

74AUP1G332

Low-power 3-input OR gate

Rev. 01.00 — 27 February 2006

Preliminary data sheet

1. General description

The 74AUP1G332 is a high-performance, low-power, low-voltage, Si-gate CMOS device, superior to most advanced CMOS compatible TTL families.

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.

The 74AUP1G332 provides a single 3-input OR gate.

2. Features

- 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-A114-C Class 3A. Exceeds 4000 V
 - ◆ MM JESD22-A115-A exceeds 200 V
 - ◆ CDM JESD22-C101-C exceeds 1000 V
- Low static power consumption; $I_{CC} = 0.9 \mu\text{A}$ (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 $-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ and $-40\text{ }^{\circ}\text{C}$ to $+125\text{ }^{\circ}\text{C}$

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3. Quick reference data

Table 1: Quick reference data

$GND = 0\text{ V}$; $T_{amb} = 25\text{ °C}$; $t_r = t_f \leq 3\text{ ns}$.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
t_{PHL} , t_{PLH}	HIGH-to-LOW and LOW-to-HIGH propagation delay A, B and C to Y	$C_L = 5\text{ pF}$; $R_L = 1\text{ M}\Omega$; $V_{CC} = 0.8\text{ V}$	-	17.6	-	ns
		$C_L = 5\text{ pF}$; $R_L = 1\text{ M}\Omega$; $V_{CC} = 1.1\text{ V to }1.3\text{ V}$	2.3	5.2	10.2	ns
		$C_L = 5\text{ pF}$; $R_L = 1\text{ M}\Omega$; $V_{CC} = 1.4\text{ V to }1.6\text{ V}$	1.7	3.7	6.0	ns
		$C_L = 5\text{ pF}$; $R_L = 1\text{ M}\Omega$; $V_{CC} = 1.65\text{ V to }1.95\text{ V}$	1.6	3.0	4.7	ns
		$C_L = 5\text{ pF}$; $R_L = 1\text{ M}\Omega$; $V_{CC} = 2.3\text{ V to }2.7\text{ V}$	1.4	2.3	3.3	ns
		$C_L = 5\text{ pF}$; $R_L = 1\text{ M}\Omega$; $V_{CC} = 3.0\text{ V to }3.6\text{ V}$	1.2	2.1	2.9	ns
C_I	input capacitance		-	1.0	-	pF
C_{PD}	power dissipation capacitance	$V_{CC} = 1.8\text{ V}$; $f = 1\text{ MHz}$	[1][2]	3.4	-	pF
		$V_{CC} = 3.3\text{ V}$; $f = 1\text{ MHz}$	[1][2]	4.3	-	pF

[1] C_{PD} is used to determine the dynamic power dissipation (P_D in μW).

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

f_i = input frequency in MHz;

f_o = 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.

[2] The condition is $V_I = GND$ to V_{CC} .

4. Ordering information

Table 2: Ordering information

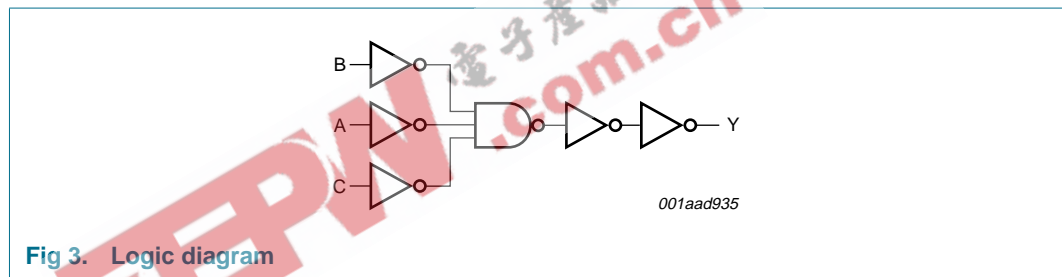
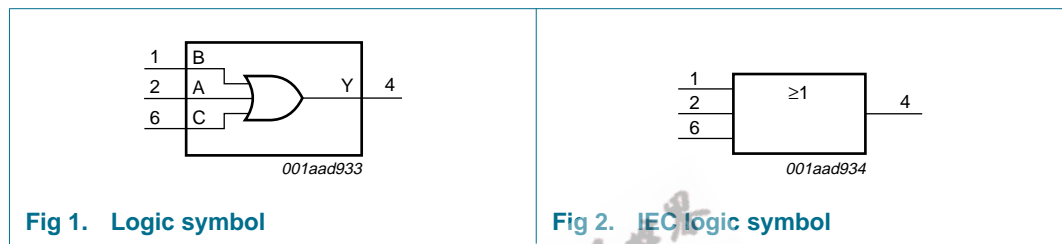
Type number	Package			Version
	Temperature range	Name	Description	
74AUP1G332GW	-40 °C to +125 °C	SC-88	plastic surface mounted package; 6 leads	SOT363
74AUP1G332GM	-40 °C to +125 °C	XSON6	plastic extremely thin small outline package; no leads; 6 terminals; body $1 \times 1.45 \times 0.5\text{ mm}$	SOT886
74AUP1G332GF	-40 °C to +125 °C	XSON6	plastic extremely thin small outline package; no leads; 6 terminals; body $1 \times 1 \times 0.5\text{ mm}$	SOT891

