclusion of TI products in such applications is understood to be fully at the risk of the customer. Use of TI products in such applications requires the written approval of an appropriate TI officer. Questions concerning potential risk applications should be directed to TI through a local SC sales office.

In order to minimize risks associated with the customer's applications, adequate design and operating safeguards should be provided by the customer to minimize inherent or procedural hazards.

TI assumes no liability for applications assistance, customer product design, software performance, or infringement of patents or services described herein. Nor does TI warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right of TI covering or relating to any combination, machine, or process in which such semiconductor products or services might be or are used.