74HC245 Octal Bus Transceivers With 3-State Outputs

1. General Description

1.1 Description

These octal bus transceivers are designed for asynchronous two-way communication between data buses. The control-function implementation minimizes external timing requirements.

The devices allow data transmission from the A bus to the B bus or from the B bus to the A bus, depending on the logic level at the direction-control (DIR) input. The output-enable ($\overline{OE}$) input can be used to disable the device so that the buses are effectively isolated.

1.2 Features

- Wide operating voltage range of 2V to 6V
- High-current 3-state outputs drive bus lines Directly or up to 15 LSTTL loads
- Low power consumption:I_{CC}=10uA (Max.)
- ±6mA output drive at 5V
- Low input current of 1uA max

1.3 Device Information

PART NUMBER	PACKAGE
74HC245	DIP
	SOP - W
	SSOP
	TSSOP

2. Connection Diagrams and Pin Description

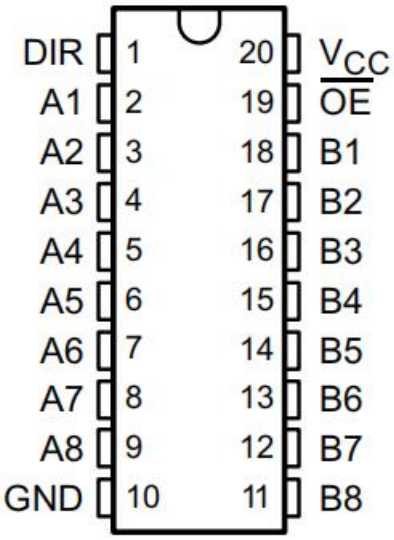


Figure 2.1: Top View

PIN No.	NAME	I/O	FUNCTION
1	DIR	I/O	Direction Pin
2	A1	I/O	A1 Input/Output
3	A2	I/O	A2 Input/Output
4	A3	I/O	A3 Input/Output
5	A4	I/O	A4 Input/Output
6	A5	I/O	A5 Input/Output
7	A6	I/O	A6 Input/Output
8	A7	I/O	A7 Input/Output
9	A8	I/O	A8 Input/Output
10	GND		Ground
11	B8	I/O	B8 Input/Output
12	B7	I/O	B7 Input/Output
13	B6	I/O	B6 Input/Output
14	B5	I/O	B5 Input/Output
15	B4	I/O	B4 Input/Output
16	B3	I/O	B3 Input/Output
17	B2	I/O	B2 Input/Output
18	B1	I/O	B1 Input/Output
19	$\overline{OE}$	I/O	Output Enable
20	VCC		Supply Voltage

3. System Diagram

3.1 Logic Diagram

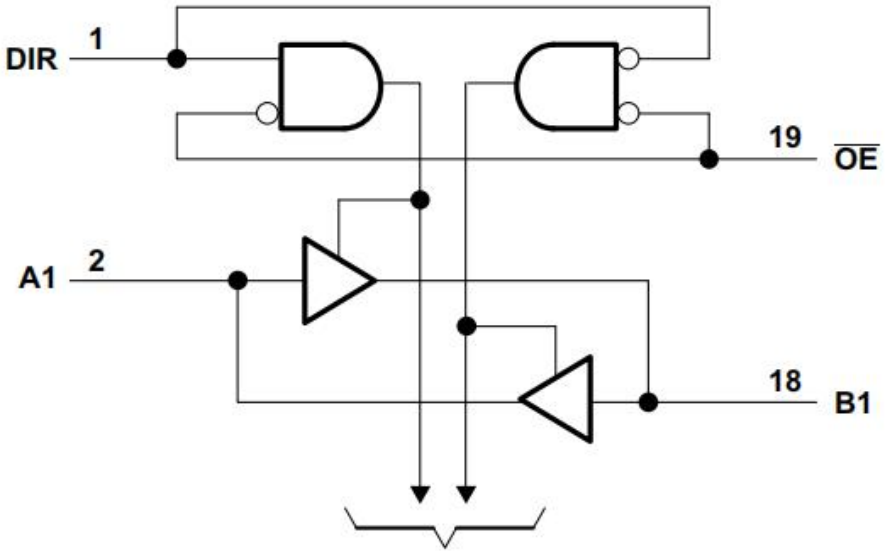


Figure 3.1: 74HC245 Logic Diagram

3.2 Function Table

Input		Function
$\overline{OE}$	DIR	
0	0	B data to A bus
0	1	A data to B bus
1	X	Isolation

