# **74AUP1G38**

## Low-power 2-input NAND gate (open drain)

Rev. 10 — 18 July 2023

**Product data sheet** 

## 1. General description

The 74AUP1G38 is a single 2-input NAND gate with open-drain output. Schmitt-trigger action at all inputs makes the circuit tolerant of slower input rise and fall times. This device ensures very low static and dynamic power consumption across the entire  $V_{\rm CC}$  range from 0.8 V to 3.6 V. This device is fully specified for partial power down applications using  $I_{\rm OFF}$ . The  $I_{\rm OFF}$  circuitry disables the output, preventing the potentially 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
- CMOS low power dissipation
- · 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 (1.65 V to 1.95 V)
  - JESD8-5 (2.3 V to 2.7 V)
  - JESD8C (2.7 V to 3.6 V)
- Low static power consumption; I<sub>CC</sub> = 0.9 μA (maximum)
- Latch-up performance exceeds 100 mA per JESD 78 Class II
- · Overvoltage tolerant inputs 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



Low-power 2-input NAND gate (open drain)

# 3. Ordering information

**Table 1. Ordering information** 

Type number	Package								
	Temperature range	Name	Description	Version					
74AUP1G38GW	-40 °C to +125 °C	TSSOP5	plastic thin shrink small outline package; 5 leads; body width 1.25 mm	SOT353-1					
74AUP1G38GM	-40 °C to +125 °C	XSON6	plastic extremely thin small outline package; no leads; 6 terminals; body 1 × 1.45 × 0.5 mm	SOT886					
74AUP1G38GN	-40 °C to +125 °C	XSON6	extremely thin small outline package; no leads; 6 terminals; body 0.9 × 1.0 × 0.35 mm	SOT1115					
74AUP1G38GS	-40 °C to +125 °C	XSON6	extremely thin small outline package; no leads; 6 terminals; body 1.0 × 1.0 × 0.35 mm	SOT1202					
74AUP1G38GX	-40 °C to +125 °C	X2SON5	plastic thermal enhanced extremely thin small outline package; no leads; 5 terminals; body 0.8 × 0.8 × 0.32 mm	SOT1226-3					

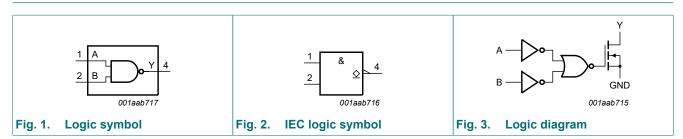
# 4. Marking

Table 2. Marking

14010 21 114111119	
Type number	Marking code[1]
74AUP1G38GW	аВ
74AUP1G38GM	аВ
74AUP1G38GN	аВ
74AUP1G38GS	аВ
74AUP1G38GX	аВ

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

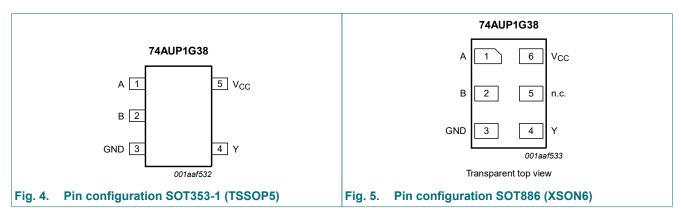
# 5. Functional diagram

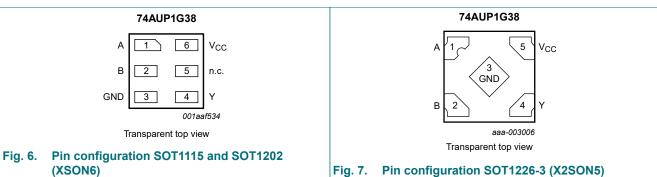


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# 6. Pinning information

### 6.1. Pinning





### 6.2. Pin description

Table 3. Pin description

Symbol	Pin		Description
	TSSOP5 and X2SON5	XSON6	
A	1	1	data input
В	2	2	data input
GND	3	3	ground (0 V)
Υ	4	4	data output
n.c.	-	5	not connected
V <sub>CC</sub>	5	6	supply voltage

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## 7. Functional description

#### **Table 4. Function table**

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

Input		Output
A	В	Υ
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
Io	output current	V <sub>O</sub> = 0 V to V <sub>CC</sub>		-	+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

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

For SOT886 (XSON6) package: Ptot derates linearly with 3.3 mW/K above 74 °C.

