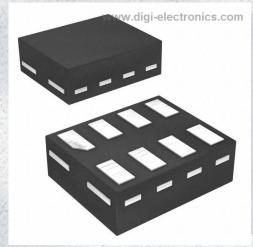


# 74AUP2G38GN,115 Datasheet



DiGi Electronics Part Number Manufacturer Manufacturer Product Number Description Detailed Description

74AUP2G38GN,115-DG Nexperia USA Inc. 74AUP2G38GN,115 IC GATE NAND 2CH 2-INP 8XSON NAND Gate IC 2 Channel Open Drain 8-XSON (1.2x1

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# Purchase and inquiry

Manufacturer Product Number:	Manufacturer:					
74AUP2G38GN,115	Nexperia USA Inc.					
Series:	Product Status:					
74AUP	Active					
Logic Type:	Number of Circuits:					
NAND Gate	2					
Number of Inputs:	Features:					
2	Open Drain					
Voltage - Supply:	Current - Quiescent (Max):					
0.8V ~ 3.6V	500 nA					
Current - Output High, Low:	Input Logic Level - Low:					
-, 4mA	0.7V ~ 0.9V					
Input Logic Level - High:	Max Propagation Delay @ V, Max CL:					
1.6V ~ 2V	12.7ns @ 3.3V, 30pF					
Operating Temperature:	Mounting Type:					
-40°C ~ 125°C	Surface Mount					
Supplier Device Package:	Package / Case:					
8-XSON (1.2x1)	8-XFDFN					
Base Product Number:						
74AUP2G38						

# **Environmental & Export classification**

RoHS Status:	Moisture Sensitivity Level (MSL):
ROH53 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8542.39.0001	

Low-power dual 2-input NAND gate; open drain

Rev. 11 — 31 July 2023

**Product data sheet** 

### 1. General description

The 74AUP2G38 provides the dual 2-input NAND gate with open-drain output. The output of the device is an open drain and can be connected to other open-drain outputs to implement active-LOW wired-OR or active-HIGH wired-AND functions.

Schmitt trigger action at all inputs makes the circuit tolerant to slower input rise and fall times across the entire  $V_{CC}$  range from 0.8 V to 3.6 V.

This device ensures a very low static and dynamic power consumption across the entire  $V_{CC}$  range from 0.8 V to 3.6 V.

This device is fully specified for partial Power-down applications using  $I_{OFF}$ . The  $I_{OFF}$  circuitry disables the output, preventing a damaging backflow current through the device when it is powered down.

### 2. Features and benefits

- Wide supply voltage range from 0.8 V to 3.6 V
- High noise immunity
- Complies with JEDEC standards:
  - JESD8-12 (0.8 V to 1.3 V)
  - JESD8-11 (0.9 V to 1.65 V)
  - JESD8-7 (1.2 V to 1.95 V)
  - JESD8-5 (1.8 V to 2.7 V)
  - JESD8-B (2.7 V to 3.6 V)
- Low static power consumption;  $I_{CC} = 0.9 \ \mu A$  (maximum)
- Latch-up performance exceeds 100 mA per JESD78B Class II
- Inputs accept voltages up to 3.6 V
- Low noise overshoot and undershoot < 10 % of V<sub>CC</sub>
- I<sub>OFF</sub> circuitry provides partial Power-down mode operation
- ESD protection:
  - HBM: ANSI/ESDA/JEDEC JS-001 class 3A exceeds 5000 V
  - CDM: ANSI/ESDA/JEDEC JS-002 class C3 exceeds 1000 V
- Multiple package options
- Specified from -40 °C to +85 °C and -40 °C to +125 °C

# nexperia

# 3. Ordering information

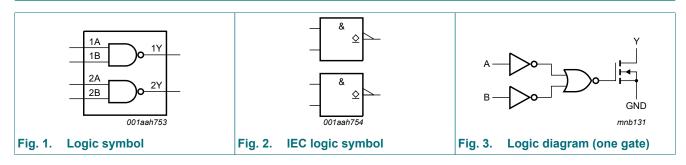
Type number	Package							
	Temperature range	Name	Description	Version				
74AUP2G38DC	-40 °C to +125 °C	VSSOP8	plastic very thin shrink small outline package; 8 leads; body width 2.3 mm	<u>SOT765-1</u>				
74AUP2G38GT	-40 °C to +125 °C	XSON8	plastic extremely thin small outline package; no leads; 8 terminals; body 1 × 1.95 × 0.5 mm	<u>SOT833-1</u>				
74AUP2G38GN	-40 °C to +125 °C	XSON8	extremely thin small outline package; no leads; 8 terminals; body 1.2 × 1.0 × 0.35 mm	<u>SOT1116</u>				
74AUP2G38GS	-40 °C to +125 °C	XSON8	extremely thin small outline package; no leads; 8 terminals; body 1.35 × 1.0 × 0.35 mm	<u>SOT1203</u>				

