

74LVCV2G66

Overvoltage tolerant bilateral switch

Rev. 6 — 22 July 2015

Product data sheet

1. General description

The 74LVCV2G66 is a low-power, low-voltage, high-speed Si-gate CMOS device.

The 74LVCV2G66 provides two single pole single throw analog or digital switches. Each switch includes an overvoltage tolerant input/output terminal (pin nZ), an output/input terminal (pin nY) and low-power active HIGH enable input (pin nE).

The overvoltage tolerant switch terminals allow the switching of signals in excess of V_{CC} . The low-power enable input eliminates the necessity of using current limiting resistors in portable applications when using control logic signals much lower than V_{CC} . These inputs are also overvoltage tolerant.

2. Features and benefits

- Wide supply voltage range from 2.3 V to 5.5 V
- Ultra low-power operation
- Very low ON resistance:
 - ◆ 8.0 Ω (typical) at $V_{CC} = 2.7$ V
 - ◆ 7.5 Ω (typical) at $V_{CC} = 3.3$ V
 - ◆ 7.3 Ω (typical) at $V_{CC} = 5.0$ V.
- 5 V tolerant input for interfacing with 5 V logic
- High noise immunity
- Switch handling capability of 32 mA
- CMOS low-power consumption
- Latch-up performance exceeds 250 mA
- Incorporates overvoltage tolerant analog switch technology
- Switch accepts voltages up to 5.5 V independent of V_{CC}
- 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
74LVCV2G66DP	−40 °C to +125 °C	TSSOP8	plastic thin shrink small outline package; 8 leads; body width 3 mm; lead length 0.5 mm	SOT505-2
74LVCV2G66DC	−40 °C to +125 °C	VSSOP8	plastic very thin shrink small outline package; 8 leads; body width 2.3 mm	SOT765-1
74LVCV2G66GT	−40 °C to +125 °C	XSON8	plastic extremely thin small outline package; no leads; 8 terminals; body 1 × 1.95 × 0.5 mm	SOT833-1
74LVCV2G66GD	−40 °C to +125 °C	XSON8	plastic extremely thin small outline package; no leads; 8 terminals; body 3 × 2 × 0.5 mm	SOT996-2
74LVCV2G66GM	−40 °C to +125 °C	XQFN8	plastic, extremely thin quad flat package; no leads; 8 terminals; body 1.6 × 1.6 × 0.5 mm	SOT902-2

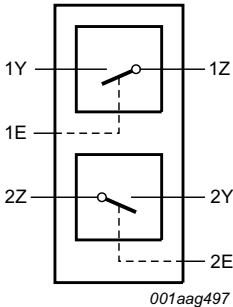
4. Marking

Table 2. Marking codes

Type number	Marking code ^[1]
74LVCV2G66DP	Y66
74LVCV2G66DC	Y66
74LVCV2G66GT	Y66
74LVCV2G66GD	Y66
74LVCV2G66GM	Y66

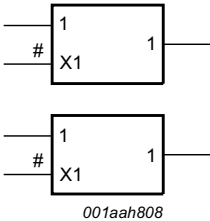
[1] The pin 1 indicator is located on the lower left corner of the device, below the marking code.

5. Functional diagram



001aag497

Fig 1. Logic symbol



001aah808

Fig 2. IEC logic symbol

6. Pinning information

74LVCV2G66

1Z 1
1Y 2
2E 3
GND 4

8 VCC
7 1E
6 2Y
5 2Z

001aa1213

74LVCV2G666

1Z 1 8 VCC

1Y 2 7 1E

2E 3 6 2Y

GND 4 5 2Z

aaa-018593

Transparent top view

74LVCV2G66

The diagram shows the transparent top view of the 74LVCV2G66 chip. It is a rectangular package with pins on all four sides. The pins are numbered 1 through 8. The connections are as follows:

Pin Number	Label
1	1Z
2	1Y
3	2E
4	GND
5	2Z
6	2Y
7	1E
8	V _{CC}

001aa/214

Transparent top view

Fig 7. Pin configuration SOT902-2

6.2 Pin description

Table 3. Pin description

Symbol	Pin		Description
	SOT505-2, SOT765-1, SOT996-2 and SOT833-1	SOT902-2	
1Z	1	7	independent input or output (overvoltage tolerant)
1Y	2	6	independent input or output
2E	3	5	enable input (active HIGH)
GND	4	4	ground (0 V)
2Z	5	3	independent input or output (overvoltage tolerant)
2Y	6	2	independent input or output
1E	7	1	enable input (active HIGH)
V _{CC}	8	8	supply voltage

7. Functional description

Table 4. Function table^[1]

Input nE	Switch
L	OFF-state
H	ON-state

[1] H = HIGH voltage level; L = LOW voltage level.