For SOT1115 (XSON6) package: Ptot derates linearly with 3.2 mW/K above 71 °C.

For SOT1202 (XSON6) package: P<sub>tot</sub> derates linearly with 3.3 mW/K above 74 °C.

For SOT1226-3 (X2SON5) package: Ptot derates linearly with 3.0 mW/K above 67 °C.

## 9. Recommended operating conditions

Table 6. Recommended operating conditions

Symbol	Parameter	Conditions	Min	Max	Unit
$V_{CC}$	supply voltage		8.0	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

<sup>[2]</sup> For SOT353-1 (TSSOP5) package: P<sub>tot</sub> derates linearly with 3.3 mW/K above 74 °C.

Low-power 2-input NAND gate (open drain)

## 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					
V <sub>IH</sub>	HIGH-level input voltage	V <sub>CC</sub> = 0.8 V	0.70 × V <sub>CC</sub>	-	-	V
		V <sub>CC</sub> = 0.9 V to 1.95 V	0.65 × V <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 voltage	V <sub>CC</sub> = 0.8 V	-	-	0.30 × V <sub>CC</sub>	V
		V <sub>CC</sub> = 0.9 V to 1.95 V	-	-	0.35 × V <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 voltage	$V_I = V_{IH}$ or $V_{IL}$				
		I <sub>O</sub> = 20 μA; V <sub>CC</sub> = 0.8 V to 3.6 V	-	-	0.1	V
		I <sub>O</sub> = 1.1 mA; V <sub>CC</sub> = 1.1 V	-	-	0.3 × V <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
I <sub>I</sub>	input leakage current	V <sub>I</sub> = GND to 3.6 V; V <sub>CC</sub> = 0 V to 3.6 V	-	-	±0.1	μΑ
l <sub>OZ</sub>	OFF-state output current	$V_I = V_{IH}$ or $V_{IL}$ (and at least one input LOW); $V_O = 0$ V to 3.6 V; $V_{CC} = 0$ V to 3.6 V	-	-	±0.1	μA
I <sub>OFF</sub>	power-off leakage current	V <sub>I</sub> or V <sub>O</sub> = 0 V to 3.6 V; V <sub>CC</sub> = 0 V	-	-	±0.2	μΑ
$\Delta I_{OFF}$	additional power-off leakage current	$V_1$ or $V_0 = 0$ V to 3.6 V; $V_{CC} = 0$ V to 0.2 V	-	-	±0.2	μA
I <sub>CC</sub>	supply current	$V_I = GND \text{ or } V_{CC}; I_O = 0 \text{ A};$ $V_{CC} = 0.8 \text{ V to } 3.6 \text{ V}$	-	-	0.5	μΑ
ΔI <sub>CC</sub>	additional supply current	$V_1 = V_{CC} - 0.6 \text{ V}; I_O = 0 \text{ A}; V_{CC} = 3.3 \text{ V}$	-	-	40	μΑ
Cı	input capacitance	$V_{CC}$ = 0 V to 3.6 V; $V_I$ = GND or $V_{CC}$	-	8.0	-	pF
Co	output capacitance	output enabled; V <sub>O</sub> = GND; V <sub>CC</sub> = 0 V	-	1.7	-	pF
		output disabled; V <sub>O</sub> = GND; V <sub>CC</sub> = 0 V	-	1.1	-	pF

