

74ABT241

Octal Buffer/Line Driver with TRI-STATE® Outputs

General Description

The 74ABT241 is an octal buffer and line driver with TRI-STATE outputs designed to be employed as a memory and address driver, clock driver, or bus-oriented transmitter/receiver.

Features

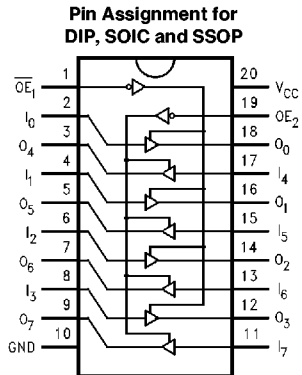
- Non-inverting buffers
- Output sink capability of 64 mA, source capability of 32 mA
- Guaranteed latchup protection
- High impedance glitch free bus loading during entire power up and power down cycle
- Nondestructive hot insertion capability

Commercial	Package Number	Package Description
74ABT241CSC (Note 1)	M20B	20-Lead (0.300" Wide) Molded Small Outline, JEDEC
74ABT241CSJ (Note 1)	M20D	20-Lead (0.300" Wide) Molded Small Outline, EIAJ
74ABT241CMSA (Note 1)	MSA20	20-Lead Molded Shrink Small Outline, EIAJ Type II
74ABT241CMTC (Notes 1, 2)	MTC20	20-Lead Molded Thin Shrink Small Outline, JEDEC

Note 1: Devices also available in 13" reel. Use suffix = SCX, SJX, MSAX and MTCX.

Note 2: Contact factory for package availability.

Connection Diagram



TL/F/11691-1

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 Plastic	-55°C to +150°C
V _{CC} 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 in the HIGH State	-0.5V to 5.5V -0.5V to V _{CC}
Current Applied to Output in LOW State (Max)	twice the rated I _{OL} (mA)

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

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.

Recommended Operating Conditions

Free Air Ambient Temperature Commercial	-40°C to +85°C
Supply Voltage Commercial	+4.5V to +5.5V
Minimum Input Edge Rate Data Input	($\Delta V/\Delta t$) 50 mV/ns
Enable Input	20 mV/ns

DC Electrical Characteristics

Symbol	Parameter	ABT241			Units	V _{CC}	Conditions
		Min	Typ	Max			
V _{IH}	Input HIGH Voltage	2.0			V		Recognized HIGH Signal
V _{IL}	Input LOW Voltage			0.8	V		Recognized LOW Signal
V _{CD}	Input Clamp Diode Voltage			-1.2	V	Min	I _{IN} = -18 mA
V _{OH}	Output HIGH Voltage	74ABT	2.5		V	Min	I _{OH} = -3 mA
		74ABT	2.0		V	Min	I _{OH} = -32 mA
V _{OL}	Output LOW Voltage	74ABT		0.55	V	Min	I _{OL} = 64 mA
I _{IH}	Input HIGH Current			5	μA	Max	V _{IN} = 2.7V (Note 2) V _{IN} = V _{CC}
				5			
I _{BVI}	Input HIGH Current Breakdown Test			7	μA	Max	V _{IN} = 7.0V
I _{IL}	Input LOW Current			-5	μA	Max	V _{IN} = 0.5V (Note 2) V _{IN} = 0.0V
				-5			
V _{ID}	Input Leakage Test	4.75			V	0.0	I _{ID} = 1.9 μA All Other Pins Grounded
I _{OZH}	Output Leakage Current			50	μA	0 - 5.5V	V _{OUT} = 2.7V; $\overline{OE}_n = 2.0V$
I _{OZL}	Output Leakage Current			-50	μA	0 - 5.5V	V _{OUT} = 0.5V; $\overline{OE}_n = 2.0V$
I _{OS}	Output Short-Circuit Current	-100		-275	mA	Max	V _{OUT} = 0.0V
I _{CEX}	Output High Leakage Current			50	μA	Max	V _{OUT} = V _{CC}
I _{ZZ}	Bus Drainage Test			100	μA	0.0	V _{OUT} = 5.5V; All Others GND
I _{CCH}	Power Supply Current			50	μA	Max	All Outputs HIGH
I _{CCL}	Power Supply Current			30	mA	Max	All Outputs LOW
I _{CCZ}	Power Supply Current			50	μA	Max	$\overline{OE}_n = V_{CC}$; All Others at V _{CC} or Ground
I _{CCT}	Additional I _{CC} /Input	Outputs Enabled		2.5	mA	Max	V _I = V _{CC} - 2.1V Enable Input V _I = V _{CC} - 2.1V Data Input V _I = V _{CC} - 2.1V All Others at V _{CC} or Ground
		Outputs TRI-STATE		2.5	mA		
		Outputs TRI-STATE		50	μA		
I _{CCD}	Dynamic I _{CC} (Note 2)	No Load		0.1	mA/ MHz	Max	Outputs Open $\overline{OE}_n = GND$, (Note 1) One Bit Toggling, 50% Duty Cycle

