A Product Line of
Diodes Incorporated

LXU0104A

4 Bit Dual Power Supply Translating Buffer With 3 State Outputs

Description

The LXU0104A is a 4-bit, dual-supply, non-inverting buffer translator suitable for transmitting across different voltage domains. It is a unidirectional translator from An to Yn or Yn to An. The input pin An has input switching thresholds related to VCCA, operating from 0.8V to 3.6V. The output pin Y has a HIGH level output voltage that tracks VCCB, also operating from 0.8V to 3.6V. EN pin can be referenced to either VCCA or VCCB logic levels.

Fixed direction data transmission can occur from A to B or B to A when EN is set to high in reference to either supply. When EN is set to low, all output pins are in the high-impedance state.

The LXU0104 is available in the packages, and is specified for operation from -40°C to +125°C among all supply voltages. The wide temperature ranges and high ESD tolerance facilitate their use in harsh applications.

Application(s)

- Driving indicator LEDs or Buzzers
- Debouncing a Mechanical Switch
- General Purpose I/O Level Shifting
- Push-pull Level Shifting (UART, SPI, JTAG, and so forth)

Features

- Supply Voltage Range: VCC(A)/ VCC(B): from 0.8V to 3.6V
- Max Data Rates:
  - 380Mbps (1.8V to 3.3V Translation)
  - 200Mbps (<1.8V to 3.3V Translation)
  - 200Mbps (Translate to 2.5V or 1.8V)
  - 150Mbps (Translate to 1.5V)
  - 100Mbps (Translate to 1.2V)
  - 50Mbps (Translate to 0.8V~1.1V)
- High Drive Strength (± 12mA at 3.3V)
- IOFF Supports Partial-Power-Down Mode Operation
- VCC Isolation or VCC disconnect (Ioff-float).
  - If VCC input <100mV or disconnected, all outputs are disabled and become high impedance
- Control logic (EN) with VCC (MIN) circuitry allows for control from either A or B port
- Pinout Compatible with LXB Family Level Shifter
- ESD Protection Exceeds JESD 22
  - Exceeds 5000V Human Body Model (A114)
  - Exceeds 1500V Charged Device Model (C101)
- Latch-Up Exceeds 100mA per JESD 78, Class II
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative. https://www.diodes.com/quality/product-definitions/

Ordering Information

Orderable Part Number	Package Code	Package Description
LXU0104AT14-13	T14	TSSOP-14
LXU0104AZRB14-7	ZRB14	V-QFN2530-14
LXU0104AZMA12-7	ZMA	U-QFN1720-12 (Type A)

Notes:

- 7: 7" Tape & Reel, 13: 13" Tape & Reel

Notes:

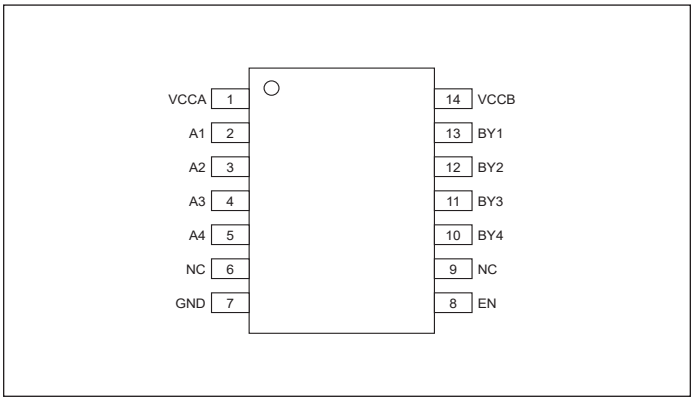
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

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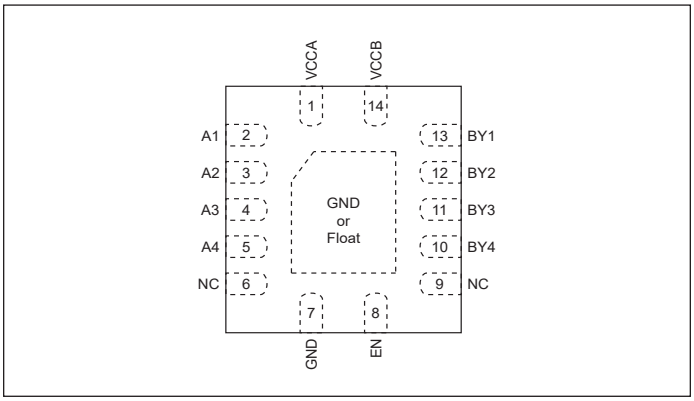
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Pin Configuration

