



AiP74AVCH4T245

4-bit Dual Supply Translating Transceiver;

3-state

Product Specification

Specification Revision History:

Version	Date	Description
2021-10-A1	2021-10	New
2023-04-B1	2023-04	Add MIS16 packaging information



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1、General Description

The AiP74AVCH4T245 is a 4-bit, dual supply transceiver that enables bidirectional level translation. The device can be used as two 2-bit transceivers or as a 4-bit transceiver. It features two 2-bit input-output ports (nAn and nBn), a direction control input (nDIR), a output enable input ($\overline{\text{nOE}}$) and dual supply pins ($V_{CC(A)}$ and $V_{CC(B)}$). Both $V_{CC(A)}$ and $V_{CC(B)}$ can be supplied at any voltage between 0.8V and 3.6V making the device suitable for translating between any of the low voltage nodes (0.8V, 1.2V, 1.5V, 1.8V, 2.5V and 3.3V). Pins nAn, $\overline{\text{nOE}}$ and nDIR are referenced to $V_{CC(A)}$ and pins nBn are referenced to $V_{CC(B)}$. A HIGH on nDIR allows transmission from nAn to nBn and a LOW on nDIR allows transmission from nBn to nAn.

The output enable input ($\overline{\text{nOE}}$) can be used to disable the outputs so the buses are effectively isolated.

The AiP74AVCH4T245 has active bus hold circuitry which is provided to hold unused or floating data inputs at a valid logic level. This feature eliminates the need for external pull-up or pull-down resistors.

Features:

- Wide supply voltage range:
 $V_{CC(A)}$: 0.8V to 3.6V
 $V_{CC(B)}$: 0.8V to 3.6V
- Suspend mode
- Bus hold on data inputs
- Inputs accept voltages up to 3.6V
- Specified from -40°C to +125°C
- Packaging information: SOP16/TSSOP16/DHVQFN16/MIS16

**Ordering Information:****Tube packing specifications:**

Part number	Packaging form	Marking code	Tube quantity	Boxed tube quantity	Boxed quantity	Notes
AiP74AVCH4T245SA16.TB	SOP16	74AVCH4T245	50 PCS/tube	200 tube/box	10000 PCS/box	Dimensions of plastic enclosure: 10.0mm×3.9mm Pin spacing: 1.27mm
AiP74AVCH4T245TA16.TB	TSSOP16	74AVCH4T245	96 PCS/tube	200 tube/box	19200 PCS/box	Dimensions of plastic enclosure: 5.0mm×4.4mm Pin spacing: 0.65mm

Reel packing specifications:

Part number	Packaging form	Marking code	Reel quantity	Boxed reel quantity	Notes
AiP74AVCH4T245SA16.TR	SOP16	74AVCH4T245	4000 PCS/reel	8000 PCS/box	Dimensions of plastic enclosure: 10.0mm×3.9mm Pin spacing: 1.27mm
AiP74AVCH4T245TA16.TR	TSSOP16	74AVCH4T245	5000 PCS/reel	10000 PCS/box	Dimensions of plastic enclosure: 5.0mm×4.4mm Pin spacing: 0.65mm
AiP74AVCH4T245QE16.TR	DHVQFN16	AH4T245	3000 PCS/reel	3000 PCS/box	Dimensions of plastic enclosure: 2.5mm×3.5mm Pin spacing: 0.5mm
AiP74AVCH4T245MIS16G.TR	MIS16	AVCH4T245	3000 PCS/reel	30000 PCS/box	Dimensions of plastic enclosure: 2.6mm×1.8mm Pin spacing: 0.4mm

Note: If the physical information is inconsistent with the ordering information, please refer to the actual product.



2、Block Diagram And Pin Description

2.1、Block Diagram

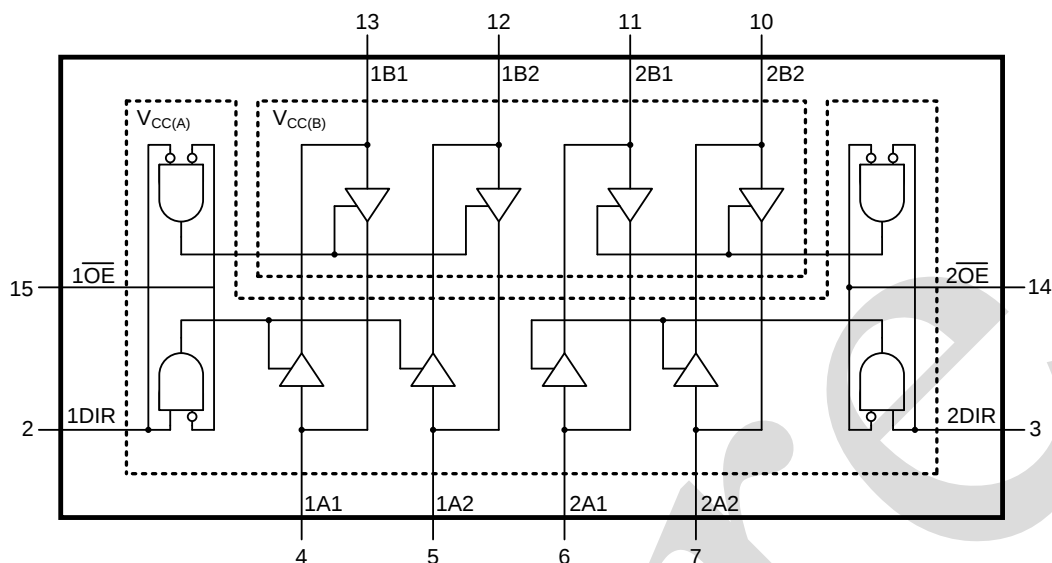


Figure 1. Logic symbol

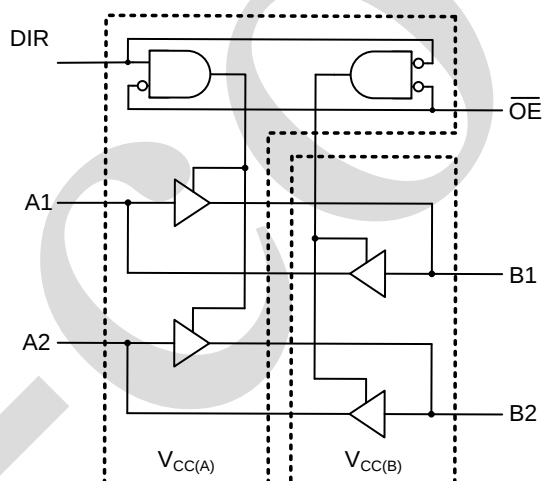
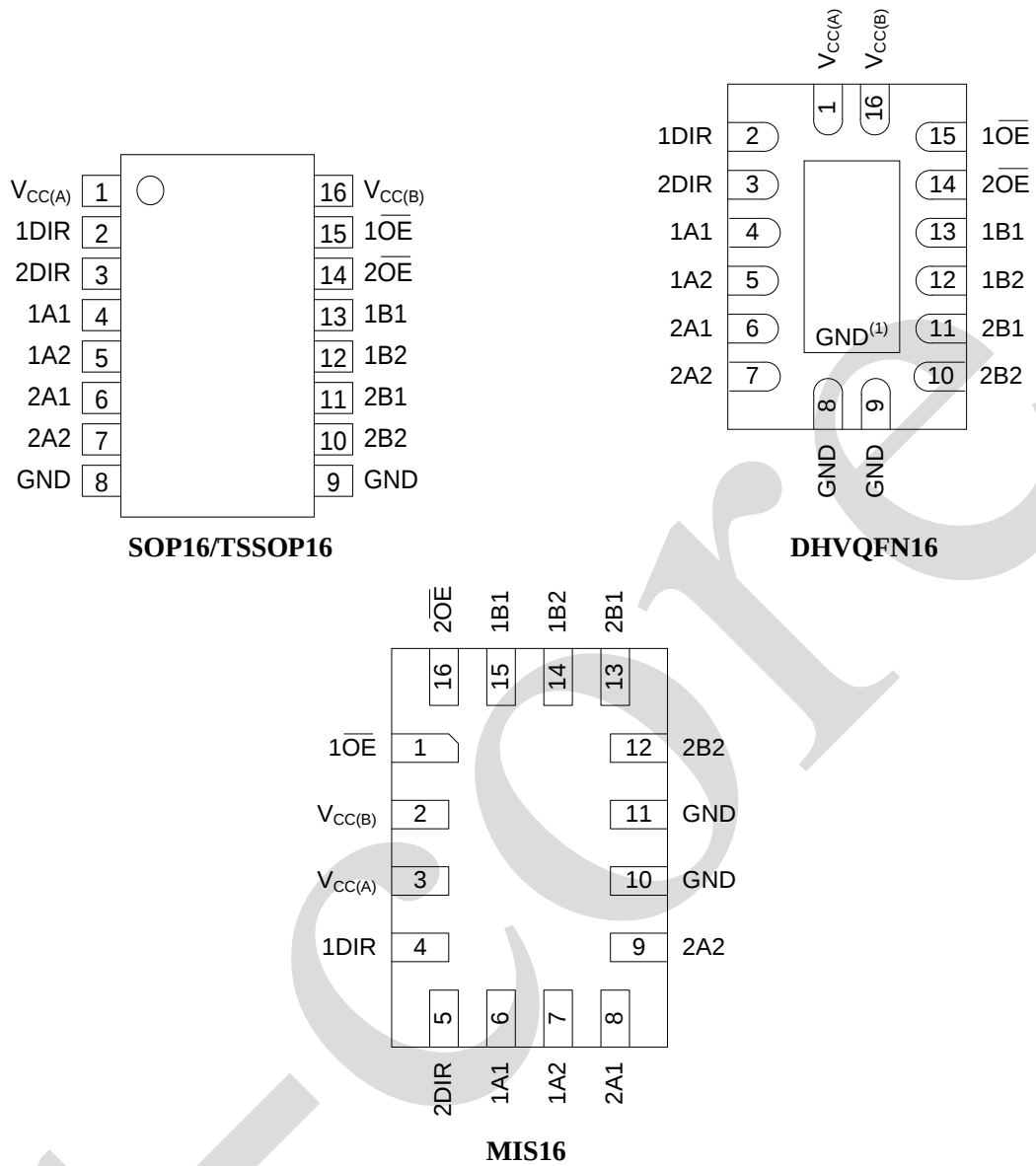


