74AUP1G386

Low-power 3-input EXCLUSIVE-OR gate

Rev. 6 — 31 July 2012

Product data sheet

1. General description

The 74AUP1G386 provides a single 3-input EXCLUSIVE-OR gate.

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 the 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)
- ESD protection:
 - HBM JESD22-A114F Class 3A exceeds 5000 V
 - MM JESD22-A115-A exceeds 200 V
 - ◆ CDM JESD22-C101E exceeds 1000 V
- Low static power consumption; I_{CC} = 0.9 μA (maximum)
- Latch-up performance exceeds 100 mA per JESD 78 Class II
- Inputs accept voltages up to 3.6 V
- Low noise overshoot and undershoot < 10 % of V_{CC}
- I_{OFF} circuitry provides partial Power-down mode operation
- Multiple package options
- Specified from -40 °C to +85 °C and -40 °C to +125 °C



3. Ordering information

Table 1. Ordering information

Type number	Package								
	Temperature range	Name	Description	Version					
74AUP1G386GW	–40 °C to +125 °C	SC-88	plastic surface-mounted package; 6 leads	SOT363					
74AUP1G386GM	–40 °C to +125 °C	XSON6	plastic extremely thin small outline package; no leads; 6 terminals; body 1 \times 1.45 \times 0.5 mm	SOT886					
74AUP1G386GF	–40 °C to +125 °C	XSON6	plastic extremely thin small outline package; no leads; 6 terminals; body 1 \times 1 \times 0.5 mm	SOT891					
74AUP1G386GN	–40 °C to +125 °C	XSON6	extremely thin small outline package; no leads; 6 terminals; body $0.9 \times 1.0 \times 0.35$ mm	SOT1115					
74AUP1G386GS	–40 °C to +125 °C	XSON6	extremely thin small outline package; no leads; 6 terminals; body 1.0 \times 1.0 \times 0.35 mm	SOT1202					

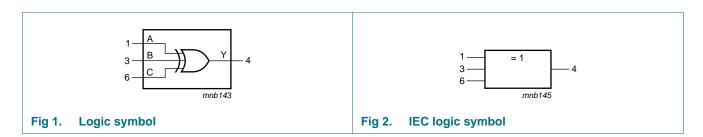
4. Marking

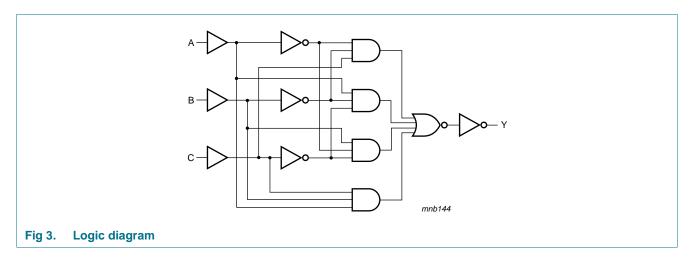
Table 2. Marking

Type number	Marking code ^[1]
74AUP1G386GW	аН
74AUP1G386GM	аН
74AUP1G386GF	аН
74AUP1G386GN	аН
74AUP1G386GS	аН

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

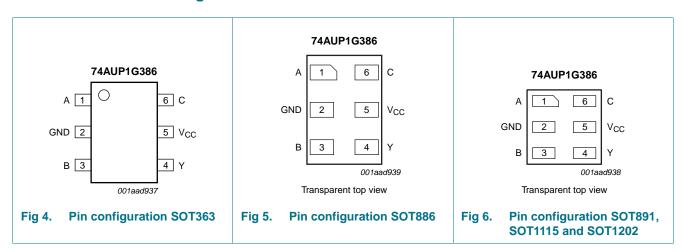
5. Functional diagram





6. Pinning information

6.1 Pinning



6.2 Pin description

Table 3. Pin description

Symbol	Pin	Description
Α	1	data input A
GND	2	ground (0 V)
В	3	data input B
Υ	4	data output Y
V _{CC}	5	supply voltage
С	6	data input C

7. Functional description

Table 4. Function table[1]

Input			Output
Α	В	С	Υ
L	L	L	L
L	L	Н	Н
L	Н	L	Н
L	Н	Н	L
Н	L	L	Н
Н	L	Н	L
Н	Н	L	L
Н	Н	Н	Н

^[1] H = HIGH voltage level; L = LOW voltage level; X = don't care.