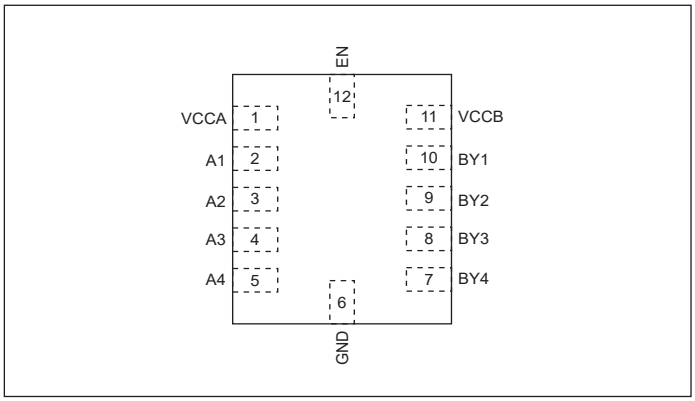
TSSOP (T14) Package



V-QFN2530 (ZRB14) Package



U-QFN1720 (ZMA12) Package



Pin Description

Pin Number		Pin Name	Signal Type	Description
TSSOP-14 V-QFN2530-14	U-QFN1720-12			
1	1	VCCA	Power	A port supply Voltage
2	2	A1	I	Input A1. Referenced to VCCA.
3	3	A2	I	Input A2. Referenced to VCCA.
4	4	A3	I	Input A3. Referenced to VCCA.
5	5	A4	I	Input A4. Referenced to VCCA.
6	–	NC	–	No connection
7	6	GND	Power	Ground
8	12	EN	Control Logic Input	Output Enable. Pull to GND to place all outputs in high-impedance mode. Pull to VCCA or VCCB to enable all outputs.
9	–	NC	–	No connection
10	7	BY4	O	Output BY4. Referenced to VCCB.

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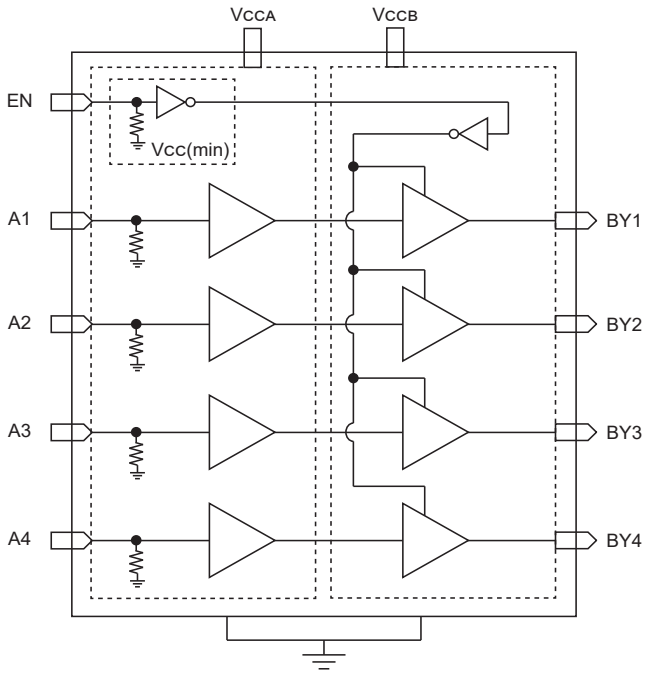
Pin Number		Pin Name	Signal Type	Description
TSSOP-14 V-QFN2530-14	U-QFN1720-12			
11	8	BY3	O	Output BY3. Referenced to VCCB.
12	9	BY2	O	Output BY2. Referenced to VCCB.
13	10	BY1	O	Output BY1. Referenced to VCCB.
14	11	VCCB	Power	B port supply Voltage

Table 1. Function Table

Enable	Input	Output
EN	A	Y
H	L	L
H	H	H
L	X	Z
L	Isolated*	Z

*Floating input pin is allowed for this case

Logic Diagram



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Maximum Ratings

(Above which useful life may be impaired. For user guidelines, not tested.)

Storage Temperature .....–65°C to +150°C
Junction Temperature .....+150°C
Supply Voltage Range ..... –0.5V to +4.6V
Input Voltage Range ..... –0.5V to +4.6V
Voltage Applied to Output in High Impedance or I_{OFF} State.... –0.5V to +4.6V
Voltage Applied to Output in High or Low State..... –0.5V to V_{CCO}+0.5V
Input Clamp Current $V_I < 0$ ..... –20mA
Output Clamp Current ..... –20mA
Continuous Output Current .....±25mA
Continuous Current Through V_{CCA} or GND .....±100mA
ESD: HBM..... 5KV
ESD: CDM..... 1.5KV

Note:
Stresses greater than those listed under MAXIMUM RATINGS may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

Thermal Information

Symbol	Parameter	Package	Min.	Typ.	Max.	Units
θJA	Thermal Resistance Junction-to-Ambient	TSSOP-14		115		°C/W
		V-QFN2530-14		62		
		U-QFN1720-12		150		
θJC	Thermal Resistance Junction-to-Case	TSSOP-14		48		°C/W
		V-QFN2530-14		43		
		U-QFN1720-12		70		

Note: Test condition for the package type: Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

Recommended Operating Conditions

T_A = +25°C

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{CCA}	Operating Voltage		0.8		3.6	V
V_{CCB}	Operating Voltage		0.8		3.6	V
I_{OH}	High-Level Output Current Data Input, nDIR, $\overline{OE}$ Input	V_{CCO} = 1.1V			-3	mA
		V_{CCO} = 1.4V to 1.6V			-6	
		V_{CCO} = 1.65V to 1.95V			-8	
		V_{CCO} = 2.3V to 2.7V			-9	
		V_{CCO} = 3V to 3.6V			-12	

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Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
I_{OL}	Low-Level Output Current Data Input, nDIR, $\overline{OE}$ Input	V_{CCO} = 1.1V			3	mA
		V_{CCO} = 1.4V to 1.6V			6	
		V_{CCO} = 1.65V to 1.95V			8	
		V_{CCO} = 2.3V to 2.7V			9	
		V_{CCO} = 3V to 3.6V			12	
V_I	Input Voltage		0		3.6	V
V_O	Output Voltage	Active State	0		V_{CCO}	V
		Tri-State	0		3.6	
T_A	Operating Free-Air Temperature		-40		+125	°C

Electrical Characteristics

T_A = +40°C to +125°C, unless otherwise specified.