Figure 2. Logic diagram (one 2-bit transceiver)



2.2、Pin Configurations



Note: (1) This is not a supply pin.



2.3、Pin Description

Pin No.		Pin Name	Description
SOP/TSSOP/DHVQFN	MIS		
1	3	$V_{CC(A)}$	supply voltage A (nAn, nOE and nDIR inputs are referenced to $V_{CC(A)}$)
2	4	1DIR	direction control
3	5	2DIR	direction control
4	6	1A1	data input or output
5	7	1A2	data input or output
6	8	2A1	data input or output
7	9	2A2	data input or output
8	10	GND	ground (0V)
9	11	GND	ground (0V)
10	12	2B2	data input or output
11	13	2B1	data input or output
12	14	1B2	data input or output
13	15	1B1	data input or output
14	16	2OE	output enable input (active LOW)
15	1	1OE	output enable input (active LOW)
16	2	$V_{CC(B)}$	supply voltage B (nBn inputs are referenced to $V_{CC(B)}$)

2.4、Function Table

H=HIGH voltage level; L=LOW voltage level; X=don't care; Z=high-impedance OFF-state.

Supply voltage	Input		Input/Output ^[1]	
$V_{CC(A)}, V_{CC(B)}$	nOE ^[2]	nDIR ^[2]	nAn ^[2]	nBn ^[2]
0.8V to 3.6V	L	L	nAn=nBn	input
0.8V to 3.6V	L	H	input	nBn=nAn
0.8V to 3.6V	H	X	Z	Z
GND ^[1]	X	X	Z	Z

Note:

[1] If at least one of $V_{CC(A)}$ or $V_{CC(B)}$ is at GND level, the device goes into suspend mode.

[2] The nAn, nDIR and nOE input circuit is referenced to $V_{CC(A)}$; The nBn input circuit is referenced to $V_{CC(B)}$.



3、Electrical Parameter

3.1、Absolute Maximum Ratings

($T_{amb}=25^{\circ}\text{C}$, all voltage referenced to GND (ground=0V), unless otherwise specified)

Characteristic	Symbol	Conditions	Min.	Max.	Unit
supply voltage A	$V_{CC(A)}$	-	-0.5	+4.6	V
supply voltage B	$V_{CC(B)}$	-	-0.5	+4.6	V
input clamping current	I_{IK}	$V_I < 0V$	-50	-	mA
input voltage	V_I	-	-0.5	+4.6	V
output clamping current	I_{IK}	$V_O < 0V$	-50	-	mA
output voltage	V_O	Active mode ^{[1][2][3]}	-0.5	$V_{CCO}+0.5$	V
		Suspend or 3-state mode ^[1]	-0.5	+4.6	V
output current	I_O	$V_O=0V$ to V_{CCO} ^[2]	-	± 50	mA
supply current	I_{CC}	per $V_{CC(A)}$ or $V_{CC(B)}$ pin	-	100	mA
ground current	I_{GND}	per GND pin	-100	-	mA
storage temperature	T_{stg}	-	-65	+150	$^{\circ}\text{C}$
total power dissipation	P_{tot}	-	-	500	mW
soldering temperature	T_L	10s	260		$^{\circ}\text{C}$

Note:

[1] The minimum input voltage ratings and output voltage ratings may be exceeded if the input and output current ratings are observed.

[2] V_{CCO} is the supply voltage associated with the output port.

[3] $V_{CCO}+0.5V$ should not exceed 4.6V.

3.2、Recommended Operating Conditions

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
supply voltage A	$V_{CC(A)}$	-	0.8	-	3.6	V
supply voltage B	$V_{CC(B)}$	-	0.8	-	3.6	V
input voltage	V_I	-	0	-	3.6	V
output voltage	V_O	Active mode ^[1]	0	-	V_{CCO}	V
		Suspend or 3-state mode	0	-	3.6	V
ambient temperature	T_{amb}	-	-40	-	+125	$^{\circ}\text{C}$

Note:

[1] V_{CCO} is the supply voltage associated with the output port.



3.3、Electrical Characteristics

3.3.1、DC Characteristics 1

($T_{amb}=25^{\circ}\text{C}$, voltages are referenced to GND (ground=0V), unless otherwise specified)^{[1][2]}

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
HIGH-level output voltage	V_{OH}	$V_I=V_{IH}$ or V_{IL} $I_O=-1.5\text{mA}$; $V_{CC(A)}=V_{CC(B)}=0.8\text{V}$	-	0.69	-	V
LOW-level output voltage	V_{OL}	$V_I=V_{IH}$ or V_{IL} $I_O=1.5\text{mA}$; $V_{CC(A)}=V_{CC(B)}=0.8\text{V}$	-	0.07	-	V
input leakage current	I_I	nDIR, nOE input; $V_I=0\text{V}$ or 3.6V ; $V_{CC(A)}=V_{CC(B)}=0.8\text{V}$ to 3.6V	-	± 0.1	± 1	μA
bus hold LOW current	I_{BHL}	A or B port; $V_I=0.42\text{V}$; $V_{CC(A)}=V_{CC(B)}=1.2\text{V}$	-	26	-	μA
bus hold HIGH current	I_{BHH}	A or B port; $V_I=0.78\text{V}$; $V_{CC(A)}=V_{CC(B)}=1.2\text{V}$	-	-24	-	μA
bus hold LOW overdrive current	I_{BHLO}	A or B port; $V_{CC(A)}=V_{CC(B)}=1.2\text{V}$	-	27	-	μA
bus hold HIGH overdrive current	I_{BHHO}	A or B port; $V_{CC(A)}=V_{CC(B)}=1.2\text{V}$	-	-26	-	μA
OFF-state output current	I_{OZ}	A or B port; $V_O=0\text{V}$ or V_{CCO} ; $V_{CC(A)}=V_{CC(B)}=3.6\text{V}$	-	-	± 2.5	μA
		suspend mode A port; $V_O=0\text{V}$ or V_{CCO} ; $V_{CC(A)}=3.6\text{V}$; $V_{CC(B)}=0\text{V}$	-	-	± 2.5	μA
		suspend mode B port; $V_O=0\text{V}$ or V_{CCO} ; $V_{CC(A)}=0\text{V}$; $V_{CC(B)}=3.6\text{V}$	-	-	± 2.5	μA
power-off leakage current	I_{OFF}	A port; V_I or $V_O=0\text{V}$ to 3.6V ; $V_{CC(A)}=0\text{V}$; $V_{CC(B)}=0.8\text{V}$ to 3.6V	-	-	± 1	μA
		B port; V_I or $V_O=0\text{V}$ to 3.6V ; $V_{CC(B)}=0\text{V}$; $V_{CC(A)}=0.8\text{V}$ to 3.6V	-	-	± 1	μA
input capacitance	C_I	nDIR, nOE input; $V_I=0\text{V}$ or 3.3V ; $V_{CC(A)}=V_{CC(B)}=3.3\text{V}$	-	1.0	-	pF
input/output capacitance	$C_{I/O}$	A and B port; $V_O=3.3\text{V}$ or 0V ; $V_{CC(A)}=V_{CC(B)}=3.3\text{V}$	-	4.0	-	pF

