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# 74LCXH245

## Low Voltage Bidirectional Transceiver with Bushold

### General Description

The LCXH245 contains eight non-inverting bidirectional buffers with 3-STATE outputs and is intended for bus oriented applications. The device is designed for low voltage (2.5V and 3.3V)  $V_{CC}$  applications. The T/R input deter-

nology to achieve low power operation while retaining CMOS low power dissipation. The LCXH245 inputs include active bushold circuitry, eliminating the need for external pull-up resistors to hold unused or floating data inputs at a valid logic level. Bushold on inputs eliminates the need for external pull-up/pull-down resistors

### Features

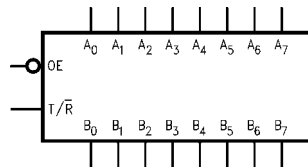
- 5V tolerant control inputs
- 2.3V–3.6V  $V_{CC}$  specifications provided
- 7.0 ns  $t_{PD}$  max ( $V_{CC} = 3.3V$ ), 10  $\mu A$   $I_{CC}$  max
- Implements patented noise/EMI reduction circuitry
- Bushold on inputs eliminates the need for external pull-up/pull-down resistors
- ESD performance:
  - Human body model > 2000V
  - Machine model > 200V

### Ordering Code:

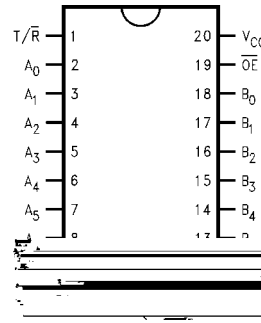
Order Number	Package Number	Package Description
74LCXH245WM	M20B	20-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-013, 0.300" Wide
74LCXH245SJ	M20D	20-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide
74LCXH245MSA	MSA20	20-Lead Shrink Small Outline Package (SSOP), EIAJ TYPE II, 5.3mm Wide
74LCXH245MTC	MTC20	20-Lead Thin Shrink Small Outline Package (TSSOP), JEDEC MO-153, 4.4mm Wide

Devices also available in Tape and Reel. Specify by appending the suffix letter "X" to the ordering code.

### Logic Symbol



### Connection Diagram



### Pin Descriptions

Pin Names	Description
$\overline{OE}$	Output Enable Input
$T/\overline{R}$	Transmit/Receive Input
$A_0$ – $A_7$	Side A Inputs or 3-STATE Outputs (Bushold)
$B_0$ – $B_7$	Side B Inputs or 3-STATE Outputs (Bushold)

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74LCXH245

### Truth Table

H =

**Absolute Maximum Ratings**(Note 2)

Symbol	Parameter	Value	Conditions	Units
$V_{CC}$	Supply Voltage	-0.5 to +7.0		V
$V_I$	T/ $\bar{R}$ , OE I/O Ports	0.5 to +7.0 -0.5 to $V_{CC} + 0.5$		V
$V_O$	DC Output Voltage	-0.5 to +7.0 -0.5 to $V_{CC} + 0.5$	Output in 3-STATE Output in HIGH or LOW State (Note 3)	V
$I_{IK}$	DC Input Diode Current	-50	$V_I < GND$	mA
$I_{OK}$	DC Output Diode Current	-50 +50	$V_O < GND$ $V_O > V_{CC}$	mA
$I_O$	DC Output Source/Sink Current	$\pm 50$		mA
$I_{CC}$	DC Supply Current per Supply Pin	$\pm 100$		mA
$I_{GND}$	DC Ground Current per Ground Pin	$\pm 100$		mA
$T_{STG}$	Storage Temperature	-65 to +150		°C

**Recommended Operating Conditions** (Note 4)

Symbol	Parameter	Min	Max	Units	
$V_{CC}$	Supply Voltage	Operating	2.0	3.6	V
		Data Retention	1.5	3.6	
$V_I$	Input Voltage	0	$V_{CC}$	V	
$V_O$	Output Voltage	HIGH or LOW State	0	$V_{CC}$	V
		3-STATE	0	5.5	
$I_{OH}/I_{OL}$	Output Current	$V_{CC} = 3.0V - 3.6V$		$\pm 24$	mA
		$V_{CC} = 2.7V - 3.0V$		$\pm 12$	
		$V_{CC} = 2.3V - 2.7V$		$\pm 8$	
$T_A$					