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 _{CC}	supply voltage		-0.5	+6.5	V
V _I	input voltage	^[1]	-0.5	+6.5	V
I _{IK}	input clamping current	V _I < -0.5 V or V _I > 6.5 V	-50	-	mA
I _{SK}	switch clamping current	V _I < -0.5 V or V _I > 6.5 V	-	±50	mA
V _{SW}	switch voltage	enable and disable mode	-0.5	+6.5	V
I _{SW}	switch current	V _{SW} > -0.5 V or V _{SW} < 6.5 V	-	±50	mA
I _{CC}	supply current		-	100	mA
I _{GND}	ground current		-100	-	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 input and output voltage ratings may be exceeded if the input and output current ratings are observed.

[2] For TSSOP8 package: above 55 °C, the value of P_{tot} derates linearly with 2.5 mW/K.

For VSSOP8 package: above 110 °C, the value of P_{tot} derates linearly with 8 mW/K.

For XSON8 and XQFN8 packages: above 118 °C, the value of P_{tot} derates linearly with 7.8 mW/K.

9. Recommended operating conditions

Table 6. Recommended operating conditions

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{CC}	supply voltage		2.3	-	5.5	V
V_I	input voltage		0	-	5.5	V
V_{SW}	switch voltage	enable and disable mode [1]	0	-	5.5	V
T_{amb}	ambient temperature		-40	-	+125	°C
$\Delta t/\Delta V$	input transition rise and fall rate	$V_{CC} = 2.3\text{ V to }2.7\text{ V}$ [2]	-	-	20	ns/V
		$V_{CC} = 2.7\text{ V to }5.5\text{ V}$ [2]	-	-	10	ns/V

[1] To avoid sinking GND current from terminal nZ when switch current flows in terminal nY, the voltage drop across the bidirectional switch must not exceed 0.4 V. If the switch current flows into terminal nZ, no GND current flows from terminal nY. In this case, there is no limit for the voltage drop across the switch.

[2] Applies to control signal levels.

10. Static characteristics

Table 7. Static characteristics

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

Symbol	Parameter	Conditions	-40 °C to +85 °C			-40 °C to +125 °C		Unit
			Min	Typ [1]	Max	Min	Max	
V_{IH}	HIGH-level input voltage	$V_{CC} = 2.3\text{ V to }2.7\text{ V}$	$0.6V_{CC}$	-	-	$0.6V_{CC}$	-	V
		$V_{CC} = 3.0\text{ V to }3.6\text{ V}$	2.0	-	-	2.0	-	V
		$V_{CC} = 4.5\text{ V to }5.5\text{ V}$	$0.55V_{CC}$	-	-	$0.55V_{CC}$	-	V
V_{IL}	LOW-level input voltage	$V_{CC} = 2.3\text{ V to }2.7\text{ V}$	-	-	$0.1V_{CC}$	-	$0.1V_{CC}$	V
		$V_{CC} = 3.0\text{ V to }3.6\text{ V}$	-	-	0.5	-	0.5	V
		$V_{CC} = 4.5\text{ V to }5.5\text{ V}$	-	-	$0.15V_{CC}$	-	$0.15V_{CC}$	V
I_I	input leakage current	pin nE; $V_I = 5.5\text{ V or GND}$; $V_{CC} = 0\text{ V to }5.5\text{ V}$ [2]	-	± 0.1	± 5	-	± 5	μA
$I_{S(OFF)}$	OFF-state leakage current	$V_{CC} = 2.3\text{ V to }5.5\text{ V}$; see Figure 8 [2][3]	-	± 0.1	± 10	-	± 10	μA
$I_{S(ON)}$	ON-state leakage current	$V_{CC} = 2.3\text{ V to }5.5\text{ V}$; see Figure 9 [2][3]	-	± 0.1	± 10	-	± 10	μA
I_{CC}	supply current	$V_I = 5.5\text{ V or GND}$; $V_{SW} = \text{GND or }V_{CC}$; $V_{CC} = 2.3\text{ V to }5.5\text{ V}$ [2]	-	0.1	10	-	40	μA
ΔI_{CC}	additional supply current	pin nE; $V_I = V_{CC} - 0.6\text{ V}$; $V_{SW} = \text{GND or }V_{CC}$; $V_{CC} = 3.0\text{ V to }5.5\text{ V}$ [2]	-	0.1	5	-	50	μA
C_I	input capacitance		-	2.5	-	-	-	pF
$C_{S(OFF)}$	OFF-state capacitance		-	8.0	-	-	-	pF