Note:

[1] V_{CCO} is the supply voltage associated with the output port.

[2] V_{CCI} is the supply voltage associated with the data input port.



3.3.2、DC Characteristics 2

(T_{amb}=-40℃ to +85℃, voltages are referenced to GND (ground=0V), unless otherwise specified)^{[1][2]}

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
HIGH-level input voltage	V _{IH}	data input	V _{CCI} =0.8V	0.70V _{CCI}	-	-	V
			V _{CCI} =1.1V to 1.95V	0.65V _{CCI}	-	-	V
			V _{CCI} =2.3V to 2.7V	1.6	-	-	V
			V _{CCI} =3.0V to 3.6V	2	-	-	V
		nDIR, n OE input	V _{CC(A)} =0.8V	0.70V _{CC(A)}	-	-	V
			V _{CC(A)} =1.1V to 1.95V	0.65V _{CC(A)}	-	-	V
			V _{CC(A)} =2.3V to 2.7V	1.6	-	-	V
			V _{CC(A)} =3.0V to 3.6V	2	-	-	V
LOW-level input voltage	V _{IL}	data input	V _{CCI} =0.8V	-	-	0.30V _{CCI}	V
			V _{CCI} =1.1V to 1.95V	-	-	0.35V _{CCI}	V
			V _{CCI} =2.3V to 2.7V	-	-	0.7	V
			V _{CCI} =3.0V to 3.6V	-	-	0.8	V
		nDIR, n OE input	V _{CC(A)} =0.8V	-	-	0.30V _{CC(A)}	V
			V _{CC(A)} =1.1V to 1.95V	-	-	0.35V _{CC(A)}	V
			V _{CC(A)} =2.3V to 2.7V	-	-	0.7	V
			V _{CC(A)} =3.0V to 3.6V	-	-	0.8	V
HIGH-level output voltage	V _{OH}	V _I =V _{IH} or V _{IL}	I _O =-100uA; V _{CC(A)} =V _{CC(B)} =0.8V to 3.6V	V _{CCO} -0.1	-	-	V
			I _O =-3mA; V _{CC(A)} =V _{CC(B)} =1.1V	0.85	-	-	V
			I _O =-6mA; V _{CC(A)} =V _{CC(B)} =1.4V	1.05	-	-	V
			I _O =-8mA; V _{CC(A)} =V _{CC(B)} =1.65V	1.2	-	-	V
			I _O =-9mA; V _{CC(A)} =V _{CC(B)} =2.3V	1.75	-	-	V
			I _O =-12mA; V _{CC(A)} =V _{CC(B)} =3.0V	2.3	-	-	V
LOW-level output voltage	V _{OL}	V _I =V _{IH} or V _{IL}	I _O =100uA; V _{CC(A)} =V _{CC(B)} =0.8V to 3.6V	-	-	0.1	V
			I _O =3mA; V _{CC(A)} =V _{CC(B)} =1.1V	-	-	0.25	V
			I _O =6mA; V _{CC(A)} =V _{CC(B)} =1.4V	-	-	0.35	V
			I _O =8mA; V _{CC(A)} =V _{CC(B)} =1.65V	-	-	0.45	V
			I _O =9mA; V _{CC(A)} =V _{CC(B)} =2.3V	-	-	0.55	V
			I _O =12mA; V _{CC(A)} =V _{CC(B)} =3.0V	-	-	0.7	V
input leakage current	I _I	nDIR, n OE input; V _I =0V or 3.6V; V _{CC(A)} =V _{CC(B)} =0.8V to 3.6V		-	-	±1	uA



bus hold LOW current	I_{BHL}	A or B port	$V_I=0.49V$; $V_{CC(A)}=V_{CC(B)}=1.4V$	15	-	-	μA
			$V_I=0.58V$; $V_{CC(A)}=V_{CC(B)}=1.65V$	25	-	-	μA
			$V_I=0.70V$; $V_{CC(A)}=V_{CC(B)}=2.3V$	45	-	-	μA
			$V_I=0.80V$; $V_{CC(A)}=V_{CC(B)}=3.0V$	100	-	-	μA
bus hold HIGH current	I_{BHH}	A or B port	$V_I=0.91V$; $V_{CC(A)}=V_{CC(B)}=1.4V$	-15	-	-	μA
			$V_I=1.07V$; $V_{CC(A)}=V_{CC(B)}=1.65V$	-25	-	-	μA
			$V_I=1.60V$; $V_{CC(A)}=V_{CC(B)}=2.3V$	-45	-	-	μA
			$V_I=2.00V$; $V_{CC(A)}=V_{CC(B)}=3.0V$	-100	-	-	μA
bus hold LOW overdrive current	I_{BHLO}	A or B port	$V_{CC(A)}=V_{CC(B)}=1.6V$	125	-	-	μA
			$V_{CC(A)}=V_{CC(B)}=1.95V$	200	-	-	μA
			$V_{CC(A)}=V_{CC(B)}=2.7V$	300	-	-	μA
			$V_{CC(A)}=V_{CC(B)}=3.6V$	500	-	-	μA
bus hold HIGH overdrive current	I_{BHHO}	A or B port	$V_{CC(A)}=V_{CC(B)}=1.6V$	-125	-	-	μA
			$V_{CC(A)}=V_{CC(B)}=1.95V$	-200	-	-	μA
			$V_{CC(A)}=V_{CC(B)}=2.7V$	-300	-	-	μA
			$V_{CC(A)}=V_{CC(B)}=3.6V$	-500	-	-	μA
OFF-state output current	I_{OZ}	A or B port; $V_O=0V$ or V_{CCO} ; $V_{CC(A)}=V_{CC(B)}=3.6V$		-	-	± 5	μA
		suspend mode A port; $V_O=0V$ or V_{CCO} ; $V_{CC(A)}=3.6V$; $V_{CC(B)}=0V$		-	-	± 5	μA
		suspend mode B port; $V_O=0V$ or V_{CCO} ; $V_{CC(A)}=0V$; $V_{CC(B)}=3.6V$		-	-	± 5	μA
power-off leakage current	I_{OFF}	A port; V_I or $V_O=0V$ to $3.6V$; $V_{CC(A)}=0V$; $V_{CC(B)}=0.8V$ to $3.6V$		-	-	± 5	μA
		B port; V_I or $V_O=0V$ to $3.6V$; $V_{CC(B)}=0V$; $V_{CC(A)}=0.8V$ to $3.6V$		-	-	± 5	μA
supply current	I_{CC}	A port; $V_I=0V$ or V_{CCI} ; $I_O=0A$	$V_{CC(A)}=0.8V$ to $3.6V$; $V_{CC(B)}=0.8V$ to $3.6V$	-	-	10	μA
			$V_{CC(A)}=1.1V$ to $3.6V$; $V_{CC(B)}=1.1V$ to $3.6V$	-	-	8	μA
			$V_{CC(A)}=3.6V$; $V_{CC(B)}=0V$	-	-	8	μA
			$V_{CC(A)}=0V$; $V_{CC(B)}=3.6V$	-2	-	-	μA
		B port; $V_I=0V$ or V_{CCI} ; $I_O=0A$	$V_{CC(A)}=0.8V$ to $3.6V$; $V_{CC(B)}=0.8V$ to $3.6V$	-	-	10	μA
			$V_{CC(A)}=1.1V$ to $3.6V$; $V_{CC(B)}=1.1V$ to $3.6V$	-	-	8	μA