**Note 2:** The Absolute Maximum Ratings are those values beyond which the safety of the device cannot be guaranteed. The device should not be operated at these limits. The parametric values defined in the Electrical Characteristics tables are not guaranteed at the Absolute Maximum Ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

**Note 3:**  $I_O$  Absolute Maximum Rating must be observed.

**Note 4:** Floating or unused control inputs must be HIGH or LOW.

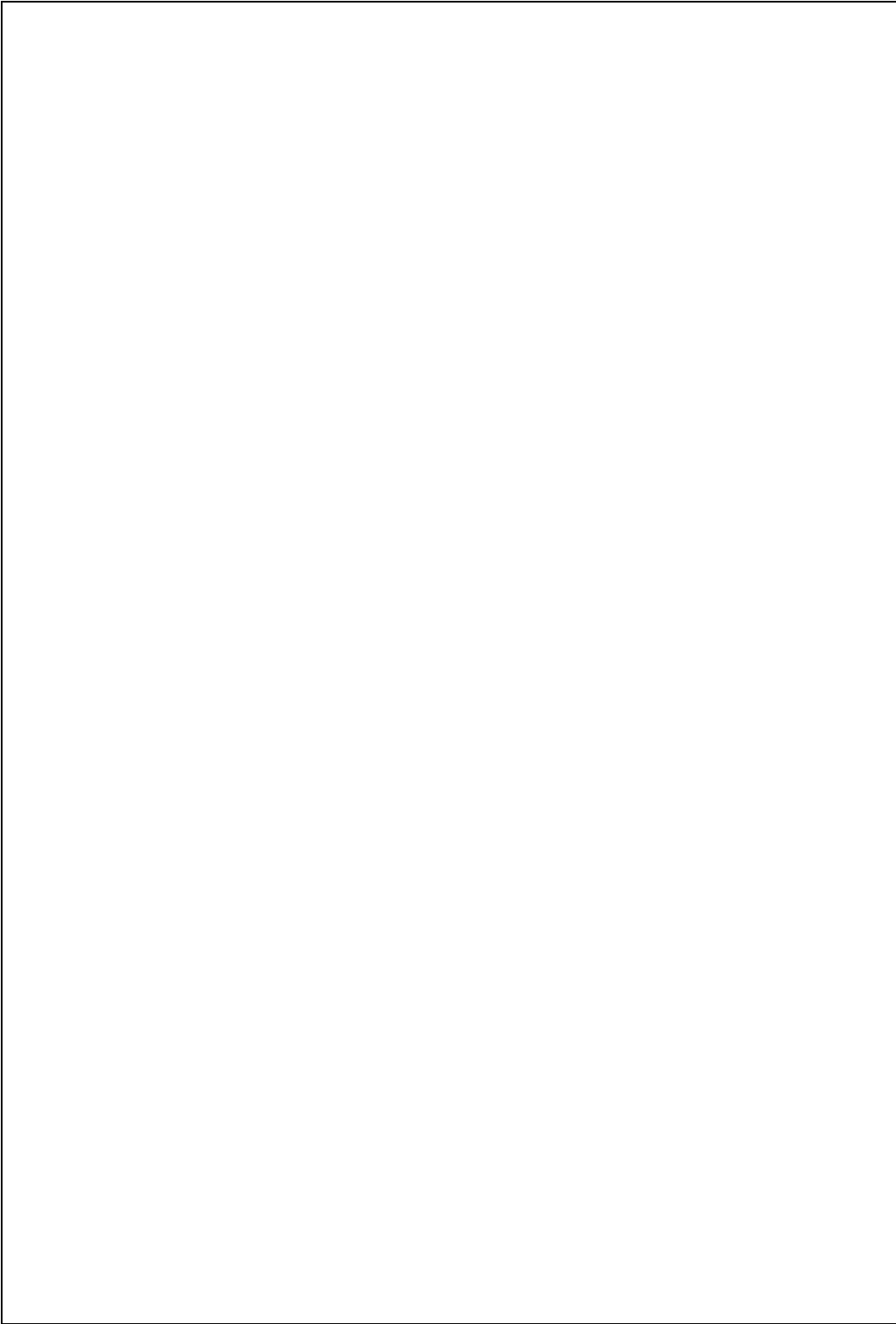
**DC Electrical Characteristics**

**DC Electrical Characteristics** (Continued)

**Note 5:** Outputs disabled or 3-STATE only.

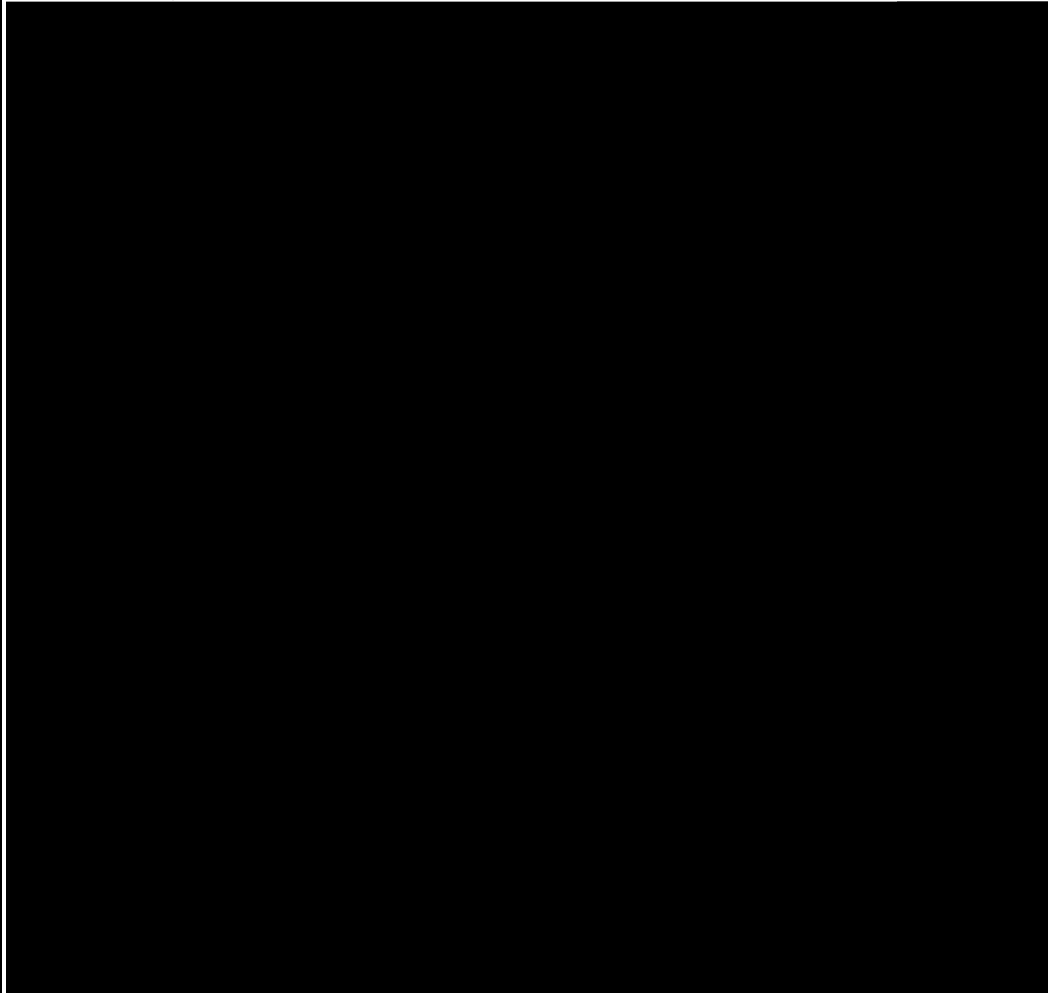
**Note 6:** An external driver must source at least the specified current to switch from LOW-to-HIGH.