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
T <sub>amb</sub> = -4	40 °C to +85 °C				-	
V <sub>IH</sub>	HIGH-level input voltage	V <sub>CC</sub> = 0.8 V	0.70 × V <sub>CC</sub>	-	-	V
· III		V <sub>CC</sub> = 0.9 V to 1.95 V	0.65 × V <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 voltage	V <sub>CC</sub> = 0.8 V	-	-	0.30 × V <sub>CC</sub>	V
		V <sub>CC</sub> = 0.9 V to 1.95 V	-	-	0.35 × V <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 voltage	$V_I = V_{IH}$ or $V_{IL}$				
		$I_O = 20 \mu A$ ; $V_{CC} = 0.8 \text{ V to } 3.6 \text{ V}$	-	-	0.1	V
		I <sub>O</sub> = 1.1 mA; V <sub>CC</sub> = 1.1 V	-	-	0.3 × V <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
		$I_{O}$ = 2.7 mA; $V_{CC}$ = 3.0 V	-	-	0.33	V
		$I_O = 4.0 \text{ mA}; V_{CC} = 3.0 \text{ V}$	-	-	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	μΑ
l <sub>OZ</sub>	OFF-state output current	$V_I = V_{IH}$ or $V_{IL}$ (and at least one input LOW); $V_O = 0$ V to 3.6 V; $V_{CC} = 0$ V to 3.6 V	-	-	±0.5	μΑ
I <sub>OFF</sub>	power-off leakage current	$V_{I}$ or $V_{O} = 0$ V to 3.6 V; $V_{CC} = 0$ V	-	-	±0.5	μΑ
Δl <sub>OFF</sub>	additional power-off leakage current	$V_1$ or $V_0 = 0 \text{ V}$ to 3.6 V; $V_{CC} = 0 \text{ V}$ to 0.2 V	-	-	±0.6	μΑ
I <sub>CC</sub>	supply current	$V_1 = GND \text{ or } V_{CC}; I_O = 0 \text{ A};$ $V_{CC} = 0.8 \text{ V to } 3.6 \text{ V}$	-	-	0.9	μΑ
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	μΑ

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
T <sub>amb</sub> = -	40 °C to +125 °C					'
V <sub>IH</sub>	HIGH-level input voltage	V <sub>CC</sub> = 0.8 V	0.75 × V <sub>CC</sub>	-	-	V
		V <sub>CC</sub> = 0.9 V to 1.95 V	0.70 × V <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 voltage	V <sub>CC</sub> = 0.8 V	-	-	0.25 × V <sub>CC</sub>	V
		V <sub>CC</sub> = 0.9 V to 1.95 V	-	-	0.30 × V <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 voltage	$V_{I} = V_{IH}$ or $V_{IL}$				
		I <sub>O</sub> = 20 μA; V <sub>CC</sub> = 0.8 V to 3.6 V	-	-	0.11	V
		I <sub>O</sub> = 1.1 mA; V <sub>CC</sub> = 1.1 V	-	-	0.33 × V <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
		$I_{O}$ = 2.7 mA; $V_{CC}$ = 3.0 V	-	-	0.36	V
		$I_{O}$ = 4.0 mA; $V_{CC}$ = 3.0 V	-	-	0.50	V
l <sub>l</sub>	input leakage current	V <sub>I</sub> = GND to 3.6 V; V <sub>CC</sub> = 0 V to 3.6 V	-	-	±0.75	μΑ
l <sub>OZ</sub>	OFF-state output current	$V_I = V_{IH}$ or $V_{IL}$ (and at least one input LOW); $V_O = 0$ V to 3.6 V; $V_{CC} = 0$ V to 3.6 V	-	-	±0.75	μΑ
I <sub>OFF</sub>	power-off leakage current	$V_{I}$ or $V_{O} = 0 \text{ V to } 3.6 \text{ V; } V_{CC} = 0 \text{ V}$	-	-	±0.75	μΑ
Δl <sub>OFF</sub>	additional power-off leakage current	$V_1$ or $V_0 = 0$ V to 3.6 V; $V_{CC} = 0$ V to 0.2 V	-	-	±0.75	μΑ
I <sub>CC</sub>	supply current	$V_1 = GND \text{ or } V_{CC}; I_O = 0 \text{ A};$ $V_{CC} = 0.8 \text{ V to } 3.6 \text{ V}$	-	-	1.4	μΑ
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	μΑ
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Low-power 2-input NAND gate (open drain)

# 11. Dynamic characteristics

#### **Table 8. Dynamic characteristics**

Voltages are referenced to GND (ground = 0 V; for test circuit see Fig. 9.