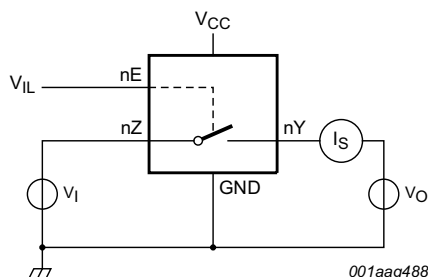
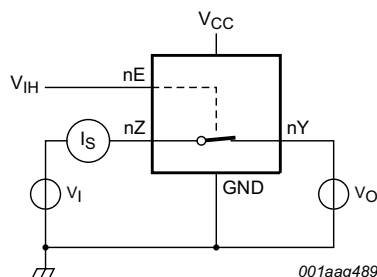
Table 7. Static characteristics ...continued

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

Symbol	Parameter	Conditions	–40 °C to +85 °C			–40 °C to +125 °C		Unit
			Min	Typ ^[1]	Max	Min	Max	
C _{S(ON)}	ON-state capacitance		-	16	-	-	-	pF

- [1] All typical values are measured at T_{amb} = 25 °C.
 [2] These typical values are measured at V_{CC} = 3.3 V.
 [3] For overvoltage signals (V_{SW} > V_{CC}), the condition V_Y < V_Z must be observed.

10.1 Test circuits

V_I = GND and V_O = GND or 5.5 V.**Fig 8.** Test circuit for measuring OFF-state leakage currentV_I = 5.5 V or GND and V_O = open circuit.**Fig 9.** Test circuit for measuring ON-state leakage current

10.2 ON resistance

Table 8. Resistance R_{ON}At recommended operating conditions; voltages are referenced to GND (ground 0 V); for graphs see [Figure 11](#) and [Figure 12](#).