**Note 7:** An external driver must sink at least the specified current to switch from HIGH-to-LOW.



**Schematic Diagram** Generic for LCXH Family (with Bushold)

input stage



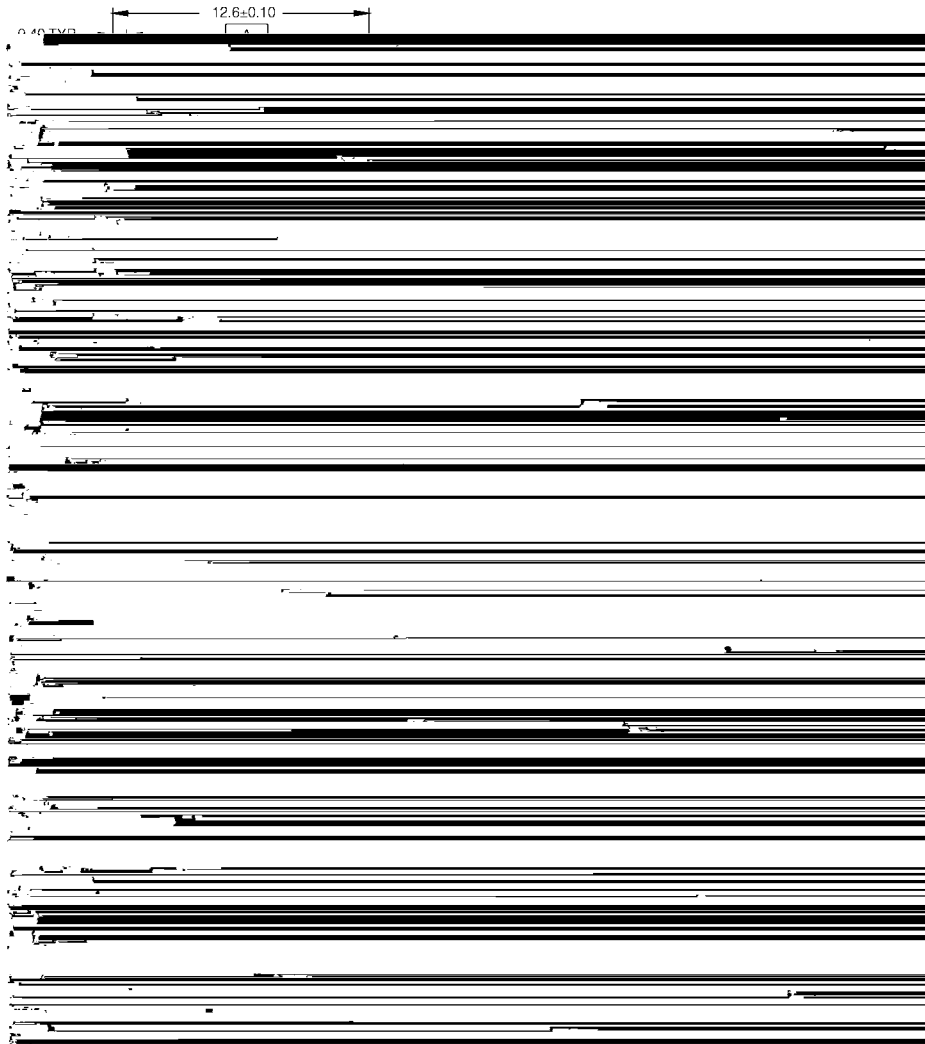
**Physical Dimensions** inches (millimeters) unless otherwise noted

