

**AUTOMOTIVE COMPLIANT 4-BIT BIDIRECTIONAL
 LEVEL TRANSLATOR OPEN-DRAIN AND PUSH-PULL APPLICATIONS**

Description

The LSF0204Q is an automotive 4-channel bidirectional multi-voltage level translator for open-drain and push-pull applications. This device is a universal level translator with A port operating from 0.8V to 4.5V (Vref_A) and B port from 1.8V to 5.5V (Vref_B). This range allows for bidirectional voltage translations between 0.8V and 5.0V. Be aware that Vref_B is recommended to be at 1.0V higher than Vref_A for the best signal integrity.

The EN pin is used to activate the device. When EN is HIGH, the translator switch is on. Otherwise, if EN is LOW, the translator switch is off, and a high-impedance state exists between ports. The EN input circuit is designed to be supplied by Vref_A. EN must be LOW to ensure the high-impedance state during power-up or power-down to avoid misoperation.

Please note that an external Rpu (pullup resistor) is required on port A and B for push-pull and open-drain application because a pull-high state can avoid misoperation during the power sequence. About the Rpu, the smaller value can result in the larger driving current. Overall, the LSF0204Q is designed for easy-to-use with auto direction. So, there is no need for a direction pin to minimize system effort. This device supports 5V tolerant I/O pins for compatibility with TTL levels in a variety of applications which require a proper voltage translation.

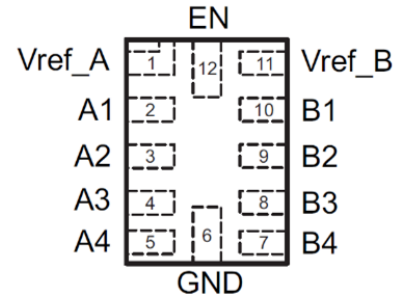
Features

- External Rpu (Pullup Resistor) to Set Driving Current in Both Push-Pull and Open-Drain Applications
- Up & Down Translation
 - $\leq 100\text{MHz}$; $C_L = 15\text{pF}$, 30pF
 - $\leq 50\text{MHz}$; $C_L = 50\text{pF}$
- Bidirectional Voltage Level Translation Between:
 - 0.8V and 1.8V, 2.5V, 3.3V and 5.0V
 - 1.2V and 1.8V, 2.5V, 3.3V and 5.0V
 - 1.8V and 2.5V, 3.3V and 5.0V
 - 2.5V and 3.3V and 5.0V
 - 3.3V and 5.0V
- ESD Protection Exceeds JESD 22
 - 2000V HBM (A114)
 - 1000V CDM (C101)
- Latchup Exceeds 100mA per JESD 17
- AEC-Q100 Grade 1 Specified from -40°C to $+125^\circ\text{C}$
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The LSF0204Q is suitable for automotive applications requiring specific change control; this part is AEC-Q100 qualified, PPAP capable, and manufactured in IATF16949 certified facilities.**

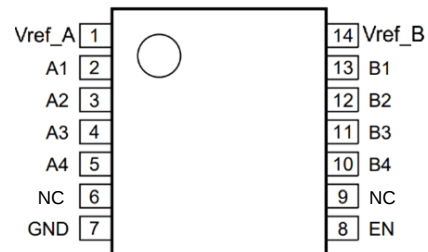
<https://www.diodes.com/quality/product-definitions/>

- 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.

Pin Assignments



U-QFN1720-12 (Type CJ)



TSSOP-14

Applications

- GPIO, MDIO, SDIO, SVID, UART
- PMBus™, SMBus™, I2C, and other interfaces
- Digital infotainment clusters
- Advanced driver assistance systems (ADAS)
- High-performance vehicle computing vision
- HEV/EV battery management systems