			$V_{CC(A)}=3.6V; V_{CC(B)}=0V$	-2	-	-	uA
			$V_{CC(A)}=0V; V_{CC(B)}=3.6V$	-	-	8	uA
		A plus B port ($I_{CC(A)}+I_{CC(B)}$); $I_O=0A$; $V_I=0V$ or V_{CCI} ; $V_{CC(A)}=0.8V$ to $3.6V$; $V_{CC(B)}=0.8V$ to $3.6V$		-	-	20	uA
		A plus B port ($I_{CC(A)}+I_{CC(B)}$); $I_O=0A$; $V_I=0V$ or V_{CCI} ; $V_{CC(A)}=1.1V$ to $3.6V$; $V_{CC(B)}=1.1V$ to $3.6V$		-	-	16	uA

Note:

[1] V_{CCO} is the supply voltage associated with the output port.

[2] V_{CCI} is the supply voltage associated with the data input port.

3.3.3、DC Characteristics 3

($T_{amb}=-40^{\circ}C$ to $+125^{\circ}C$, voltages are referenced to GND (ground=0V), unless otherwise specified)^{[1][2]}

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
HIGH-level input voltage	V_{IH}	data input	$V_{CCI}=0.8V$	$0.70V_{CCI}$	-	-	V
			$V_{CCI}=1.1V$ to $1.95V$	$0.65V_{CCI}$	-	-	V
			$V_{CCI}=2.3V$ to $2.7V$	1.6	-	-	V
			$V_{CCI}=3.0V$ to $3.6V$	2	-	-	V
		nDIR, n OE input	$V_{CC(A)}=0.8V$	$0.70V_{CC(A)}$	-	-	V
			$V_{CC(A)}=1.1V$ to $1.95V$	$0.65V_{CC(A)}$	-	-	V
			$V_{CC(A)}=2.3V$ to $2.7V$	1.6	-	-	V
			$V_{CC(A)}=3.0V$ to $3.6V$	2	-	-	V
LOW-level input voltage	V_{IL}	data input	$V_{CCI}=0.8V$	-	-	$0.30V_{CCI}$	V
			$V_{CCI}=1.1V$ to $1.95V$	-	-	$0.35V_{CCI}$	V
			$V_{CCI}=2.3V$ to $2.7V$	-	-	0.7	V
			$V_{CCI}=3.0V$ to $3.6V$	-	-	0.8	V
		nDIR, n OE input	$V_{CC(A)}=0.8V$	-	-	$0.30V_{CC(A)}$	V
			$V_{CC(A)}=1.1V$ to $1.95V$	-	-	$0.35V_{CC(A)}$	V
			$V_{CC(A)}=2.3V$ to $2.7V$	-	-	0.7	V
			$V_{CC(A)}=3.0V$ to $3.6V$	-	-	0.8	V
HIGH-level output voltage	V_{OH}	$V_I=V_{IH}$ or V_{IL}	$I_O=-100uA$; $V_{CC(A)}=V_{CC(B)}=0.8V$ to $3.6V$	$V_{CCO}-0.1$	-	-	V
			$I_O=-3mA$; $V_{CC(A)}=V_{CC(B)}=1.1V$	0.85	-	-	V
			$I_O=-6mA$; $V_{CC(A)}=V_{CC(B)}=1.4V$	1.05	-	-	V
			$I_O=-8mA$; $V_{CC(A)}=V_{CC(B)}=1.65V$	1.2	-	-	V
			$I_O=-9mA$; $V_{CC(A)}=V_{CC(B)}=2.3V$	1.75	-	-	V
			$I_O=-12mA$; $V_{CC(A)}=V_{CC(B)}=3.0V$	2.3	-	-	V



LOW-level output voltage	V_{OL}	$V_I = V_{IH} \text{ or } V_{IL}$	$I_O = 100\mu A;$ $V_{CC(A)} = V_{CC(B)} = 0.8V \text{ to } 3.6V$	-	-	0.1	V
			$I_O = 3mA;$ $V_{CC(A)} = V_{CC(B)} = 1.1V$	-	-	0.25	V
			$I_O = 6mA;$ $V_{CC(A)} = V_{CC(B)} = 1.4V$	-	-	0.35	V
			$I_O = 8mA;$ $V_{CC(A)} = V_{CC(B)} = 1.65V$	-	-	0.45	V
			$I_O = 9mA;$ $V_{CC(A)} = V_{CC(B)} = 2.3V$	-	-	0.55	V
			$I_O = 12mA;$ $V_{CC(A)} = V_{CC(B)} = 3.0V$	-	-	0.7	V
input leakage current	I_I	nDIR, nOE input; $V_I = 0V \text{ or } 3.6V;$ $V_{CC(A)} = V_{CC(B)} = 0.8V \text{ to } 3.6V$		-	-	± 5	μA
bus hold LOW current	I_{BHL}	A or B port	$V_I = 0.49V;$ $V_{CC(A)} = V_{CC(B)} = 1.4V$	15	-	-	μA
			$V_I = 0.58V;$ $V_{CC(A)} = V_{CC(B)} = 1.65V$	25	-	-	μA
			$V_I = 0.70V;$ $V_{CC(A)} = V_{CC(B)} = 2.3V$	45	-	-	μA
			$V_I = 0.80V;$ $V_{CC(A)} = V_{CC(B)} = 3.0V$	90	-	-	μA
bus hold HIGH current	I_{BHH}	A or B port	$V_I = 0.91V;$ $V_{CC(A)} = V_{CC(B)} = 1.4V$	-15	-	-	μA
			$V_I = 1.07V;$ $V_{CC(A)} = V_{CC(B)} = 1.65V$	-25	-	-	μA
			$V_I = 1.60V;$ $V_{CC(A)} = V_{CC(B)} = 2.3V$	-45	-	-	μA
			$V_I = 2.00V;$ $V_{CC(A)} = V_{CC(B)} = 3.0V$	-100	-	-	μA
bus hold LOW overdrive current	I_{BHLO}	A or B port	$V_{CC(A)} = V_{CC(B)} = 1.6V$	125	-	-	μA
			$V_{CC(A)} = V_{CC(B)} = 1.95V$	200	-	-	μA
			$V_{CC(A)} = V_{CC(B)} = 2.7V$	300	-	-	μA
			$V_{CC(A)} = V_{CC(B)} = 3.6V$	500	-	-	μA
bus hold HIGH overdrive current	I_{BHHO}	A or B port	$V_{CC(A)} = V_{CC(B)} = 1.6V$	-125	-	-	μA
			$V_{CC(A)} = V_{CC(B)} = 1.95V$	-200	-	-	μA
			$V_{CC(A)} = V_{CC(B)} = 2.7V$	-300	-	-	μA
			$V_{CC(A)} = V_{CC(B)} = 3.6V$	-500	-	-	μA
OFF-state output current	I_{OZ}	A or B port; $V_O = 0V \text{ or } V_{CCO};$ $V_{CC(A)} = V_{CC(B)} = 3.6V$		-	-	± 30	μA
		suspend mode A port; $V_O = 0V \text{ or } V_{CCO};$ $V_{CC(A)} = 3.6V; V_{CC(B)} = 0V$		-	-	± 30	μA
		suspend mode B port; $V_O = 0V \text{ or } V_{CCO};$ $V_{CC(A)} = 0V; V_{CC(B)} = 3.6V$		-	-	± 30	μA
power-off leakage	I_{OFF}	A port; $V_I \text{ or } V_O = 0V \text{ to } 3.6V; V_{CC(A)} = 0V;$ $V_{CC(B)} = 0.8V \text{ to } 3.6V$		-	-	± 30	μA