X = don't care, 1≡High State, 0≡Low State

4. Specifications

4.1 Absolute Maximum Ratings

Symbol	Parameter	MIN	MAX	Unit
V_{CC}	Supply Voltage	-0.5	7	V
P_D	Power Dissipation		500	mW
T_J	Junction Temperature		125	℃
T_{OP}	Operating Temperature	0	70	℃

Absolute maximum ratings are those values beyond which the device could be permanently damaged,These are stress ratings only,which do not imply functional operation of the device at these or any other conditions beyond those indicated under normal operating conditions.

4.2 Recommended Operating Conditions

Symbol	Parameter	Test Condition	MIN	NOM	MAX	Unit
V_{CC}	Supply Voltage		2	5	6	V
V_{IH}	High Level Input Voltage	V_{CC}=2V	1.5			V
		V_{CC}=4.5V	3.15			V
		V_{CC}=6V	4.2			V
V_{IL}	Low Level Input Voltage	V_{CC}=2V			0.5	V
		V_{CC}=4.5V			1.35	V
		V_{CC}=6V			1.8	V
V_I	Input voltage		0		V_{CC}	V

4.3 Electrical Characteristics

(T_a=25℃, voltages are referenced to GND (ground=0V), unless otherwise specified)

Symbol	Parameter	Test Condition	MIN	TYP	MAX	Unit
V_{OH}	High Level Output Voltage	V_{CC}=2V,I_O=-20uA	1.9	--	--	V
		V_{CC}=4.5V,I_O=-20uA	4.4	--	--	V
		V_{CC}=6V,I_O=-20uA	5.9	--	--	V
		V_{CC}=4.5V,I_O=-6mA	4.0	--	--	V
		V_{CC}=6V,I_O=-7.8mA	5.5	--	--	V
V_{OL}	Low Level Output Voltage	V_{CC}=2V,I_O=20uA	--	--	0.1	V
		V_{CC}=4.5V,I_O=20uA	--	--	0.1	V
		V_{CC}=6V,I_O=20uA	--	--	0.1	V
		V_{CC}=4.5V,I_O=6mA	--	--	0.3	V
		V_{CC}=6V,I_O=7.8mA	--	--	0.3	V
I_I	Input Leakage Current	V_{CC}=6V,V_I=V_{CC} or GND	--	0	±1	uA
I_{OZ}	Off-State (HighImpedance State) Output Current (A or B)	V_{CC}=6V,V_O=V_{CC} or GND	--	0	±5	uA
I_{CC}	Quiescent Supply Current	V_{CC}=6V,V_I=V_{CC}/GND	--	0	10	uA