### 4. Marking

Table 2. Marking codes					
Type number	Marking code[1]				
74AUP2G38DC	a38				
74AUP2G38GT	a38				
74AUP2G38GN	aB				
74AUP2G38GS	aB				

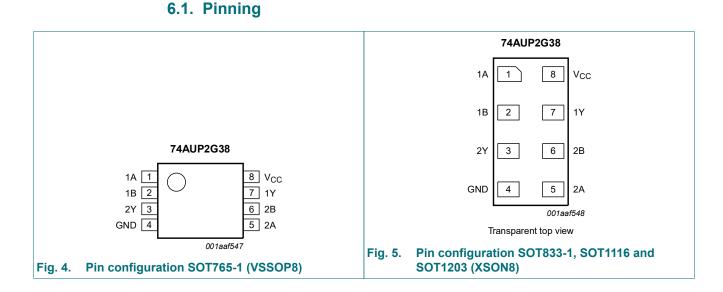
[1] The pin 1 indicator is located on the lower left corner of the device, below the marking code.

# 5. Functional diagram



### Low-power dual 2-input NAND gate; open drain

# 6. Pinning information



### 6.2. Pin description

Symbol	Pin	Description
1A, 2A	1, 5	data input
1B, 2B	2, 6	data input
GND	4	ground (0 V)
1Y, 2Y	7, 3	data output
V <sub>CC</sub>	8	supply voltage

# 7. Functional description

#### Table 4. Function table

H = HIGH voltage level; L = LOW voltage level; Z = high-impedance OFF state.

Input	Output	
nA	nB	nY
L	L	Z
L	Н	Z
н	L	Z
Н	Н	L

### 8. Limiting values

#### Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134). Voltages are referenced to GND (ground = 0 V).

Symbol	Parameter	Conditions	Min	Max	Unit
V <sub>CC</sub>	supply voltage		-0.5	+4.6	V
I <sub>IK</sub>	input clamping current	V <sub>I</sub> < 0 V	-50	-	mA
VI	input voltage	[1]	-0.5	+4.6	V
I <sub>OK</sub>	output clamping current	V <sub>O</sub> < 0 V	-50	-	mA
Vo	output voltage	Active mode and Power-down mode [1]	-0.5	+4.6	V
I <sub>O</sub>	output current	$V_{O} = 0 V \text{ to } V_{CC}$	-	+20	mA
I <sub>CC</sub>	supply current		-	+50	mA
I <sub>GND</sub>	ground current		-50	-	mA
T <sub>stg</sub>	storage temperature		-65	+150	°C
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> = -40 °C to +125 °C [2]	-	250	mW

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

[2] For SOT765-1 (VSSOP8) package: P<sub>tot</sub> derates linearly with 4.9 mW/K above 99 °C. For SOT833-1 (XSON8) package: P<sub>tot</sub> derates linearly with 3.1 mW/K above 68 °C. For SOT1116 (XSON8) package: P<sub>tot</sub> derates linearly with 4.2 mW/K above 90 °C.

For SOT1203 (XSON8) package: Ptot derates linearly with 3.6 mW/K above 81 °C.

## 9. Recommended operating conditions

#### Table 6. Operating conditions

Symbol	Parameter	Conditions	Min	Мах	Unit
V <sub>CC</sub>	supply voltage		0.8	3.6	V
VI	input voltage		0	3.6	V
Vo	output voltage	Active mode and Power-down mode	0	3.6	V
T <sub>amb</sub>	ambient temperature		-40	+125	°C
Δt/ΔV	input transition rise and fall rate	V <sub>CC</sub> = 0.8 V to 3.6 V	0	200	ns/V

# **10. Static characteristics**

#### Table 7. Static characteristics

At recommended operating conditions; voltages are referenced to GND (ground = 0 V).