current		B port; V_I or $V_O=0V$ to $3.6V$; $V_{CC(B)}=0V$; $V_{CC(A)}=0.8V$ to $3.6V$		-	-	± 30	μA
supply current	I_{CC}	A port; $V_I=0V$ or V_{CCI} ; $I_O=0A$	$V_{CC(A)}=0.8V$ to $3.6V$; $V_{CC(B)}=0.8V$ to $3.6V$	-	-	55	μA
			$V_{CC(A)}=1.1V$ to $3.6V$; $V_{CC(B)}=1.1V$ to $3.6V$	-	-	50	μA
			$V_{CC(A)}=3.6V$; $V_{CC(B)}=0V$	-	-	50	μA
			$V_{CC(A)}=0V$; $V_{CC(B)}=3.6V$	-12	-	-	μA
		B port; $V_I=0V$ or V_{CCI} ; $I_O=0A$	$V_{CC(A)}=0.8V$ to $3.6V$; $V_{CC(B)}=0.8V$ to $3.6V$	-	-	55	μA
			$V_{CC(A)}=1.1V$ to $3.6V$; $V_{CC(B)}=1.1V$ to $3.6V$	-	-	50	μA
			$V_{CC(A)}=3.6V$; $V_{CC(B)}=0V$	-12	-	-	μA
			$V_{CC(A)}=0V$; $V_{CC(B)}=3.6V$	-	-	50	μA
		A plus B port ($I_{CC(A)}+I_{CC(B)}$); $I_O=0A$; $V_I=0V$ or V_{CCI} ; $V_{CC(A)}=0.8V$ to $3.6V$; $V_{CC(B)}=0.8V$ to $3.6V$		-	-	70	μA
		A plus B port ($I_{CC(A)}+I_{CC(B)}$); $I_O=0A$; $V_I=0V$ or V_{CCI} ; $V_{CC(A)}=1.1V$ to $3.6V$; $V_{CC(B)}=1.1V$ to $3.6V$		-	-	65	μA

Note:

[1] V_{CCO} is the supply voltage associated with the output port.

[2] V_{CCI} is the supply voltage associated with the data input port.

**Typical total supply current ($I_{CC(A)}+I_{CC(B)}$)**

$V_{CC(A)}$	$V_{CC(B)}$							Unit
	0V	0.8V	1.2V	1.5V	1.8V	2.5V	3.3V	
0V	0	0.1	0.1	0.1	0.1	0.1	0.1	uA
0.8V	0.1	0.1	0.1	0.1	0.1	0.3	1.6	uA
1.2V	0.1	0.1	0.1	0.1	0.1	0.1	0.8	uA
1.5V	0.1	0.1	0.1	0.1	0.1	0.1	0.4	uA
1.8V	0.1	0.1	0.1	0.1	0.1	0.1	0.2	uA
2.5V	0.1	0.3	0.1	0.1	0.1	0.1	0.1	uA
3.3V	0.1	1.6	0.8	0.4	0.2	0.1	0.1	uA

3.3.4、AC Characteristics 1

($T_{amb}=25^{\circ}C$, $V_{CC(A)}=0.8V$, voltages are referenced to GND (ground=0V), unless otherwise specified)^[1]

Parameter	Symbol	Conditions	$V_{CC(B)}$						Unit
			0.8V	1.2V	1.5V	1.8V	2.5V	3.3V	
propagation delay	t_{PLH} , t_{PHL}	nAn to nBn	14.5	7.3	6.5	6.2	5.9	6.0	ns
		nBn to nAn	14.5	12.7	12.4	12.3	12.1	12.0	ns
disable time	t_{PLZ} , t_{PHZ}	$\overline{\text{nOE}}$ to nAn	14.3	14.3	14.3	14.3	14.3	14.3	ns
		$\overline{\text{nOE}}$ to nBn	17.0	9.9	9.0	9.4	9.0	9.7	ns
enable time	t_{PZL} , t_{PZH}	$\overline{\text{nOE}}$ to nAn	18.2	18.2	18.2	18.2	18.2	18.2	ns
		$\overline{\text{nOE}}$ to nBn	19.2	10.7	9.8	9.6	9.7	10.2	ns

3.3.5、AC Characteristics 2

($T_{amb}=25^{\circ}C$, $V_{CC(B)}=0.8V$, voltages are referenced to GND (ground=0V), unless otherwise specified)^[1]

Parameter	Symbol	Conditions	$V_{CC(A)}$						Unit
			0.8V	1.2V	1.5V	1.8V	2.5V	3.3V	
propagation delay	t_{PLH} , t_{PHL}	nAn to nBn	14.5	12.7	12.4	12.3	12.1	12.0	ns
		nBn to nAn	14.5	7.3	6.5	6.2	5.9	6.0	ns
disable time	t_{PLZ} , t_{PHZ}	$\overline{\text{nOE}}$ to nAn	14.3	5.5	4.1	4.0	3.0	3.5	ns
		$\overline{\text{nOE}}$ to nBn	17.0	13.8	13.4	13.1	12.9	12.7	ns
enable time	t_{PZL} , t_{PZH}	$\overline{\text{nOE}}$ to nAn	18.2	5.6	4.0	3.2	2.4	2.2	ns
		$\overline{\text{nOE}}$ to nBn	19.2	14.6	14.1	13.9	13.7	13.6	ns



3.3.6、AC Characteristics 3

($T_{amb} = -40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$, voltages are referenced to GND (ground=0V), unless otherwise specified)^[1]