5. Application Information

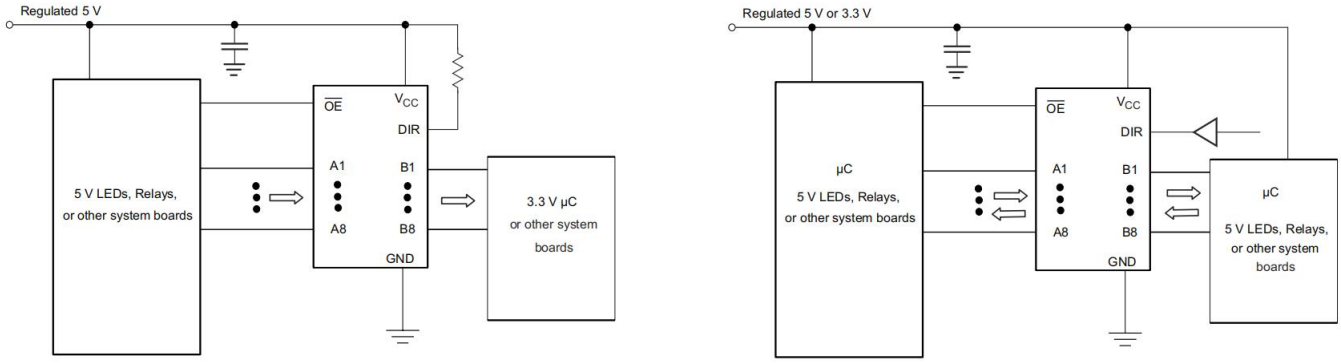


Figure 5.1:Typical application schematic

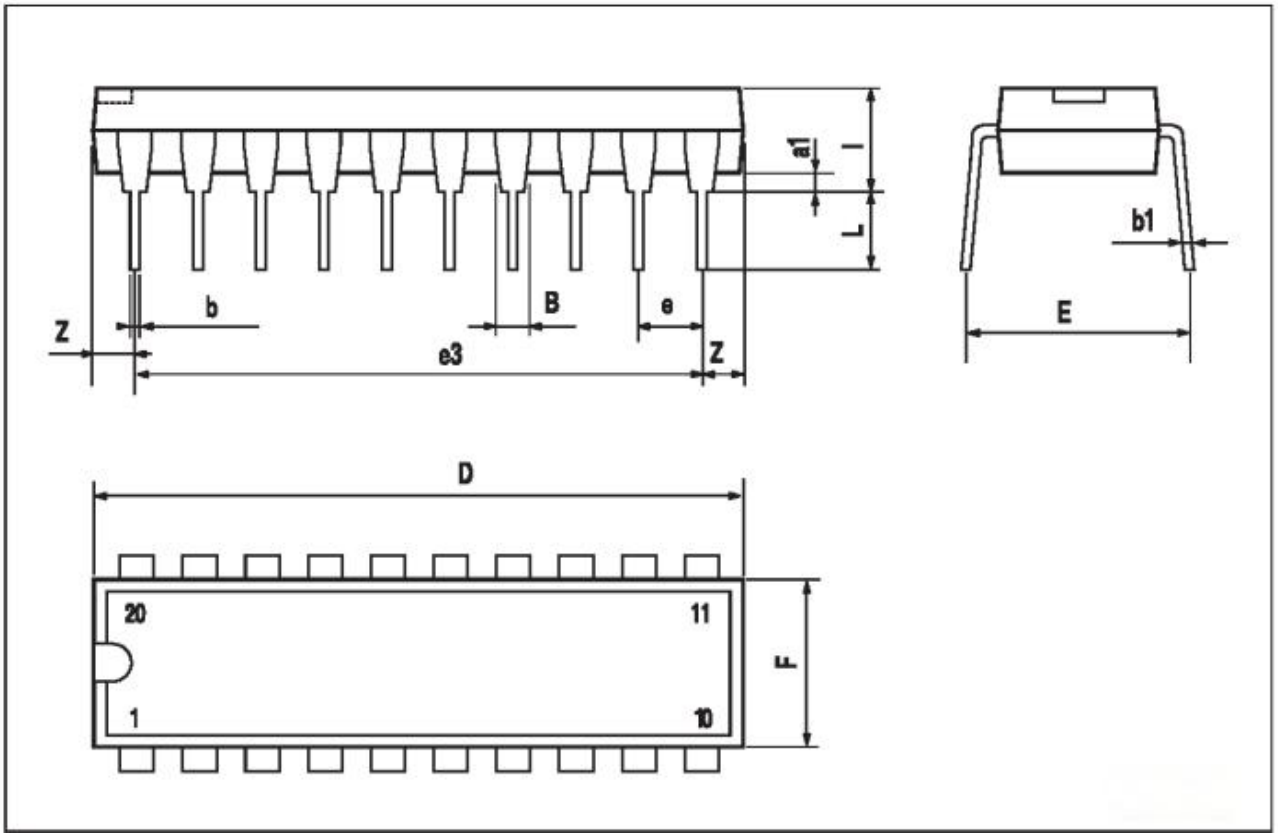
6. Ordering Information

Orderable Device	Package Type	Pins	Packing	Package Qty
74HC245ND20ATAH	DIP	20	Tube	18
74HC245WS20ARBQ	SOP - W	20	Tape & Reel	2000
74HC245SS20ARBQ	SSOP	20	Tape & Reel	2000
74HC245TS20ARCQ	TSSOP	20	Tape & Reel	3000