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
•		Conditionio			
V_{CC}	supply voltage		-0.5	+4.6	V
I _{IK}	input clamping current	V _I < 0 V	-50	-	mA
V_{I}	input voltage		<u>[1]</u> –0.5	+4.6	V
I _{OK}	output clamping current	V _O < 0 V	-50	-	mA
V _O	output voltage	Active mode and Power-down mode	[1] -0.5	+4.6	V
I _O	output current	$V_O = 0 V \text{ to } V_{CC}$	-	±20	mA
I _{CC}	supply current		-	50	mA
I _{GND}	ground current		-50	-	mA
T _{stg}	storage temperature		-65	+150	°C
P _{tot}	total power dissipation	$T_{amb} = -40 ^{\circ}\text{C} \text{ to } +125 ^{\circ}\text{C}$	[2] _	250	mW

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

9. Recommended operating conditions

Table 6. Recommended operating conditions

Symbol	Parameter	Conditions	Min	Max	Unit
V_{CC}	supply voltage		8.0	3.6	V
V_{I}	input voltage		0	3.6	V

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^[2] For SC-88 packages: above 87.5 °C the value of P_{tot} derates linearly with 4.0 mW/K. For XSON6 packages: above 118 °C the value of P_{tot} derates linearly with 7.8 mW/K.

Table 6. Recommended operating conditions ...continued

Symbol	Parameter	Conditions	Min	Max	Unit
V_{O}	output voltage	Active mode	0	V_{CC}	V
		Power-down mode; V _{CC} = 0 V	0	3.6	V
T _{amb}	ambient temperature		-40	+125	°C
$\Delta t/\Delta V$	input transition rise and fall rate	V _{CC} = 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 _{amb} = 2	5 °C					
V_{IH}	HIGH-level input voltage	$V_{CC} = 0.8 \text{ V}$	$0.70 \times V_{CC}$	-	-	V
		V _{CC} = 0.9 V to 1.95 V	$0.65 \times V_{CC}$	-	-	V
		$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$	1.6	-	-	V
		$V_{CC} = 3.0 \text{ V to } 3.6 \text{ V}$	2.0	-	-	V
V _{IL}	LOW-level input voltage	V _{CC} = 0.8 V	-	-	$0.30 \times V_{CC}$	V
		V _{CC} = 0.9 V to 1.95 V	-	-	$0.35 \times V_{CC}$	V
		$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$	-	-	0.7	V
		V _{CC} = 3.0 V to 3.6 V	-	-	0.9	V
V _{OH}	HIGH-level output voltage	$V_I = V_{IH}$ or V_{IL}				
		$I_{O} = -20 \mu A$; $V_{CC} = 0.8 \text{ V}$ to 3.6 V	$V_{CC}-0.1$	-	-	V
		$I_{O} = -1.1 \text{ mA}; V_{CC} = 1.1 \text{ V}$	$0.75 \times V_{CC}$	-	-	V
		$I_{O} = -1.7 \text{ mA}; V_{CC} = 1.4 \text{ V}$	1.11	-	-	V
		$I_{O} = -1.9 \text{ mA}; V_{CC} = 1.65 \text{ V}$	1.32	-	-	V
		$I_{O} = -2.3 \text{ mA}; V_{CC} = 2.3 \text{ V}$	2.05	-	-	V
		$I_{O} = -3.1 \text{ mA}; V_{CC} = 2.3 \text{ V}$	1.9	-	-	V
		$I_{O} = -2.7 \text{ mA}; V_{CC} = 3.0 \text{ V}$	2.72	-	-	V
		$I_{O} = -4.0 \text{ mA}; V_{CC} = 3.0 \text{ V}$	2.6	-	-	V
V _{OL}	LOW-level output voltage	$V_I = V_{IH}$ or V_{IL}				
		I_O = 20 μ A; V_{CC} = 0.8 V to 3.6 V	-	-	0.1	V
		$I_O = 1.1 \text{ mA}; V_{CC} = 1.1 \text{ V}$	-	-	$0.3 \times V_{CC}$	V
		$I_O = 1.7 \text{ mA}; V_{CC} = 1.4 \text{ V}$	-	-	0.31	V
		$I_O = 1.9 \text{ mA}; V_{CC} = 1.65 \text{ V}$	-	-	0.31	V
		$I_{O} = 2.3 \text{ mA}; V_{CC} = 2.3 \text{ V}$	-	-	0.31	V
		$I_O = 3.1 \text{ mA}; V_{CC} = 2.3 \text{ V}$	-	-	0.44	V
		$I_O = 2.7 \text{ mA}; V_{CC} = 3.0 \text{ V}$	-	-	0.31	V
		$I_{O} = 4.0 \text{ mA}; V_{CC} = 3.0 \text{ V}$	-	-	0.44	V
l	input leakage current	V_I = GND to 3.6 V; V_{CC} = 0 V to 3.6 V	-	-	±0.1	μΑ
l _{OFF}	power-off leakage current	V_I or $V_O = 0$ V to 3.6 V; $V_{CC} = 0$ V	-	-	±0.2	μΑ
ΔI_{OFF}	additional power-off leakage current	V_1 or $V_O = 0$ V to 3.6 V; $V_{CC} = 0$ V to 0.2 V	-	-	±0.2	μΑ