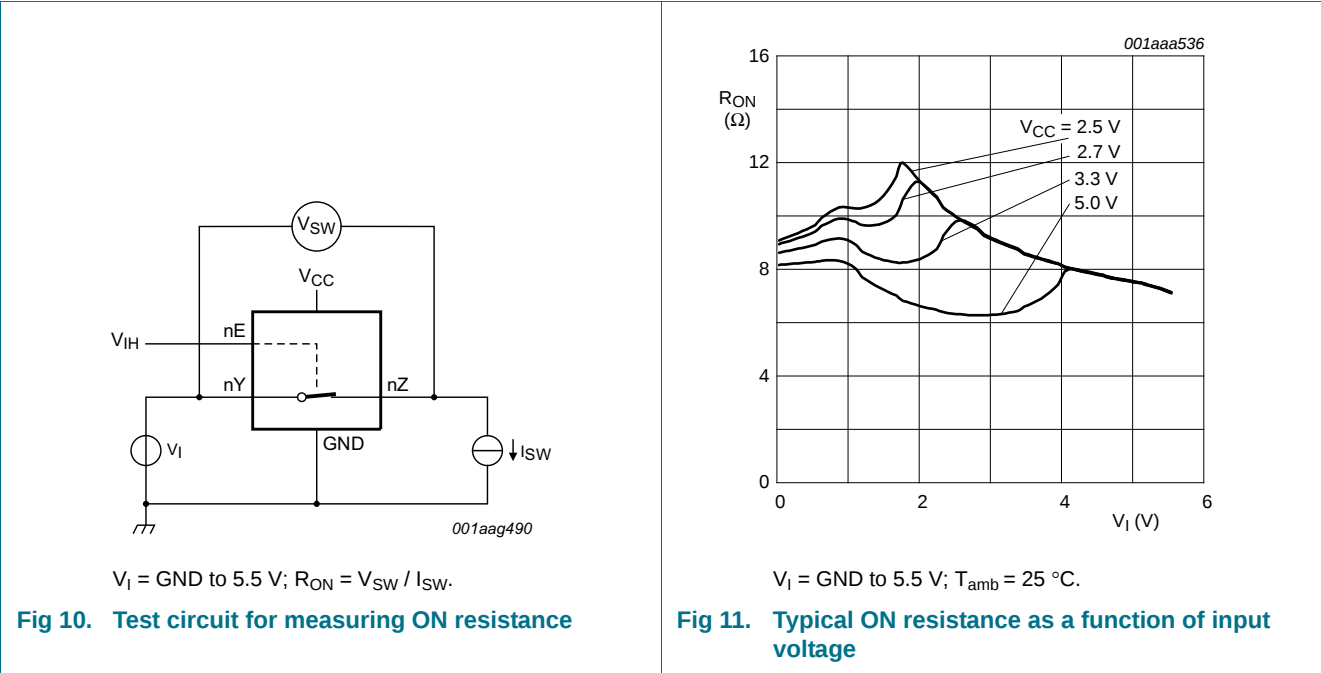
Symbol	Parameter	Conditions	–40 °C to +85 °C			–40 °C to +125 °C		Unit
			Min	Typ ^[1]	Max	Min	Max	
R _{ON(peak)}	ON resistance (peak)	V _{SW} = GND to V _{CC} ; V _I = V _{IH} ; see Figure 10						
		I _{SW} = 8 mA; V _{CC} = 2.3 V to 2.7 V	-	13	30	-	30	Ω
		I _{SW} = 12 mA; V _{CC} = 2.7 V	-	10	25	-	25	Ω
		I _{SW} = 24 mA; V _{CC} = 3.0 V to 3.6 V	-	8.3	20	-	20	Ω
		I _{SW} = 32 mA; V _{CC} = 4.5 V to 5.5 V	-	7.4	15	-	15	Ω
R _{ON(rail)}	ON resistance (rail)	V _{SW} = GND; V _I = V _{IH} ; see Figure 10						
		I _{SW} = 8 mA; V _{CC} = 2.3 V to 2.7 V	-	8.5	20	-	20	Ω
		I _{SW} = 12 mA; V _{CC} = 2.7 V	-	8.0	18	-	18	Ω
		I _{SW} = 24 mA; V _{CC} = 3.0 V to 3.6 V	-	7.5	15	-	15	Ω
		I _{SW} = 32 mA; V _{CC} = 4.5 V to 5.5 V	-	7.3	10	-	10	Ω
		V _{SW} = V _{CC} ; V _I = V _{IH}						
		I _{SW} = 8 mA; V _{CC} = 2.3 V to 2.7 V	-	8.5	20	-	20	Ω
		I _{SW} = 12 mA; V _{CC} = 2.7 V	-	7.2	18	-	18	Ω
		I _{SW} = 24 mA; V _{CC} = 3.0 V to 3.6 V	-	6.5	15	-	15	Ω
		I _{SW} = 32 mA; V _{CC} = 4.5 V to 5.5 V	-	5.7	10	-	10	Ω

Table 8. Resistance R_{ON} ...continued
At recommended operating conditions; voltages are referenced to GND (ground 0 V); for graphs see [Figure 11](#) and [Figure 12](#).

Symbol	Parameter	Conditions	−40 °C to +85 °C			−40 °C to +125 °C		Unit
			Min	Typ ^[1]	Max	Min	Max	
$R_{ON(Flat)}$	ON resistance (flatness)	$V_{SW} = GND \text{ to } V_{CC}; V_I = V_{IH}$ ^[2]						
		$I_{SW} = 8 \text{ mA}; V_{CC} = 2.5 \text{ V}$	-	17	-	-	-	Ω
		$I_{SW} = 12 \text{ mA}; V_{CC} = 2.7 \text{ V}$	-	10	-	-	-	Ω
		$I_{SW} = 24 \text{ mA}; V_{CC} = 3.3 \text{ V}$	-	5	-	-	-	Ω
		$I_{SW} = 32 \text{ mA}; V_{CC} = 5.0 \text{ V}$	-	3	-	-	-	Ω

- [1] All typical values are measured at $T_{amb} = 25 \text{ °C}$ and nominal V_{CC} .
- [2] Flatness is defined as the difference between the maximum and minimum value of ON resistance measured at identical V_{CC} and temperature.