Symbol	Parameter	Test Conditions		T_A = +25°C			T_A = -40°C to +85°C		T_A = -40°C to +125°C		Units
				Min.	Typ.	Max.	Min.	Max.	Min.	Max.	
V_{IH}	High-level input voltage	Data Input, nDIR, $\overline{nOE}$ Input	V_{CCI} = 0.8V	0.70V_{CCI}			0.70V_{CCI}		0.70V_{CCI}		V
			V_{CCI} = 1.1V to 1.95V	0.65V_{CCI}			0.65V_{CCI}		0.65V_{CCI}		
			V_{CCI} = 1.95V to 2.7V	1.6			1.6		1.6		
			V_{CCI} = 2.7V to 3.6V	2			2		2		
V_{IL}	Low-level input voltage	Data Input, nDIR, $\overline{nOE}$ Input	V_{CCI} = 0.8V			0.3V_{CCI}		0.3V_{CCI}		0.3V_{CCI}	V
			V_{CCI} = 1.1V to 1.95V			0.35V_{CCI}		0.35V_{CCI}		0.35V_{CCI}	
			V_{CCI} = 1.95V to 2.7V			0.7		0.7		0.7	
			V_{CCI} = 2.7V to 3.6V			0.8		0.8		0.8	
V_{OH}	High-Level Output Voltage	I_{OH} = -0.1mA; V_{CCI} & V_{CCO} = 0.8-3.6V		V_{CCO} -0.1			V_{CCO} -0.1		V_{CCO} -0.1		V
		I_{OH} = -3mA; V_{CCI} & V_{CCO} = 1.1V		0.95			0.85		0.85		
		I_{OH} = -6mA; V_{CCI} & V_{CCO} = 1.4V		1.05			1.05		1.05		
		I_{OH} = -8mA; V_{CCI} & V_{CCO} = 1.65V		1.2			1.2		1.2		
		I_{OH} = -9mA; V_{CCI} & V_{CCO} = 2.3V		1.75			1.75		1.75		
		I_{OH} = -12mA; V_{CCI} & V_{CCO} = 3V		2.3			2.3		2.3		

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Symbol	Parameter	Test Conditions		T_A = +25°C			T_A = -40°C to +85°C		T_A = -40°C to +125°C		Units
				Min.	Typ.	Max.	Min.	Max.	Min.	Max.	
V_{OL}	Low-Level Output Voltage	I_{OH} = 0.1mA; V_{CCI} & V_{CCO} = 0.8-3.6V				0.1		0.1		0.1	V
		I_{OH} = 3mA; V_{CCI} & V_{CCO} = 1.1V				0.25		0.25		0.27	
		I_{OH} = 6mA; V_{CCI} & V_{CCO} = 1.4V				0.35		0.35		0.35	
		I_{OH} = 8mA; V_{CCI} & V_{CCO} = 1.65V				0.45		0.45		0.45	
		I_{OH} = 9mA; V_{CCI} & V_{CCO} = 2.3V				0.55		0.55		0.55	
		I_{OH} = 12mA; V_{CCI} & V_{CCO} = 3V				0.7		0.7		0.7	
I_I	Input Current	V_I = V_{CCA} or GND; V_{CCI} & V_{CCO} = 0.8-3.6V				±1		±1.5		±1.5	uA
I_{OFF}	Off State Current	A or B Port; V_I or V_O = 0 to 3.6V	V_{CCI} = 0			±1		±3		±10	uA
			V_{CCI} = 0.8-3.6V			±1		±3		±10	
I_{OZ}	High-Z State Current	A or B Port; V_I or V_O = 0 to 3.6V; V_{CCI} = 3.6V				±1		±2		±5	uA
		A Port; V_I or V_O = 0 to 3.6V; V_{CCI} = 3.6V				±1		±2		±5	
		B Port; V_I or V_O = 0 to 3.6V; V_{CCI} = 0				±1		±2		±5	
I_{CCA}	Supply Current	V_I = V_{CCI} or GND IO = 0	V_{CCI} & V_{CCO} = 0.8-3.6V			±2		±10		±35	uA
			V_{CCI} & V_{CCO} = 0.8-1.1V			±1.5		±8		±25	
			V_{CCI} = 0-3.6V; V_{CCO} = 0			±1.5		±10		±35	
			V_{CCI} = 0; V_{CCO} = 0-3.6V			±1		±1		±1	
I_{CCB}	Supply Current	V_I = V_{CCI} or GND IO = 0	V_{CCI} & V_{CCO} = 0.8-3.6V			±2		±10		±35	uA
			V_{CCI} & V_{CCO} = 0.8-1.1V			±1.5		±8		±25	
			V_{CCI} = 0-3.6V; V_{CCO} = 0			±1		±1		±1	
			V_{CCI} = 0; V_{CCO} = 0-3.6V			±1.5		±10		±35	
I_{CCA} + I_{CCB}	Supply Current	V_I = V_{CCI} or GND IO = 0; V_{CCI} & V_{CCO} = 0.8-3.6V				±4		±20		±70	uA

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Symbol	Parameter	Test Conditions	T_A = +25°C			T_A = -40°C to +85°C		T_A = -40°C to +125°C		Units
			Min.	Typ.	Max.	Min.	Max.	Min.	Max.	
C_I	Control Input Capacitance	nDIR, n$\overline{OE}$ Input; V_I = 3.3V or GND; V_{CCI} = 3.3V		3.5			4.5		4.5	pF
C_O	Input/Output Capacitance	A or B; V_O = 3.3V or GND; V_{CCI} & V_{CCO} = 3.3V		6			7		7	pF

Switching Characteristics

V_{CCA} = 0.8V; T_A = -40°C to +125°C, unless otherwise specified.