 Table 7.
 Static characteristics ...continued

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

Symbol	Parameter	Conditions	Min	Тур	Max	Uni
lcc	supply current	V_I = GND or V_{CC} ; I_O = 0 A; V_{CC} = 0.8 V to 3.6 V	-	-	0.5	μΑ
7l ^{CC}	additional supply current	$V_{I} = V_{CC} - 0.6 \text{ V}; I_{O} = 0 \text{ A};$ $V_{CC} = 3.3 \text{ V}$	-	-	40	μΑ
Cı	input capacitance	V_{CC} = 0 V to 3.6 V; V_I = GND or V_{CC}	-	8.0	-	рF
Co	output capacitance	$V_O = GND; V_{CC} = 0 V$	-	1.7	-	рF
Γ _{amb} = -	40 °C to +85 °C					
/ _{IH}	HIGH-level input voltage	V _{CC} = 0.8 V	$0.70 \times V_{CC}$	-	-	V
		V _{CC} = 0.9 V to 1.95 V	$0.65 \times V_{CC}$	-	-	V
		$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$	1.6	-	-	V
		$V_{CC} = 3.0 \text{ V to } 3.6 \text{ V}$	2.0	-	-	V
/ _{IL}	LOW-level input voltage	V _{CC} = 0.8 V	-	-	$0.30 \times V_{CC}$	V
		V _{CC} = 0.9 V to 1.95 V	-	-	$0.35 \times V_{CC}$	V
		V _{CC} = 2.3 V to 2.7 V	-	-	0.7	V
		V _{CC} = 3.0 V to 3.6 V	-	-	0.9	V
/он	HIGH-level output voltage	$V_{I} = V_{IH}$ or V_{IL}				
		$I_O = -20 \mu A$; $V_{CC} = 0.8 \text{ V to } 3.6 \text{ V}$	V _{CC} - 0.1	-	-	V
		$I_{O} = -1.1 \text{ mA}; V_{CC} = 1.1 \text{ V}$	$0.7 \times V_{CC}$	-	-	٧
		$I_O = -1.7 \text{ mA}$; $V_{CC} = 1.4 \text{ V}$	1.03	-	-	٧
		$I_O = -1.9 \text{ mA}; V_{CC} = 1.65 \text{ V}$	1.30	-	-	٧
		$I_O = -2.3 \text{ mA}$; $V_{CC} = 2.3 \text{ V}$	1.97	-	-	٧
		$I_{O} = -3.1 \text{ mA}; V_{CC} = 2.3 \text{ V}$	1.85	-	-	٧
		$I_{O} = -2.7 \text{ mA}; V_{CC} = 3.0 \text{ V}$	2.67	-	-	V
		$I_O = -4.0 \text{ mA}; V_{CC} = 3.0 \text{ V}$	2.55		-	V
/ _{OL}	LOW-level output voltage	$V_{I} = V_{IH}$ or V_{IL}				
OL	- · · · · · · · · · · · · · · · · · · ·	$I_O = 20 \mu A$; $V_{CC} = 0.8 \text{ V to } 3.6 \text{ V}$	-	_	0.1	٧
		$I_{O} = 1.1 \text{ mA; } V_{CC} = 1.1 \text{ V}$	-	-	0.3 × V _{CC}	V
		$I_{O} = 1.7 \text{ mA}$; $V_{CC} = 1.4 \text{ V}$	-	_	0.37	V
		$I_O = 1.9 \text{ mA}$; $V_{CC} = 1.65 \text{ V}$	-	_	0.35	٧
		$I_O = 2.3 \text{ mA}; V_{CC} = 2.3 \text{ V}$		_	0.33	٧
		$I_O = 3.1 \text{ mA}; V_{CC} = 2.3 \text{ V}$		_	0.45	٧
		$I_O = 2.7 \text{ mA}$; $V_{CC} = 3.0 \text{ V}$		_	0.33	V
		$I_O = 4.0 \text{ mA}$; $V_{CC} = 3.0 \text{ V}$	-	_	0.45	V
<u> </u>	input leakage current	$V_I = GND \text{ to } 3.6 \text{ V}; V_{CC} = 0.0 \text{ V}$		_	±0.5	μΑ
	power-off leakage current	V_1 or $V_0 = 0$ V to 3.6 V; $V_{CC} = 0$ V	-	_	±0.5	μΑ
OFF	additional power-off	$V_1 \text{ or } V_0 = 0 \text{ V to } 3.6 \text{ V}, V_{CC} = 0 \text{ V}$ $V_1 \text{ or } V_0 = 0 \text{ V to } 3.6 \text{ V};$		_	±0.5 ±0.6	-
MOFF	leakage current	$V_{CC} = 0$ V to 0.2 V	-		±0.0	μА
CC	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	μΑ
∆I _{CC}	additional supply current	$V_I = V_{CC} - 0.6 \text{ V}; I_O = 0 \text{ A};$ $V_{CC} = 3.3 \text{ V}$	-	-	50	μΑ