5. Marking

Table 3: Marking

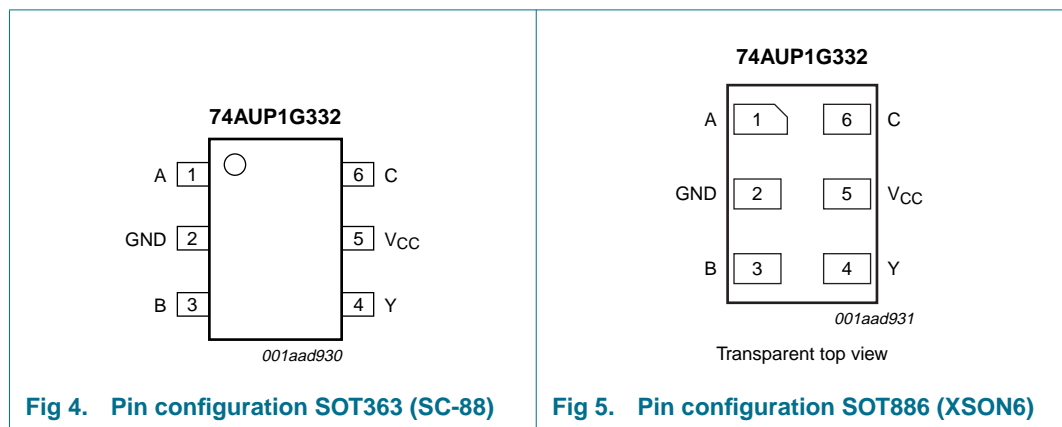
Type number	Marking code
74AUP1G332GW	aG
74AUP1G332GM	aG
74AUP1G332GF	aG

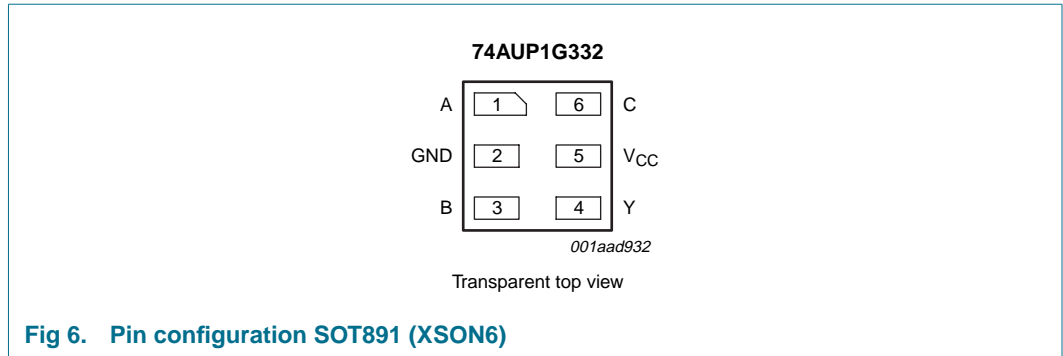
6. Functional diagram



7. Pinning information

7.1 Pinning





7.2 Pin description

Table 4: Pin description

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

8. Functional description

8.1 Function table

Table 5: Function table [\[1\]](#)

Input			Output
A	B	C	Y
H	X	X	H
X	H	X	H
X	X	H	H
L	L	L	L

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

9. Limiting values

Table 6: 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_{CC}	supply voltage		-0.5	+4.6	V
I_{IK}	input clamping current	$V_I < 0$ V	-	-50	mA
V_I	input voltage		[1] -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 to V_{CC}	-	±20	mA
I_{CC}	quiescent supply current		-	+50	mA
I_{GND}	ground current		-	-50	mA
T_{stg}	storage temperature		-65	+150	°C
P_{tot}	total power dissipation	$T_{amb} = -40$ °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 SC-88 packages: above 87.5 °C the value of P_{tot} derates linearly with 4.0 mW/K.
For XSON6 packages: above 45 °C the value of P_{tot} derates linearly with 2.4 mW/K.

10. Recommended operating conditions

Table 7: Recommended operating conditions

Symbol	Parameter	Conditions	Min	Max	Unit
V_{CC}	supply voltage		0.8	3.6	V
V_I	input voltage		0	3.6	V
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