Symbol	Parameter	Conditions		25 °C		-40 °C to	o +85 °C	-40 °C to +125 °C		Unit
			Min	Typ[1]	Max	Min	Max	Min	Max	
C <sub>L</sub> = 5 p	F									
t <sub>pd</sub>		A or B to Y; see Fig. 8 [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									
t <sub>pd</sub>	propagation	A or B to Y; see Fig. 8 [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					'				
t <sub>pd</sub>	propagation	A or B to Y; see Fig. 8 [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>		A or B to Y; see Fig. 8 [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

#### Low-power 2-input NAND gate (open drain)

Symbol	Parameter	Conditions		25 °C		-40 °C to +85 °C		-40 °C to	+125 °C	Unit
			Min	Typ[1]	Max	Min	Max	Min	Max	
C <sub>L</sub> = 5 pl	F, 10 pF, 15 p	F and 30 pF								
C <sub>PD</sub>	dissipation	$f_i$ = 1 MHz; [3] $V_I$ = GND to $V_{CC}$								
	capacitance	V <sub>CC</sub> = 0.8 V	-	0.6	-	-	-	-	-	pF
		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<sub>CC</sub>.
- [2]  $t_{pd}$  is the same as  $t_{PZL}$  and  $t_{PLZ}$ .
- [3]  $C_{PD}$  is used to determine the dynamic power dissipation ( $P_D$  in  $\mu$ W).

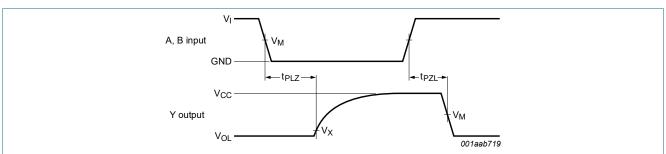
 $P_D = C_{PD} \times V_{CC}^2 \times f_i \times N$  where:

 $f_i$  = input frequency in MHz;

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

N = number of inputs switching.

### 11.1. Waveforms and test circuit



Measurement points are given in Table 9.

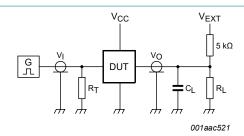
Logic levels: V<sub>OL</sub> is a typical output voltage drop that occur with the output load.

Fig. 8. The data input (A or B) to output (Y) propagation delays

**Table 9. Measurement points** 

Supply voltage	Input			Output		
V <sub>CC</sub>	V <sub>M</sub>	V <sub>I</sub>	$t_r = t_f$	V <sub>M</sub>	V <sub>X</sub>	
0.8 V to 1.6 V	0.5 × V <sub>CC</sub>	V <sub>CC</sub>	≤ 3.0 ns	0.5 × V <sub>CC</sub>	V <sub>OL</sub> + 0.1 V	
1.65 V to 2.7 V	0.5 × V <sub>CC</sub>	V <sub>CC</sub>	≤ 3.0 ns	0.5 × V <sub>CC</sub>	V <sub>OL</sub> + 0.15 V	
3.0 V to 3.6 V	0.5 × V <sub>CC</sub>	V <sub>CC</sub>	≤ 3.0 ns	0.5 × V <sub>CC</sub>	V <sub>OL</sub> + 0.3 V	

### Low-power 2-input NAND gate (open drain)



Test data is given in Table 10.