 Table 7.
 Static characteristics ...continued

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

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
T _{amb} = -	HIGH-level input voltage V _{CC} = 0.8 V 0.75 × V _{CC} -					
V_{IH}	HIGH-level input voltage	$V_{CC} = 0.8 \text{ V}$	$0.75 \times V_{CC}$	-	-	V
		V _{CC} = 0.9 V to 1.95 V	$0.70 \times V_{CC}$	-	-	V
		V _{CC} = 2.3 V to 2.7 V	1.6	-	-	V
		V _{CC} = 3.0 V to 3.6 V	2.0	-	-	V
V_{IL}	LOW-level input voltage	V _{CC} = 0.8 V	-	-	$0.25 \times V_{CC}$	V
		V _{CC} = 0.9 V to 1.95 V	-	-	$0.30 \times V_{CC}$	V
		V _{CC} = 2.3 V to 2.7 V	-	-	0.7	V
		V _{CC} = 3.0 V to 3.6 V	-	-	0.9	V
V_{OH}	HIGH-level output voltage	$V_I = V_{IH}$ or V_{IL}				
		$I_O = -20 \mu A$; $V_{CC} = 0.8 \text{ V}$ to 3.6 V	V _{CC} – 0.11	-	-	V
		$I_{O} = -1.1 \text{ mA}; V_{CC} = 1.1 \text{ V}$	$0.6 \times V_{CC}$	-	-	V
		$I_{O} = -1.7 \text{ mA}; V_{CC} = 1.4 \text{ V}$	0.93	-	-	V
		$I_{O} = -1.9 \text{ mA}; V_{CC} = 1.65 \text{ V}$	1.17	-	-	V
		$I_{O} = -2.3 \text{ mA}; V_{CC} = 2.3 \text{ V}$	1.77	-	-	V
		$I_{O} = -3.1 \text{ mA}; V_{CC} = 2.3 \text{ V}$	1.67	-	-	V
		$I_{O} = -2.7 \text{ mA}; V_{CC} = 3.0 \text{ V}$	2.40	-	-	V
		$I_{O} = -4.0 \text{ mA}; V_{CC} = 3.0 \text{ V}$	2.30	-	-	V
V_{OL}	LOW-level output voltage	$V_{I} = V_{IH}$ or V_{IL}				
		$I_O = 20 \mu A$; $V_{CC} = 0.8 \text{ V to } 3.6 \text{ V}$	-	-	0.11	V
		I _O = 1.1 mA; V _{CC} = 1.1 V	-	-	$0.33 \times V_{CC}$	V
		$I_O = 1.7 \text{ mA}; V_{CC} = 1.4 \text{ V}$	-	-	0.41	V
		I _O = 1.9 mA; V _{CC} = 1.65 V	-	-	0.39	V
		I_{O} = 2.3 mA; V_{CC} = 2.3 V	-	-	0.36	V
		$I_O = 3.1 \text{ mA}; V_{CC} = 2.3 \text{ V}$	-	-	0.50	V
		$I_O = 2.7 \text{ mA}; V_{CC} = 3.0 \text{ V}$	-	-	0.36	V
		$I_O = 4.0 \text{ mA}; V_{CC} = 3.0 \text{ V}$	-	-	0.50	V
I _I	input leakage current	$V_{I} = GND \text{ to } 3.6 \text{ V}; V_{CC} = 0 \text{ V to } 3.6 \text{ V}$	-	-	±0.75	μΑ
I _{OFF}	power-off leakage current	V_I or $V_O = 0$ V to 3.6 V; $V_{CC} = 0$ V	-	-	±0.75	μΑ
ΔI_{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	-	-	±0.75	μΑ
I _{CC}	supply current	V_I = GND or V_{CC} ; I_O = 0 A; V_{CC} = 0.8 V to 3.6 V	-	-	1.4	μΑ
ΔI_{CC}	additional supply current	$V_I = V_{CC} - 0.6 \text{ V}; I_O = 0 \text{ A};$ $V_{CC} = 3.3 \text{ V}$	-	-	75	μΑ

11. Dynamic characteristics

Table 8. Dynamic characteristics

Voltages are referenced to GND (ground = 0 V); for test circuit see Figure 8.