Pin Descriptions

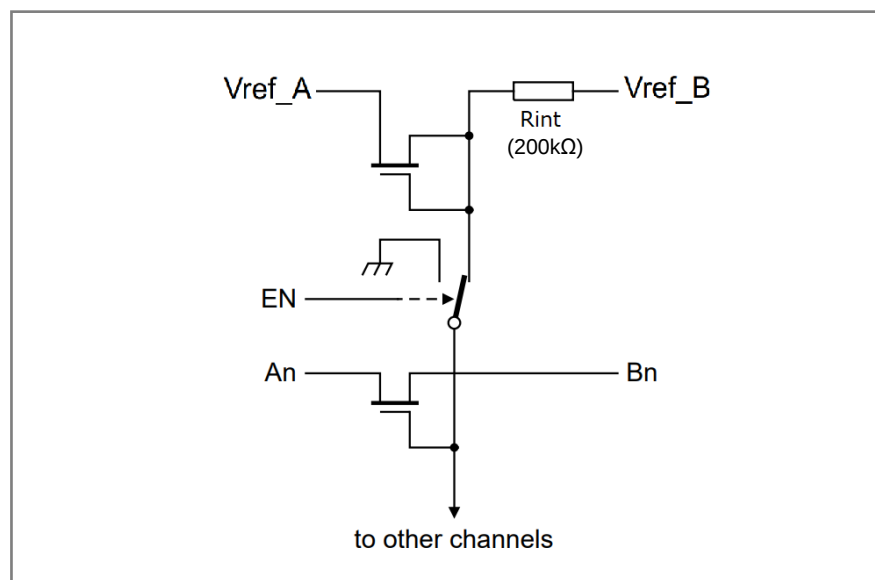
Pin Name	TSSOP-14	U-QFN1720-12 (Type CJ)	Function
V _{ref_A}	1	1	Reference supply voltage; A port
A1	2	2	Input/output 1
A2	3	3	Input/output 2
A3	4	4	Input/output 3
A4	5	5	Input/output 4
NC	6	—	No connection. Not internally connected.
GND	7	6	Ground
EN	8	12	Switch enable input; EN is high-active.
NC	9	—	No connection. Not internally connected.
B4	10	7	Input/output 4
B3	11	8	Input/output 3
B2	12	9	Input/output 2
B1	13	10	Input/output 1
V _{ref_B}	14	11	Reference supply voltage; B port

Absolute Maximum Ratings (Note 4)

Symbol	Parameter	Rating	Unit
ESD HBM	Human Body Model ESD Protection	±2	kV
ESD CDM	Charged Device Model ESD Protection	±1	kV
V _{REF}	Supply Reference Voltage Range	-0.5 to +6.0	V
V _I	Input Voltage Range	-0.5 to +6.0	V
V _O	Voltage Range Applied to Any Output in the High-Z or Power-Off State	-0.5 to +6.0	V
I _{CH}	Continuous Channel Current	128	mA
I _{IK}	Input Clamp Current, V _I < 0	-50	mA
T _J	Operating Junction Temperature	-40 to +150	°C
T _{STG}	Storage Temperature	-65 to +150	°C

Note: 4. Stresses greater than those listed under *Absolute Maximum Ratings* can cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under *Recommended Operating Conditions* is not implied. Exposure to *Absolute Maximum Ratings* for extended periods can affect device reliability.

Functional Diagram



Recommended Operating Conditions (@T_A = +25°C, unless otherwise specified.)

Symbol	Parameter	Min	Max	Unit
V _{REF}	Reference Voltage, A & B Ports	0.8	5.5	V
V _{I/O}	Input/Output Voltage	0.8	5.5	V
V _{EN}	Enable Voltage	0	5.5	V
I _{PASS}	Pass Transistor Current	—	64	mA
T _A	Operating Free-Air Temperature	-40	+125	°C

