



FXLA108

PIN CONFIGURATION

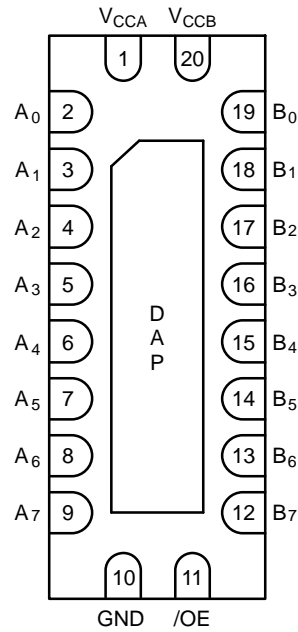


Figure 1. Pin Configuration (Top Through View)

PIN DEFINITIONS

Pin No.	Name	Description
1	V _{CCA}	A-Side Power Supply
2	A ₀	A-Side Inputs or 3-State Outputs
3	A ₁	A-Side Inputs or 3-State Outputs
4	A ₂	A-Side Inputs or 3-State Outputs
5	A ₃	A-Side Inputs or 3-State Outputs
6	A ₄	A-Side Inputs or 3-State Outputs
7	A ₅	A-Side Inputs or 3-State Outputs
8	A ₆	A-Side Inputs or 3-State Outputs
9	A ₇	A-Side Inputs or 3-State Outputs
10	GND	Ground
11	/OE	Output Enable Input
12	B ₇	B-Side Inputs or 3-State Outputs
13	B ₆	B-Side Inputs or 3-State Outputs
14	B ₅	B-Side Inputs or 3-State Outputs
15	B	

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FUNCTIONAL DIAGRAM

Figure 2. Functional Diagram

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ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Conditions	Min	Max	Unit
V _{CC}	Supply Voltage	V _{CCA}	-0.5	4.6	V
		V _{CCB}	-0.5	4.6	
V _I	DC Input Voltage				

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POWER-UP/POWER-DOWN SEQUENCE

FXL translators offer an advantage in that either V_{CC} may be powered up first. This benefit derives from the chip design. When either V_{CC} is at 0 V, outputs are in a high-impedance state. The control input ($/OE$) is designed to track the V_{CCA} supply. A pull-up resistor tying $/OE$ to V_{CCA} should be used to ensure that bus contention, excessive currents, or oscillations do not occur during power-up or power-down. The size of the pull-up resistor is based upon the current-sinking capability of the device driving the $/OE$ pin.

The recommended power-up sequence is:

1. Apply power to the first V_{CC} .
2. Apply power to the second V_{CC} .
3. Drive the $/OE$ input LOW to enable the device.

The recommended power-down sequence is:

1. Drive $/OE$ input HS2685 $T_w[(\text{excessive})16.6(\text{)}-5.59\text{s}]$:

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DC CHARACTERISTICS (T_A = -40 to 85°C)