10.3 ON resistance test circuit and graphs



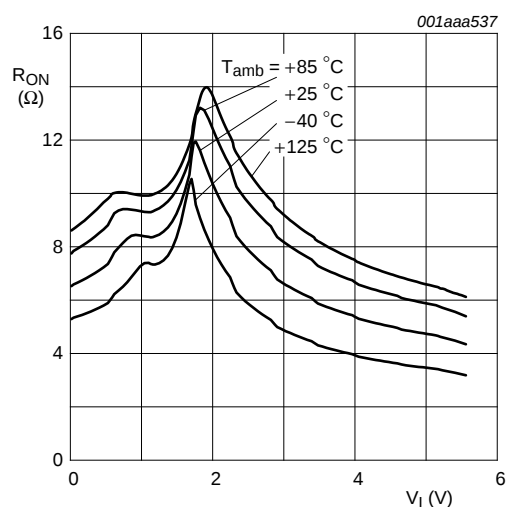
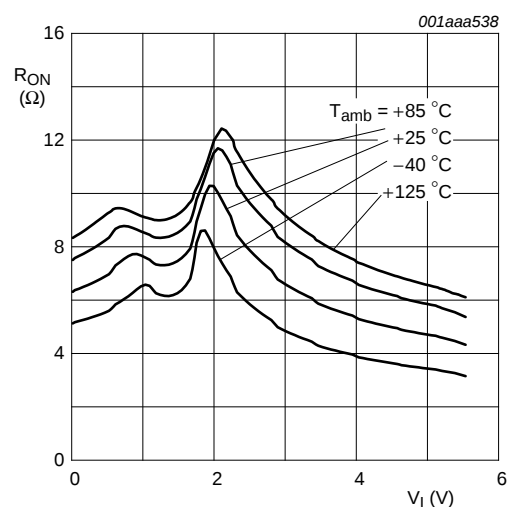
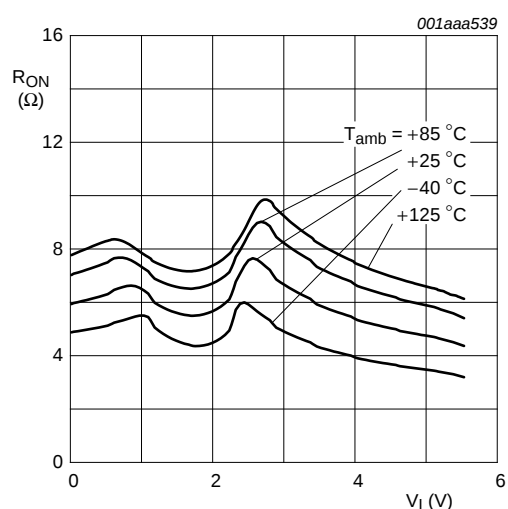
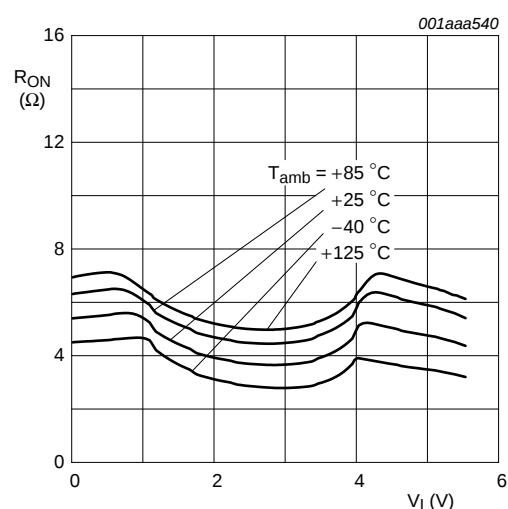
a. $V_{CC} = 2.5 \text{ V}$ b. $V_{CC} = 2.7 \text{ V}$ c. $V_{CC} = 3.3 \text{ V}$ d. $V_{CC} = 5.0 \text{ V}$

Fig 12. ON resistance as a function of input voltage at various supply voltages

11. Dynamic characteristics

Table 9. Dynamic characteristics

At recommended operating conditions; voltages are referenced to GND (ground = 0 V); for test circuit, see [Figure 15](#).