11. Static characteristics

Table 8: Static characteristics

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
T_{amb} = 25 °C						
V _{IH}	HIGH-state input voltage	V _{CC} = 0.8 V	0.70 × V _{CC}	-	-	V
		V _{CC} = 0.9 V to 1.95 V	0.65 × 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-state input voltage	V _{CC} = 0.8 V	-	-	0.30 × V _{CC}	V
		V _{CC} = 0.9 V to 1.95 V	-	-	0.35 × 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-state output voltage	V _I = V _{IH} or V _{IL}				
		I _O = -20 μA; V _{CC} = 0.8 V to 3.6 V	V _{CC} - 0.1	-	-	V
		I _O = -1.1 mA; V _{CC} = 1.1 V	0.75 × V _{CC}	-	-	V
		I _O = -1.7 mA; V _{CC} = 1.4 V	1.11	-	-	V
		I _O = -1.9 mA; V _{CC} = 1.65 V	1.32	-	-	V
		I _O = -2.3 mA; V _{CC} = 2.3 V	2.05	-	-	V
		I _O = -3.1 mA; V _{CC} = 2.3 V	1.9	-	-	V
		I _O = -2.7 mA; V _{CC} = 3.0 V	2.72	-	-	V
		I _O = -4.0 mA; V _{CC} = 3.0 V	2.6	-	-	V
V _{OL}	LOW-state output voltage	V _I = V _{IH} or V _{IL}				
		I _O = 20 μA; V _{CC} = 0.8 V to 3.6 V	-	-	0.1	V
		I _O = 1.1 mA; V _{CC} = 1.1 V	-	-	0.3 × V _{CC}	V
		I _O = 1.7 mA; V _{CC} = 1.4 V	-	-	0.31	V
		I _O = 1.9 mA; V _{CC} = 1.65 V	-	-	0.31	V
		I _O = 2.3 mA; V _{CC} = 2.3 V	-	-	0.31	V
		I _O = 3.1 mA; V _{CC} = 2.3 V	-	-	0.44	V
		I _O = 2.7 mA; V _{CC} = 3.0 V	-	-	0.31	V
		I _O = 4.0 mA; V _{CC} = 3.0 V	-	-	0.44	V
I _I	input leakage current	V _I = GND to 3.6 V; V _{CC} = 0 V to 3.6 V	-	-	±0.1	μA
I _{OFF}	power-off leakage current	V _I or V _O = 0 V to 3.6 V; V _{CC} = 0 V	-	-	±0.2	μA
ΔI _{OFF}	additional power-off leakage current	V _I or V _O = 0 V to 3.6 V; V _{CC} = 0 V to 0.2 V	-	-	±0.2	μA
I _{CC}	quiescent supply current	V _I = GND or V _{CC} ; I _O = 0 A; V _{CC} = 0.8 V to 3.6 V	-	-	0.5	μA
ΔI _{CC}	additional quiescent supply current	V _I = V _{CC} - 0.6 V; I _O = 0 A; V _{CC} = 3.3 V	-	-	40	μA
C _I	input capacitance	V _{CC} = 0 V to 3.6 V; V _I = GND or V _{CC}	-	1.0	-	pF
C _O	output capacitance	V _O = GND; V _{CC} = 0 V	-	1.8	-	pF

Table 8: Static characteristics ...continued

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
T_{amb} = -40 °C to +85 °C						
V _{IH}	HIGH-state input voltage	V _{CC} = 0.8 V	0.70 × V _{CC}	-	-	V
		V _{CC} = 0.9 V to 1.95 V	0.65 × 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-state input voltage	V _{CC} = 0.8 V	-	-	0.30 × V _{CC}	V
		V _{CC} = 0.9 V to 1.95 V	-	-	0.35 × 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-state output voltage	V _I = V _{IH} or V _{IL}				
		I _O = -20 μA; V _{CC} = 0.8 V to 3.6 V	V _{CC} - 0.1	-	-	V
		I _O = -1.1 mA; V _{CC} = 1.1 V	0.7 × V _{CC}	-	-	V
		I _O = -1.7 mA; V _{CC} = 1.4 V	1.03	-	-	V
		I _O = -1.9 mA; V _{CC} = 1.65 V	1.30	-	-	V
		I _O = -2.3 mA; V _{CC} = 2.3 V	1.97	-	-	V
		I _O = -3.1 mA; V _{CC} = 2.3 V	1.85	-	-	V
		I _O = -2.7 mA; V _{CC} = 3.0 V	2.67	-	-	V
V _{OL}	LOW-state output voltage	V _I = V _{IH} or V _{IL}				
		I _O = 20 μA; V _{CC} = 0.8 V to 3.6 V	-	-	0.1	V
		I _O = 1.1 mA; V _{CC} = 1.1 V	-	-	0.3 × V _{CC}	V
		I _O = 1.7 mA; V _{CC} = 1.4 V	-	-	0.37	V
		I _O = 1.9 mA; V _{CC} = 1.65 V	-	-	0.35	V
		I _O = 2.3 mA; V _{CC} = 2.3 V	-	-	0.33	V
		I _O = 3.1 mA; V _{CC} = 2.3 V	-	-	0.45	V
		I _O = 2.7 mA; V _{CC} = 3.0 V	-	-	0.33	V
I _I	input leakage current	V _I = GND to 3.6 V; V _{CC} = 0 V to 3.6 V	-	-	±0.5	μA
		V _I or V _O = 0 V to 3.6 V; V _{CC} = 0 V	-	-	±0.5	μA
ΔI _{OFF}	additional power-off leakage current	V _I or V _O = 0 V to 3.6 V; V _{CC} = 0 V to 0.2 V	-	-	±0.6	μA
I _{CC}	quiescent supply current	V _I = GND or V _{CC} ; I _O = 0 A; V _{CC} = 0.8 V to 3.6 V	-	-	0.9	μA
ΔI _{CC}	additional quiescent supply current	V _I = V _{CC} - 0.6 V; I _O = 0 A; V _{CC} = 3.3 V	-	-	50	μA