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
T <sub>amb</sub> = 2	5 °C	,				1
VIH	HIGH-level input	V <sub>CC</sub> = 0.8 V	0.70V <sub>CC</sub>	-	-	V
	voltage	V <sub>CC</sub> = 0.9 V to 1.95 V	0.65V <sub>CC</sub>	-	-	V
		V <sub>CC</sub> = 2.3 V to 2.7 V	1.6	-	-	V
		V <sub>CC</sub> = 3.0 V to 3.6 V	2.0	-	-	V
V <sub>IL</sub>	LOW-level input	V <sub>CC</sub> = 0.8 V	-	-	0.30V <sub>CC</sub>	V
	voltage	V <sub>CC</sub> = 0.9 V to 1.95 V	-	-	0.35V <sub>CC</sub>	V
		V <sub>CC</sub> = 2.3 V to 2.7 V	-	-	0.7	V
		V <sub>CC</sub> = 3.0 V to 3.6 V	-	-	0.9	V
V <sub>OL</sub>	LOW-level output	$V_{I} = V_{IH} \text{ or } V_{IL}$				
	voltage	$I_{O}$ = 20 µA; $V_{CC}$ = 0.8 V to 3.6 V	-	-	0.1	V
		I <sub>O</sub> = 1.1 mA; V <sub>CC</sub> = 1.1 V	-	-	0.3V <sub>CC</sub>	V
		I <sub>O</sub> = 1.7 mA; V <sub>CC</sub> = 1.4 V	-	-	0.31	V
		I <sub>O</sub> = 1.9 mA; V <sub>CC</sub> = 1.65 V	-	-	0.31	V
		I <sub>O</sub> = 2.3 mA; V <sub>CC</sub> = 2.3 V	-	-	0.31	V
		I <sub>O</sub> = 3.1 mA; V <sub>CC</sub> = 2.3 V	-	-	0.44	V
		I <sub>O</sub> = 2.7 mA; V <sub>CC</sub> = 3.0 V	-	-	0.31	V
		I <sub>O</sub> = 4.0 mA; V <sub>CC</sub> = 3.0 V	-	-	0.44	V
l <sub>i</sub>	input leakage current	$V_{I}$ = GND to 3.6 V; $V_{CC}$ = 0 V to 3.6 V	-	-	±0.1	μA
I <sub>OZ</sub>	OFF-state output current	$V_{I} = V_{IH} \text{ or } V_{IL}; V_{O} = 0 \text{ V to } 3.6 \text{ V};$ $V_{CC} = 0 \text{ V to } 3.6 \text{ V}$	-	-	±0.1	μA
I <sub>OFF</sub>	power-off leakage current	$V_1 \text{ or } V_0 = 0 \text{ V to } 3.6 \text{ V; } V_{CC} = 0 \text{ V}$	-	-	±0.2	μA
ΔI <sub>OFF</sub>	additional power-off leakage current	$V_1 \text{ or } V_0 = 0 \text{ V to } 3.6 \text{ V}; V_{CC} = 0 \text{ V to } 0.2 \text{ V}$	-	-	±0.2	μA
I <sub>CC</sub>	supply current	$\label{eq:VI} \begin{array}{l} V_{I} = GND \text{ or } V_{CC}; \ I_{O} = 0 \ A; \\ V_{CC} = 0.8 \ V \ to \ 3.6 \ V \end{array}$	-	-	0.5	μA
ΔI <sub>CC</sub>	additional supply current	$V_{I} = V_{CC} - 0.6 \text{ V}; I_{O} = 0 \text{ A}; V_{CC} = 3.3 \text{ V}$	-	-	40	μA
CI	input capacitance	$V_{CC}$ = 0 V to 3.6 V; V <sub>I</sub> = GND or V <sub>CC</sub>	-	0.7	-	pF
Co	output capacitance	$V_0 = GND; V_{CC} = 0 V$	-	0.9	-	pF

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### Low-power dual 2-input NAND gate; open drain