Electrical Characteristics (Note 5) (@T_A = +40°C to +125°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions		Min	Typ	Max	Unit
V _{ref_A}	A Port Supply Voltage	—		0.8	—	4.5	V
V _{ref_B}	B Port Supply Voltage	—		1.8	—	5.5	V
V _{IK}	—	I _I = -18mA, V _{EN} = 0		-1.2	—	—	V
I _{IH}	—	V _I = 5V, V _{EN} = 0		—	—	5.0	μA
I _{CCBA}	Leakage from Vref_B to Vref_A	V _{ref_B} = 3.3V, V _{ref_A} = 1.8V, V _{EN} = V _{ref_A} , I _O = 0 V _I = 3.3V or GND		—	—	3.5	μA
I _{CCA} + I _{CCB}	Total Current Through GND	V _{ref_B} = 3.3V, V _{ref_A} = 1.8V, V _{EN} = V _{ref_A} , I _O = 0 V _I = 3.3V or GND		—	0.2	—	μA
I _{IN}	Control Pin Current	V _{ref_B} = 5.5V, V _{ref_A} = 4.5V, V _{EN} = 0 to V _{ref_A} , I _O = 0		—	—	±1	μA
I _{off}	Power Off Leakage Current	V _{ref_B} = V _{ref_A} = 0, V _{EN} = GND, I _O = 0, V _I = 5V or GND		—	—	±1	μA
C _I (ref_A/B/EN)	—	V _I = 3V or 0		—	7	—	pF
C _{io} (off)	—	V _O = 3V or 0, V _{EN} = 0		—	5.0	6.0	pF
C _{io} (on)	—	V _O = 3V or 0, V _{EN} = V _{ref_A}		—	10.5	13	pF
V _{IH} (EN)	High-Level Input Voltage	V _{ref_A} = 1.5V to 4.5V		0.7×V _{ref_A}	—	—	V
V _{IL} (EN)	Low-Level Input Voltage	V _{ref_A} = 1.5V to 4.5V		—	—	0.3×V _{ref_A}	V
V _{IH} (EN)	High-Level Input Voltage	V _{ref_A} = 1.0V to 1.5V		0.8×V _{ref_A}	—	—	V
V _{IL} (EN)	Low-Level Input Voltage	V _{ref_A} = 1.0V to 1.5V		—	—	0.3×V _{ref_A}	V
Δt/Δv (EN)	Input Transition Rise or Fall Rate for EN Pin	—		—	10	—	ns/V
R _{on}	—	V _I = 0, I _O = 64mA	V _{ref_A} = V _{EN} = 3.3V; V _{ref_B} = 5V	—	3	—	Ω
			V _{ref_A} = V _{EN} = 1.8V; V _{ref_B} = 5V	—	4	—	
		V _I = 0, I _O = 32mA	V _{ref_A} = V _{EN} = 1.0V; V _{ref_B} = 5V	—	5	—	Ω
			V _{ref_A} = V _{EN} = 1.8V; V _{ref_B} = 5V	—	4	—	
		V _I = 0, I _O = 32mA, V _{ref_A} = V _{EN} = 2.5V; V _{ref_B} = 5V		—	3	—	Ω
		V _I = 1.8V, I _O = 15mA, V _{ref_A} = V _{EN} = 3.3V; V _{ref_B} = 5V		—	5	—	Ω
		V _I = 1.0V, I _O = 10mA, V _{ref_A} = V _{EN} = 1.8V V _{ref_B} = 3.3V		—	8	—	Ω
		V _I = 0, I _O = 10mA, V _{ref_A} = V _{EN} = 1.0V; V _{ref_B} = 3.3V		—	6	—	Ω
		V _I = 0, I _O = 10mA, V _{ref_A} = V _{EN} = 1.0V; V _{ref_B} = 1.8V		—	6	—	Ω

Note: 5. All typical values are at T_A = +25°C. Measured by the voltage drop between the A and B terminals at the indicated current through the switch. On-state resistance is determined by the lowest voltage of the two (A or B) terminals. The actual supply current for LSF0204Q is I_{CCA} + I_{CCB}; the leakage from V_{ref_B} to V_{ref_A} can be measured on V_{ref_A} and V_{ref_B} pins.

EN Pin Characteristics (Note 6) (@T_A = +40°C to +125°C, unless otherwise specified.)

Translating Down, 3.3V to 1.8V

Parameter	From EN Pin	To Port A or B	C _L = 50pF		C _L = 30pF		C _L = 15pF		Unit
			Typ	Max	Typ	Max	Typ	Max	
t _{PLZ} (LOW to OFF)			13	20	12	20	11	20	ns
t _{PZL} (OFF to LOW)			35	50	30	40	25	40	ns

Test Conditions: V_{ref_A} = 1.8V, V_{ref_B} = 3.3V, V_M = 0.9V, V_{EN} = 1.8V, V_{EXT} = V_{ref_A}, R_{pu} = NA, V_{IH} = 3.3V, V_{IL} = 0, PRR = 10MHz (unless otherwise noted, see Figure 1)

Translating Up, 1.8V to 3.3V

Parameter	From EN Pin	To Port A or B	C _L = 50pF		C _L = 30pF		C _L = 15pF		Unit
			Typ	Max	Typ	Max	Typ	Max	
t _{PLZ} (LOW to OFF)			13	20	12	20	11	20	ns
t _{PZL} (OFF to LOW)			35	50	30	40	25	40	ns

Test Conditions: V_{ref_A} = 1.8V, V_{ref_B} = 3.3V, V_M = 0.9V, V_{EN} = 1.8V, V_{EXT} = V_{ref_A}, R_{pu} = NA, V_{IH} = 3.3V, V_{IL} = 0, PRR = 10MHz (unless otherwise noted, see Figure 1)

Translating Down Characteristics (Note 6) (@T_A = +40°C to +125°C, unless otherwise specified.)