Parameter	Test Conditions	Direction	V_{CCB}						Units
			0.8V	1.2V± 0.1V	1.5V ± 0.1V	1.8V± 0.15V	2.5V± 0.2V	3.3V ± 0.3V	
			Typ.	Typ.	Typ.	Typ.	Typ.	Typ.	
tpd	Propagation delay	nAn to nBn	11.0	7.3	6.5	6.2	6.5	7.0	ns
		nBn to nAn	11.0	10.0	12.4	12.3	12.1	12.0	
ten	Enable Time	n$\overline{OE}$ to nAn	18.2	18.2	18.2	18.2	18.2	18.2	
		n$\overline{OE}$ to nBn	19.2	12.7	11.4	10.9	10.7	11.1	
tdis	Disable Time	n$\overline{OE}$ to nAn	14.3	14.3	14.3	14.3	14.3	14.3	
		n$\overline{OE}$ to nBn	12.6	9.9	9.0	9.4	9.0	9.7	

V_{CCB} = 0.8V; T_A = -40°C to +125°C, unless otherwise specified.

Parameter	Test Conditions	Direction	V_{CCA}						Units
			0.8V	1.2V ± 0.1V	1.5V ± 0.1V	1.8V ± 0.15V	2.5V ± 0.2V	3.3V ± 0.3V	
			Typ.	Typ.	Typ.	Typ.	Typ.	Typ.	
tpd	Propagation delay	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	
ten	Enable Time	n$\overline{OE}$ to nAn	18.2	13.0	12.1	9.6	7.3	6.4	
		n$\overline{OE}$ to nBn	19.2	15.8	15.3	15.0	15.0	14.8	
tdis	Disable Time	n$\overline{OE}$ to nAn	14.3	9.6	8.5	7.5	7.7	8.6	
		n$\overline{OE}$ to nBn	17.0	13.8	13.4	13.1	12.9	12.7	

V_{CCA} = 1.2V ±0.1V; T_A = -40°C to +125°C, unless otherwise specified.

Parameter	Test Conditions	Direction	V_{CCB}													Units
			1.2V ± 0.1V			1.5V ± 0.1V			1.8V ± 0.15V			2.5V ± 0.2V			3.3V ± 0.3V			
			Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
tpd	Propagation delay	nAn to nBn	0.5	3	8.3	0.5	2.9	6.3	0.5	2.1	5.5	0.5	2.1	4.6	0.5	2.3	4.6	ns
		nBn to nAn	0.5	3	8.3	0.5	3.1	7.8	0.5	2.8	7.7	0.5	2.1	7.4	0.5	2.2	7.3	
ten	Enable Time	n$\overline{OE}$ to nAn	1.8	3.9	11.7	1.8	4.2	11.7	1.8	4.3	11.7	1.8	3.5	11.7	1.8	3.5	11.7	
		n$\overline{OE}$ to nBn	1.9	4	13.0	1.9	2.5	9.5	1.9	3.3	8.2	1.4	3.6	6.8	1.2	4.5	6.5	
tdis	Disable Time	n$\overline{OE}$ to nAn	1.4	3.2	11.5	1.4	2.3	11.5	1.4	3	11.5	1.4	3	11.5	1.4	3.1	11.5	
		n$\overline{OE}$ to nBn	1.1	3	10.0	1.1	2.2	8.1	1.1	2.9	7.5	1.0	2.5	6.3	1.0	5.5	6.3	

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V_{CCA} = 1.5V ±0.1V; T_A = -40°C to +125°C, unless otherwise specified.

Parameter	Test Conditions	Direction	V_{CCB}										Units
			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.	
tpd	Propagation delay	nAn to nBn	0.3	7.8	0.3	6.3	0.3	5.2	0.4	4.2	0.4	4.2	ns
		nBn to nAn	0.7	6.3	0.7	6.3	0.5	5.9	0.4	5.7	0.3	5.6	
ten	Enable Time	$n\overline{OE}$ to nAn	1.8	10.5	1.4	9.6	1.1	9.5	0.7	9.7	0.4	9.4	
		$n\overline{OE}$ to nBn	1.9	11.0	1.4	9.6	1.1	7.7	0.9	7.1	0.9	6.9	
tdis	Disable Time	$n\overline{OE}$ to nAn	1.1	10.2	1.8	10.2	1.5	10.2	1.3	10.2	1.6	10.2	
		$n\overline{OE}$ to nBn	1.4	10.4	1.9	10.3	1.9	9.1	1.4	7.4	1.2	7.6	

V_{CCA} = 1.8V ±0.15V; T_A = -40°C to +125°C, unless otherwise specified.