Symbol	Parameter	Conditions			25 °C		-4	0 °C to +1	125 °C	Unit
				Min	Typ[1]	Max	Min	Max (85 °C)	Max (125 °C)	
$C_L = 5 p$	F					'		'	•	
t _{pd}	propagation delay	A, B and C to Y; see Figure 7	[2]							
		$V_{CC} = 0.8 \text{ V}$		-	23.4	-	-	-	-	ns
	$V_{CC} = 1.1 \text{ V to } 1.3 \text{ V}$		2.7	6.5	14.2	2.4	14.6	14.7	ns	
		$V_{CC} = 1.4 \text{ V to } 1.6 \text{ V}$		2.0	4.4	8.1	2.1	8.8	9.1	ns
		$V_{CC} = 1.65 \text{ V to } 1.95 \text{ V}$		1.8	3.5	6.1	1.6	7.0	7.3	ns
		V_{CC} = 2.3 V to 2.7 V		1.5	2.7	4.3	1.2	4.6	4.8	ns
		$V_{CC} = 3.0 \text{ V to } 3.6 \text{ V}$		1.3	2.4	3.6	1.0	4.0	4.2	ns
C _L = 10	pF									
t _{pd}	propagation delay	A, B and C to Y; see Figure 7	[2]							
		$V_{CC} = 0.8 \text{ V}$		-	26.8	-	-	-	-	ns
		$V_{CC} = 1.1 \text{ V to } 1.3 \text{ V}$		3.2	7.3	15.8	2.7	16.2	16.3	ns
		$V_{CC} = 1.4 \text{ V to } 1.6 \text{ V}$		2.3	5.0	9.0	2.5	9.8	10.2	ns
		$V_{CC} = 1.65 \text{ V to } 1.95 \text{ V}$		2.2	4.1	6.9	1.9	7.8	8.2	ns
		$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$		1.9	3.2	5.0	1.6	5.3	5.5	ns
		$V_{CC} = 3.0 \text{ V to } 3.6 \text{ V}$		1.7	2.9	4.3	1.4	4.7	4.9	ns
C _L = 15	pF									
t _{pd}	propagation delay	A, B and C to Y; see Figure 7	[2]							
		$V_{CC} = 0.8 \text{ V}$		-	30.1	-	-	-	-	ns
		$V_{CC} = 1.1 \text{ V to } 1.3 \text{ V}$		3.5	8.1	17.3	3.0	17.7	17.8	ns
		$V_{CC} = 1.4 \text{ V to } 1.6 \text{ V}$		2.6	5.6	9.8	2.8	10.7	11.1	ns
		$V_{CC} = 1.65 \text{ V to } 1.95 \text{ V}$		2.4	4.6	7.5	2.2	8.6	9.0	ns
		V_{CC} = 2.3 V to 2.7 V		2.2	3.7	5.5	1.9	5.9	6.2	ns
		$V_{CC} = 3.0 \text{ V to } 3.6 \text{ V}$		2.0	3.4	4.8	1.7	5.2	5.5	ns
C _L = 30	pF									
t_{pd}	propagation delay	A, B and C to Y; see Figure 7	[2]							
		$V_{CC} = 0.8 \text{ V}$		-	37.9	-	-	-	-	ns
		$V_{CC} = 1.1 \text{ V to } 1.3 \text{ V}$		4.5	10.3	21.6	3.9	22.0	22.1	ns
		$V_{CC} = 1.4 \text{ V to } 1.6 \text{ V}$		3.5	7.1	12.1	3.5	13.2	13.8	ns
		$V_{CC} = 1.65 \text{ V to } 1.95 \text{ V}$		3.1	5.8	9.5	2.8	10.7	11.3	ns
		V_{CC} = 2.3 V to 2.7 V		2.9	4.8	6.9	2.6	7.8	8.2	ns
		$V_{CC} = 3.0 \text{ V to } 3.6 \text{ V}$		2.7	4.5	6.1	2.3	6.6	6.9	ns

 Table 8.
 Dynamic characteristics ...continued

Voltages are referenced to GND (ground = 0 V); for test circuit see Figure 8.