Note 1: For 8 bits toggling, I_{CCD} < 0.8 mA/MHz.

Note 2: Guaranteed, but not tested.

DC Electrical Characteristics (SOIC package) (Continued)

Symbol	Parameter	Min	Typ	Max	Units	V _{CC}	Conditions C _L = 50 pF, R _L = 500Ω
V _{OLP}	Quiet Output Maximum Dynamic V _{OL}		0.5	0.8	V	5.0	T _A = 25°C (Note 1)
V _{OLV}	Quiet Output Minimum Dynamic V _{OL}	-1.3	-0.8		V	5.0	T _A = 25°C (Note 1)
V _{OHV}	Minimum High Level Dynamic Output Voltage	2.7	3.1		V	5.0	T _A = 25°C (Note 3)
V _{IHD}	Minimum High Level Dynamic Input Voltage	2.0	1.5		V	5.0	T _A = 25°C (Note 2)
V _{ILD}	Maximum Low Level Dynamic Input Voltage		1.1	0.8	V	5.0	T _A = 25°C (Note 2)

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

Note 2: Max number of data inputs (n) switching. n - 1 inputs switching 0V to 3V. Input-under-test switching: 3V to threshold (V_{ILD}), 0V to threshold (V_{IHD}). Guaranteed, but not tested.

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

AC Electrical Characteristics (SOIC and SSOP package)

Symbol	Parameter	74ABT			74ABT		Units
		T _A = +25°C V _{CC} = +5V C _L = 50 pF			T _A = -40°C to +85°C V _{CC} = 4.5V-5.5V C _L = 50 pF		
		Min	Typ	Max	Min	Max	
t _{PLH}	Propagation Delay	1.0		4.6	1.0	4.6	ns
t _{PHL}	Data to Outputs	1.0		4.6	1.0	4.6	
t _{PZH}	Output Enable	1.1		6.8	1.1	6.8	ns
t _{PZL}	Time	1.3		6.8	1.3	6.8	
t _{PHZ}	Output Disable	1.6		6.8	1.6	6.8	ns
t _{PLZ}	Time	1.0		5.9	1.0	5.9	

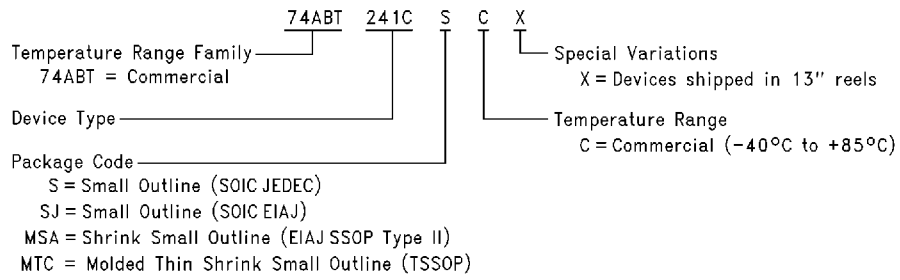
Capacitance

Symbol	Parameter	Typ	Units	Conditions T _A = 25°C
C _{IN}	Input Capacitance	5.0	pF	V _{CC} = 0V
C _{OUT} (Note 1)	Output Capacitance	9.0	pF	V _{CC} = 5.0V