Table 8: Static characteristics ...continued

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
T_{amb} = -40 °C to +125 °C						
V _{IH}	HIGH-state input voltage	V _{CC} = 0.8 V	0.75 × V _{CC}	-	-	V
		V _{CC} = 0.9 V to 1.95 V	0.70 × 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-state input voltage	V _{CC} = 0.8 V	-	-	0.25 × V _{CC}	V
		V _{CC} = 0.9 V to 1.95 V	-	-	0.30 × 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-state output voltage	V _I = V _{IH} or V _{IL}				
		I _O = -20 μA; V _{CC} = 0.8 V to 3.6 V	V _{CC} - 0.11	-	-	V
		I _O = -1.1 mA; V _{CC} = 1.1 V	0.6 × V _{CC}	-	-	V
		I _O = -1.7 mA; V _{CC} = 1.4 V	0.93	-	-	V
		I _O = -1.9 mA; V _{CC} = 1.65 V	1.17	-	-	V
		I _O = -2.3 mA; V _{CC} = 2.3 V	1.77	-	-	V
		I _O = -3.1 mA; V _{CC} = 2.3 V	1.67	-	-	V
		I _O = -2.7 mA; V _{CC} = 3.0 V	2.40	-	-	V
V _{OL}	LOW-state output voltage	V _I = V _{IH} or V _{IL}				
		I _O = 20 μA; V _{CC} = 0.8 V to 3.6 V	-	-	0.11	V
		I _O = 1.1 mA; V _{CC} = 1.1 V	-	-	0.33 × V _{CC}	V
		I _O = 1.7 mA; V _{CC} = 1.4 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 mA; V _{CC} = 2.3 V	-	-	0.50	V
		I _O = 2.7 mA; V _{CC} = 3.0 V	-	-	0.36	V
I _I	input leakage current	V _I = GND to 3.6 V; V _{CC} = 0 V to 3.6 V	-	-	±0.75	μA
		V _I or V _O = 0 V to 3.6 V; V _{CC} = 0 V	-	-	±0.75	μA
ΔI _{OFF}	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 _{CC}	quiescent supply current	V _I = GND or V _{CC} ; I _O = 0 A; V _{CC} = 0.8 V to 3.6 V	-	-	1.4	μA
ΔI _{CC}	additional quiescent supply current	V _I = V _{CC} - 0.6 V; I _O = 0 A; V _{CC} = 3.3 V	-	-	75	μA

12. Dynamic characteristics

Table 9: Dynamic characteristics

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

Symbol	Parameter	Conditions	Min	Typ [1]	Max	Unit
$T_{amb} = 25\text{ }^{\circ}\text{C}$; $C_L = 5\text{ pF}$						
t_{PHL} , t_{PLH}	HIGH-to-LOW and LOW-to-HIGH propagation delay A, B and C to Y	see Figure 7				
		$V_{CC} = 0.8\text{ V}$	-	17.6	-	ns
		$V_{CC} = 1.1\text{ V to }1.3\text{ V}$	2.3	5.2	10.2	ns
		$V_{CC} = 1.4\text{ V to }1.6\text{ V}$	1.7	3.7	6.0	ns
		$V_{CC} = 1.65\text{ V to }1.95\text{ V}$	1.6	3.0	4.7	ns
		$V_{CC} = 2.3\text{ V to }2.7\text{ V}$	1.4	2.3	3.3	ns
		$V_{CC} = 3.0\text{ V to }3.6\text{ V}$	1.2	2.1	2.9	ns
$T_{amb} = 25\text{ }^{\circ}\text{C}$; $C_L = 10\text{ pF}$						
t_{PHL} , t_{PLH}	HIGH-to-LOW and LOW-to-HIGH propagation delay A, B and C to Y	see Figure 7				
		$V_{CC} = 0.8\text{ V}$	-	17.6	-	ns
		$V_{CC} = 1.1\text{ V to }1.3\text{ V}$	2.5	6.1	11.9	ns
		$V_{CC} = 1.4\text{ V to }1.6\text{ V}$	2.2	4.3	7.1	ns
		$V_{CC} = 1.65\text{ V to }1.95\text{ V}$	2.1	3.5	5.4	ns
		$V_{CC} = 2.3\text{ V to }2.7\text{ V}$	1.7	2.9	4.0	ns
		$V_{CC} = 3.0\text{ V to }3.6\text{ V}$	1.5	2.6	3.7	ns
$T_{amb} = 25\text{ }^{\circ}\text{C}$; $C_L = 15\text{ pF}$						
t_{PHL} , t_{PLH}	HIGH-to-LOW and LOW-to-HIGH propagation delay A, B and C to Y	see Figure 7				
		$V_{CC} = 0.8\text{ V}$	-	23.6	-	ns
		$V_{CC} = 1.1\text{ V to }1.3\text{ V}$	2.9	6.9	13.5	ns
		$V_{CC} = 1.4\text{ V to }1.6\text{ V}$	2.5	4.9	7.8	ns
		$V_{CC} = 1.65\text{ V to }1.95\text{ V}$	2.2	4.0	6.2	ns
		$V_{CC} = 2.3\text{ V to }2.7\text{ V}$	2.0	3.3	4.7	ns
		$V_{CC} = 3.0\text{ V to }3.6\text{ V}$	1.9	3.1	4.2	ns
$T_{amb} = 25\text{ }^{\circ}\text{C}$; $C_L = 30\text{ pF}$						
t_{PHL} , t_{PLH}	HIGH-to-LOW and LOW-to-HIGH propagation delay A, B and C to Y	see Figure 7				
		$V_{CC} = 0.8\text{ V}$	-	36.3	-	ns
		$V_{CC} = 1.1\text{ V to }1.3\text{ V}$	3.6	9.2	17.9	ns
		$V_{CC} = 1.4\text{ V to }1.6\text{ V}$	3.2	6.4	10.4	ns
		$V_{CC} = 1.65\text{ V to }1.95\text{ V}$	3.0	5.3	8.3	ns
		$V_{CC} = 2.3\text{ V to }2.7\text{ V}$	2.8	4.4	6.2	ns
		$V_{CC} = 3.0\text{ V to }3.6\text{ V}$	2.6	4.2	5.5	ns