Symbol	Parameter	Conditions	V _{CCA} (V)	V _{CCB} (V)	Min	Typ	Max	Unit
V _{IHA}	High-Level Input Voltage	Data Inputs A _n Control Pin /OE	2.70 to 3.60	1.10 to 3.60	2.00	-	-	V
			2.30 to 2.70		1.60	-	-	
			1.65 to 2.30		0.65 x V _{CCA}	-	-	
			1.40 to 1.65		0.65 x V _{CCA}	-	-	
			1.10 to 1.40		0.9 x V _{CCA}	-	-	
V _{IHB}		Data Inputs B _n	1.10 to 3.60	2.70 to 3.60	2.00	-	-	V
			2.30 to 2.70		1.60	-	-	
			1.65 to 2.30		0.65 x V _{CCB}	-	-	
			1.40 to 1.65		0.65 x V _{CCB}	-	-	
			1.10 to 1.40		0.9 x V _{CCB}	-	-	
V _{ILA}	Low-Level Input Voltage	Data Inputs A _n Control Pin /OE	2.70 to 3.60	1.10 to 3.60	-	-	0.8	V
			2.30 to 2.70		-	-	0.7	
			1.65 to 2.30		-	-	0.35 x V _{CCA}	
			1.40 to 1.65		-	-	0.35 x V _{CCA}	
			1.10 to 1.40		-	-	0.1 x V _{CCA}	
V _{ILB}		Data Inputs B _n	1.10 to 3.60	2.70 to 3.60	-	-	0.8	V
			2.30 to 2.70		-	-	0.7	
			1.65 to 2.30		-	-	0.35 x V _{CCB}	
			1.40 to 1.65		-	-	0.35 x V _{CCB}	
			1.10 to 1.40		-	-	0.1 x V _{CCB}	
V _{OHA}	High-Level Output Voltage (Note 3)	I _{OH} = -4 μA	1.10 to 3.60	1.10 to 3.60	V _{CCA} - 0.4	-	-	V
V _{OHB}		I _{OH} = -4 μA	1.10 to 3.60	1.10 to 3.60	V _{CCB} - 0.4	-	-	
V _{OLA}	Low-Level Output Voltage (Note 3)	I _{OL} = 4 μA	1.10 to 3.60	1.10 to 3.60	-	-	0.4	V
V _{OLB}		I _{OL} = 4 μA	1.10 to 3.60	1.10 to 3.60	-	-	0.4	
I _{I(HOLD)}	Bus-Hold Input Minimum Drive Current	V _{IN} = 0.80 V	3.00	3.00	75.0	-	-	μA
		V _{IN} = 2.00 V	3.00	3.00	-75.0	-	-	
		V _{IN} = 0.7 V	2.30	2.30	45.0	-	-	
		V _{IN} = 1.60 V	2.30	2.30	-45.0	-	-	
		V _{IN} = 0.57 V	1.65	1.65	25.0	-	-	
		V _{IN} = 1.07 V	1.65	1.65	-25.0	-	-	
		V _{IN} = 0.49 V	1.40	1.40	11.0	-	-	
		V _{IN} = 0.91 V	1.40	1.40	-11.0	-	-	
		V _{IN} = 0.11 V	1.10	1.10	-	4.0	-	
		V _{IN} = 0.99 V	1.10	1.10	-	-4.0	-	
I _{I(ODH)}	Bus-Hold Input Overdrive High Current (Note 4)	Data Inputs A _n , B _n	3.60	3.60	450.00	-	-	μA
			2.70	2.70	300.00	-	-	
			1.95	1.95	200.00	-	-	
			1.60	1.60	120.00	-	-	
			1.40	1.40	80.00	-	-	

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DC CHARACTERISTICS (T_A = -40 to 85°C) (continued)

Symbol	Parameter	Conditions	V _{CCA} (V)	V _{CCB} (V)	Min	Typ	Max	Unit
I _{I(ODL)}	Bus-Hold Input Overdrive Low Current (Note 5)	Data Inputs A _n , B _n	3.60	3.60	-450.00	-	-	μA
			2.70	2.70	-300.00	-	-	
			1.95	1.95	-200.00	-	-	
			1.60	1.60	-120.00	-	-	
			1.40	1.40	-80.00	-	-	
I _I	Input Leakage Current	Control Inputs /OE, V _I = V _{CCA} or GND	1.10 to 3.60	3.60	-	-	±1.0	μA
I _{OFF}	Power-Off Leakage Current	A _n V _O = 0 V to 3.6 V	0	3.6	-	-	±2.0	μA
		B _n V _O = 0 V to 3.6 V	3.60	0	-	-	±2.0	
I _{OZ}	3-State Output Leakage	A _n , B _n V _O = 0 V or 3.6 V, /OE = V _{IH}	3.6	3.60	-	-	±5.0	μA
		A _n V _O = 0 V or 3.6 V, /OE = GND	3.60	0	-	-	±5.0	

B

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DYNAMIC OUTPUT ELECTRICAL CHARACTERISTICS

Symbol	Parameter	V _{CCA} = 3.0 V to 3.6 V		V _{CCA} = 2.3 V to 2.7 V		V _{CCA} = 1.65 V to 1.95 V		V _{CCA} = 1.4 V to 1.6 V		V _{CCA} = 1.1 V to 1.3 V	Unit
		Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	

A PORT (A_n)