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
T <sub>amb</sub> = -4	40 °C to +85 °C					
VIH	HIGH-level input	V <sub>CC</sub> = 0.8 V	0.70V <sub>CC</sub>	-	-	V
	voltage	V <sub>CC</sub> = 0.9 V to 1.95 V	0.65V <sub>CC</sub>	-	-	V
		V <sub>CC</sub> = 2.3 V to 2.7 V	1.6	-	-	V
		V <sub>CC</sub> = 3.0 V to 3.6 V	2.0	-	-	V
V <sub>IL</sub>	LOW-level input	V <sub>CC</sub> = 0.8 V	-	-	0.30V <sub>CC</sub>	V
	voltage	V <sub>CC</sub> = 0.9 V to 1.95 V	-	-	0.35V <sub>CC</sub>	V
		V <sub>CC</sub> = 2.3 V to 2.7 V	-	-	0.7	V
		V <sub>CC</sub> = 3.0 V to 3.6 V	-	-	0.9	V
V <sub>OL</sub>	LOW-level output	$V_{I} = V_{IH} \text{ or } V_{IL}$				
	voltage	$I_{O}$ = 20 µA; $V_{CC}$ = 0.8 V to 3.6 V	-	-	0.1	V
		I <sub>O</sub> = 1.1 mA; V <sub>CC</sub> = 1.1 V	-	-	0.3V <sub>CC</sub>	V
		I <sub>O</sub> = 1.7 mA; V <sub>CC</sub> = 1.4 V	-	-	0.37	V
		I <sub>O</sub> = 1.9 mA; V <sub>CC</sub> = 1.65 V	-	-	0.35	V
		I <sub>O</sub> = 2.3 mA; V <sub>CC</sub> = 2.3 V	-	-	0.33	V
		I <sub>O</sub> = 3.1 mA; V <sub>CC</sub> = 2.3 V	-	-	0.45	V
		I <sub>O</sub> = 2.7 mA; V <sub>CC</sub> = 3.0 V	-	-	0.33	V
		I <sub>O</sub> = 4.0 mA; V <sub>CC</sub> = 3.0 V	-	-	0.45	V
l <sub>l</sub>	input leakage current	$V_{I}$ = GND to 3.6 V; $V_{CC}$ = 0 V to 3.6 V	-	-	±0.5	μA
I <sub>OZ</sub>	OFF-state output current	$V_{I} = V_{IH} \text{ or } V_{IL}; V_{O} = 0 \text{ V to } 3.6 \text{ V};$ $V_{CC} = 0 \text{ V to } 3.6 \text{ V}$	-	-	±0.5	μA
I <sub>OFF</sub>	power-off leakage current	$V_{I} \text{ or } V_{O} = 0 \text{ V to } 3.6 \text{ V; } V_{CC} = 0 \text{ V}$	-	-	±0.5	μA
ΔI <sub>OFF</sub>	additional power-off leakage current	$V_1 \text{ or } V_0 = 0 \text{ V to } 3.6 \text{ V}; V_{CC} = 0 \text{ V to } 0.2 \text{ V}$	-	-	±0.6	μA
I <sub>CC</sub>	supply current	$V_{I} = GND \text{ or } V_{CC}; I_{O} = 0 \text{ A}; \\ V_{CC} = 0.8 \text{ V to } 3.6 \text{ V}$	-	-	0.9	μA
ΔI <sub>CC</sub>	additional supply current	$V_{I} = V_{CC} - 0.6 \text{ V}; I_{O} = 0 \text{ A}; V_{CC} = 3.3 \text{ V}$	-	-	50	μA

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### Low-power dual 2-input NAND gate; open drain

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
T <sub>amb</sub> = -	40 °C to +125 °C				_	
VIH	HIGH-level input	V <sub>CC</sub> = 0.8 V	0.75V <sub>CC</sub>	-	-	V
Tamb = -40         VIH         VIH         VIL         VIL         VOL         I         IOZ         IOFF         ΔIOFF	voltage	V <sub>CC</sub> = 0.9 V to 1.95 V	0.70V <sub>CC</sub>	-	-	V
		V <sub>CC</sub> = 2.3 V to 2.7 V	1.6	-	-	V
	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	V				
V <sub>IL</sub>	LOW-level input	V <sub>CC</sub> = 0.8 V	-	-	0.25V <sub>CC</sub>	V
	voltage	V <sub>CC</sub> = 0.9 V to 1.95 V	-	-	0.30V <sub>CC</sub>	V
		V <sub>CC</sub> = 2.3 V to 2.7 V	-	-	0.7	V
		V <sub>CC</sub> = 3.0 V to 3.6 V	-	-	0.9	V
V <sub>OL</sub>	LOW-level output	$V_{I} = V_{IH} \text{ or } V_{IL}$				
	voltage	$I_{O}$ = 20 µA; $V_{CC}$ = 0.8 V to 3.6 V	-	-	0.11	V
		I <sub>O</sub> = 1.1 mA; V <sub>CC</sub> = 1.1 V	-	-	0.33V <sub>CC</sub>	V
		I <sub>O</sub> = 1.7 mA; V <sub>CC</sub> = 1.4 V	-	-	0.41	V
		I <sub>O</sub> = 1.9 mA; V <sub>CC</sub> = 1.65 V	-	-	0.39	V
		I <sub>O</sub> = 2.3 mA; V <sub>CC</sub> = 2.3 V	-	-	0.36	V
		I <sub>O</sub> = 3.1 mA; V <sub>CC</sub> = 2.3 V	-	-	0.50	V
		I <sub>O</sub> = 2.7 mA; V <sub>CC</sub> = 3.0 V	-	-	0.36	V
		I <sub>O</sub> = 4.0 mA; V <sub>CC</sub> = 3.0 V	-	-	0.50	V
l <sub>l</sub>	input leakage current	$V_{I}$ = GND to 3.6 V; $V_{CC}$ = 0 V to 3.6 V	-	-	±0.75	μA
I <sub>OZ</sub>	OFF-state output current		-	-	±0.75	μA
I <sub>OFF</sub>	power-off leakage current	$V_{I} \text{ or } V_{O} = 0 \text{ V to } 3.6 \text{ V; } V_{CC} = 0 \text{ V}$	-	-	±0.75	μA
∆I <sub>OFF</sub>	additional power-off leakage current	$V_{I}$ or $V_{O}$ = 0 V to 3.6 V; $V_{CC}$ = 0 V to 0.2 V	-	-	±0.75	μA
I <sub>CC</sub>	supply current	$\label{eq:VI} \begin{array}{l} V_{I} = GND \text{ or } V_{CC}; \ I_{O} = 0 \ A; \\ V_{CC} = 0.8 \ V \ to \ 3.6 \ V \end{array}$	-	-	1.4	μA
ΔI <sub>CC</sub>	additional supply current	$V_{I} = V_{CC} - 0.6 \text{ V}; I_{O} = 0 \text{ A}; V_{CC} = 3.3 \text{ V}$	-	-	75	μA