Table 9: Dynamic characteristics ...continued
 Voltages are referenced to GND (ground = 0 V); for test circuit see [Figure 8](#)

Symbol	Parameter	Conditions	Min	Typ [1]	Max	Unit
T_{amb} = 25 °C						
C _{PD}	power dissipation capacitance	f = 1 MHz	[2] [3]			
		V _{CC} = 0.8 V	-	3.1	-	pF
		V _{CC} = 1.1 V to 1.3 V	-	3.2	-	pF
		V _{CC} = 1.4 V to 1.6 V	-	3.2	-	pF
		V _{CC} = 1.65 V to 1.95 V	-	3.4	-	pF
		V _{CC} = 2.3 V to 2.7 V	-	3.8	-	pF
		V _{CC} = 3.0 V to 3.6 V	-	4.3	-	pF

- [1] All typical values are measured at nominal V_{CC}.
- [2] C_{PD} is used to determine the dynamic power dissipation (P_D in μW).
 $P_D = C_{PD} \times V_{CC}^2 \times f_i \times N + \Sigma(C_L \times V_{CC}^2 \times f_o)$ where:
 f_i = input frequency in MHz;
 f_o = output frequency in MHz;
 C_L = load capacitance in pF;
 V_{CC} = supply voltage in V;
 N = number of inputs switching;
 Σ(C_L × V_{CC}² × f_o) = sum of the outputs.
- [3] The condition is V_I = GND to V_{CC}.

Table 10: Dynamic characteristics
 Voltages are referenced to GND (ground = 0 V); for test circuit see [Figure 8](#)

Symbol	Parameter	Conditions	-40 °C to +85 °C		-40 °C to +125 °C		Unit
			Min	Max	Min	Max	
C_L = 5 pF							
t _{PHL} , t _{PLH}	HIGH-to-LOW and LOW-to-HIGH propagation delay A, B and C to Y	see Figure 7					
		V _{CC} = 1.1 V to 1.3 V	2.0	10.3	2.0	10.3	ns
		V _{CC} = 1.4 V to 1.6 V	1.9	6.4	1.9	6.6	ns
		V _{CC} = 1.65 V to 1.95 V	1.4	5.2	1.4	5.4	ns
		V _{CC} = 2.3 V to 2.7 V	1.2	3.7	1.2	3.9	ns
		V _{CC} = 3.0 V to 3.6 V	1.1	3.1	1.1	3.3	ns
C_L = 10 pF							
t _{PHL} , t _{PLH}	HIGH-to-LOW and LOW-to-HIGH propagation delay A, B and C to Y	see Figure 7					
		V _{CC} = 1.1 V to 1.3 V	2.4	12.0	2.4	12.0	ns
		V _{CC} = 1.4 V to 1.6 V	2.0	7.3	2.0	7.6	ns
		V _{CC} = 1.65 V to 1.95 V	1.9	5.8	1.9	6.1	ns
		V _{CC} = 2.3 V to 2.7 V	1.5	4.5	1.5	4.7	ns
		V _{CC} = 3.0 V to 3.6 V	1.4	3.9	1.4	4.1	ns

Table 10: Dynamic characteristics ...continued

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

Symbol	Parameter	Conditions	-40 °C to +85 °C		-40 °C to +125 °C		Unit
			Min	Max	Min	Max	
$C_L = 15\text{ pF}$							
t_{PHL}, t_{PLH}	HIGH-to-LOW and LOW-to-HIGH propagation delay A, B and C to Y	see Figure 7					
		$V_{CC} = 1.1\text{ V to }1.3\text{ V}$	2.7	13.6	2.7	13.6	ns
		$V_{CC} = 1.4\text{ V to }1.6\text{ V}$	2.4	8.5	2.4	8.8	ns
		$V_{CC} = 1.65\text{ V to }1.95\text{ V}$	2.1	6.8	2.1	7.1	ns
		$V_{CC} = 2.3\text{ V to }2.7\text{ V}$	1.6	5.2	1.6	5.4	ns
		$V_{CC} = 3.0\text{ V to }3.6\text{ V}$	1.7	4.5	1.7	4.8	ns
$C_L = 30\text{ pF}$							
t_{PHL}, t_{PLH}	HIGH-to-LOW and LOW-to-HIGH propagation delay A, B and C to Y	see Figure 7					
		$V_{CC} = 1.1\text{ V to }1.3\text{ V}$	3.5	18.4	3.5	18.7	ns
		$V_{CC} = 1.4\text{ V to }1.6\text{ V}$	3.3	11.4	3.3	11.9	ns
		$V_{CC} = 1.65\text{ V to }1.95\text{ V}$	2.9	9.1	2.9	9.6	ns
		$V_{CC} = 2.3\text{ V to }2.7\text{ V}$	1.6	6.7	1.6	7.1	ns
		$V_{CC} = 3.0\text{ V to }3.6\text{ V}$	1.4	6.4	1.4	6.7	ns

