Universal Three State Output Eight Bus Signal Transceiver

FEATURES

- CMOS process
- Three-State Outputs
- Eight Bus Signal Transceiver
- Excellent ESD Characteristics
- Package：TSSOP20、QFN20-3*3

GENERAL DESCRIPTION

DP245D is a high-speed Si-gate CMOS device and is pin compatible with Low-Power Schottky TTL (LSTTL).

DP245D is a three state output, eight bus signal Bidirectional Transceiver with two control terminals (, DIR); DIR is the data Direction Control control terminal, When DIR is high level, the data flow is a to b; When DIR is low, the data flow direction is B to A. is the output state control terminal. When is at high level, the output is in high resistance state; When is at low level, the data is transmitted normally.

DP245D is mainly used in large screen display and other consumer electronic products。

APPLICATIONS

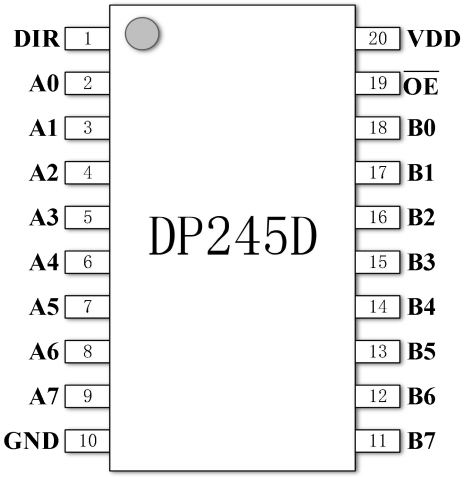
- LED Video display
- Standard 74HC245 Application
- Drive of other digital circuits

ORDERING INFORMATION

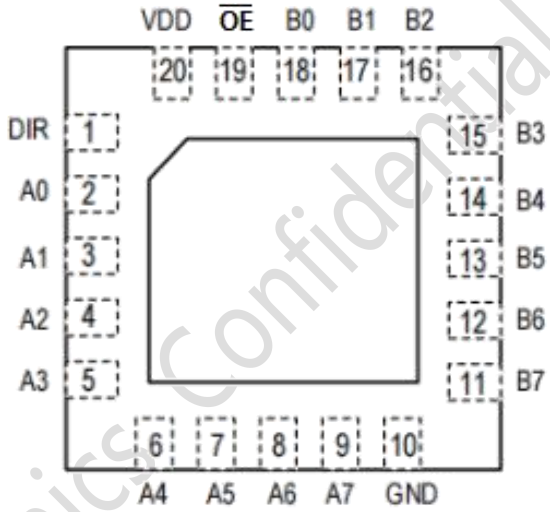
Name	Package	Mode	Reels	MSL
DP245D	TSSOP20	Tape	5000	MSL=3
	QFN20-3*3	Tape	5000	

PRODUCT DESCRIPTION

➢ Pin Configuration



TSSOP20



QFN20-3*3

➢ Pin Description

Pin No.	Pin Name	Function (TSSOP20)
20	VDD	Power Supply
10	GND	Power Ground
1	DIR	Direction Control DIR=1, A—>B DIR=0, B—>A
19	$\overline{OE}$	Output Enable
2 ~ 9	A0 ~ A7	Data Input/Output
18 ~ 11	B0 ~ B7	Data Input/Output
Pin No.	**Pin Name**	**Function (TSSOP20)**
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18 ~ 11	B0 ~ B7	Data Input/Output
19	$\overline{OE}$	Output Enable
20	VDD	Power Supply

➢ Marking Information

TSSOP20

QFN20-3*3

DP245D is product name:

XXXXXX The first X represents the last bit of year，for example X is 4 when year is 2014. The second X represents month, using 12 alphabets from A to L. The forth X represents day, using numbers 01 to 31. The last two X represent twafer batch no

➢ Absolute Maximum Ratings(Ta = 25℃)

Characteristics	Symbol	Rating	Unit
Power Supply	VDD	-0.5 ~ +8.0	V
Input Voltage	VI	-0.5 ~ VDD +0.5	V
Power Dissipation	PD	<400	mW
Max Frequency	fmax	60	MHz
Junction Temperature	Tj	150	℃
Operating Temperature	Topr	-40 ~ 85	℃
Storage Temperature	Tstg	-55 ~ 150	℃

Note:

