

# 54ABT241

## Octal Buffer/Line Driver with TRI-STATE® Outputs

### General Description

The ABT241 is an octal buffer and line driver with 3-STATE outputs designed to be employed as a memory and address driver, clock driver, or bus-oriented transmitter/receiver.

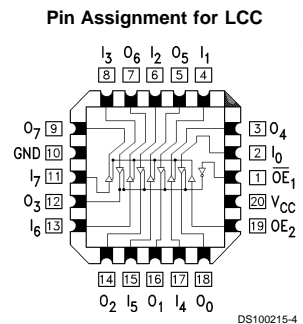
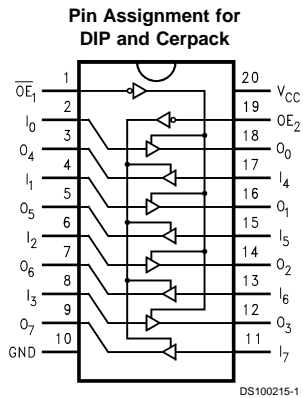
### Features

- Non-inverting buffers
- Output sink capability of 48 mA, source capability of 24 mA
- Guaranteed latchup protection
- High impedance glitch free bus loading during entire power up and power down cycle
- Nondestructive hot insertion capability
- Standard Microcircuit Drawing (SMD) 5962-9322701

### Ordering Code

Military	Package Number	Package Description
54ABT241J-QML	J20A	20-Lead Ceramic Dual-In-Line
54ABT241W-QML	W20A	20-Lead Cerpack
54ABT241E-QML	E20A	20-Lead Ceramic Leadless Chip Carrier, Type C

### Connection Diagram



Pin Names	Description
$\overline{OE}_1$	Output Enable Input (Active Low)
$OE_2$	Output Enable Input (Active High)
$I_0-I_7$	Inputs
$O_0-O_7$	Outputs

### Truth Table

$\overline{OE}_1$	$I_{0-3}$	$O_{0-3}$	$\overline{OE}_2$	$I_{4-7}$	$O_{4-7}$
H	X	Z	L	X	Z
L	H	H	H	H	H
L	L	L	H	L	L

H = HIGH Voltage Level  
 L = LOW Voltage Level  
 X = Immaterial  
 Z = High Impedance

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### Absolute Maximum Ratings (Note 1)

Storage Temperature	-65°C to +150°C
Ambient Temperature under Bias	-55°C to +125°C
Junction Temperature under Bias	
Ceramic	-55°C to +175°C
V <sub>CC</sub> Pin Potential to Ground Pin	-0.5V to +7.0V
Input Voltage (Note 2)	-0.5V to +7.0V
Input Current (Note 2)	-30 mA to +5.0 mA
Voltage Applied to Any Output in the Disabled or Power-Off State	-0.5V to 5.5V
in the HIGH State	-0.5V to V <sub>CC</sub>
Current Applied to Output in LOW State (Max)	twice the rated I <sub>OL</sub> (mA)

DC Latchup Source Current (Over Comm Operating Range)	-500 mA
Over Voltage Latchup (I/O)	10V

### Recommended Operating Conditions

Free Air Ambient Temperature	
Military	-55°C to +125°C
Supply Voltage	
Military	+4.5V to +5.5V
Minimum Input Edge Rate	( $\Delta V/\Delta t$ )
Data Input	50 mV/ns
Enable Input	20 mV/ns

**Note 1:** Absolute maximum ratings are values beyond which the device may be damaged or have its useful life impaired. Functional operation under these conditions is not implied.