Symbol	Parameter	Conditions	-40 °C to +85 °C			-40 °C to +125 °C		Unit
			Min	Typ ^[1]	Max	Min	Max	
t_{pd}	propagation delay	nY to nZ or nZ to nY; see Figure 13 ^{[2][3]}						
		$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$	-	0.4	1.2	-	2.0	ns
		$V_{CC} = 2.7 \text{ V}$	-	0.4	1.0	-	1.5	ns
		$V_{CC} = 3.0 \text{ V to } 3.6 \text{ V}$	-	0.3	0.8	-	1.5	ns
		$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$	-	0.2	0.6	-	1.0	ns

Table 9. Dynamic characteristics ...continuedAt recommended operating conditions; voltages are referenced to GND (ground = 0 V); for test circuit, see [Figure 15](#).

Symbol	Parameter	Conditions	–40 °C to +85 °C			–40 °C to +125 °C		Unit
			Min	Typ ^[1]	Max	Min	Max	
t _{en}	enable time	nE to nY or nZ; see Figure 14 ^[4]						
		V _{CC} = 2.3 V to 2.7 V	1.0	4.7	12	1.0	15	ns
		V _{CC} = 2.7 V	1.0	4.4	8.5	1.0	11	ns
		V _{CC} = 3.0 V to 3.6 V	1.0	3.8	7.5	1.0	9.5	ns
		V _{CC} = 4.5 V to 5.5 V	1.0	2.7	5.0	1.0	6.5	ns
t _{dis}	disable time	nE to nY or nZ; see Figure 14 ^[5]						
		V _{CC} = 2.3 V to 2.7 V	1.0	6.0	16	1.0	20	ns
		V _{CC} = 2.7 V	1.0	7.9	15	1.0	19	ns
		V _{CC} = 3.0 V to 3.6 V	1.0	6.5	13.5	1.0	17	ns
		V _{CC} = 4.5 V to 5.5 V	1.0	4.4	9.0	1.0	11.5	ns
C _{PD}	power dissipation capacitance	C _L = 50 pF; f _i = 10 MHz; V _I = GND to 5.5 V ^[6]						
		V _{CC} = 2.5 V	-	9.7	-	-	-	pF
		V _{CC} = 3.3 V	-	10.3	-	-	-	pF
		V _{CC} = 5.0 V	-	11.3	-	-	-	pF

[1] Typical values are measured at T_{amb} = 25 °C and nominal V_{CC}.[2] t_{pd} is the same as t_{PLH} and t_{PHL}.

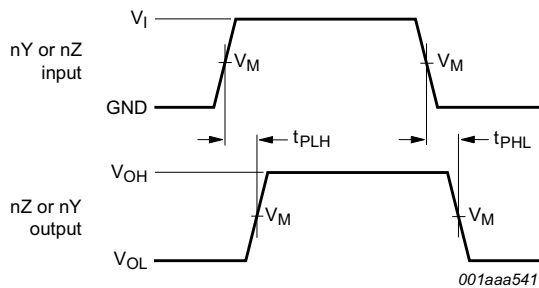
[3] Propagation delay is the calculated RC time constant of the typical ON resistance of the switch and the specified capacitance when driven by an ideal voltage source (zero output impedance).

[4] t_{en} is the same as t_{PZH} and t_{PZL}.[5] t_{dis} is the same as t_{PLZ} and t_{PHZ}.[6] C_{PD} is used to determine the dynamic power dissipation (P_D in μW).P_D = C_{PD} × V_{CC}² × f_i × N + Σ{(C_L + C_{S(ON)}) × V_{CC}² × f_o} where:f_i = input frequency in MHz;f_o = output frequency in MHz;C_L = output load capacitance in pF;C_{S(ON)} = maximum ON-state switch capacitance in pF;V_{CC} = supply voltage in V;

N = number of inputs switching;