Parameter	Test Conditions	Direction	V_{CCB}										Units
			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.	
tpd	Propagation delay	nAn to nBn	0.1	7.7	0.1	5.9	0.1	4.9	0.1	3.9	0.3	3.9	ns
		nBn to nAn	0.6	5.5	0.6	5.3	0.5	4.9	0.3	4.6	0.3	4.5	
ten	Enable Time	$n\overline{OE}$ to nAn	1.8	9.0	1	8.6	1	7.3	0.6	7.3	0.4	7.2	
		$n\overline{OE}$ to nBn	1.7	10.5	1.2	9.2	1	7.4	0.8	6.7	0.8	6.5	
tdis	Disable Time	$n\overline{OE}$ to nAn	1.0	8.9	1.6	8.6	1.8	8.7	1.3	8.7	1.6	8.7	
		$n\overline{OE}$ to nBn	1.2	10.0	1.7	9.9	1.6	8.7	1.2	7.4	1	6.9	

V_{CCA} = 2.5V ±0.2V; T_A = -40°C to +125°C, unless otherwise specified.

Parameter	Test Conditions	Direction	V_{CCB}										Units
			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.	
tpd	Propagation delay	nAn to nBn	0.1	7.4	0.1	5.7	0.1	4.6	0.2	3.9	0.1	3.6	ns
		nBn to nAn	0.6	4.6	0.6	4.2	0.4	4.1	0.2	3.9	0.2	3.3	
ten	Enable Time	$n\overline{OE}$ to nAn	1.0	8.0	0.7	6.7	0.7	6.5	0.6	5.9	0.4	4.8	
		$n\overline{OE}$ to nBn	1.5	9.8	0.9	8.8	0.8	7.0	0.6	5.8	0.6	4	
tdis	Disable Time	$n\overline{OE}$ to nAn	0.7	9.0	1	8.4	1	8.4	1	6.2	1	6.6	
		$n\overline{OE}$ to nBn	0.9	9.9	1.5	9.4	1.3	8.2	1.1	6.2	0.9	5.2	

V_{CCA} = 3.3V ±0.3V; T_A = -40°C to +125°C, unless otherwise specified.

Parameter	Test Conditions	Direction	V_{CCB}										Units
			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.	
tpd	Propagation delay	nAn to nBn	0.1	7.3	0.1	5.6	0.1	4.5	0.1	3.7	0.1	2.9	ns
		nBn to nAn	0.6	4.6	0.6	4.2	0.4	3.9	0.2	3.7	0.1	2.8	
ten	Enable Time	$n\overline{OE}$ to nAn	0.7	9.2	0.6	8.7	0.6	5.9	0.6	5.6	0.4	3.8	
		$n\overline{OE}$ to nBn	1.4	9.5	0.8	8.7	0.6	6.8	0.5	5.7	0.5	3.8	
tdis	Disable Time	$n\overline{OE}$ to nAn	0.6	9.5	0.7	9.3	0.7	8.3	0.7	5.6	0.7	6.6	
		$n\overline{OE}$ to nBn	0.8	9.5	1.4	9.3	1.2	8.1	1	6.4	0.8	6.2	

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Operating Characteristics

$T_A = +25^oC$

Parameter	Test Conditions			0.8V	1.2V	1.5V	1.8V	2.5V	3.3V	Units
CpdA	A to B	Enabled	$C_L = 0$, R_L = Open, f = 10MHz, $t_r = t_f$ = 1ns, $V_{CCA} = V_{CCB}$	0.2	0.2	0.2	0.2	0.3	0.4	pF
		Disabled		0.2	0.2	0.2	0.2	0.3	0.4	
	B to A	Enabled		9.5	9.7	9.8	9.9	10.7	11.9	
		Disabled		0.6	0.6	0.6	0.6	0.7	0.7	
CpdY	A to B	Enabled		9.5	9.7	9.8	9.9	10.7	11.9	
		Disabled		0.6	0.6	0.6	0.6	0.7	0.7	
	B to A	Enabled		0.2	0.2	0.2	0.2	0.3	0.4	
		Disabled		0.2	0.2	0.2	0.2	0.3	0.4	

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Parameter Measurement Information

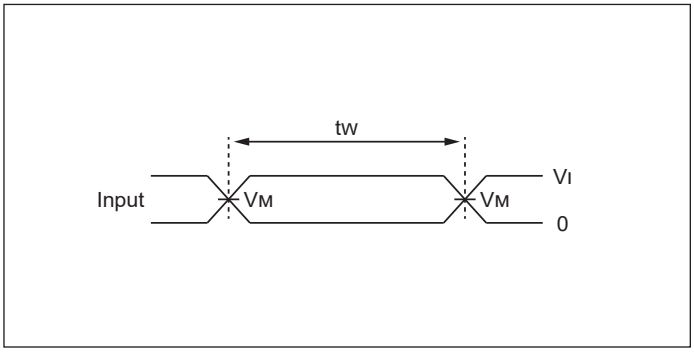


Figure 1. Voltage Waveform Pulse Duration

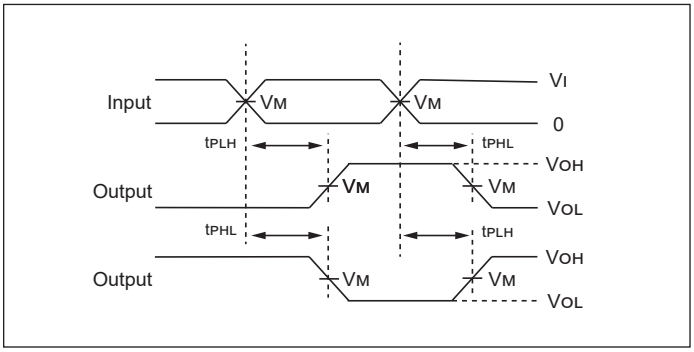


Figure 2. Voltage Waveform Propagation Delay Times Inverting and Non Inverting Outputs