Parameter	Symbol	Conditions	V _{CC(B)}										Unit
			1.2V ±0.1V		1.5V ±0.1V		1.8V ±0.15V		2.5V ±0.2V		3.3V ±0.3V		
			Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
V _{CC(A)} =1.1V to 1.3V													
propagation delay	t _{PLH} , t _{PHL}	nAn to nBn	0.5	9.4	0.5	7.1	0.5	6.2	0.5	5.2	0.5	5.1	ns
		nBn to nAn	0.5	9.4	0.5	8.9	0.5	8.7	0.5	8.4	0.5	8.2	ns
disable time	t _{PLZ} , t _{PHZ}	n $\overline{OE}$ to nAn	1.8	10.9	1.8	10.9	1.8	10.9	1.8	10.9	1.8	10.9	ns
		n $\overline{OE}$ to nBn	1.9	12.4	1.9	9.6	1.9	9.5	1.4	8.1	1.2	9.1	ns
enable time	t _{PZL} , t _{PZH}	n $\overline{OE}$ to nAn	1.4	12.8	1.4	12.8	1.4	12.8	1.4	12.8	1.4	12.8	ns
		n $\overline{OE}$ to nBn	1.1	13.3	1.1	10.0	1.1	8.9	1.0	7.9	1.0	7.7	ns
V _{CC(A)} =1.4V to 1.6V													
propagation delay	t _{PLH} , t _{PHL}	nAn to nBn	0.3	8.9	0.3	6.3	0.3	5.2	0.3	4.2	0.3	4.2	ns
		nBn to nAn	0.7	7.1	0.7	6.3	0.5	6.0	0.4	5.7	0.3	5.6	ns
disable time	t _{PLZ} , t _{PHZ}	n $\overline{OE}$ to nAn	1.8	10.2	1.8	10.2	1.5	10.2	1.3	10.2	1.6	10.2	ns
		n $\overline{OE}$ to nBn	1.9	11.3	1.9	10.3	1.9	9.1	1.4	7.4	1.2	7.6	ns
enable time	t _{PZL} , t _{PZH}	n $\overline{OE}$ to nAn	1.1	9.4	1.4	9.4	1.1	9.4	0.7	9.4	0.4	9.4	ns
		n $\overline{OE}$ to nBn	1.4	12.1	1.4	9.6	1.1	7.7	0.9	5.8	0.9	5.6	ns
V _{CC(A)} =1.65V to 1.95V													
propagation delay	t _{PLH} , t _{PHL}	nAn to nBn	0.1	8.7	0.1	6.0	0.1	4.9	0.1	3.9	0.3	3.9	ns
		nBn to nAn	0.6	6.2	0.6	5.3	0.5	4.9	0.3	4.6	0.3	4.5	ns
disable time	t _{PLZ} , t _{PHZ}	n $\overline{OE}$ to nAn	1.8	8.6	1.6	8.6	1.8	8.6	1.3	8.6	1.6	8.6	ns
		n $\overline{OE}$ to nBn	1.7	10.9	1.7	9.9	1.6	8.7	1.2	6.9	1.0	6.9	ns
enable time	t _{PZL} , t _{PZH}	n $\overline{OE}$ to nAn	1.0	7.2	1.0	7.2	1.0	7.2	0.6	7.2	0.4	7.2	ns
		n $\overline{OE}$ to nBn	1.2	11.7	1.2	9.2	1.0	7.4	0.8	5.3	0.8	4.6	ns
V _{CC(A)} =2.3V to 2.7V													
propagation delay	t _{PLH} , t _{PHL}	nAn to nBn	0.1	8.4	0.1	5.7	0.1	4.6	0.2	3.5	0.1	3.6	ns
		nBn to nAn	0.6	5.2	0.6	4.2	0.4	3.9	0.2	3.4	0.2	3.3	ns
disable time	t _{PLZ} , t _{PHZ}	n $\overline{OE}$ to nAn	1.0	6.2	1.0	6.2	1.0	6.2	1.0	6.2	1.0	6.2	ns
		n $\overline{OE}$ to nBn	1.5	10.4	1.5	8.8	1.3	8.2	1.1	6.2	0.9	5.2	ns
enable time	t _{PZL} , t _{PZH}	n $\overline{OE}$ to nAn	0.7	4.8	0.7	4.8	0.7	4.8	0.6	4.8	0.4	4.8	ns
		n $\overline{OE}$ to nBn	0.9	11.3	0.9	8.8	0.8	7.0	0.6	4.8	0.6	4.0	ns
V _{CC(A)} =3.0V to 3.6V													
propagation delay	t _{PLH} , t _{PHL}	nAn to nBn	0.1	8.2	0.1	5.6	0.1	4.5	0.1	3.3	0.1	2.9	ns
		nBn to nAn	0.6	5.1	0.6	4.2	0.4	3.4	0.2	3.0	0.1	2.8	ns
disable time	t _{PLZ} , t _{PHZ}	n $\overline{OE}$ to nAn	0.7	5.6	0.7	5.6	0.7	5.6	0.7	5.6	0.7	5.6	ns
		n $\overline{OE}$ to nBn	1.4	10.2	1.4	9.3	1.2	8.1	1.0	6.4	0.8	6.2	ns
enable time	t _{PZL} , t _{PZH}	n $\overline{OE}$ to nAn	0.6	3.8	0.6	3.8	0.6	3.8	0.6	3.8	0.4	3.8	ns
		n $\overline{OE}$ to nBn	0.8	11.3	0.8	8.7	0.6	6.8	0.5	4.7	0.5	3.8	ns



3.3.7、AC Characteristics 4

($T_{amb} = -40^{\circ}\text{C}$ to $+125^{\circ}\text{C}$, voltages are referenced to GND (ground=0V), unless otherwise specified)^[1]

Parameter	Symbol	Conditions	V _{CC(B)}										Unit
			1.2V ±0.1V		1.5V ±0.1V		1.8V ±0.15V		2.5V ±0.2V		3.3V ±0.3V		
			Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
V _{CC(A)} =1.1V to 1.3V													
propagation delay	t _{PLH} , t _{PHL}	nAn to nBn	0.5	10.4	0.5	7.9	0.5	6.9	0.5	5.8	0.5	5.7	ns
		nBn to nAn	0.5	10.4	0.5	9.8	0.5	9.6	0.5	9.3	0.5	9.1	ns
disable time	t _{PLZ} , t _{PHZ}	n $\overline{OE}$ to nAn	1.8	12.0	1.8	12.0	1.8	12.1	1.8	12.0	1.8	12.0	ns
		n $\overline{OE}$ to nBn	1.9	13.7	1.9	10.6	1.9	10.5	1.4	9.0	1.2	10.1	ns
enable time	t _{PZL} , t _{PZH}	n $\overline{OE}$ to nAn	1.4	14.1	1.4	14.1	1.4	14.1	1.4	14.1	1.4	14.1	ns
		n $\overline{OE}$ to nBn	1.1	14.7	1.1	11.0	1.1	9.8	1.0	8.7	1.0	8.5	ns
V _{CC(A)} =1.4V to 1.6V													
propagation delay	t _{PLH} , t _{PHL}	nAn to nBn	0.3	9.8	0.3	7.0	0.3	5.8	0.3	4.7	0.3	4.7	ns
		nBn to nAn	0.7	7.9	0.7	7.0	0.5	6.6	0.4	6.3	0.3	6.5	ns
disable time	t _{PLZ} , t _{PHZ}	n $\overline{OE}$ to nAn	1.8	11.3	1.8	11.3	1.5	11.3	1.3	11.3	1.6	11.3	ns
		n $\overline{OE}$ to nBn	1.9	12.5	1.9	11.4	1.9	10.1	1.4	8.2	1.2	8.4	ns
enable time	t _{PZL} , t _{PZH}	n $\overline{OE}$ to nAn	1.1	10.4	1.4	10.4	1.1	10.4	0.7	10.4	0.4	10.4	ns
		n $\overline{OE}$ to nBn	1.4	13.3	1.4	10.6	1.1	8.5	0.9	6.4	0.9	6.2	ns
V _{CC(A)} =1.65V to 1.95V													
propagation delay	t _{PLH} , t _{PHL}	nAn to nBn	0.1	9.6	0.1	6.6	0.1	5.4	0.1	4.3	0.3	4.3	ns
		nBn to nAn	0.6	6.9	0.6	5.9	0.5	5.4	0.3	5.1	0.3	5.0	ns
disable time	t _{PLZ} , t _{PHZ}	n $\overline{OE}$ to nAn	1.8	9.5	1.6	9.5	1.8	9.5	1.3	9.5	1.6	9.5	ns
		n $\overline{OE}$ to nBn	1.7	12.0	1.7	10.9	1.6	9.6	1.2	7.6	1.0	7.6	ns
enable time	t _{PZL} , t _{PZH}	n $\overline{OE}$ to nAn	1.0	8.0	1.0	8.0	1.0	8.0	0.6	8.0	0.4	8.0	ns
		n $\overline{OE}$ to nBn	1.2	12.9	1.2	10.2	1.0	8.2	0.8	5.9	0.8	5.1	ns
V _{CC(A)} =2.3V to 2.7V													
propagation delay	t _{PLH} , t _{PHL}	nAn to nBn	0.1	9.3	0.1	6.3	0.1	5.1	0.2	4.0	0.1	4.0	ns
		nBn to nAn	0.6	5.8	0.6	4.7	0.4	4.3	0.2	3.9	0.2	3.8	ns
disable time	t _{PLZ} , t _{PHZ}	n $\overline{OE}$ to nAn	1.0	6.9	1.0	6.9	1.0	6.9	1.0	6.9	1.0	6.9	ns
		n $\overline{OE}$ to nBn	1.5	11.5	1.5	10.4	1.3	9.1	1.1	6.9	0.9	5.8	ns
enable time	t _{PZL} , t _{PZH}	n $\overline{OE}$ to nAn	0.7	5.3	0.7	5.3	0.7	5.3	0.6	5.3	0.4	5.3	ns
		n $\overline{OE}$ to nBn	0.9	12.4	0.9	9.7	0.8	7.7	0.6	5.3	0.6	4.4	ns
V _{CC(A)} =3.0V to 3.6V													
propagation delay	t _{PLH} , t _{PHL}	nAn to nBn	0.1	9.1	0.1	6.2	0.1	5.0	0.1	3.8	0.1	3.3	ns
		nBn to nAn	0.6	5.7	0.6	4.7	0.4	3.9	0.2	3.4	0.1	3.3	ns
disable time	t _{PLZ} , t _{PHZ}	n $\overline{OE}$ to nAn	0.7	6.2	0.7	6.2	0.7	6.2	0.7	6.2	0.7	6.2	ns
		n $\overline{OE}$ to nBn	1.4	11.3	1.4	10.3	1.2	9.0	1.0	7.1	0.8	6.9	ns
enable time	t _{PZL} , t _{PZH}	n $\overline{OE}$ to nAn	0.6	4.2	0.6	4.2	0.6	4.2	0.6	4.2	0.4	4.2	ns
		n $\overline{OE}$ to nBn	0.8	12.4	0.8	9.6	0.6	7.5	0.5	5.2	0.5	4.2	ns