13. Waveforms

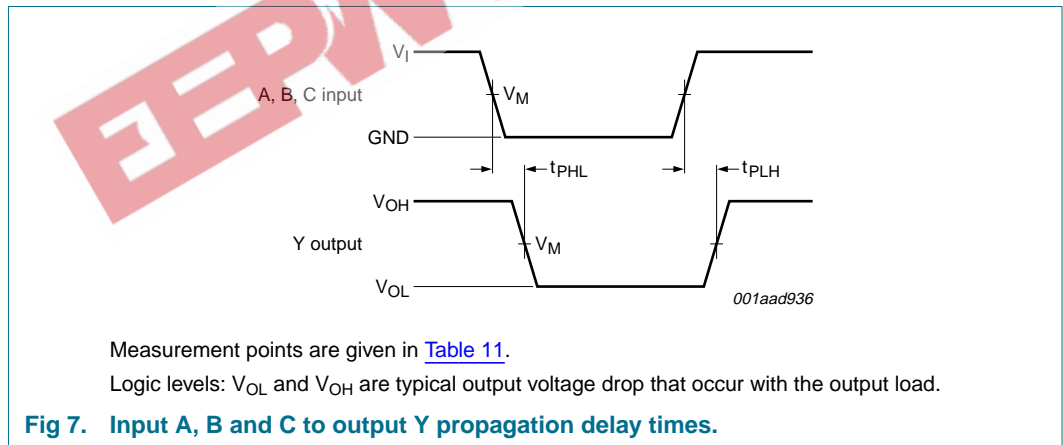


Table 11: Measurement points

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}	$\leq 3.0\text{ ns}$

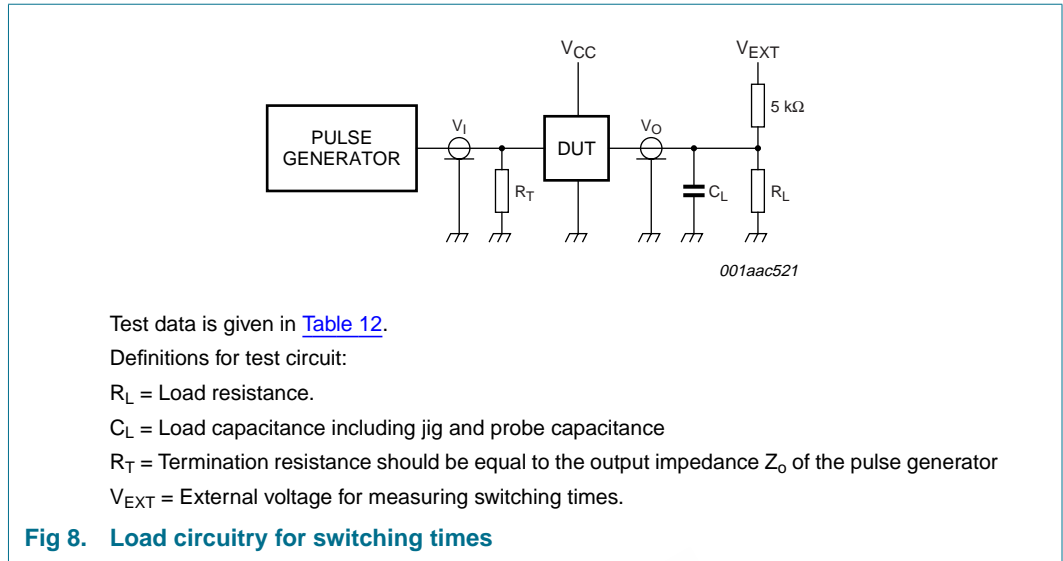


Fig 8. Load circuitry for switching times

Table 12: Test data

Supply voltage	Load		V_{EXT}		
V_{CC}	C_L	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 kΩ or 1 MΩ	open	GND	$2 \times V_{CC}$