7. Package Information

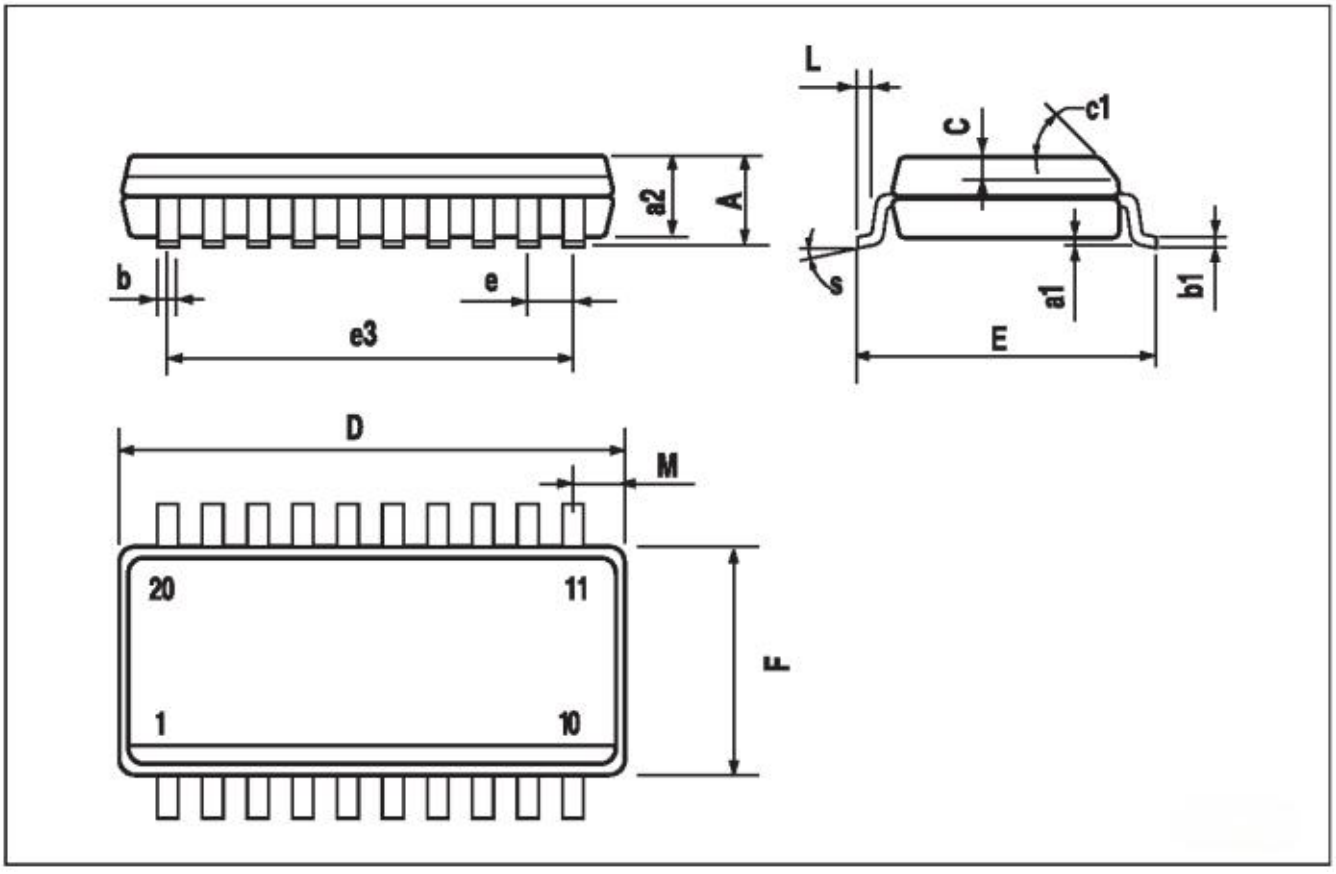
7.1 DIP20

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
a1	0.254			0.010		
B	1.39		1.65	0.055		0.065
b		0.45			0.018	
b1		0.25			0.010	
D			25.4			1.000
E		8.5			0.335	
e		2.54			0.100	
e3		22.86			0.900	
F			7.1			0.280
I			3.93			0.155
L		3.3			0.130	
Z			1.34			0.053