Symbol	Parameter	Conditions	Conditions		25 °C		-40 °C to +125 °C			Unit
				Min	Typ[1]	Max	Min	Max (85 °C)	Max (125 °C)	
$C_L = 5 pF$	F, 10 pF, 15 pF and	30 pF	·			,	,			
C_{PD}	power dissipation capacitance	$f_i = 1 \text{ MHz}; V_I = \text{GND to } V_{CC}$	[3][4]							
		$V_{CC} = 0.8 \text{ V}$		-	2.9	-	-	-	-	pF
		$V_{CC} = 1.1 \text{ V to } 1.3 \text{ V}$		-	3.0	-	-	-	-	pF
		$V_{CC} = 1.4 \text{ V to } 1.6 \text{ V}$		-	3.1	-	-	-	-	pF
		$V_{CC} = 1.65 \text{ V to } 1.95 \text{ V}$		-	3.3	-	-	-	-	pF
		$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$		-	3.9	-	-	-	-	pF
		$V_{CC} = 3.0 \text{ V to } 3.6 \text{ V}$		-	4.4	-	-	-	-	pF

- [1] All typical values are measured at nominal V_{CC}.
- [2] t_{pd} is the same as t_{PLH} and t_{PHL} .
- [3] All specified values are the average typical values over all stated loads.
- [4] C_{PD} is used to determine the dynamic power dissipation (P_D in μW).

$$P_D = C_{PD} \times V_{CC}^2 \times f_i \times N + \Sigma (C_L \times V_{CC}^2 \times f_o) \text{ where:}$$

f_i = input frequency in MHz;

 f_0 = output frequency in MHz;

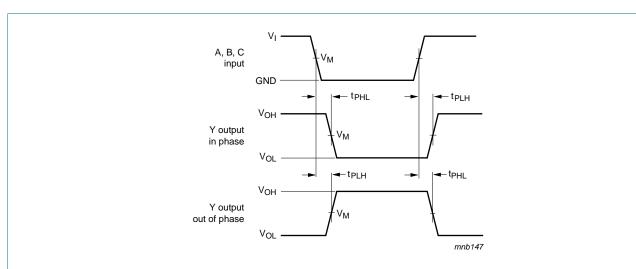
C_L = load capacitance in pF;

 V_{CC} = supply voltage in V;

N = number of inputs switching;

 $\Sigma(C_L \times V_{CC}^2 \times f_o)$ = sum of the outputs.

12. Waveforms



Measurement points are given in Table 9.

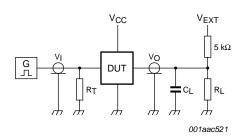
Logic levels: V_{OL} and V_{OH} are typical output voltage levels that occur with the output load.

Fig 7. Input A, B and C to output Y propagation delay times

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Table 9. Measurement points

Supply voltage	Output	Input		
V _{CC}	V _M	V _M	V _I	$t_r = t_f$
0.8 V to 3.6 V	$0.5 \times V_{CC}$	$0.5 \times V_{CC}$	V _{CC}	≤ 3.0 ns



Test data is given in Table 10.

Definitions for test circuit:

R_L = Load resistance.

 C_L = Load capacitance including jig and probe capacitance.

 R_T = Termination resistance should be equal to the output impedance Z_0 of the pulse generator.

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

Fig 8. Test circuit for measuring switching times

Table 10. Test data

Supply voltage	Load		V _{EXT}		
V _{CC}	CL	R _L [1]	t _{PLH} , t _{PHL}	t _{PZH} , t _{PHZ}	t _{PZL} , t _{PLZ}
0.8 V to 3.6 V	5 pF, 10 pF, 15 pF and 30 pF	$5~\text{k}\Omega$ or $1~\text{M}\Omega$	open	GND	$2 \times V_{CC}$

^[1] For measuring enable and disable times R_L = 5 k Ω , for measuring propagation delays, setup and hold times and pulse width R_L = 1 M Ω .