4、Testing Circuit

4.1、AC Testing Circuit

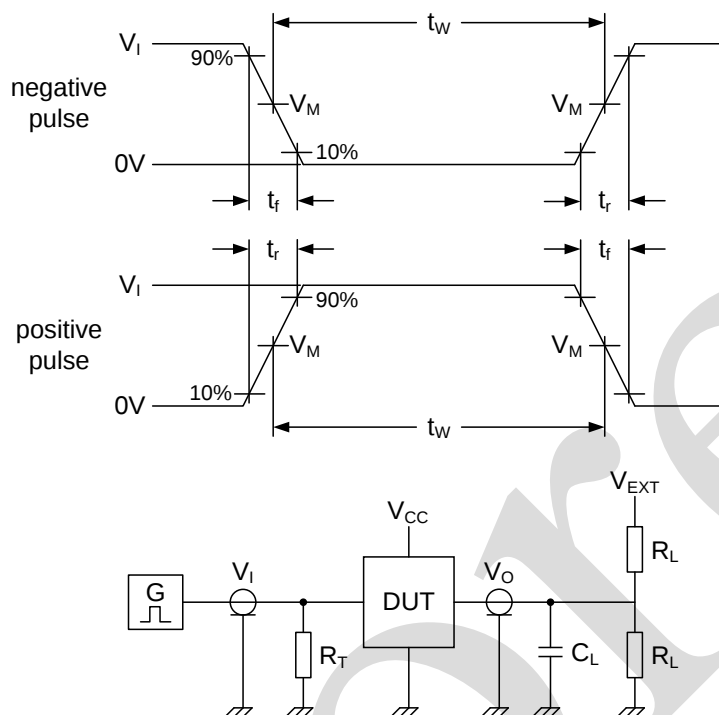


Figure 3. Test circuit for measuring switching times

R_L =Load resistance.

C_L =Load capacitance including jig and probe capacitance.

R_T =Termination resistance.

V_{EXT} =External voltage for measuring switching times.

4.2、AC Testing Waveforms

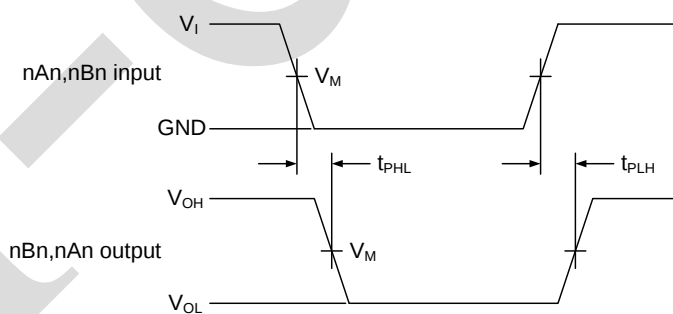


Figure 4. The data input (nAn, nBn) to output (nBn, nAn) propagation delay times

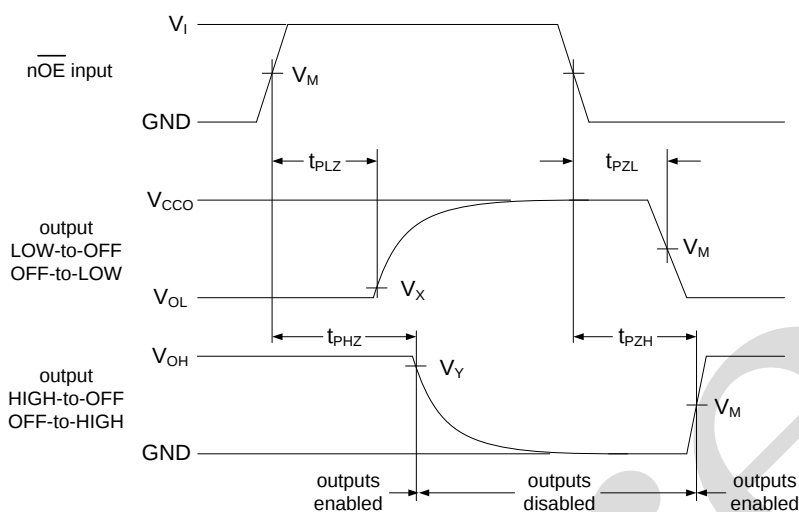


Figure 5. Enable and disable times

4.3、Measurement Points

Supply voltage	Input ^[1]	Output ^[2]		
$V_{CC(A)}, V_{CC(B)}$	V_M	V_M	V_X	V_Y
0.8V to 1.6V	$0.5V_{CCI}$	$0.5V_{CCO}$	$V_{OL}+0.1V$	$V_{OH}-0.1V$
1.65V to 2.7V	$0.5V_{CCI}$	$0.5V_{CCO}$	$V_{OL}+0.15V$	$V_{OH}-0.15V$
3.0V to 3.6V	$0.5V_{CCI}$	$0.5V_{CCO}$	$V_{OL}+0.3V$	$V_{OH}-0.3V$

Note:

[1] V_{CCI} is the supply voltage associated with the data input port.

[2] V_{CCO} is the supply voltage associated with the output port.

4.4、Test Data

Supply voltage	Input		Load		V_{EXT}		
$V_{CC(A)}, V_{CC(B)}$	$V_I^{[1]}$	$\Delta t/\Delta V^{[2]}$	C_L	R_L	t_{PLH}, t_{PHL}	t_{PZH}, t_{PHZ}	$t_{PZL}, t_{PLZ}^{[3]}$
0.8V to 1.6V	V_{CCI}	$\leq 1.0ns/V$	15pF	2k Ω	open	GND	$2V_{CCO}$
1.65V to 2.7V	V_{CCI}	$\leq 1.0ns/V$	15pF	2k Ω	open	GND	$2V_{CCO}$
3.0V to 3.6V	V_{CCI}	$\leq 1.0ns/V$	15pF	2k Ω	open	GND	$2V_{CCO}$

Note:

[1] V_{CCI} is the supply voltage associated with the data input port.