Translating Down, 5.0V to 1.8V

Parameter	From (Input)	To (Output)	C _L = 50pF		C _L = 30pF		C _L = 15pF		Unit
			Typ	Max	Typ	Max	Typ	Max	
t _{PLH}	B	A	0.6	5.1	0.5	5.1	0.3	5.0	ns
t _{PHL}			1.1	4.8	0.9	4.5	0.5	4.4	ns
f _{MAX}			50		100		100		MHz

Test Conditions: V_{ref_A} = 1.8V, V_{ref_B} = 5.0V, V_M = 2.15V, V_{EN} = 1.8V, Switch = S2, V_{IH} = 5.0V, V_{IL} = 0, PRR = 10MHz (unless otherwise noted, see Figure 1)

Translating Down, 3.3V to 1.8V

Parameter	From (Input)	To (Output)	C _L = 50pF		C _L = 30pF		C _L = 15pF		Unit
			Typ	Max	Typ	Max	Typ	Max	
t _{PLH}	B	A	0.7	5.5	0.5	5.3	0.3	5.2	ns
t _{PHL}			0.9	4.9	0.7	4.7	0.5	4.5	ns
f _{MAX}			50		100		100		MHz

Test Conditions: V_{ref_A} = 1.8V, V_{ref_B} = 3.3V, V_M = 1.15V, V_{EN} = 1.8V, Switch = S2, V_{IH} = 3.3V, V_{IL} = 0, PRR = 10MHz (unless otherwise noted, see Figure 1)

Translating Down, 3.3V to 1.2V

Parameter	From (Input)	To (Output)	C _L = 50pF		C _L = 30pF		C _L = 15pF		Unit
			Typ	Max	Typ	Max	Typ	Max	
t _{PLH}	B	A	0.8	4.1	0.5	3.9	0.3	3.8	ns
t _{PHL}			0.9	4.7	0.7	4.5	0.6	4.3	ns
f _{MAX}			50		100		100		MHz

Test Conditions: V_{ref_A} = 1.2V, V_{ref_B} = 3.3V, V_M = 0.85V, V_{EN} = 1.2V, Switch = S2, V_{IH} = 3.3V, V_{IL} = 0, PRR = 10MHz (unless otherwise noted, see Figure 1)

Note: 6. All typical values are measured at T_A = +25°C. Logic levels: V_{OL} and V_{OH} are typical output voltage levels that occur with the output load. All input pulses are supplied by generators having the following characteristics: PRR ≤ 10MHz; Z₀ = 50Ω. Definitions test circuit: C_L = Load capacitance including jig and probe capacitance; R_{pu} = pullup resistor as load resistance; S1/S2 = Test selection switch.

Translating Down Characteristics (continued) (Note 6) (@T_A = +40°C to +125°C, unless otherwise specified.)

Translating Down, 1.8V to 1.2V

Parameter	From (Input)	To (Output)	CL = 50pF		CL = 30pF		CL = 15pF		Unit
			Typ	Max	Typ	Max	Typ	Max	
tPLH	B	A	1.3	4.6	1.1	4.4	1.0	4.1	ns
tPHL			1.4	5.3	1.3	5.1	1.2	4.7	ns
fMAX			50		100		100		MHz
Test Conditions: Vref_A = 1.2V, Vref_B = 1.8V, VM = 0.65V, VEN = 1.2V, Switch = S2, VIH = 1.8V, VIL = 0, PRR = 10MHz (unless otherwise noted, see Figure 1)									

Translating Down, 1.8V to 0.8V

Parameter	From (Input)	To (Output)	C _L = 50pF		C _L = 30pF		C _L = 15pF		Unit
			Typ	Max	Typ	Max	Typ	Max	
t _{PLH}	B	A	1.5	4.7	1.2	4.5	1.1	4.3	ns
t _{PHL}			1.7	5.6	1.6	5.3	1.3	5.0	ns
f _{MAX}			50		80		100		MHz
Test Conditions: V _{ref_A} = 0.8V, V _{ref_B} = 1.8V, V _M = 0.55V, V _{EN} = 0.8V, Switch = S2, V _{IH} = 1.8V, V _{IL} = 0, PRR = 10MHz (unless otherwise noted, see Figure 1)									

Translating Up Characteristics (Note 6) (@T_A = +40°C to +125°C, unless otherwise specified.)