# **11. Dynamic characteristics**

#### Table 8. Dynamic characteristics

Voltages are referenced to GND (ground = 0 V); for test circuit see Fig. 7.

Symbol	Parameter	Conditions	T <sub>amb</sub> = 25 °C		T <sub>amb</sub> = -40 °C to +85 °C		T <sub>amb</sub> = -40 °C to +125 °C		Unit	
			Min	Typ [1]	Мах	Min	Max	Min	Max	
C <sub>L</sub> = 5 p	F									
t <sub>pd</sub>	propagation	nA, nB to nY; see Fig. 6 [2]								
	delay	V <sub>CC</sub> = 0.8 V	-	13.5	-	-	-	-	-	ns
		V <sub>CC</sub> = 1.1 V to 1.3 V	1.9	4.6	10.4	1.8	11.4	1.8	12.6	ns
		V <sub>CC</sub> = 1.4 V to 1.6 V	1.5	3.3	6.5	1.4	7.4	1.4	8.2	ns
		V <sub>CC</sub> = 1.65 V to 1.95 V	1.2	2.9	5.1	1.1	5.9	1.1	6.5	ns
		V <sub>CC</sub> = 2.3 V to 2.7 V	1.0	2.2	3.8	0.9	4.5	0.9	4.9	ns
		V <sub>CC</sub> = 3.0 V to 3.6 V	0.9	2.3	4.0	0.8	4.5	0.8	4.9	ns
C <sub>L</sub> = 10	pF								1	
t <sub>pd</sub>	propagation	nA, nB to nY; see Fig. 6 [2]								
	delay	V <sub>CC</sub> = 0.8 V	-	16.3	-	-	-	-	-	ns
		V <sub>CC</sub> = 1.1 V to 1.3 V	2.3	5.6	12.3	2.1	13.7	2.1	15.1	ns
		V <sub>CC</sub> = 1.4 V to 1.6 V	1.8	4.1	7.6	1.7	8.8	1.7	9.7	ns
		V <sub>CC</sub> = 1.65 V to 1.95 V	1.6	3.8	6.1	1.4	7.1	1.4	7.8	ns
		V <sub>CC</sub> = 2.3 V to 2.7 V	1.4	2.9	4.6	1.2	5.4	1.2	5.9	ns
		V <sub>CC</sub> = 3.0 V to 3.6 V	1.3	3.2	5.7	1.1	6.4	1.1	7.0	ns
C <sub>L</sub> = 15	pF								1	
t <sub>pd</sub>	propagation	nA, nB to nY; see Fig. 6 [2]								
	delay	V <sub>CC</sub> = 0.8 V	-	19.0	-	-	-	-	-	ns
		V <sub>CC</sub> = 1.1 V to 1.3 V	2.6	6.6	14.2	2.4	15.8	2.4	17.4	ns
		V <sub>CC</sub> = 1.4 V to 1.6 V	2.1	4.8	8.7	1.9	10.1	1.9	11.1	ns
		V <sub>CC</sub> = 1.65 V to 1.95 V	1.9	4.6	7.6	1.7	8.5	1.7	9.3	ns
		V <sub>CC</sub> = 2.3 V to 2.7 V	1.6	3.6	5.6	1.5	6.3	1.5	6.9	ns
		V <sub>CC</sub> = 3.0 V to 3.6 V	1.6	4.1	7.5	1.4	8.3	1.4	9.1	ns
C <sub>L</sub> = 30	pF			· · · · ·					-	
t <sub>pd</sub>	propagation	nA, nB to nY; see Fig. 6 [2]								
	delay	V <sub>CC</sub> = 0.8 V	-	27.0	-	-	-	-	-	ns
		V <sub>CC</sub> = 1.1 V to 1.3 V	3.6	9.5	19.5	3.2	21.8	3.2	24.0	ns
		V <sub>CC</sub> = 1.4 V to 1.6 V	2.9	7.0	11.5	2.6	13.6	2.6	15.0	ns
		V <sub>CC</sub> = 1.65 V to 1.95 V	2.6	7.0	12.1	2.3	13.3	2.3	14.6	ns
		V <sub>CC</sub> = 2.3 V to 2.7 V	2.4	5.4	8.9	2.1	9.9	2.1	10.9	ns
		V <sub>CC</sub> = 3.0 V to 3.6 V	2.3	6.5	12.7	2.1	13.9	2.1	15.3	ns