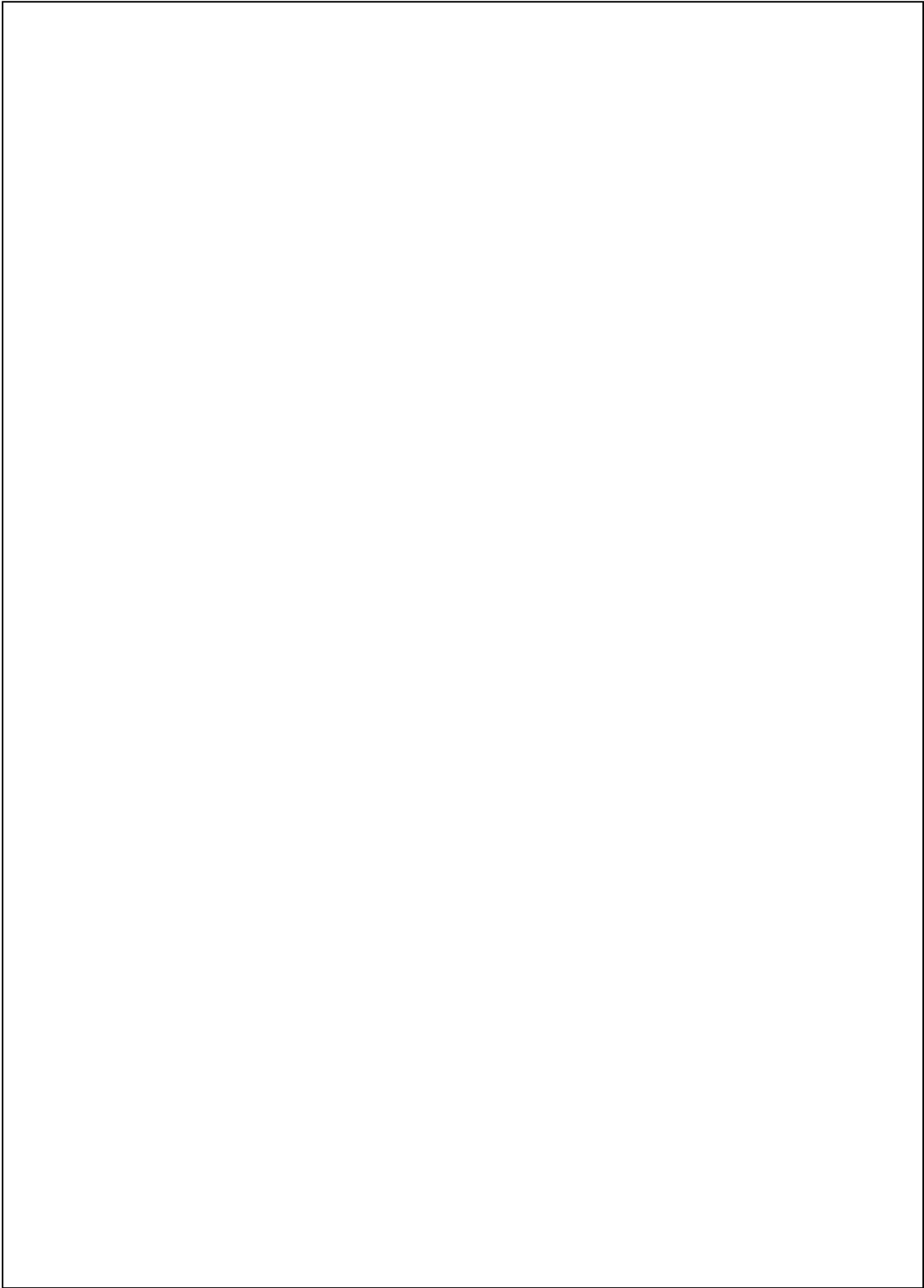
Note 1: C_{OUT} is measured at frequency f = 1 MHz, per MIL-STD-883B, Method 3012.