**Note 2:** Either voltage limit or current limit is sufficient to protect inputs.

### DC Electrical Characteristics

Symbol	Parameter	Min	Typ	Max	Units	V <sub>CC</sub>	Conditions
V <sub>IH</sub>	Input HIGH Voltage	2.0			V		Recognized HIGH Signal
V <sub>IL</sub>	Input LOW Voltage			0.8	V		Recognized LOW Signal
V <sub>CD</sub>	Input Clamp Diode Voltage			-1.2	V	Min	I <sub>IN</sub> = -18 mA
V <sub>OH</sub>	Output HIGH Voltage	54ABT	2.5		V	Min	I <sub>OH</sub> = -3 mA
		54ABT	2.0		V	Min	I <sub>OH</sub> = -24 mA
V <sub>OL</sub>	Output LOW Voltage	54ABT		0.55	V	Min	I <sub>OL</sub> = 48 mA
I <sub>IH</sub>	Input HIGH Current			5	μA	Max	V <sub>IN</sub> = 2.7V (Note 4)
				5	μA	Max	V <sub>IN</sub> = V <sub>CC</sub>
I <sub>BVI</sub>	Input HIGH Current Breakdown Test			7	μA	Max	V <sub>IN</sub> = 7.0V
I <sub>IL</sub>	Input LOW Current			-5	μA	Max	V <sub>IN</sub> = 0.5V (Note 4)
				-5	μA	Max	V <sub>IN</sub> = 0.0V
V <sub>ID</sub>	Input Leakage Test	4.75			V	0.0	I <sub>ID</sub> = 1.9 μA All Other Pins Grounded
I <sub>OZH</sub>	Output Leakage Current			50	μA	0 - 5.5V	V <sub>OUT</sub> = 2.7V; $\overline{OE}_n = 2.0V$
I <sub>OZL</sub>	Output Leakage Current			-50	μA	0 - 5.5V	V <sub>OUT</sub> = 0.5V; $\overline{OE}_n = 2.0V$
I <sub>OS</sub>	Output Short-Circuit Current	-100		-275	mA	Max	V <sub>OUT</sub> = 0.0V
I <sub>CEX</sub>	Output High Leakage Current			50	μA	Max	V <sub>OUT</sub> = V <sub>CC</sub>
I <sub>ZZ</sub>	Bus Drainage Test			100	μA	0.0	V <sub>OUT</sub> = 5.5V; All Others GND
I <sub>CCH</sub>	Power Supply Current			50	μA	Max	All Outputs HIGH
I <sub>CCL</sub>	Power Supply Current			30	mA	Max	All Outputs LOW
I <sub>CCZ</sub>	Power Supply Current			50	μA	Max	$\overline{OE}_n = V_{CC}$ ; All Others at V <sub>CC</sub> or Ground
I <sub>CCT</sub>	Additional I <sub>CC</sub> /Input	Outputs Enabled		2.5	mA	Max	V <sub>I</sub> = V <sub>CC</sub> - 2.1V
		Outputs 3-STATE		2.5	mA	Max	Enable Input V <sub>I</sub> = V <sub>CC</sub> - 2.1V
		Outputs 3-STATE		50	μA	Max	Data Input V <sub>I</sub> = V <sub>CC</sub> - 2.1V All Others at V <sub>CC</sub> or Ground
I <sub>CCD</sub>	Dynamic I <sub>CC</sub>	No Load			mA/ MHz	Max	Outputs Open $\overline{OE}_n = GND$ , (Note 3) One Bit Toggling, 50% Duty Cycle

**Note 3:** For 8 bits toggling, I<sub>CCD</sub> < 0.8 mA/MHz.

**Note 4:** Guaranteed, but not tested.

## DC Electrical Characteristics

Symbol	Parameter	Min	Max	Units	V <sub>CC</sub>	Conditions C <sub>L</sub> = 50 pF, R <sub>L</sub> = 500Ω
V <sub>OLP</sub>	Quiet Output Maximum Dynamic V <sub>OL</sub>		0.67	V	5.0	T <sub>A</sub> = 25°C (Note 5)
V <sub>OLV</sub>	Quiet Output Minimum Dynamic V <sub>OL</sub>		-1.35	V	5.0	T <sub>A</sub> = 25°C (Note 5)

**Note 5:** Max number of outputs defined as (n). n - 1 data inputs are driven 0V to 3V. One output at LOW. Guaranteed, but not tested.