Definitions for test circuit:

R<sub>L</sub> = Load resistance;

C<sub>L</sub> = Load capacitance including jig and probe capacitance;

 $R_T$  = Termination resistance should be equal to the output impedance  $Z_o$  of the pulse generator;

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

#### Fig. 9. Test circuit for measuring switching times

#### 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	2 × V <sub>CC</sub>

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

Low-power 2-input NAND gate (open drain)

# 12. Package outline

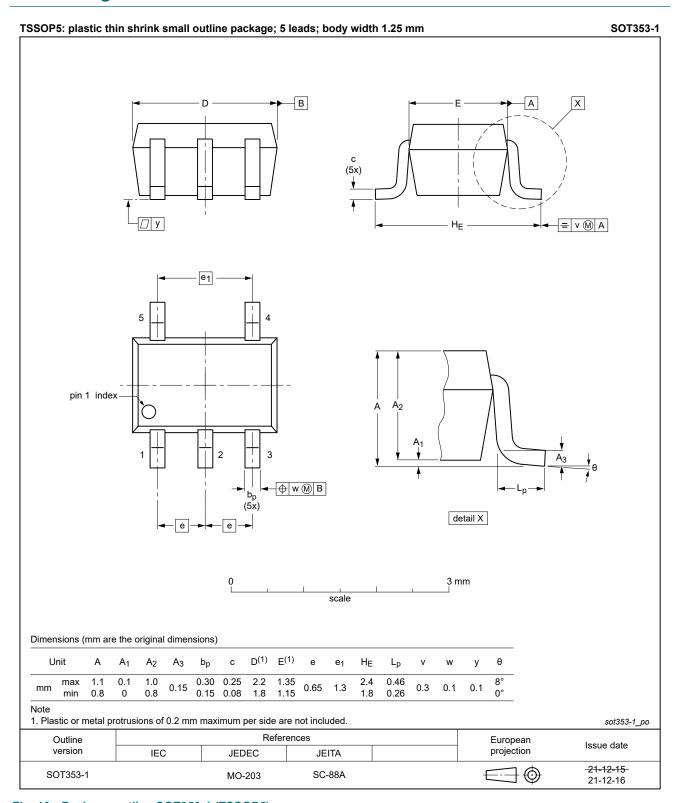


Fig. 10. Package outline SOT353-1 (TSSOP5)

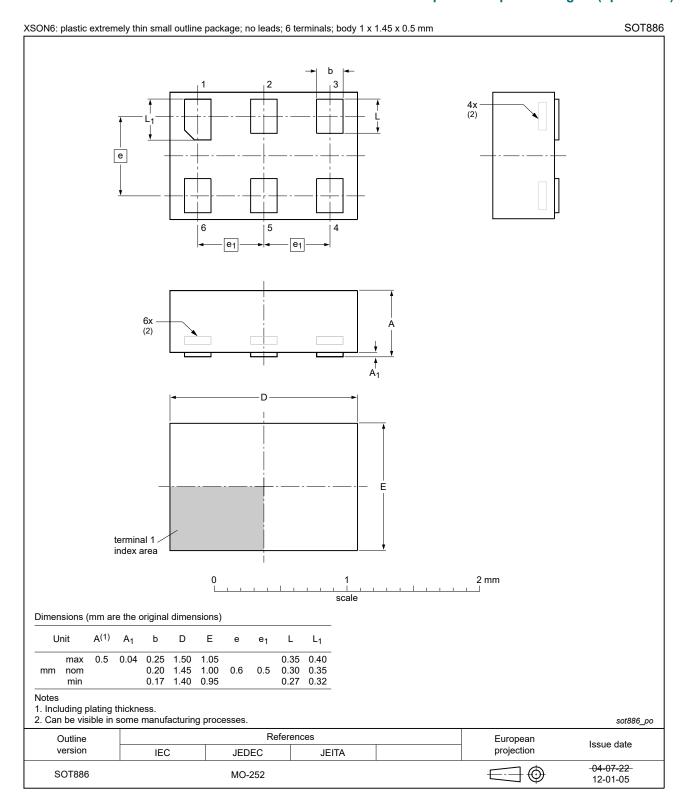


Fig. 11. Package outline SOT886 (XSON6)