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#### Low-power dual 2-input NAND gate; open drain

Symbol	Parameter	Conditions	T,	amb = 25 °	°C		<sub>1b</sub> = o +85 °C		<sub>nb</sub> = ) +125 °C	Unit
			Min	Typ [1]	Мах	Min	Max	Min	Max	
C <sub>L</sub> = 5 p	F, 10 pF, 15 p	F and 30 pF								
C <sub>PD</sub>	power dissipation capacitance	f = 1 MHz; $V_I$ = GND to $V_{CC}$ [3]								
		V <sub>CC</sub> = 0.8 V	-	0.6	-	-	-	-	-	pF pF pF pF pF
	Capacitanee	V <sub>CC</sub> = 1.1 V to 1.3 V	-	0.7	-	-	-	-	-	pF
		V <sub>CC</sub> = 1.4 V to 1.6 V	-	0.8	-	-	-	-	-	pF
		V <sub>CC</sub> = 1.65 V to 1.95 V	-	0.9	-	-	-	-	-	pF
		V <sub>CC</sub> = 2.3 V to 2.7 V	-	1.1	-	-	-	-	-	pF
		V <sub>CC</sub> = 3.0 V to 3.6 V	-	1.4	-	-	-	-	-	pF

[1] All typical values are measured at nominal  $V_{CC}$ .

[2]  $t_{pd}$  is the same as  $t_{PZL}$  and  $t_{PLZ}$ .

[3]  $C_{PD}$  is used to determine the dynamic power dissipation (P<sub>D</sub> in  $\mu$ W).

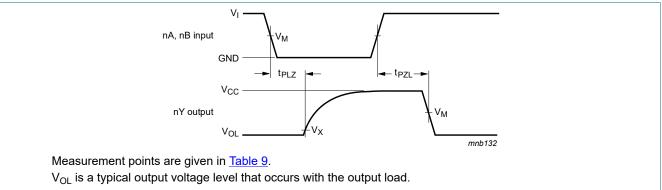
 $P_D = C_{PD} \times V_{CC}^2 \times f_i \times N$  where:

 $f_i$  = input frequency in MHz;

V<sub>CC</sub> = supply voltage in V;

N = number of inputs switching.

### 11.1. Waveforms and test circuit



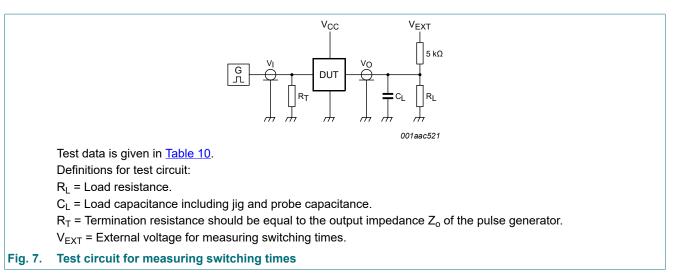
#### Fig. 6. The data input (nA, nB) to output (nY) propagation delays

#### Table 9. Measurement points

Supply voltage	Input		Output		
V <sub>cc</sub>	V <sub>M</sub>	VI	t <sub>r</sub> = t <sub>f</sub>	V <sub>M</sub>	V <sub>X</sub>
0.8 V to 1.6 V	0.5V <sub>CC</sub>	V <sub>CC</sub>	≤ 3.0 ns	0.5V <sub>CC</sub>	V <sub>OL</sub> + 0.1 V
1.65 V to 2.7 V	0.5V <sub>CC</sub>	V <sub>CC</sub>	≤ 3.0 ns	0.5V <sub>CC</sub>	V <sub>OL</sub> + 0.15 V
3.0 V to 3.6 V	0.5V <sub>CC</sub>	V <sub>CC</sub>	≤ 3.0 ns	0.5V <sub>CC</sub>	V <sub>OL</sub> + 0.3 V