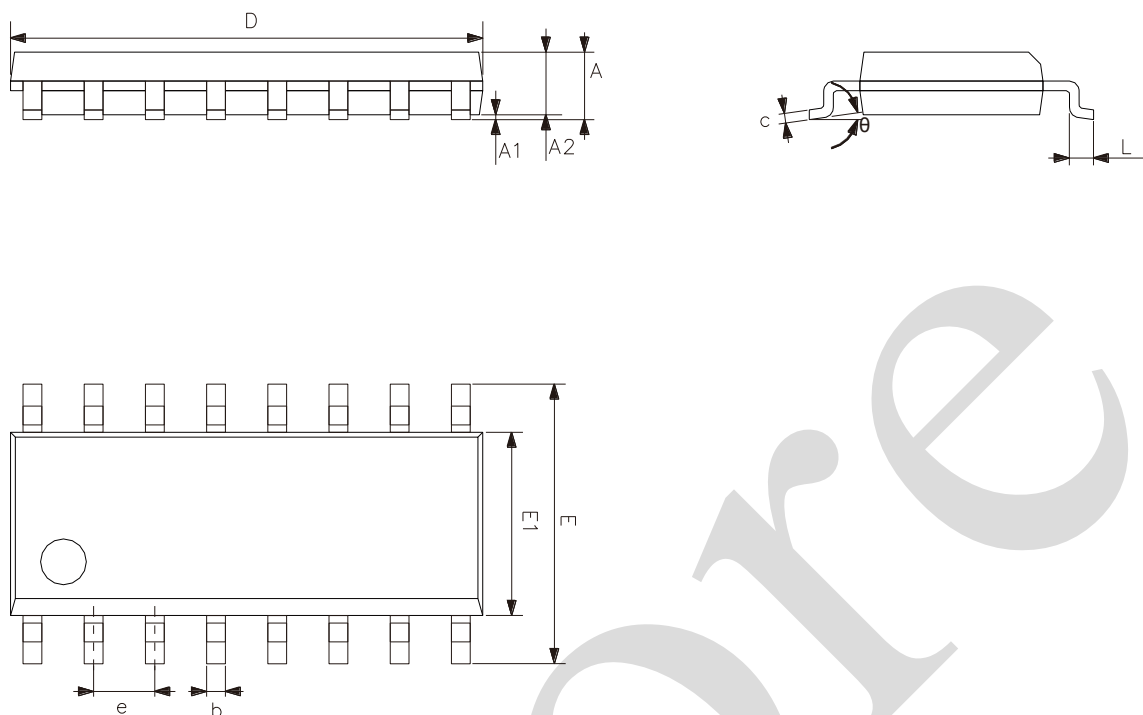
[2] $dV/dt \geq 1.0V/ns$

[3] V_{CCO} is the supply voltage associated with the output port.



5、Package Information

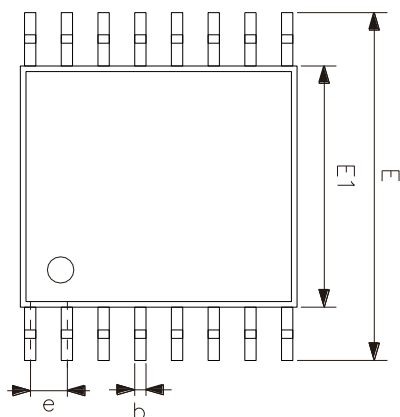
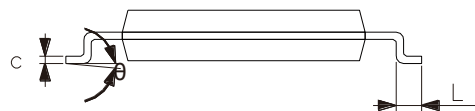
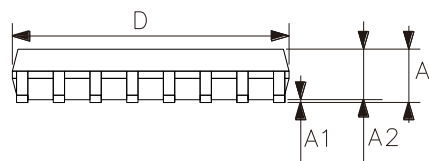
5.1、SOP16



Symbol	Dimensions (mm)	
	Min.	Max.
A	1.35	1.80
A1	0.10	0.25
A2	1.25	1.55
b	0.33	0.51
c	0.19	0.25
D	9.50	10.10
E	5.80	6.30
E1	3.70	4.10
e	1.27	
L	0.35	0.89
θ	0°	8°



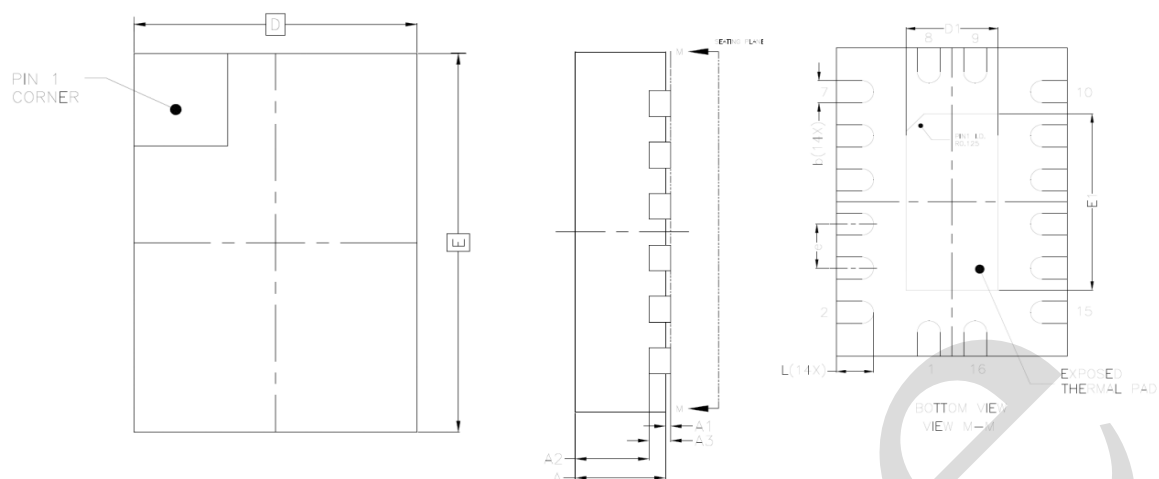
5.2、TSSOP16



Symbol	Dimensions (mm)	
	Min.	Max.
A	-	1.20
A1	0.05	0.15
A2	0.80	1.05
b	0.19	0.30
c	0.09	0.20
D	4.90	5.10
E1	4.30	4.50
E	6.20	6.60
e	0.65	
L	0.45	0.75
θ	0°	8°



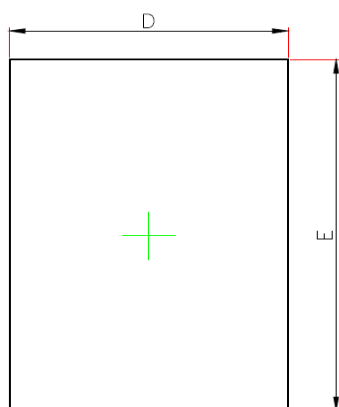
5.3、DHVQFN16



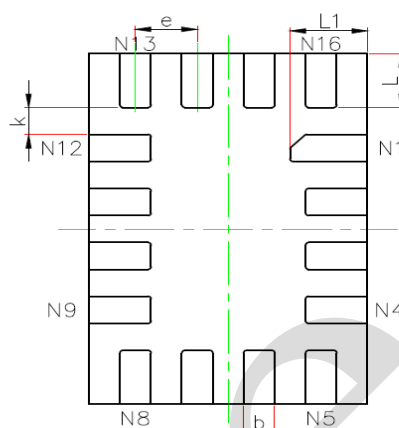
Symbol	Dimensions (mm)	
	Min.	Max.
A	0.80	1.00
A1	0.00	0.05
A2	0.60	0.70
A3	0.20	
D	2.40	2.60
E	3.40	3.60
e	0.50	
b	0.18	0.30
L	0.30	0.50
D1	0.85	1.15
E1	1.85	2.15



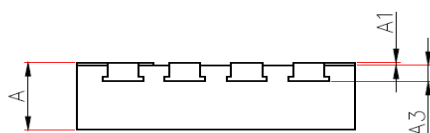
5.4、MIS16



TOP VIEW



BOTTOM VIEW



SIDE VIEW

Symbol	Dimensions (mm)	
	Min.	Max.
A	0.45	0.55
A1	0	0.046
A3	0.11	
D	1.75	1.85
E	2.55	2.65
k	0.15	
b	0.15	0.25
e	0.40	
L	0.35	0.45
L1	0.45	0.55



6、Statements And Notes

6.1、The name and content of Hazardous substances or Elements in the product

Part name	Hazardous substances or Elements									
	Lead and lead compounds	Mercury and mercury compounds	Cadmium and cadmium compounds	Hexavalent chromium compounds	Polybrominated biphenyls	Polybrominated biphenyl ethers	Dibutyl phthalate	Butylbenzyl phthalate	Di-2-ethylhexyl phthalate	Diisobutyl phthalate
Lead frame	○	○	○	○	○	○	○	○	○	○
Plastic resin	○	○	○	○	○	○	○	○	○	○
Chip	○	○	○	○	○	○	○	○	○	○
The lead	○	○	○	○	○	○	○	○	○	○
Plastic sheet installed	○	○	○	○	○	○	○	○	○	○
explanation	○: Indicates that the content of hazardous substances or elements in the detection limit of the following the SJ/T11363-2006 standard. ×: Indicates that the content of hazardous substances or elements exceeding the SJ/T11363-2006 Standard limit requirements.									

6.2、Notes

Recommended carefully reading this information before the use of this product;

The information in this document are subject to change without notice;

This information is using to the reference only, the company is not responsible for any loss;

The company is not responsible for the any infringement of the third party patents or other rights of the responsibility.