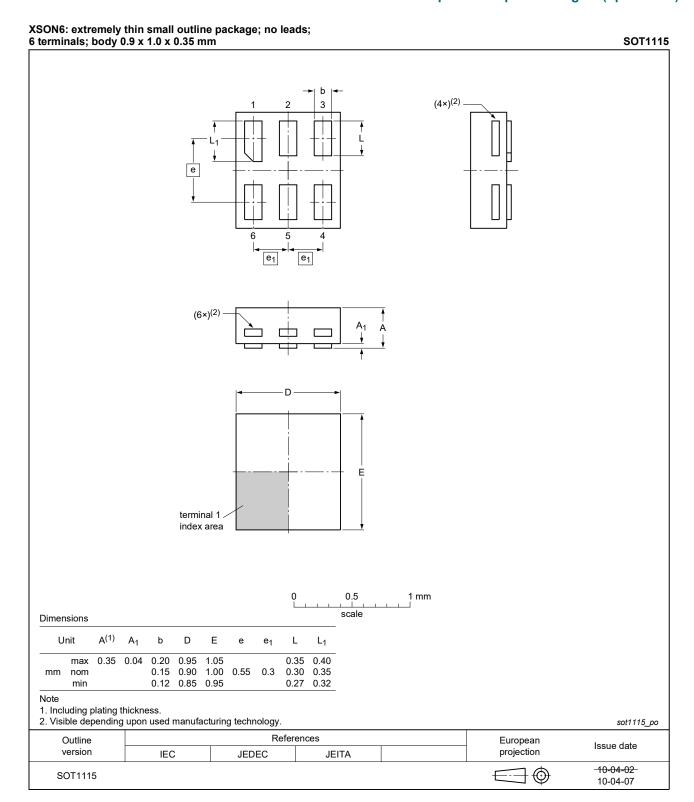


Fig. 12. Package outline SOT1115 (XSON6)

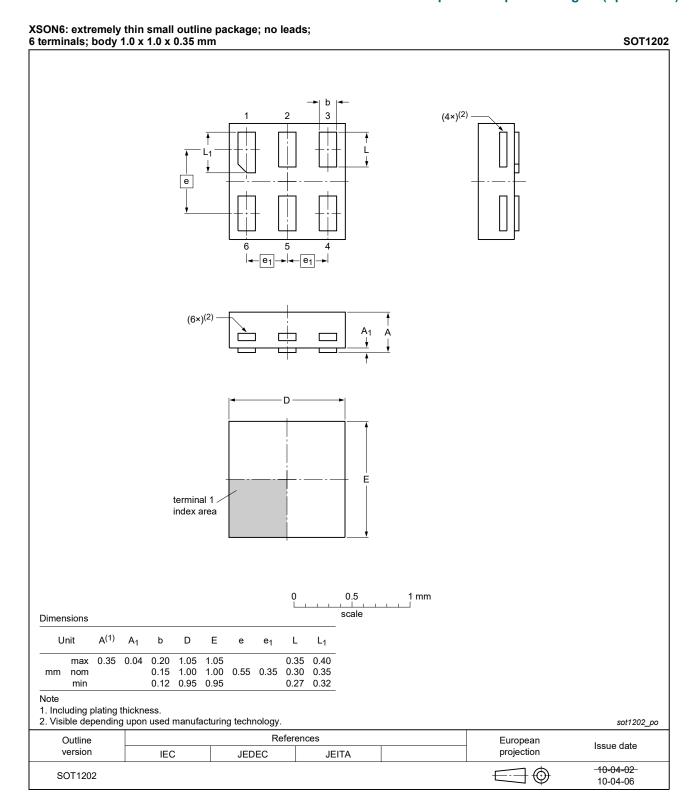


Fig. 13. Package outline SOT1202 (XSON6)