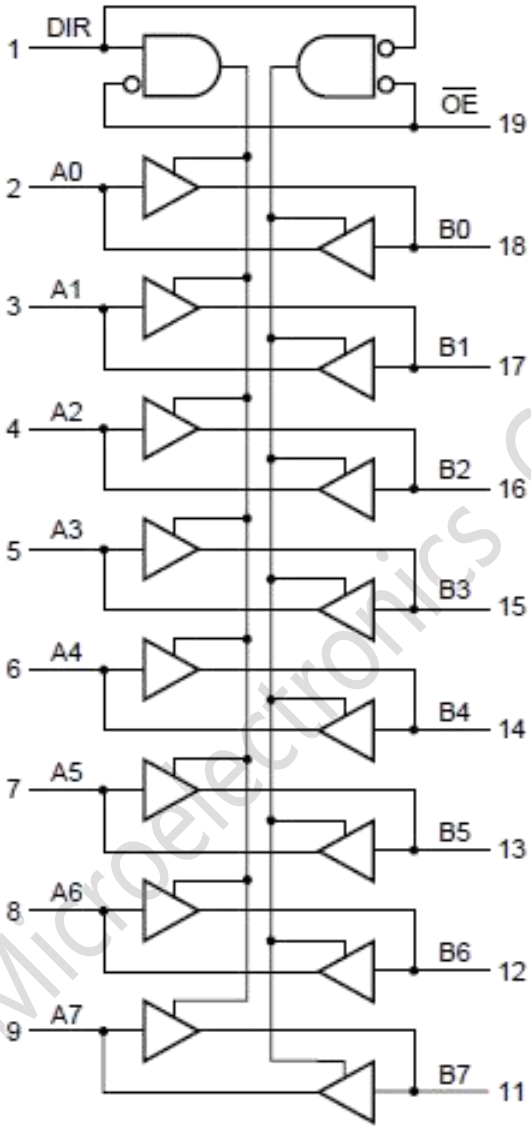
- 1. All the voltage value setting based on GND PIN as reference;
- 2. Application exceed the above specified value, may cause permanent damage to components, extending the operating life under absolute maximum conditions may reduce the reliability of the components. These are only part of the specified values, and do not support the functional operation of other conditions beyond the specification.
- 3. SMD components, soldering peak temperature must be lower than 260℃, temperature curve as standard J-STD-020, and factory decides by itself, take the reference by actual situation and solder paste manufacture' s suggestion.

➢ ESD Rating (T=25℃)

Symbol	Condition		Min	Typ	Max	Unit
V(ESD)	Charged-Device Model（CDM）[1]	All Pin-GND		±4		KV
	Human-Body Model（HBM）[2]	All Pin-GND		±8		KV
	Machine Model（MM）[3]	All Pin-GND		±0.8		KV

- [1] The minimum CDM model ESD voltage of all pins complies with ESDA STM5.3.1-1999 CLASS-C7 standard.
- [2] The minimum HBM model ESD voltage of all pins complies with ESDA STM5.1-2001 CLASS-3B standard.
- [3] The minimum HH model ESD voltage of all pins complies with ESDA STM5.2-1999 CLASS-M4 standard.

BLOCK DIAGRAM



ELECTRICAL CHARACTERISTICS(T=25℃)

characteristics	Condition	Symbol	Min	Typ	Max	Unit
Power Supply		VDD	2.6	5.0	5.5	V
Flip Voltage		VREV	-	0.5*VDD	-	V
	VDD=3.3V		-	1.75	-	V
	VDD=5V		-	2.5	-	V
	VDD=5V		-	-	1.5	V
High Level Logic Output Voltage	VDD=5V	VOH	4.9	-	-	V
High Level Logic Output Voltage	VDD=5V	VOL	-	-	0.1	V
High Level Current Drive Capability	VDD=5V	IOH	-	75	-	mA
Low Level Current Drive Capability	VDD=5V	IOL	-	78	-	mA

DYNAMIC CHARACTERISTICS(T=25℃,f=5MHz)