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

14. Package outline

Plastic surface mounted package; 6 leads

SOT363

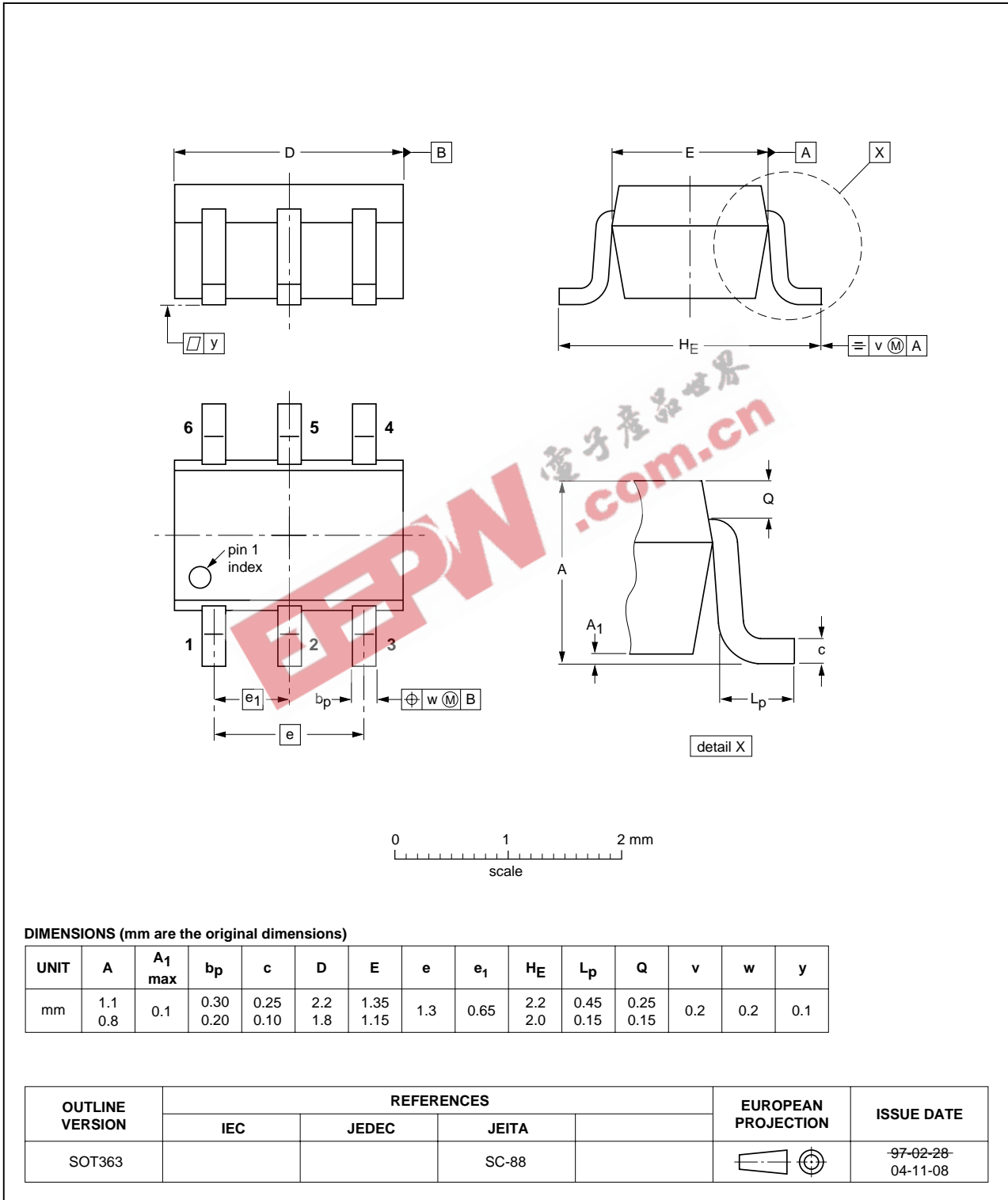


Fig 9. Package outline SOT363 (SC-88)

XSON6: plastic extremely thin small outline package; no leads; 6 terminals; body 1 x 1.45 x 0.5 mm

SOT886

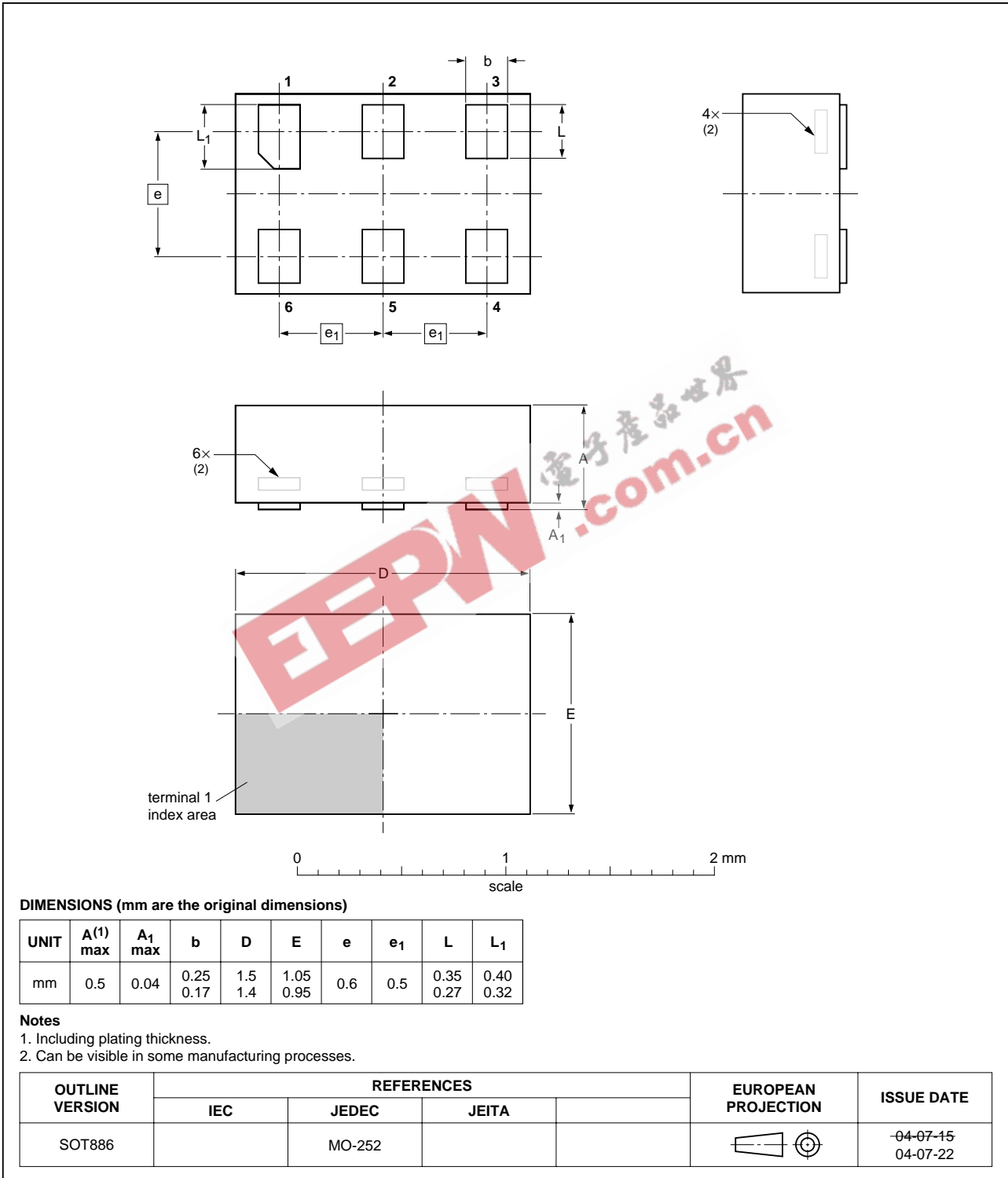


Fig 10. Package outline SOT886 (XSON6)