Ordering Information

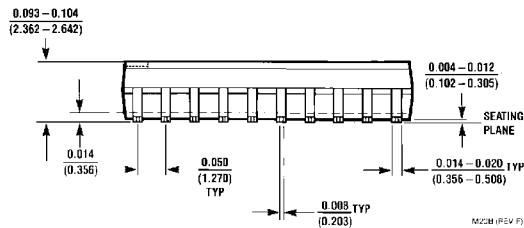
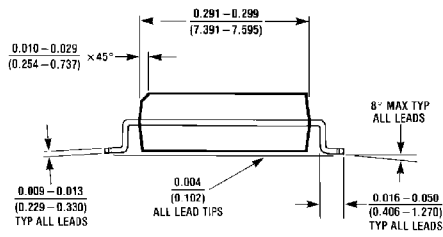
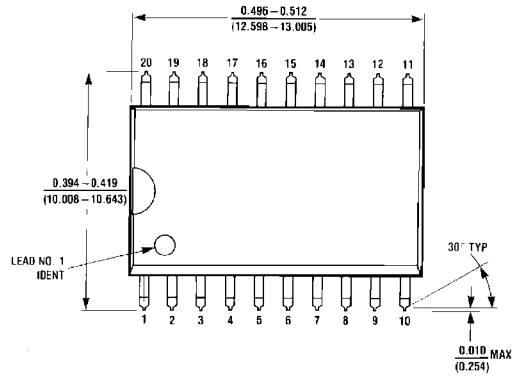
The device number is used to form part of a simplified purchasing code where the package type and temperature range are defined as follows:



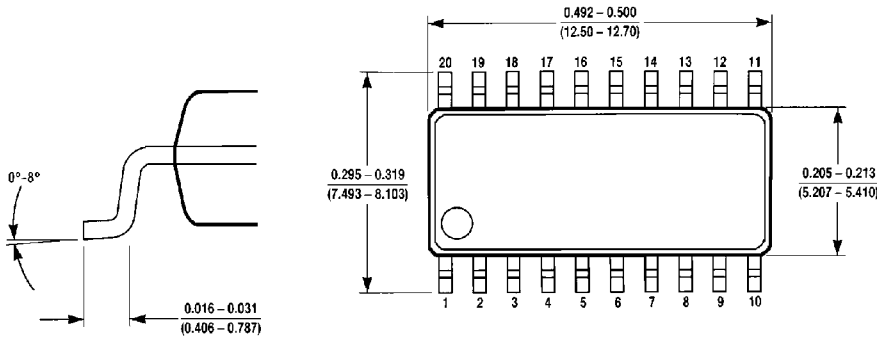
TL/F/11691-3



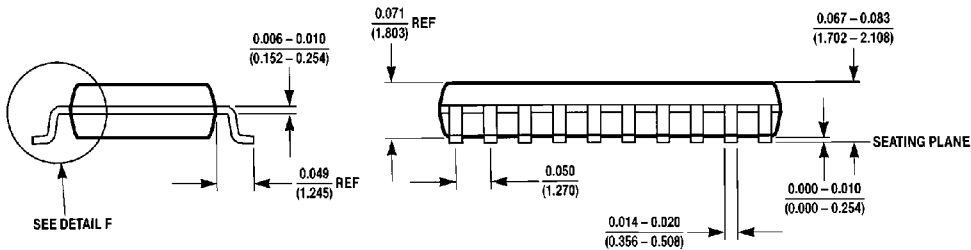
Physical Dimensions inches (millimeters)