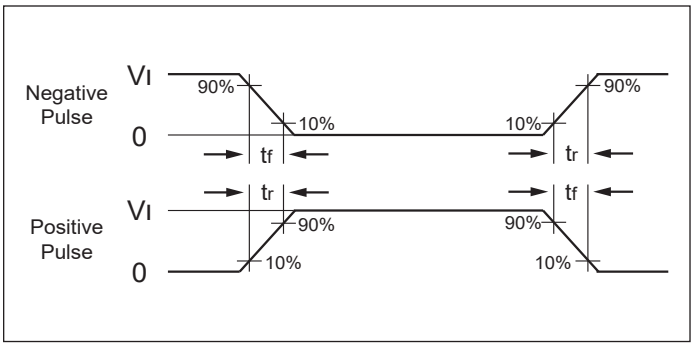


Figure 3. The VI Source Waveform

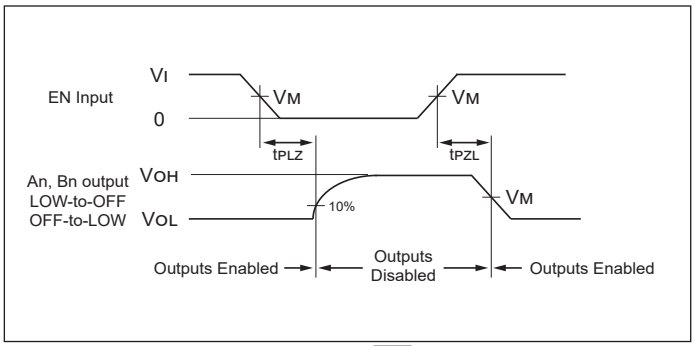


Figure 4. The Enable/Disable ($\overline{EN}$) to Output (Yn) Times

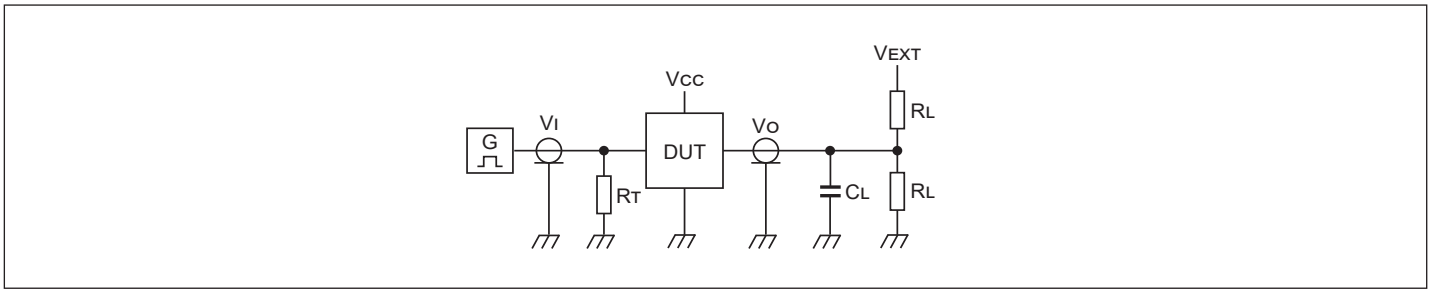


Figure 5. Load Circuit and Voltage Waveforms

Parameter	S1
tpd	Open
ten/ tdis	2*VCCO
ten/ tdis	GND

V_{CC}	R_L	C_L	VTP
0.8V-1.6V	2KΩ	15pF	0.1V
1.65V-2.7V	2KΩ	15pF	0.15V
3.0V-3.6V	2KΩ	15pF	0.3V

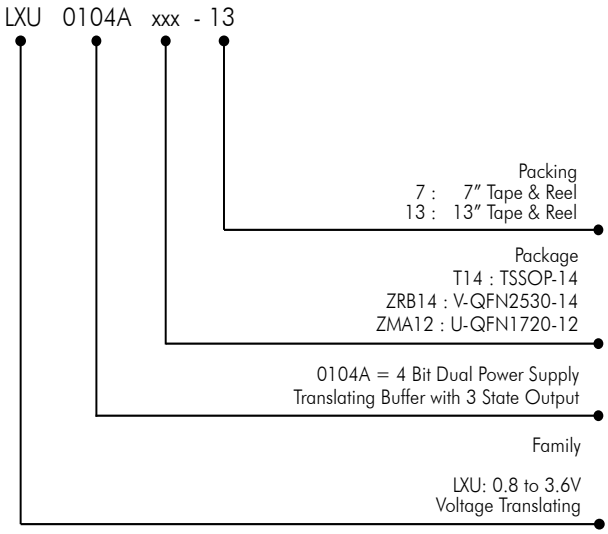
Notes:

1. Includes test lead and test apparatus capacitance.
2. f = 1MHz, Δt/ΔV <1ns/V
3. t_{PLH} and t_{PHL} are the same as t_{PD}.
4. t_r, t_f <1ns

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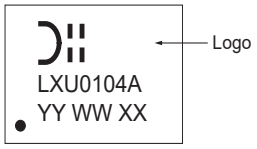
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Device Naming Information



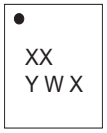
Part Marking

TSSOP (T14) Package



Identification Code: LXU0104A
YY: Year: 24, 25, 26~
WW: Workweek: 01~52;
52 represents 52 and 53 week
XX: Internal Code

V-QFN2530 (ZRB14) Package



XX: U6 = Identification Code
Y: Year: 0~9
W: Week: A~Z: week 1~26;
a~z: week 27~52; z represents 52 and 53 week
X: Internal Code