13. Package outline

Plastic surface-mounted package; 6 leads

SOT363

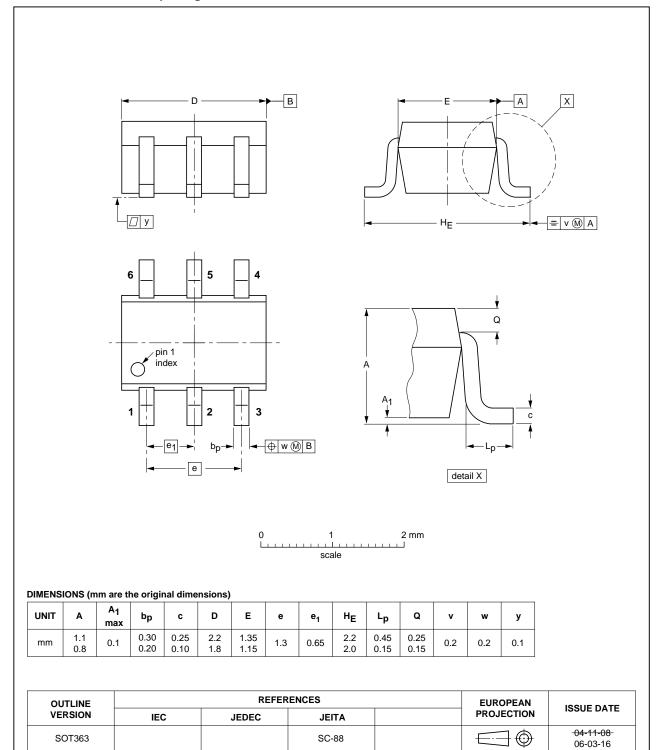


Fig 9. Package outline SOT363 (SC-88)

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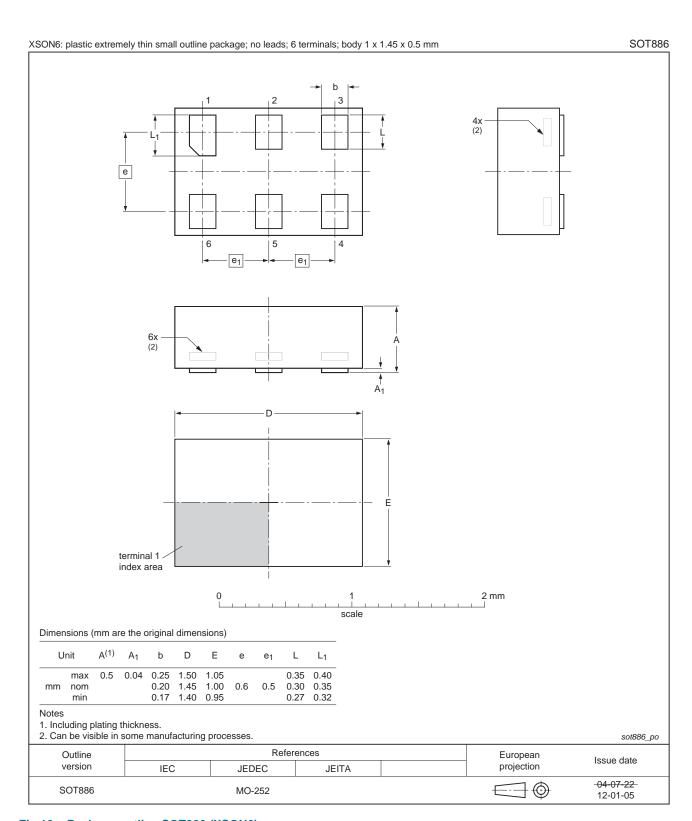


Fig 10. Package outline SOT886 (XSON6)

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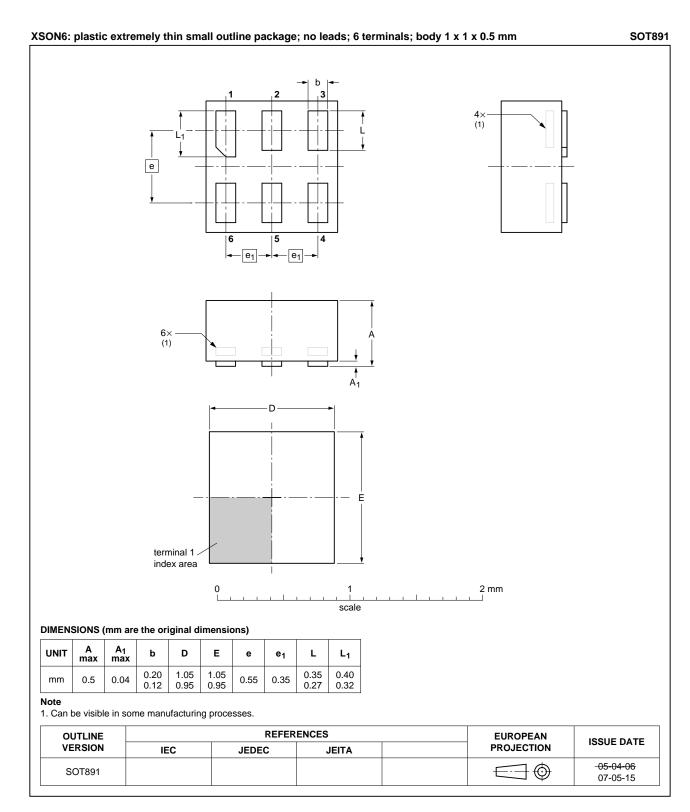