OUTPUT LOAD: C_L = 15 pF, R_L ≥ 1 MΩ (C_{I/O} = 4 pF), T_A = -40 to 85°C

t _{rise}	Output Rise Time A Port (Note 9)	-	3.0	-	3.5	-	4.0	-	5.0	7.5	ns
t _{fall}	Output Fall Time A Port (Note 10)	-	3.0	-	3.5	-	4.0	-	5.0	7.5	ns
I _{OHD}	Dynamic Output Current High (Note 9)	-11.4	-	-7.5	-	-4.7	-	-3.2	-	-1.7	mA
I _{OLD}	Dynamic Output Current Low (Note 10)	+11.4	-	+7.5	-	+4.7	-	+3.2	-	+1.7	mA

B PORT (B_n)

OUTPUT LOAD: C_L = 15 pF, R_L ≥ 1 MΩ (C_{I/O} = 5 pF), T_A = -40 to 85°C

t _{rise}	Output Rise Time B Port (Note 9)	-	3.0	-	3.5	-	4.0	-	5.0	7.5	ns
t _{fall}	Output Fall Time B Port (Note 10)	-	3.0	-	3.5	-	4.0	-	5.0	7.5	ns
I _{OHD}	Dynamic Output Current High (Note 9)	-12.0	-	-7.9	-	-5.0	-	-3.4	-	-1.8	mA
I _{OLD}	Dynamic Output Current Low (Note 10)	+12.0	-	+7.9	-	+5.0	-	+3.4	-	+1.8	mA

8. Dynamic output characteristics are guaranteed, but not tested.

9. See Figure 7.

10. See Figure 8.

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MAXIMUM DATA RATE ($T_A = -40$ to 85°C)

V_{CCA}	$V_{CCB} = 3.0\text{ V}$ to 3.6 V	$V_{CCB} = 2.3\text{ V}$ to 2.7 V	$V_{CCB} = 1.65\text{ V}$ to 1.95 V	$V_{CCB} = 1.4\text{ V}$ to 1.6 V	$V_{CCB} = 1.1\text{ V}$ to 1.3 V	Unit
	Min	Min				

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I/O ARCHITECTURE BENEFIT

The FXLA108 I/O architecture benefits the end user, beyond level translation, in the following three ways:

Auto Direction without an external direction pin.

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TEST DIAGRAMS

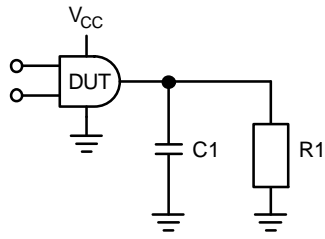
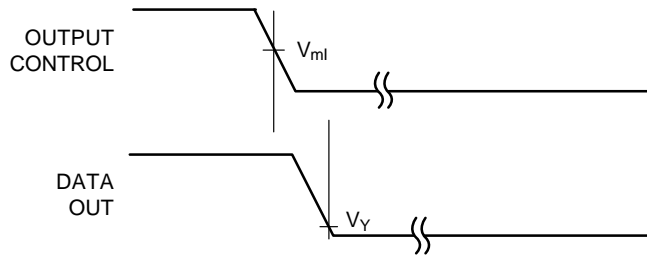


Figure 3. Test Circuit

Table 1. AC TEST CONDITIONS

Test

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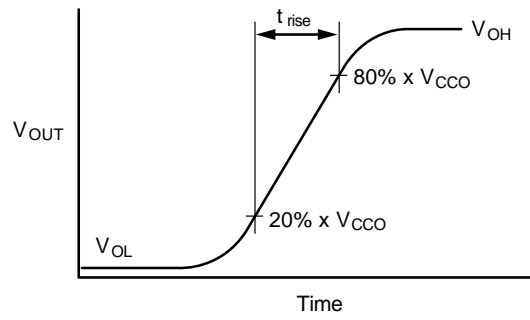