U-QFN1720 (ZMA12) Package



XX: U2 = Identification Code
Y: Year: 0~9
W: Week: A~Z: week 1~26;
a~z: week 27~52; z represents 52 and 53 week
X: Internal Code

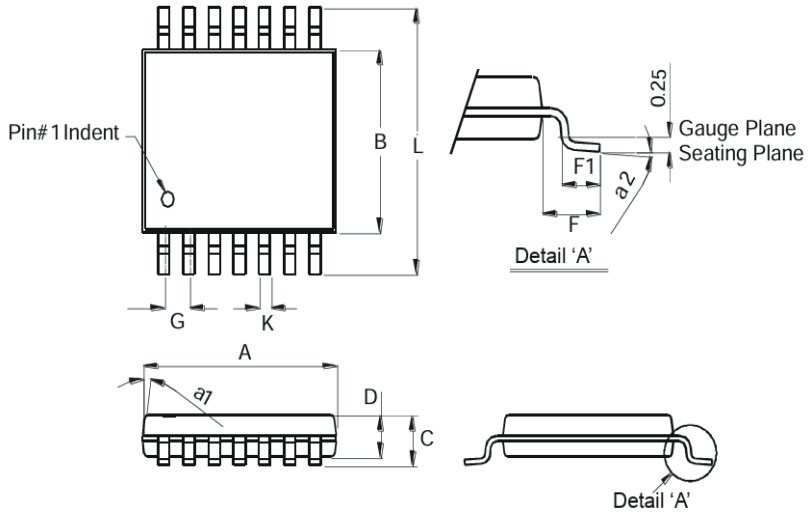
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Packaging Mechanical

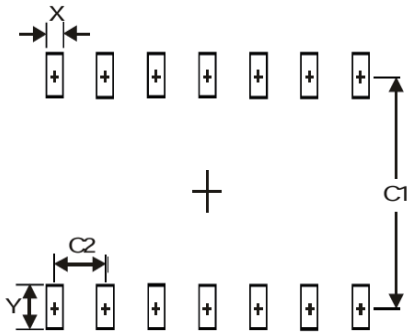
14-TSSOP (T14)

Package Outline Dimensions



TSSOP-14		
Dim	**Min**	**Max**
a1	7° (4X)	
a2	0°	8°
A	4.9	5.10
B	4.30	4.50
C	-	1.2
D	0.8	1.05
F	1.00 Typ	
F1	0.45	0.75
G	0.65 Typ	
K	0.19	0.30
L	6.40 Typ	
All Dimensions in mm		

Suggested Pad Layout



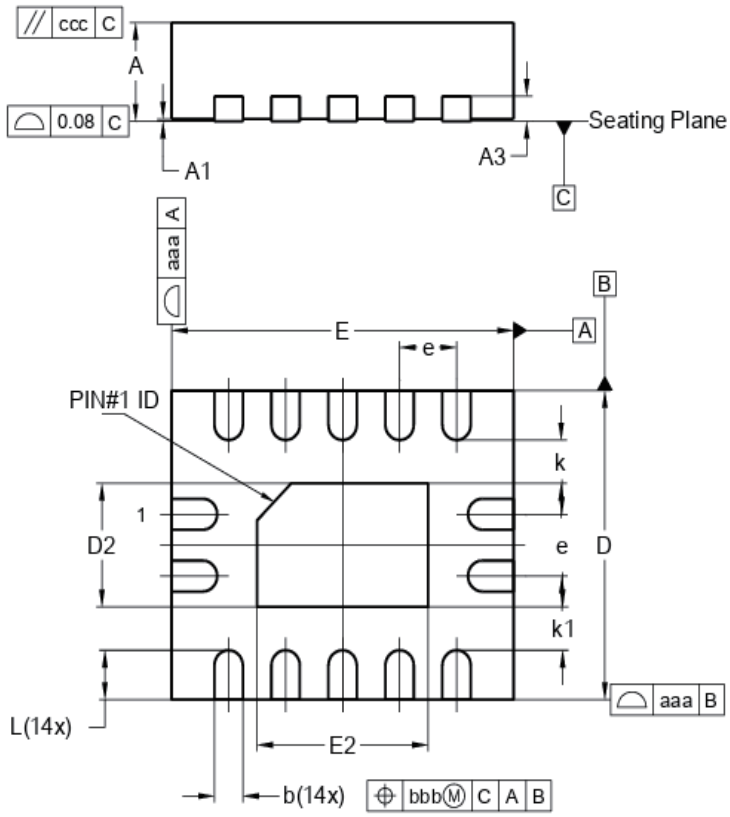
Dimensions	Value (in mm)
X	0.45
Y	1.45
C1	5.9
C2	0.65

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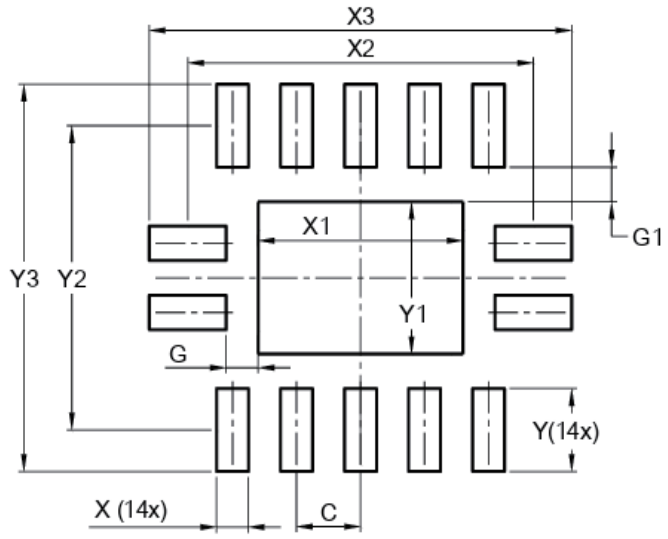
14-V-QFN2530 (ZRB14)