## AC Electrical Characteristics

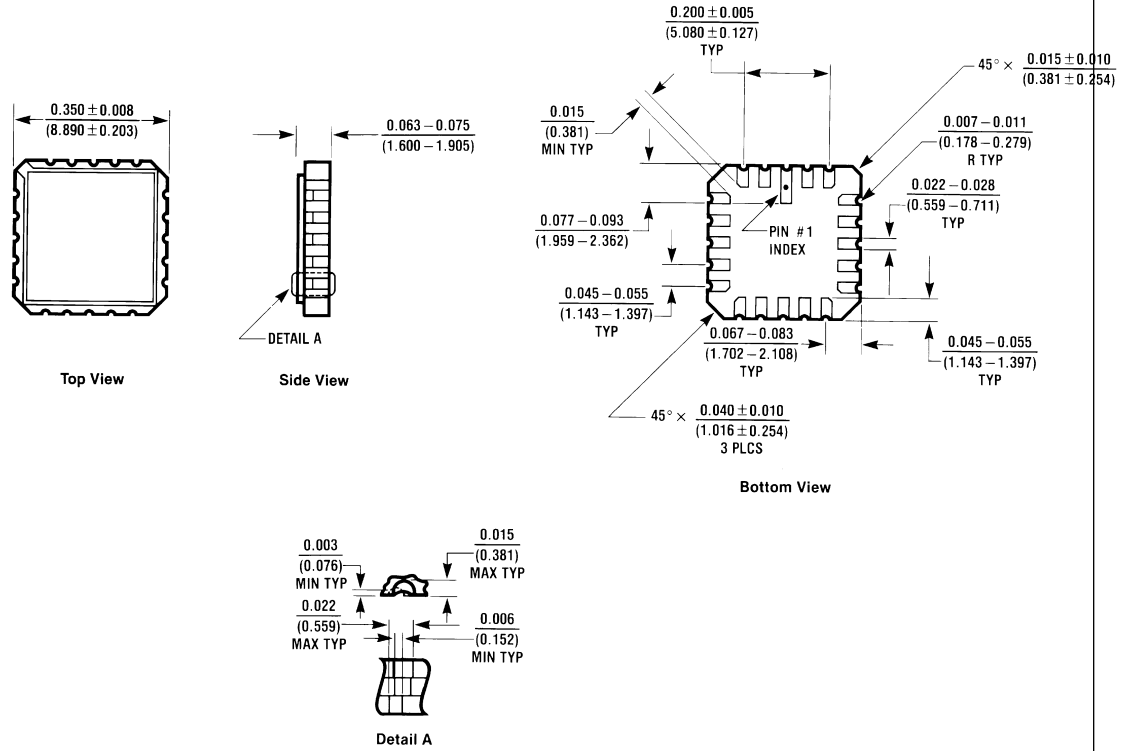
Symbol	Parameter	T <sub>A</sub> = -55°C to +125°C V <sub>CC</sub> = 4.5V-5.5V C <sub>L</sub> = 50 pF		Units	Fig. No.
		Min	Max		
t <sub>PLH</sub>	Propagation Delay	0.8	5.3	ns	
t <sub>PHL</sub>	Data to Outputs	0.8	5.0		
t <sub>PZH</sub>	Output Enable	1.0	7.0	ns	
t <sub>PZL</sub>	Time	1.0	7.0		
t <sub>PHZ</sub>	Output Disable	0.8	7.9	ns	
t <sub>PLZ</sub>	Time	0.8	6.2		

## Capacitance

Symbol	Parameter	Typ	Units	Conditions T <sub>A</sub> = 25°C
C <sub>IN</sub>	Input Capacitance	5.0	pF	V <sub>CC</sub> = 0V
C <sub>OUT</sub> (Note 6)	Output Capacitance	9.0	pF	V <sub>CC</sub> = 5.0V

**Note 6:** C<sub>OUT</sub> is measured at frequency f = 1 MHz, per MIL-STD-883B, Method 3012.

### Physical Dimensions inches (millimeters) unless otherwise noted



20-Lead Ceramic Leadless Chip Carrier  
Package Number E20A

E20A (REV. D)



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