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#### Table 10. Test data

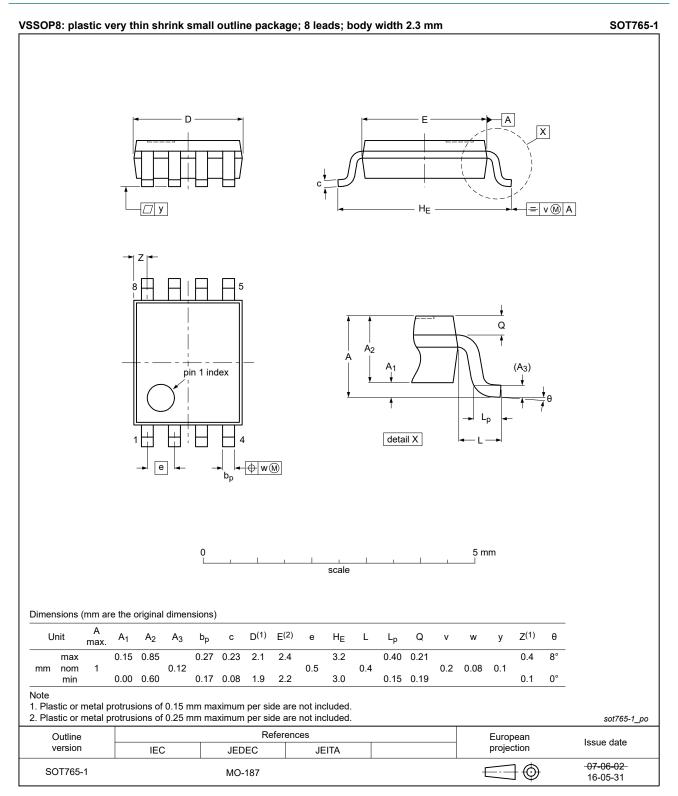
Supply voltage	Load		V <sub>EXT</sub>		
V <sub>cc</sub>	CL	R <sub>L</sub> [1]	t <sub>PLH</sub> , t <sub>PHL</sub>	t <sub>PZH</sub> , t <sub>PHZ</sub>	t <sub>PZL</sub> , t <sub>PLZ</sub>
0.8 V to 3.6 V	5 pF, 10 pF, 15 pF and 30 pF	5 kΩ or 1 MΩ	open	GND	2V <sub>CC</sub>

[1] For measuring enable and disable times  $R_L = 5 k\Omega$ . For measuring propagation delays, set-up times, hold times and pulse width,  $R_L = 1 M\Omega$ .

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# 12. Package outline



#### Fig. 8. Package outline SOT765-1 (VSSOP8)

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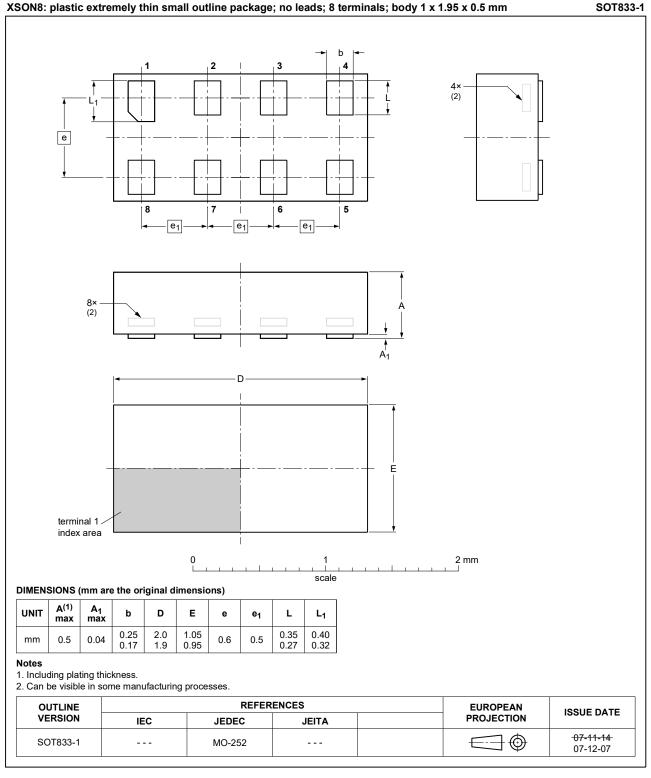


Fig. 9. Package outline SOT833-1 (XSON8)