Translating Up, 1.8V to 5.0V

Parameter	From (Input)	To (Output)	C _L = 50pF		C _L = 30pF		C _L = 15pF		Unit
			Typ	Max	Typ	Max	Typ	Max	
t _{PLH}	A	B	0.6	5.7	0.4	5.3	0.2	5.2	ns
t _{PHL}			1.3	6.7	1.0	6.4	0.7	5.3	ns
f _{MAX}			50		100		100		MHz
Test Conditions: V _{ref_A} = 1.8V, V _{ref_B} = 5.0V, V _M = 2.05V, V _{EN} = 1.8V, Switch = S1, R _{pu} = 500Ω, V _{EXT} = 5.0V, V _{IH} = 1.8V, V _{IL} = 0, PRR = 10MHz (unless otherwise noted, see Figure 1)									

Translating Up, 1.8V to 3.3V

Parameter	From (Input)	To (Output)	C _L = 50pF		C _L = 30pF		C _L = 15pF		Unit
			Typ	Max	Typ	Max	Typ	Max	
t _{PLH}	A	B	0.6	5.7	0.4	5.3	0.2	5.2	ns
t _{PHL}			1.3	6.7	1.0	6.4	0.7	5.3	ns
f _{MAX}			50		100		100		MHz
Test Conditions: V _{ref_A} = 1.8V, V _{ref_B} = 5.0V, V _M = 2.05V, V _{EN} = 1.8V, Switch = S1, R _{pu} = 500Ω, V _{EXT} = 5.0V, V _{IH} = 1.8V, V _{IL} = 0, PRR = 10MHz (unless otherwise noted, see Figure 1)									

Translating Up, 1.2V to 3.3V

Parameter	From (Input)	To (Output)	CL = 50pF		CL = 30pF		CL = 15pF		Unit
			Typ	Max	Typ	Max	Typ	Max	
tPLH	A	B	0.7	7.3	0.4	7.1	0.2	6.9	ns
tPHL			1.6	7.1	1.3	6.5	1.0	5.4	ns
fMAX			50		100		100		MHz
Test Conditions: Vref_A = 1.2V, Vref_B = 3.3V, VM = 0.75V, VEN = 1.2V, Switch = S1, Rpu = 500Ω, VEXT = 3.3V, VIH = 1.2V, VIL = 0, PRR = 10MHz (unless otherwise noted, see Figure 1)									

Note: 6. All typical values are measured at T_A = +25°C. Logic levels: V_{OL} and V_{OH} are typical output voltage levels that occur with the output load. All input pulses are supplied by generators having the following characteristics: PRR ≤ 10MHz; Z_o = 50Ω. Definitions test circuit: C_L = Load capacitance including jig and probe capacitance; R_{pu} = pullup resistor as load resistance; S1/S2 = Test selection switch.

Translating Up Characteristics (continued) (Note 6) (@T_A = +40°C to +125°C, unless otherwise specified.)

Translating Up, 1.2V to 1.8V

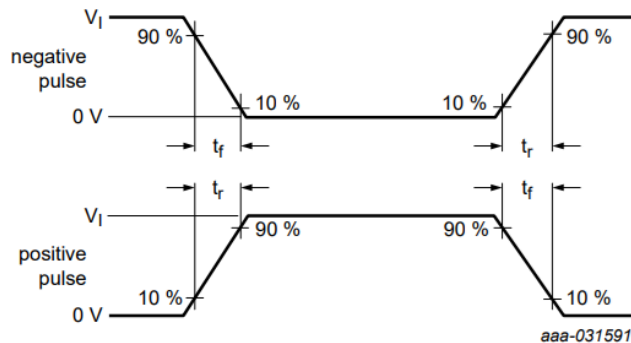
Parameter	From (Input)	To (Output)	C _L = 50pF		C _L = 30pF		C _L = 15pF		Unit
			Typ	Max	Typ	Max	Typ	Max	
t _{PLH}	A	B	0.7	7.3	0.4	7.1	0.2	6.9	ns
t _{PHL}			1.6	7.1	1.3	6.5	1.0	5.4	ns
f _{MAX}			50		100		100		MHz
Test Conditions: V _{ref_A} = 1.2V, V _{ref_B} = 3.3V, V _M = 0.75V, V _{EN} = 1.2V, Switch = S1, R _{pu} = 500Ω, V _{EXT} = 3.3V, V _{IH} = 1.2V, V _{IL} = 0, PRR = 10MHz (unless otherwise noted, see Figure 1)									