Package Outline Dimensions



V-QFN2530-14 (Type A)			
Dim	Min	Max	Typ
A	0.75	0.85	0.80
A1	0.00	0.05	0.03
A3	--	--	0.203
b	0.20	0.30	0.25
D	2.45	2.55	2.50
D2	0.90	1.10	1.00
E	2.95	3.05	3.00
E2	1.40	1.60	1.50
e	0.50 BSC		
k	--	--	0.350
k1	--	--	0.350
L	0.35	0.45	0.40
aaa	0.250		
bbb	0.100		
ccc	0.100		
All Dimensions in mm			

Suggested Pad Layout



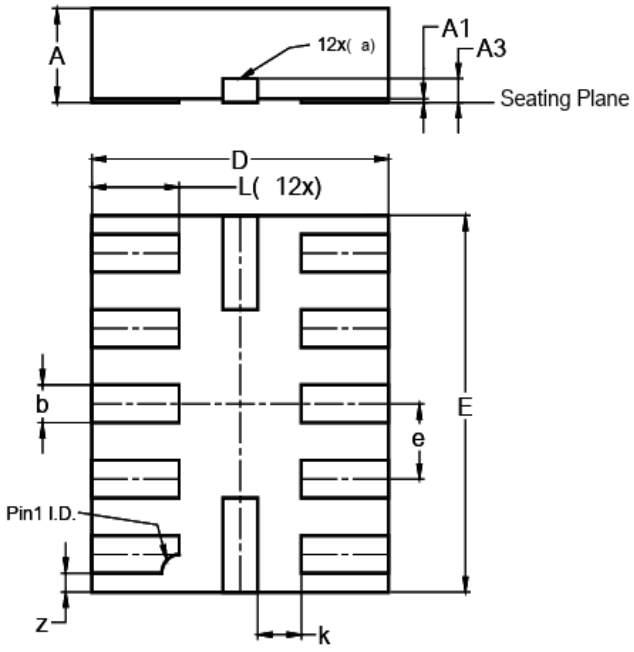
Dimensions	Value (in mm)
C	0.500
G	0.250
G1	0.250
X	0.250
X1	1.600
X2	2.700
X3	3.300
Y	0.600
Y1	1.100
Y2	2.200
Y3	2.800

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12-U-QFN1720 (ZMA)

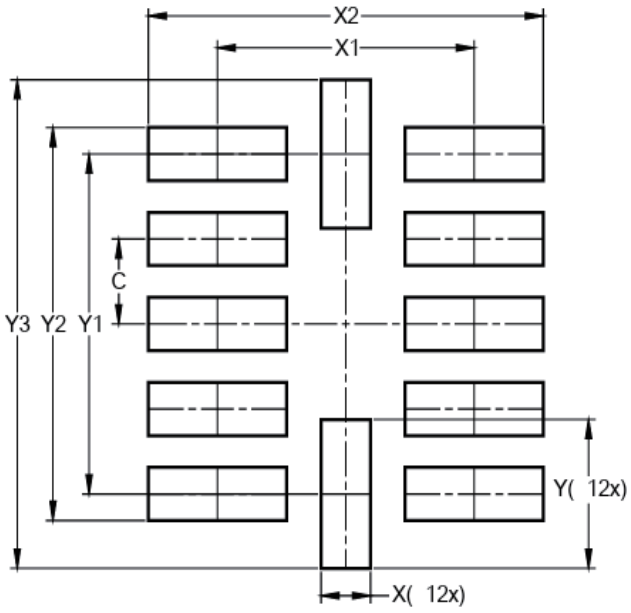
Package Outline Dimensions



U-QFN1720-12 (Type A)			
Dim	Min	Max	Typ
A	0.45	0.55	0.50
A1	0.00	0.05	0.02
A3	--	--	0.127
b	0.15	0.25	0.20
D	1.65	1.75	1.70
E	1.95	2.05	2.00
e	0.40 BSC		
L	0.45	0.55	0.50
k	--	--	0.25
z	--	--	0.10
All Dimensions in mm			

Note: (a) Actual shape dependent upon manufacturing technology used.

Suggested Pad Layout



Dimensions	Value (in mm)
C	0.400
X	0.250
X1	1.300
X2	2.000
Y	0.700
Y1	1.600
Y2	1.850
Y3	2.300

For latest package information:
See http://www.diodes.com/design/support/packaging/pericom-packaging/packaging-mechanicals-and-thermal-characteristics/.

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Mechanical Data

TSSOP-14

- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Mate Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: (0.052485) grams (Approximate)

V-QFN2530-14

- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - NiPdAu Nickel Palladium Gold, Solderable per MIL-STD-202, Method 208 e4
- Weight: (0.013919) grams (Approximate)

U-QFN1720-12 (ZMA)

- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - NiPdAu Nickel Palladium Gold. Solderable per MIL-STD-202, Method 208 e4
- Weight: (0.00598) grams (Approximate)

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