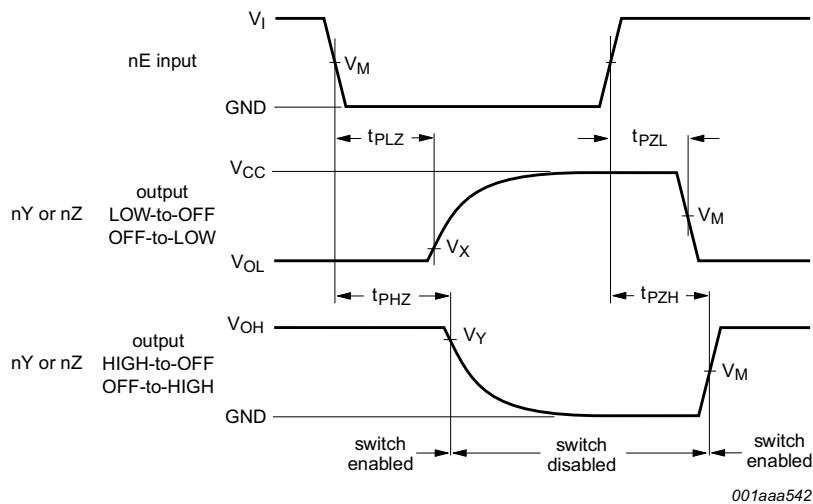
Σ{(C_L + C_{S(ON)}) × V_{CC}² × f_o} = sum of the outputs.

11.1 Waveforms and test circuit



Measurement points are given in [Table 10](#).
Logic levels: V_{OL} and V_{OH} are typical output voltage levels that occur with the output load.

Fig 13. Input (nY or nZ) to output (nZ or nY) propagation delays

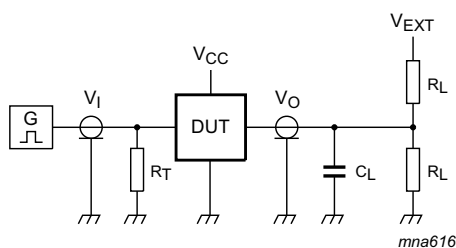


Measurement points are given in [Table 10](#).
Logic levels: V_{OL} and V_{OH} are typical output voltage levels that occur with the output load.

Fig 14. Enable and disable times

Table 10. Measurement points

Supply voltage	Input	Output		
V_{CC}	V_M	V_M	V_X	V_Y
2.3 V to 2.7 V	$0.5V_{CC}$	$0.5V_{CC}$	$V_{OL} + 0.1V_{CC}$	$V_{OH} - 0.1V_{CC}$
2.7 V	1.5 V	1.5 V	$V_{OL} + 0.3 V$	$V_{OH} - 0.3 V$
3.0 V to 3.6 V	1.5 V	1.5 V	$V_{OL} + 0.3 V$	$V_{OH} - 0.3 V$
4.5 V to 5.5 V	$0.5V_{CC}$	$0.5V_{CC}$	$V_{OL} + 0.3 V$	$V_{OH} - 0.3 V$



Test data is given in [Table 11](#).

Definitions test circuit:

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

C_L = Load capacitance including jig and probe capacitance.

R_L = Load resistance.

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

Fig 15. Test circuit for measuring switching times

Table 11. Test data

Supply voltage	Input		Load		V_{EXT}		
V_{CC}	V_I	t_r, t_f	C_L	R_L	t_{PLH}, t_{PHL}	t_{PZH}, t_{PHZ}	t_{PZL}, t_{PLZ}
2.3 V to 2.7 V	V_{CC}	≤ 2.0 ns	30 pF	500 Ω	open	GND	$2V_{CC}$
2.7 V	2.7 V	≤ 2.5 ns	50 pF	500 Ω	open	GND	6.0 V
3.0 V to 3.6 V	2.7 V	≤ 2.5 ns	50 pF	500 Ω	open	GND	6.0 V
4.5 V to 5.5 V	V_{CC}	≤ 2.5 ns	50 pF	500 Ω	open	GND	$2V_{CC}$