Translating Up, 0.8V to 1.8V

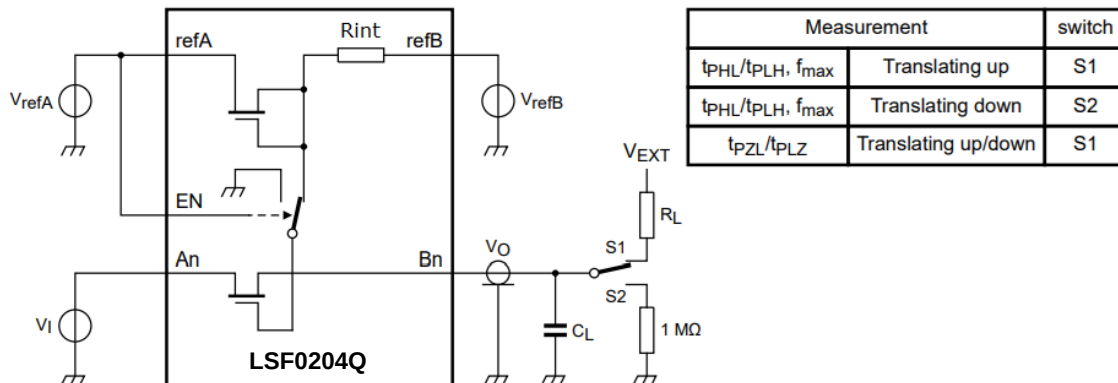
Parameter	From (Input)	To (Output)	C _L = 50pF		C _L = 30pF		C _L = 15pF		Unit
			Typ	Max	Typ	Max	Typ	Max	
t _{PLH}	A	B	0.7	7.3	0.5	7.2	0.3	6.9	ns
t _{PHL}			1.6	7.1	1.4	6.6	1.0	5.4	ns
f _{MAX}			40		80		100		MHz
Test Conditions: V _{ref_A} = 0.8V, V _{ref_B} = 1.8V, V _M = 0.55V, V _{EN} = 0.8V, Switch = S1, R _{pu} = 500Ω, V _{EXT} = 1.8V, V _{IH} = 0.8V, V _{IL} = 0, PRR = 10MHz (unless otherwise noted, see Figure 1)									

Note: 6. All typical values are measured at T_A = +25°C. Logic levels: V_{OL} and V_{OH} are typical output voltage levels that occur with the output load. All input pulses are supplied by generators having the following characteristics: PRR ≤ 10MHz; Z_o = 50Ω. Definitions test circuit: C_L = Load capacitance including jig and probe capacitance; R_{pu} = pullup resistor as load resistance; S1/S2 = Test selection switch.

Parameter Measurement Information



V_I source waveform



Test circuit

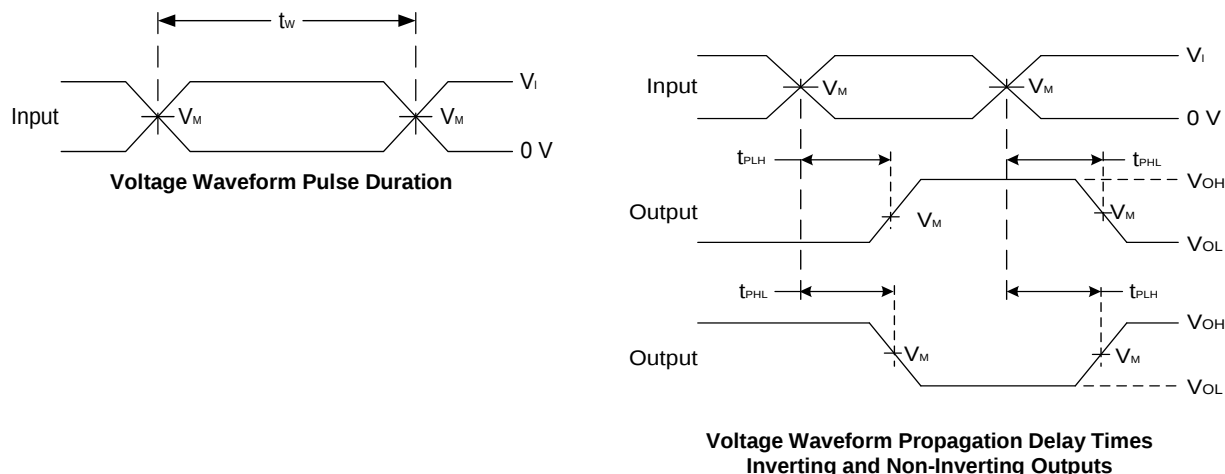
Parameter Measurement Information (continued)