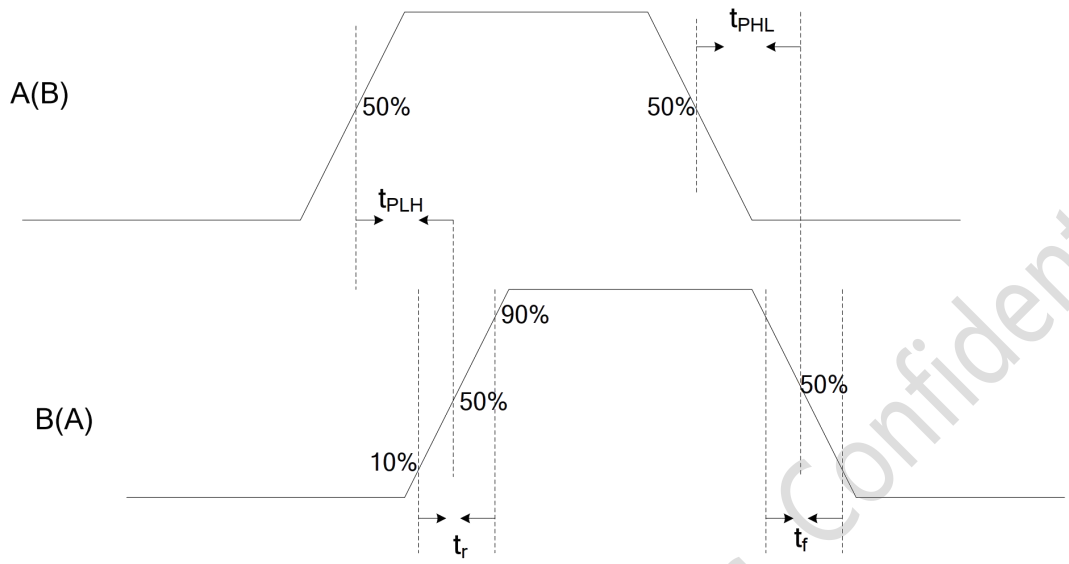
Characteristics	Symbol	Condition		Min	Typ	Max	Unit
		VDD(V)	CL(pF)				
Propagate rise delay	tPLH	3.3	15	8.4	8.35	8.6	ns
			50	8.2	8.5	8.8	ns
		5	15	5.6	6.65	7.6	ns
			50	6.4	6.65	6.8	ns
Propagate fall delay	tPHL	3.3	15	7.4	7.85	8.2	ns
			50	7.4	8	8.6	ns
		5	15	5.6	5.95	6.2	ns
			50	5.8	6	6.4	ns
Output rise time	tr	3.3	15	5.4	6	6.4	ns
			50	5.8	6.3	6.8	ns
		5	15	4.6	5.6	6.4	ns
			50	5.8	6.5	7.6	ns

Output fall time	tf	3.3	15	4.4	5.35	6.6	ns
			50	6.4	6.8	7	ns
		5	15	4.4	5.15	6.4	ns
			50	6	6.25	6.4	ns

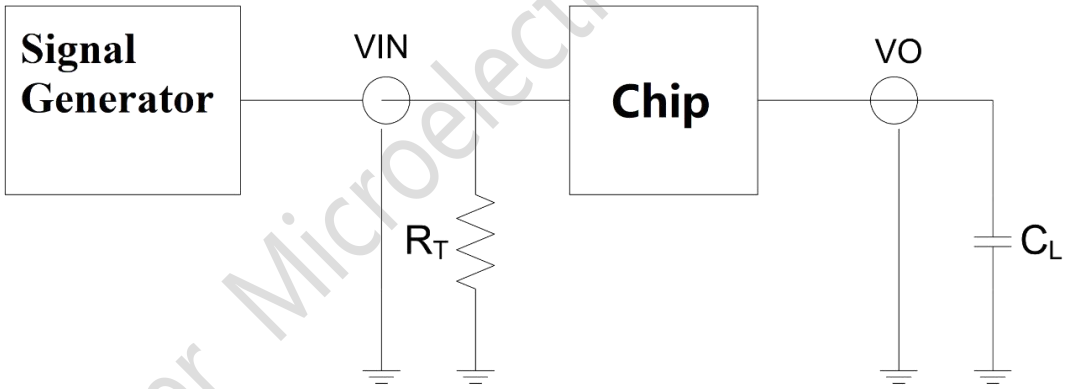
DYNAMIC CHARACTERISTICS(T=85℃,f=5MHz)

Characteristics	Symbol	Condition		Min	Typ	Max	Unit
		VDD(V)	CL(pF)				
Propagate rise delay	tPLH	3.3	15	9.2	9.65	10.2	ns
			50	8.2	8.5	8.8	ns
		5	15	7.8	8.1	8.4	ns
			50	6.8	7.05	7.2	ns
Propagate fall delay	tPHL	3.3	15	8.8	9.25	9.8	ns
			50	8	8.55	8.8	ns
		5	15	6.8	7	7.2	ns
			50	6.2	6.55	7.2	ns
Output rise time	tr	3.3	15	6.6	7.5	8.8	ns
			50	7.8	8.2	8.8	ns
		5	15	5.2	6.1	7.2	ns
			50	5.8	6	6.4	ns
Output fall time	tf	3.3	15	7.2	7.85	8.2	ns
			50	7.2	7.3	7.6	ns
		5	15	6.8	7.2	7.4	ns
			50	7	7.15	7.4	ns