XSON6: plastic extremely thin small outline package; no leads; 6 terminals; body 1 x 1 x 0.5 mm

SOT891

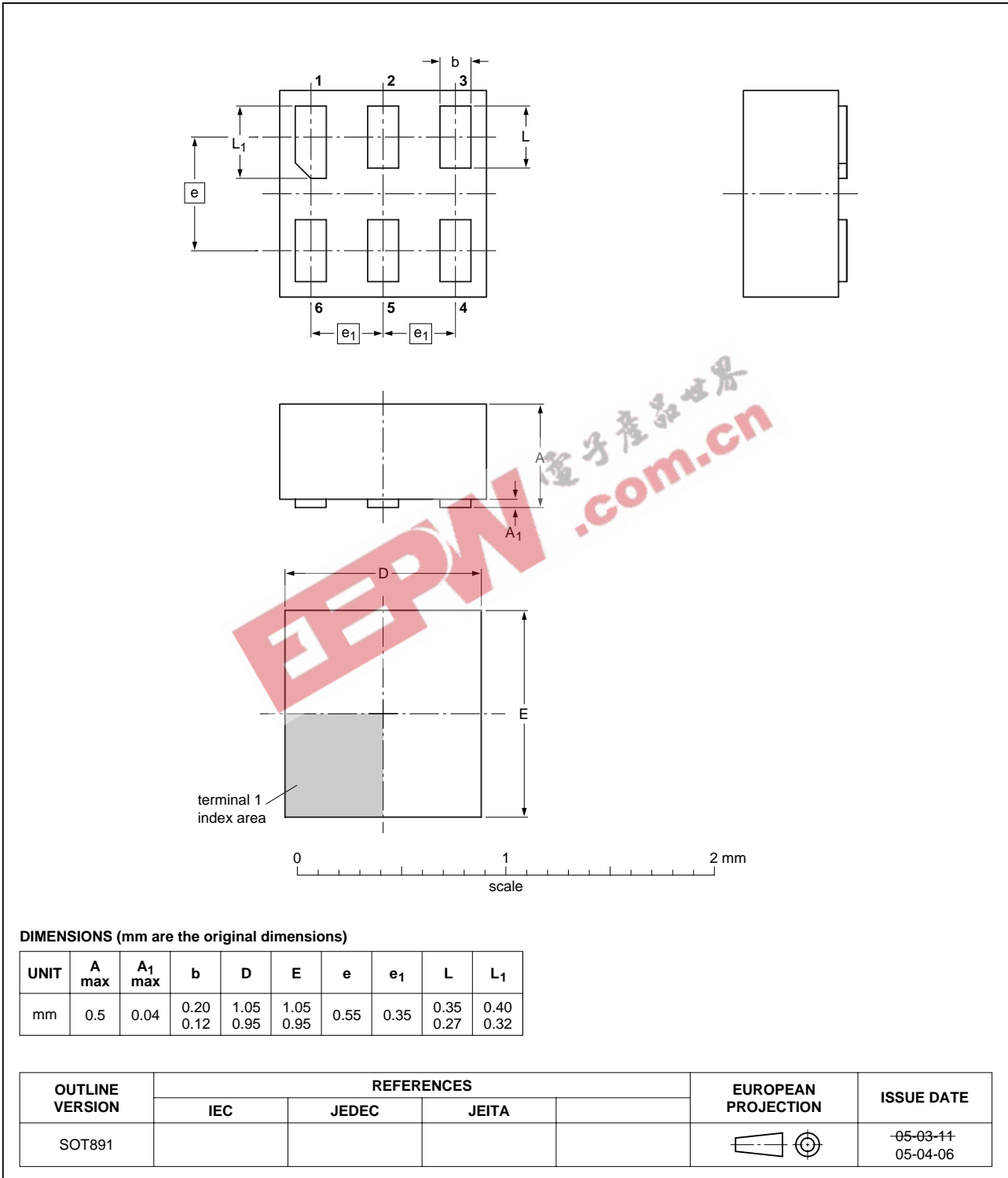


Fig 11. Package outline SOT891 (XSON6)

15. Abbreviations

Table 13: Abbreviations

Acronym	Description
CDM	Charged Device Model
CMOS	Complementary Metal Oxide Semiconductor
DUT	Device Under Test
ESD	ElectroStatic Discharge
HBM	Human Body Model
MM	Machine Model
TTL	Transistor Transistor Logic

16. Revision history

Table 14: Revision history

Document ID	Release date	Data sheet status	Change notice	Doc. number	Supersedes
74AUP1G332_1	20060227	Preliminary data sheet	-	-	-

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17. Data sheet status

Level	Data sheet status ^[1]	Product status ^[2] ^[3]	Definition
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