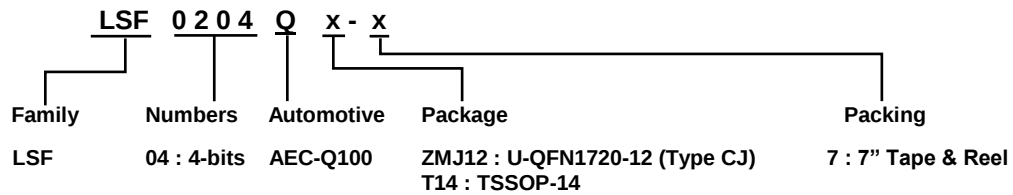
Figure 1. Load Circuit and Voltage Waveforms, $R_L = 500\Omega$, $C_L = 15\text{pF}$, 30pF , 50pF

Package Characteristics

Symbol	Parameter	Package	Test Conditions	Min	Typ	Max	Unit
θ_{JA}	Thermal Resistance Junction-to-Ambient	U-QFN1720-12 (Type CJ)	(Note 7)	—	185	—	$^{\circ}\text{C/W}$
		TSSOP-14		—	125	—	
θ_{JC}	Thermal Resistance Junction-to-Case	U-QFN1720-12 (Type CJ)	(Note 7)	—	65	—	
		TSSOP-14		—	72	—	

Note: 7. Test condition for the package type(s): device mounted on JEDEC standard PCB per JESD51, with minimum recommended pad layout.

Ordering Information (Notes 8 & 9)



Part Number	Part Number Suffix	Package Code	Package	Packing (Note 10)	
				Qty.	Carrier
LSF0204QZMJ12-7	-7	ZMJ12	U-QFN1720-12 (Type CJ)	3,000	7" Tape and Reel
LSF0204QT14-13	-13	T14	TSSOP-14	2,500	13" Tape and Reel

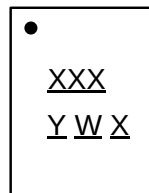
Notes:

- For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.
- Pad layout as shown in Diodes Incorporated's package outline PDFs, which can be found on our website at <http://www.diodes.com/package-outlines.html>.
- The taping orientation is located on our website at <https://www.diodes.com/assets/Packaging-Support-Docs/ap02007.pdf>.

Marking Information

(1) U-QFN1720-12 (Type CJ)

(Top View)

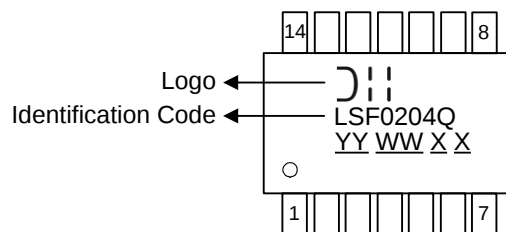


XXX : Identification Code
Y : Year : 0 to 9 (ex: 3 = 2023)
W : Week : A to Z : week 1 to 26;
 a to z : week 27 to 52; z represents
 week 52 and 53
X : Internal Code

Part Number	Package	Identification Code
LSF0204QZMJ12-7	U-QFN1720-12 (Type CJ)	J2Q

(2) TSSOP-14

(Top View)



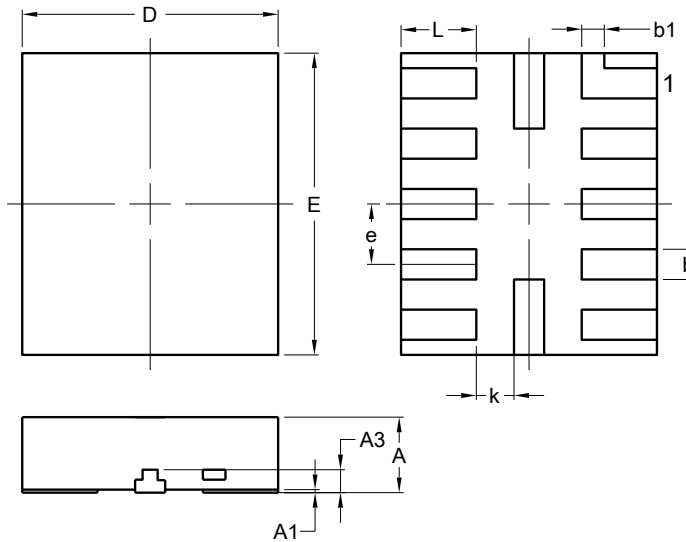
YY : Year (ex: 23 = 2023)
WW : Week : 01 to 52; 52
 represents week 52 and 53
X X : Internal Code