Fig 11. Package outline SOT891 (XSON6)

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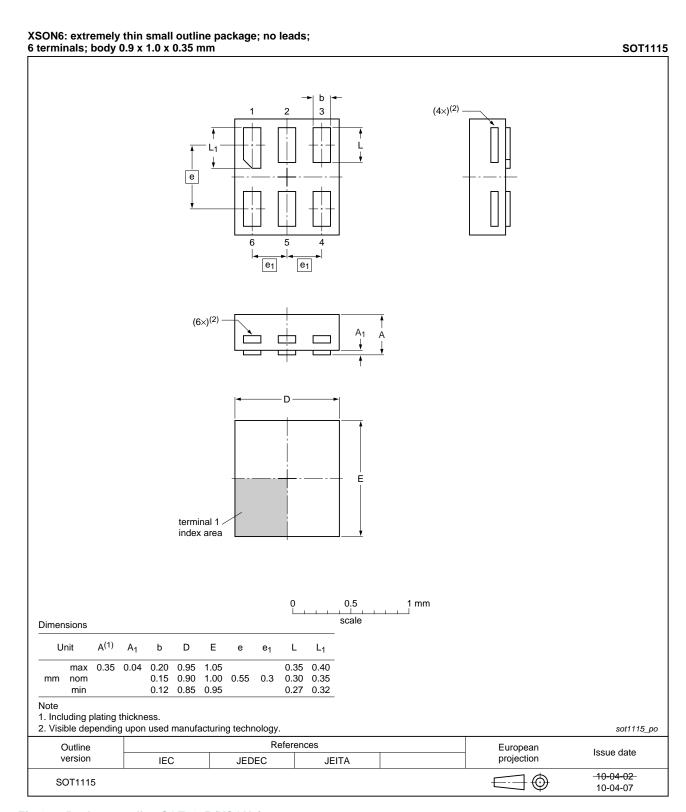


Fig 12. Package outline SOT1115 (XSON6)

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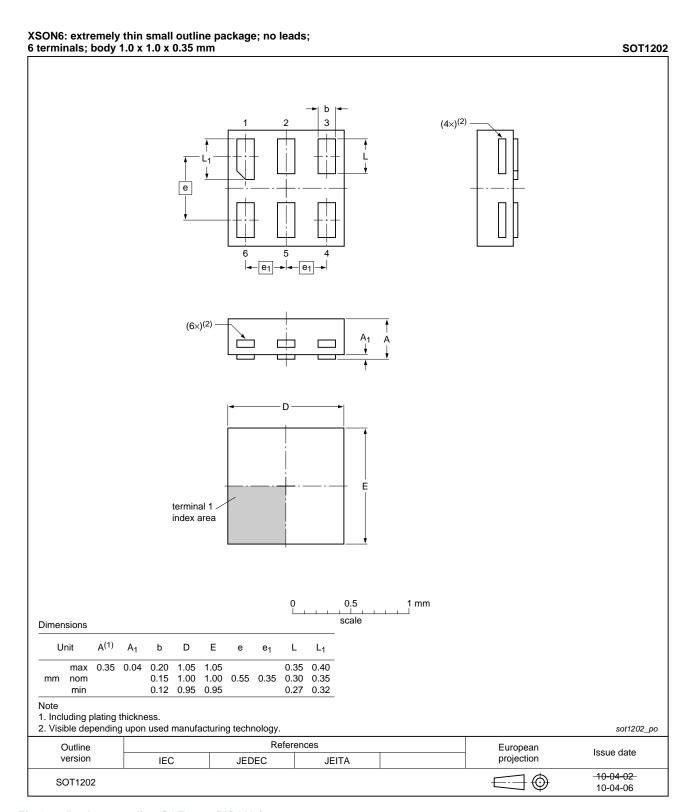


Fig 13. Package outline SOT1202 (XSON6)

14. Abbreviations

Table 11. Abbreviations

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

15. Revision history

Table 12. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
74AUP1G386 v.6	20120731	Product data sheet	-	74AUP1G386 v.5
Modifications:	 Package ou 	tline drawing of SOT886 (F	igure 10) modified.	
74AUP1G386 v.5	20111128	Product data sheet	-	74AUP1G386 v.4
Modifications:	 Legal pages 	s updated.		
74AUP1G386 v.4	20100805	Product data sheet	-	74AUP1G386 v.3
74AUP1G386 v.3	20090702	Product data sheet	-	74AUP1G386 v.2
74AUP1G386 v.2	20080110	Product data sheet	-	74AUP1G386 v.1
74AUP1G386 v.1	20061129	Product data sheet	-	-

16. Legal information

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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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