Figure 7. Active Output Rise Time and Dynamic Output Current High

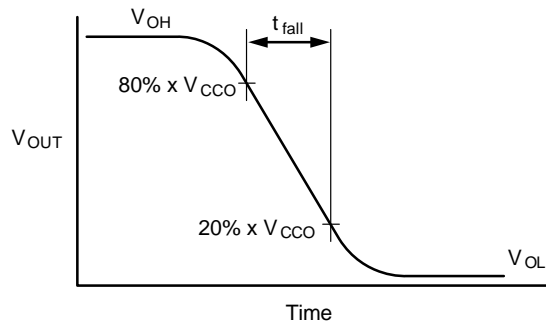


Figure 8. Active Output Fall Time and Dynamic Output Current Low

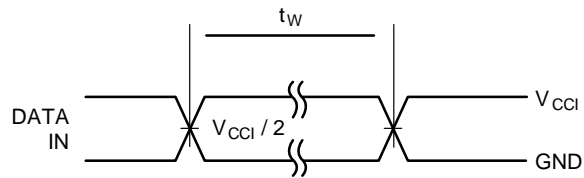


Figure 9. Maximum Data Rate

NOTE:

22. $t_{SKEW} = (t_{pHLmax} - t_{pHLmin})$ or $(t_{pLHmax} - t_{pLHmin})$

Figure 10. Output Skew Time

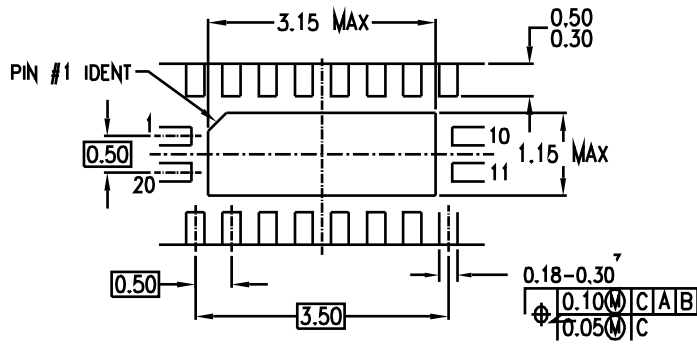
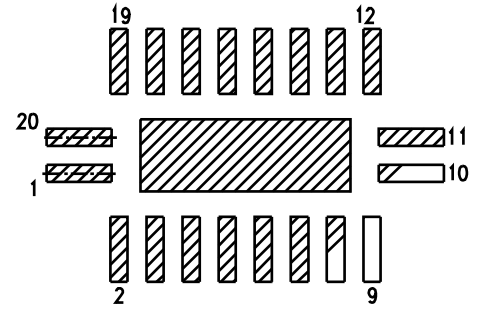
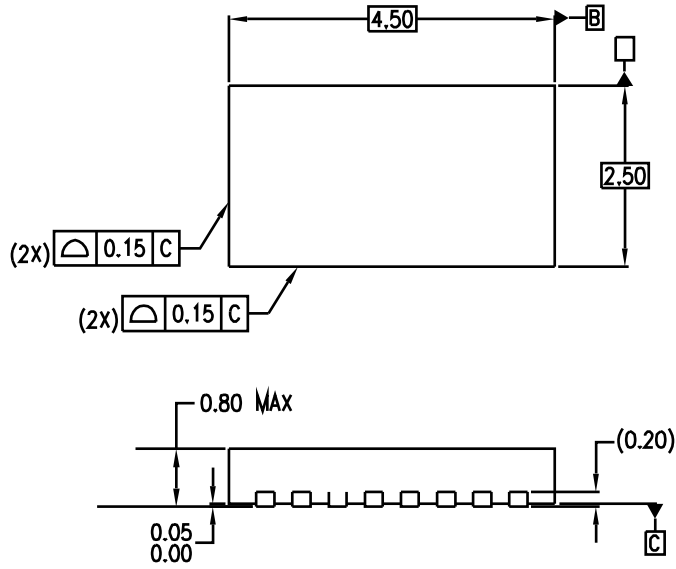
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ORDERING INFORMATION

Part Number	Operating Temperature Range	Package	Shipping†
FXLA108BQX	-40 to 85°C	WQFN20 4.5x2.5, 0.5P 20-Terminal DQFN 2.5mm x 4.5mm Package (Pb-Free)	3000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

WQFN20 4.5x2.5, 0.5P



ON AC

ASME Y14.5M, 1994

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