TIMING DIAGRAM



TEST CIRCUIT

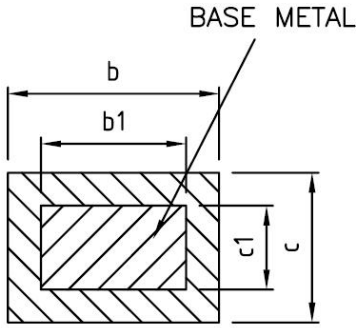


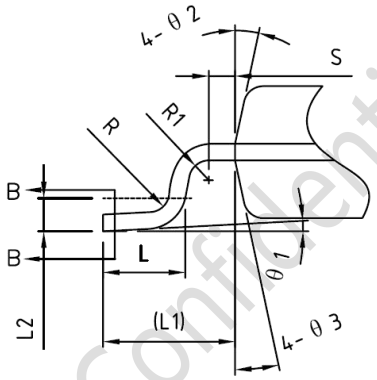
FUNCTION TABLE

Output Enable	Direct Control	工 Working Condition
$\overline{E}$	DIR	
L	H	An input Bn output
L	L	Bn input An output
H	X	Z

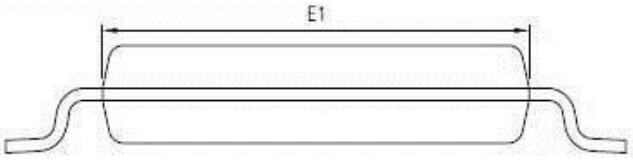
PACKAGE DIMENSION

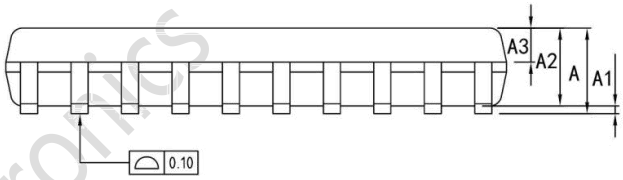
TSSOP20

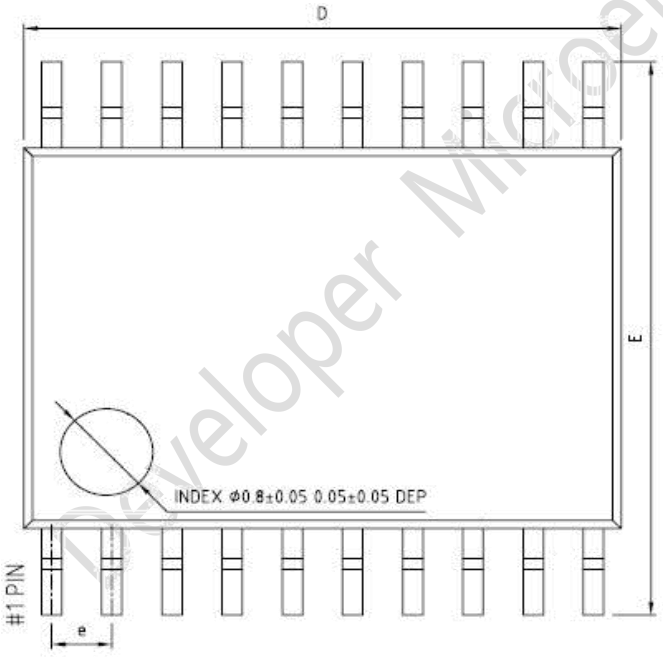




SECTION B–B



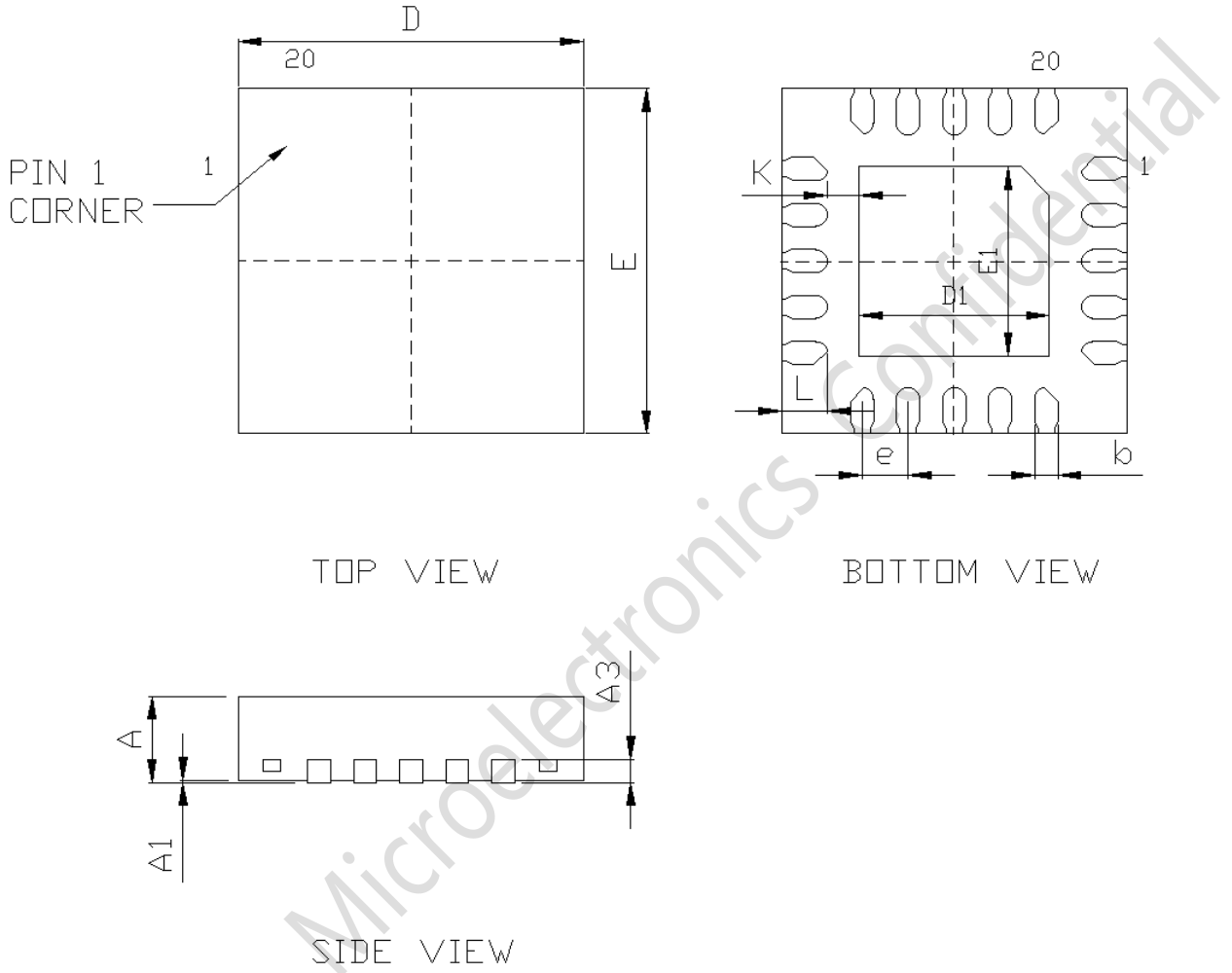




Symbol	Min	Nom	Max
A	-	-	1.2
A1	0.05	-	0.15
A2	0.90	1.00	1.05
A3	0.34	0.44	0.54
b	0.20	-	0.28
b1	0.20	0.22	0.24
c	0.10	-	0.19
c1	0.10	0.13	0.15
D	6.40	6.50	6.60
D1	4.00	4.20	4.40
E	6.25	6.40	6.55
E1	4.30	4.40	4.50
e	-	0.65BSC	-
L	0.45	0.60	0.75
L1	-	1.00REF	-
L2	-	0.25BSC	-
R	0.09	-	-
R1	0.09	-	-
S	0.20	-	-
Θ1	0°	-	8°
Θ2	10°	12°	14°
Θ3	10°	12°	14°

PACKAGE DIMENSION

QFN20-3*3



Symbol	Min	Nom	Max
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
A3		0.203REF	
b	0.15	0.20	0.25
D	2.90	3.00	3.10
E	2.90	3.00	3.10
D1	1.55	1.65	1.75
E1	1.55	1.65	1.75
e		0.40BSC	
L	0.35	0.40	0.45
K		0.275REF	

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