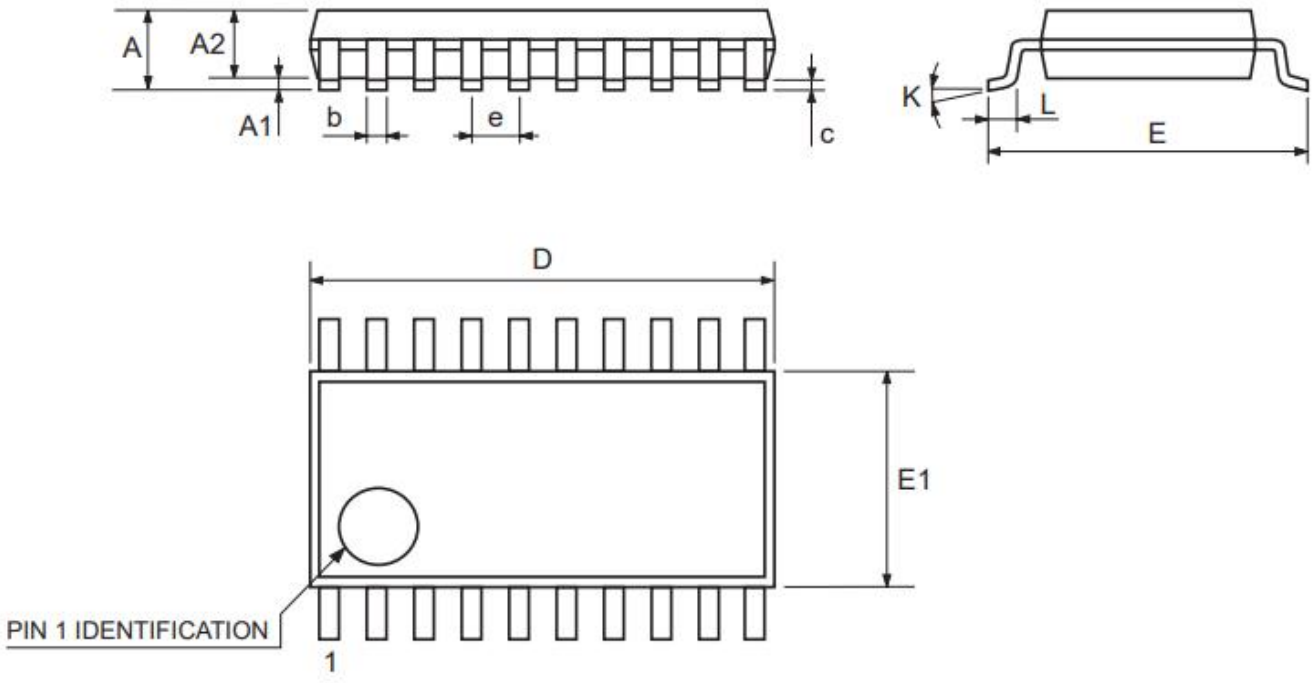


7.2 SOP20 - W

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A			2.65			0.104
a1	0.1		0.2	0.004		0.008
a2			2.45			0.096
b	0.35		0.49	0.014		0.019
b1	0.23		0.32	0.009		0.012
C		0.5			0.020	
c1	45° (typ.)					
D	12.60		13.00	0.496		0.512
E	10.00		10.65	0.393		0.419
e		1.27			0.050	
e3		11.43			0.450	
F	7.40		7.60	0.291		0.300
L	0.50		1.27	0.020		0.050
M			0.75			0.029
S	8° (max.)					



7.3 SSOP20



DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A			2			0.079
A1	0.05			0.002		
A2	1.65	1.75	1.85	0.065	0.069	0.073
b	0.22		0.38	0.009		0.015
c	0.09		0.25	0.004		0.010
D	6.9	7.2	7.5	0.272	0.283	0.295
E	7.4	7.8	8.2	0.291	0.307	0.323
E1	5	5.3	5.6	0.197	0.209	0.220
e		0.65 BSC			0.0256 BSC	
K	0°	4°	8°	0°	4°	8°
L	0.55	0.75	0.95	0.022	0.030	0.037

7.4 TSSOP20

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A			1.2			0.047
A1	0.05		0.15	0.002	0.004	0.006
A2	0.8	1	1.05	0.031	0.039	0.041
b	0.19		0.30	0.007		0.012
c	0.09		0.20	0.004		0.0089
D	6.4	6.5	6.6	0.252	0.256	0.260
E	6.2	6.4	6.6	0.244	0.252	0.260
E1	4.3	4.4	4.48	0.169	0.173	0.176
e		0.65 BSC			0.0256 BSC	
K	0°		8°	0°		8°
L	0.45	0.60	0.75	0.018	0.024	0.030