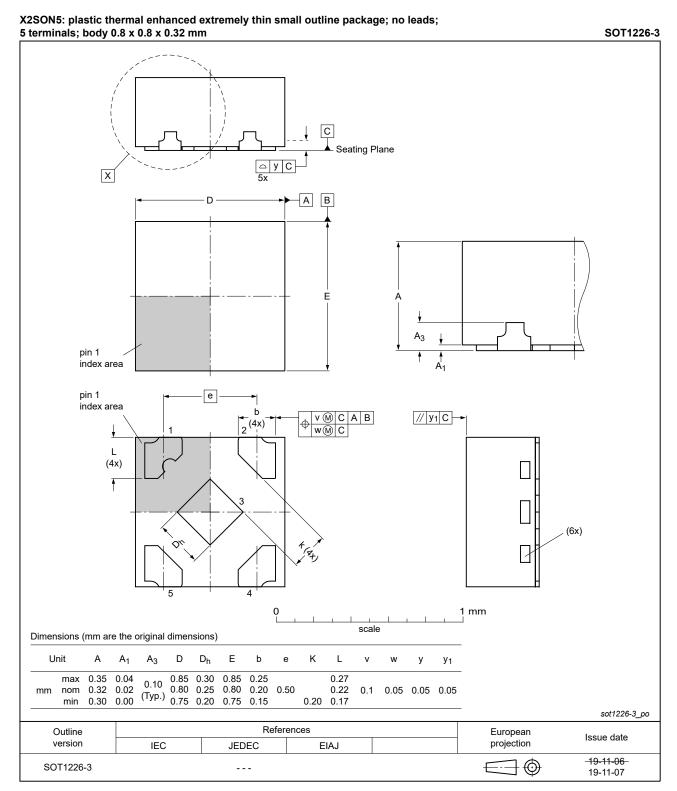


Fig. 14. Package outline SOT1226-3 (X2SON5)

Low-power 2-input NAND gate (open drain)

## 13. Abbreviations

#### **Table 11. Abbreviations**

Acronym	Description
CDM	Charged Device Model
DUT	Device Under Test
ESD	ElectroStatic Discharge
НВМ	Human Body Model

# 14. Revision history

### **Table 12. Revision history**

Document ID	Release date	Data sheet status	Change notice	Supersedes		
74AUP1G38 v.10	20230718	Product data sheet	-	74AUP1G38 v.9		
Modifications:	<u>Section 2</u> : ESI	<u>Section 2</u> : ESD specification updated according to the latest JEDEC standard.				
74AUP1G38 v.9	20220816	Product data sheet	-	74AUP1G38 v.8		
Modifications:	Package SOT	Package SOT1226 (X2SON5) changed to SOT1226-3 (X2SON5).				
74AUP1G38 v.8	20220207	Product data sheet	-	74AUP1G38 v.7		
Modifications:	Nexperia.  Legal texts ha Fig. 10: Packa Type number Section 1 and	<ul> <li>Legal texts have been adapted to the new company name where appropriate.</li> <li>Fig. 10: Package outline drawing for SOT353-1 (TSSOP5) has changed.</li> <li>Type number 74AUP1G38GF (SOT891/ XSON6) removed.</li> </ul>				
74AUP1G38 v.7	20160404	Product data sheet	-	74AUP1G38 v.6		
Modifications:	• <u>Fig. 7</u> : Typo co	prrected in pin naming (pins /	A and B swapped)			
74AUP1G38 v.6	20120628	Product data sheet	-	74AUP1G38 v.5		
Modifications:	<ul> <li>Added type number 74AUP1G38GX (SOT1226)</li> <li>Package outline drawing of SOT886 (<u>Fig. 11</u>) modified.</li> </ul>					
74AUP1G38 v.5	20111129	Product data sheet	-	74AUP1G38 v.4		
Modifications:	Legal pages updated.					
74AUP1G38 v.4	20101007	Product data sheet	-	74AUP1G38 v.3		
74AUP1G38 v.3	20090622	Product data sheet	-	74AUP1G38 v.2		
74AUP1G38 v.2	20070614	Product data sheet	-	74AUP1G38 v.1		
74AUP1G38 v.1	20061020	Product data sheet	-	-		

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## 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.
Product [short] data sheet	Production	This document contains the product specification.

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- [2] The term 'short data sheet' is explained in section "Definitions".
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