**20-Lead Small Outline Integrated Circuit JEDEC (S)
NS Package Number M20B**

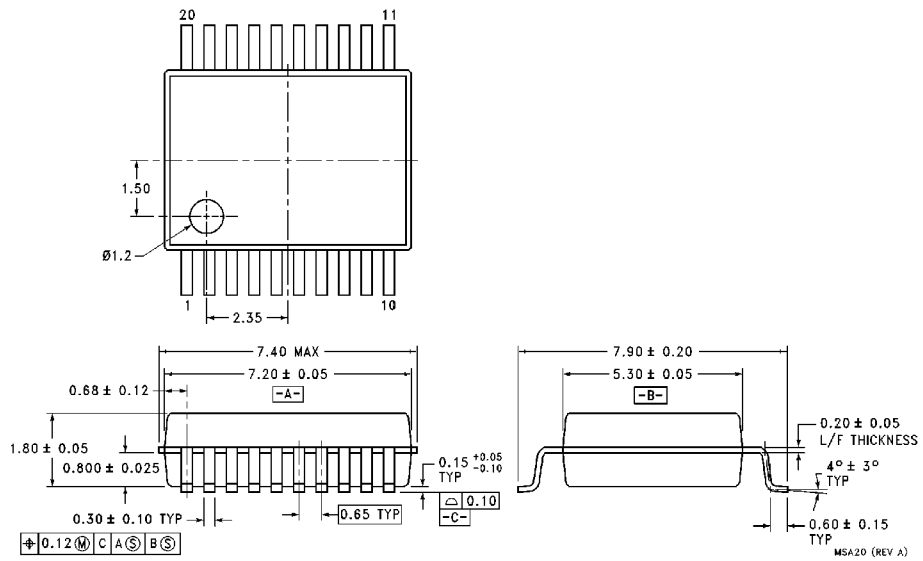


DETAIL F



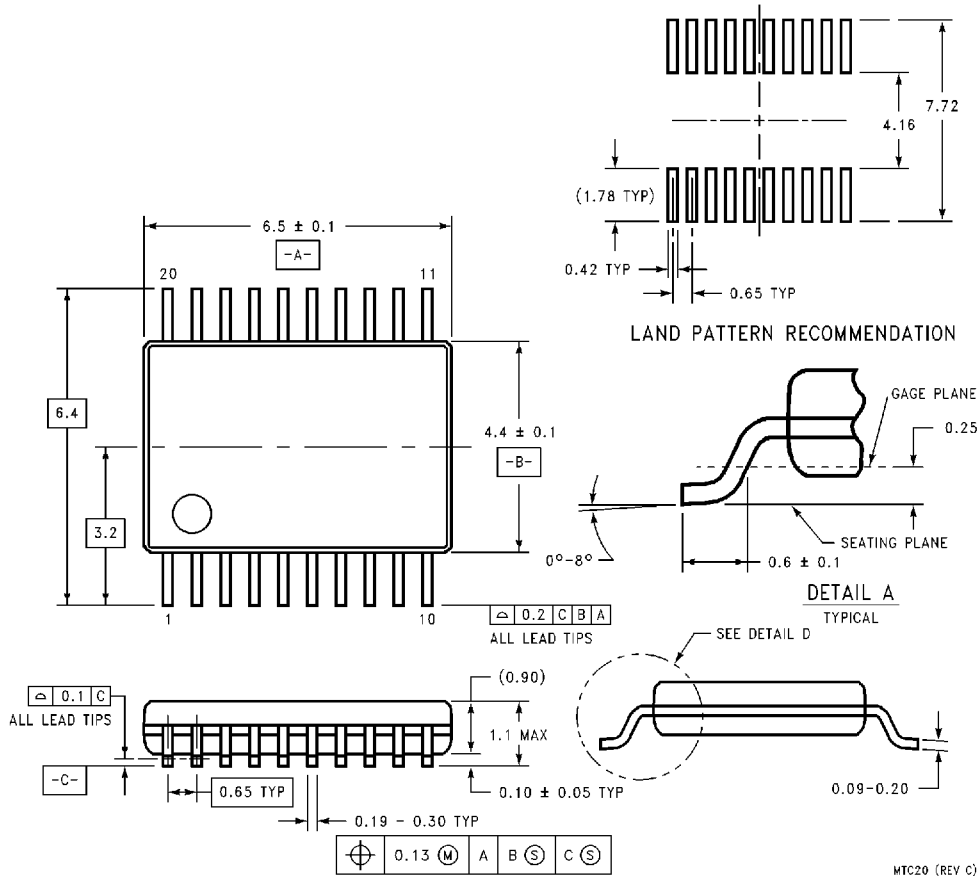
**20-Lead Small Outline Integrated Circuit EIAJ (SJ)
NS Package Number M20D**

Physical Dimensions millimeters (Continued)



20-Lead Plastic EIAJ SSOP (MSA)
NS Package Number MSA20

Physical Dimensions millimeters (Continued)



MTC20 (REV C)

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