Part Number	Package	Identification Code
LSF0204QT14-13	TSSOP-14	LSF0204Q

Package Outline Dimensions

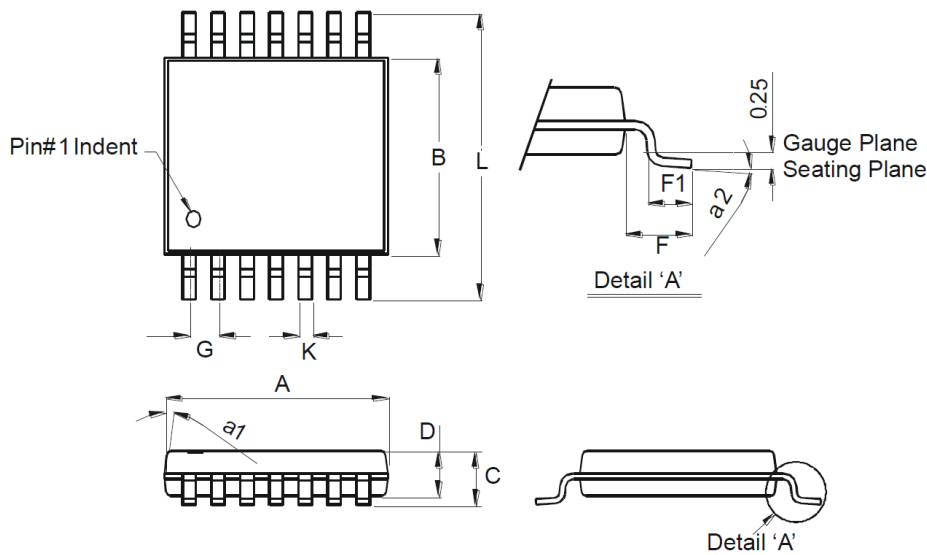
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

(1) U-QFN1720-12 (Type CJ)



U-QFN1720-12 (Type CJ)			
Dim	Min	Max	Typ
A	0.450	0.550	--
A1	0.00	0.050	--
A3	0.152 REF		
b	0.150	0.250	--
b1	0.150 REF		
D	1.600	1.800	--
E	1.900	2.100	--
e	0.400 BSC		
k	0.250 REF		
L	0.400	0.600	--
All Dimensions in mm			

(2) TSSOP-14

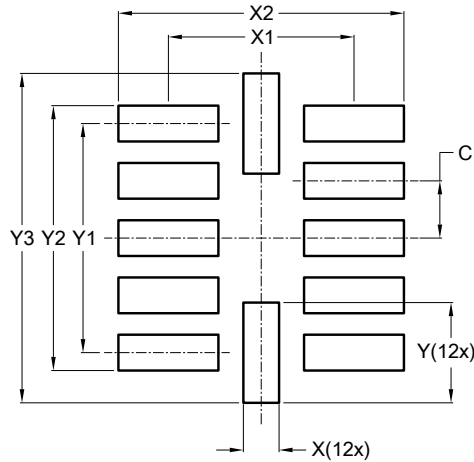


TSSOP-14		
Dim	Min	Max
a1	7° (4X)	
a2	0°	8°
A	4.9	5.10
B	4.30	4.50
C	-	1.2
D	0.8	1.05
F	1.00 Typ	
F1	0.45	0.75
G	0.65 Typ	
K	0.19	0.30
L	6.40 Typ	
All Dimensions in mm		

Suggested Pad Layout

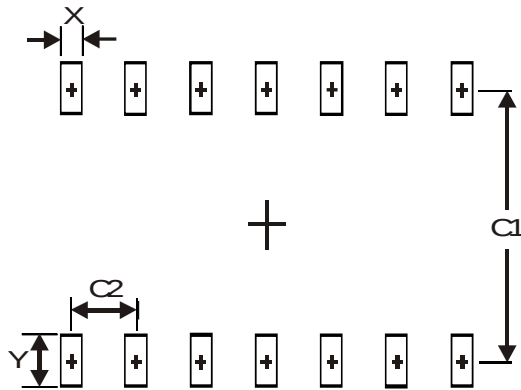
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

(1) U-QFN1720-12 (Type CJ)



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

(2) TSSOP-14



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

Mechanical Data

- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 ③
- Max Soldering Temperature +260°C for 30 secs as per JEDEC J-STD-020
- Weight: U-QFN1720-12 (Type CJ) – 21.5mg (Approximate)
TSSOP-14 – 83.5mg (Approximate)

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