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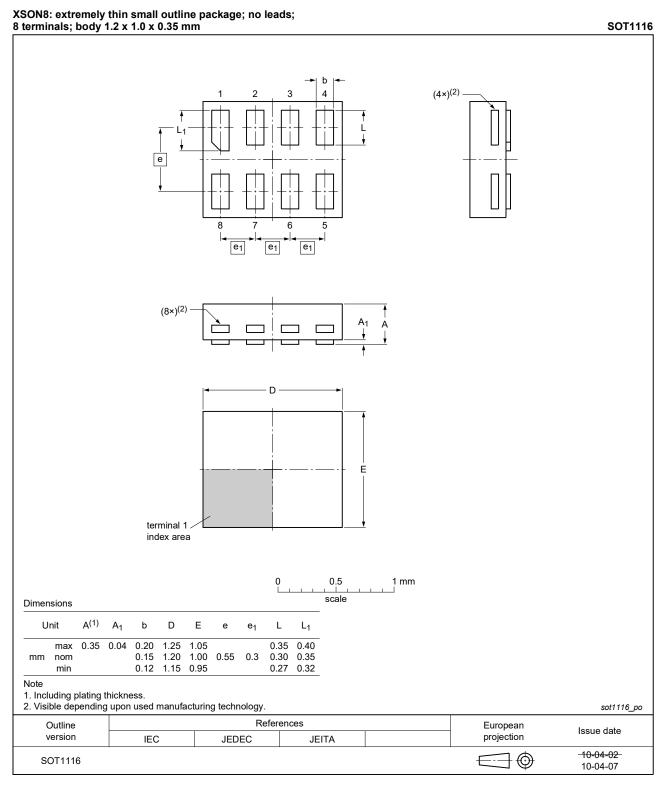
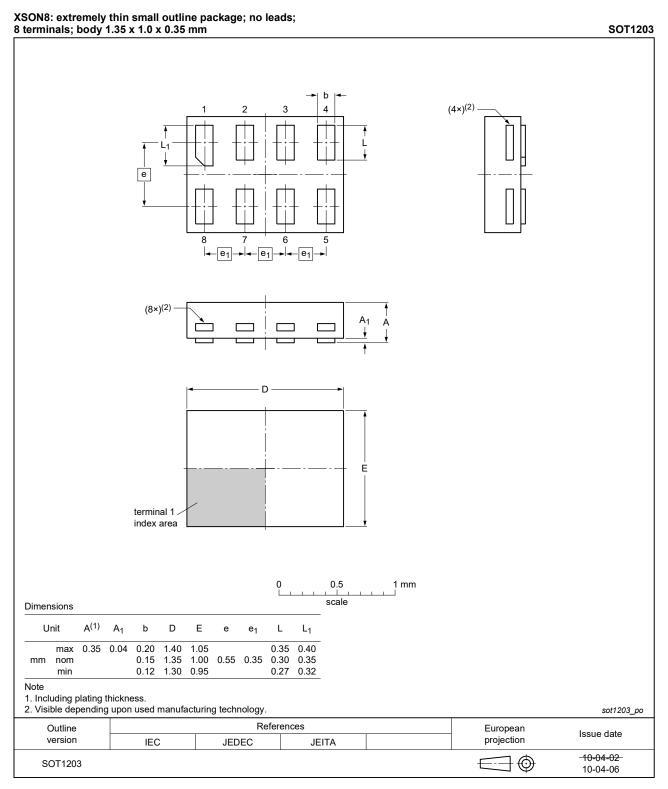


Fig. 10. Package outline SOT1116 (XSON8)

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## 13. Abbreviations

Table 11. Abbreviations			
Acronym	Description		
CDM	Charged Device Model		
DUT	Device Under Test		
ESD	ElectroStatic Discharge		
HBM	Human Body Model		

# 14. Revision history

#### Table 12. Revision history Document ID Release date Data sheet status Change notice Supersedes 74AUP2G38 v.11 20230731 74AUP2G38 v.10 Product data sheet Modifications: Section 2: ESD specification updated according to the latest JEDEC standard. 74AUP2G38 v.10 20201203 Product data sheet 74AUP2G38 v.9 Modifications: Section 8: Derating values for Ptot total power dissipation have been updated. • Type numbers 74AUP2G38GF (SOT1089/XSON8) and 74AUP2G38GM (SOT902-2/ XQFN8) removed. 74AUP2G38 v.9 20190326 Product data sheet 74AUP2G38 v.8 Modifications: The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia. Legal texts have been adapted to the new company name where appropriate. Type numbers 74AUP2G38GD (SOT996-2) removed. Package outline drawing SOT765-1 (VSSOP8) updated. • Package outline drawing SOT902-2 (XQFN8) updated. 74AUP2G38 v.8 20130211 Product data sheet 74AUP2G38 v.7 Modifications: For type number 74AUP2G38GD XSON8U has changed to XSON8. • 74AUP2G38 v.7 20120605 Product data sheet 74AUP2G38 v.6 74AUP2G38 v.6 20111209 Product data sheet 74AUP2G38 v.5 \_ 74AUP2G38 v.5 20100923 Product data sheet 74AUP2G38 v.4 74AUP2G38 v.4 74AUP2G38 v.3 20091008 Product data sheet \_ 74AUP2G38 v.3 Product data sheet 74AUP2G38 v.2 20090616 \_ 74AUP2G38 v.2 20080312 Product data sheet 74AUP2G38 v.1 74AUP2G38 v.1 Product data sheet 20061016

# 15. Legal information

#### **Data sheet status**

Document status [1][2]	Product status [3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
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