74LCXH245



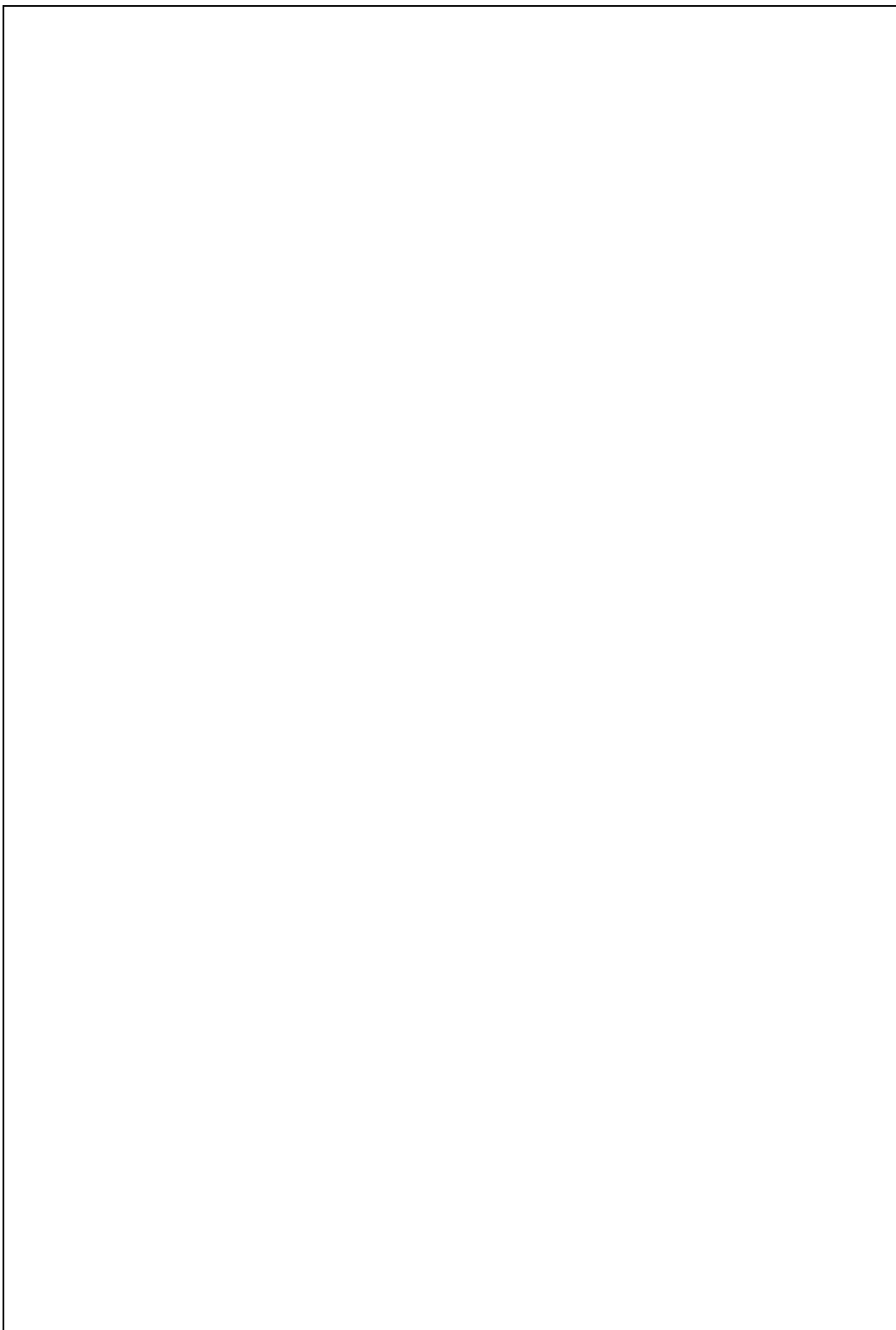
74LCXH245

**Physical Dimensions** inches (millimeters) unless otherwise noted (Continued)



**20-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide  
Package Number M20D**

74LCXH245




74LCXH245 Low Voltage Bidirectional Transceiver with Bushhold

**Physical Dimensions** inches (millimeters) unless otherwise noted (Continued)



20-Lead Thin Shrink Small Outline Package (TSSOP), JEDEC MO-153, 4.4mm Wide  
Package Number MTC20

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