11.2 Additional dynamic characteristics

Table 12. Additional dynamic characteristics

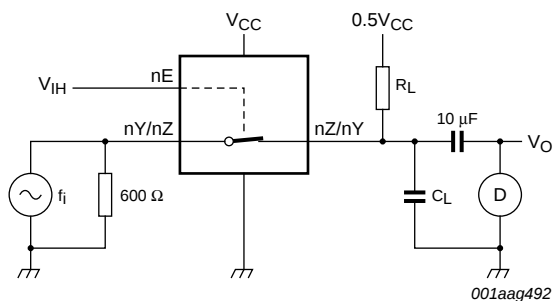
At recommended operating conditions; voltages are referenced to GND (ground = 0 V); $T_{amb} = 25$ °C.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
THD	total harmonic distortion	$f_i = 1$ kHz; $R_L = 10$ k Ω ; $C_L = 50$ pF; see Figure 16				
		$V_{CC} = 2.3$ V	-	0.42	-	%
		$V_{CC} = 3.0$ V	-	0.36	-	%
		$V_{CC} = 4.5$ V	-	0.47	-	%
		$f_i = 10$ kHz; $R_L = 10$ k Ω ; $C_L = 50$ pF; see Figure 16				
		$V_{CC} = 2.3$ V	-	0.11	-	%
		$V_{CC} = 3.0$ V	-	0.07	-	%
		$V_{CC} = 4.5$ V	-	0.01	-	%
$f_{(-3dB)}$	-3 dB frequency response	$R_L = 600$ Ω ; $C_L = 50$ pF; see Figure 17				
		$V_{CC} = 2.3$ V	-	160	-	MHz
		$V_{CC} = 3.0$ V	-	200	-	MHz
		$V_{CC} = 4.5$ V	-	210	-	MHz
		$R_L = 50$ Ω ; $C_L = 5$ pF; see Figure 17				
		$V_{CC} = 2.3$ V	-	180	-	MHz
		$V_{CC} = 3.0$ V	-	180	-	MHz
		$V_{CC} = 4.5$ V	-	180	-	MHz

Table 12. Additional dynamic characteristics ...continuedAt recommended operating conditions; voltages are referenced to GND (ground = 0 V); $T_{amb} = 25\text{ }^{\circ}\text{C}$.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
α_{iso}	isolation (OFF-state)	$R_L = 600\text{ }\Omega$; $C_L = 50\text{ pF}$; $f_i = 1\text{ MHz}$; see Figure 18				
		$V_{CC} = 2.3\text{ V}$	-	-65	-	dB
		$V_{CC} = 3.0\text{ V}$	-	-65	-	dB
		$V_{CC} = 4.5\text{ V}$	-	-62	-	dB
		$R_L = 50\text{ }\Omega$; $C_L = 5\text{ pF}$; $f_i = 1\text{ MHz}$; see Figure 18				
		$V_{CC} = 2.3\text{ V}$	-	-37	-	dB
		$V_{CC} = 3.0\text{ V}$	-	-36	-	dB
		$V_{CC} = 4.5\text{ V}$	-	-36	-	dB
V_{ct}	crosstalk voltage	between digital inputs and switch; $R_L = 600\text{ }\Omega$; $C_L = 50\text{ pF}$; $f_i = 1\text{ MHz}$; $t_r = t_f = 2\text{ ns}$; see Figure 19				
		$V_{CC} = 2.3\text{ V}$	-	91	-	mV
		$V_{CC} = 3.0\text{ V}$	-	119	-	mV
		$V_{CC} = 4.5\text{ V}$	-	205	-	mV
Xtalk	crosstalk	between switches; $R_L = 600\text{ }\Omega$; $C_L = 50\text{ pF}$; $f_i = 1\text{ MHz}$; see Figure 20				
		$V_{CC} = 2.3\text{ V}$	-	-56	-	dB
		$V_{CC} = 3.0\text{ V}$	-	-55	-	dB
		$V_{CC} = 4.5\text{ V}$	-	-55	-	dB
		between switches; $R_L = 50\text{ }\Omega$; $C_L = 5\text{ pF}$; $f_i = 1\text{ MHz}$; see Figure 20				
		$V_{CC} = 2.3\text{ V}$	-	-29	-	dB
		$V_{CC} = 3.0\text{ V}$	-	-28	-	dB
		$V_{CC} = 4.5\text{ V}$	-	-28	-	dB
Q_{inj}	charge injection	$C_L = 0.1\text{ nF}$; $V_{gen} = 0\text{ V}$; $R_{gen} = 0\text{ }\Omega$; $f_i = 1\text{ MHz}$; $R_L = 1\text{ M}\Omega$; see Figure 21				
		$V_{CC} = 2.5\text{ V}$	-	< 0.003	-	pC
		$V_{CC} = 3.3\text{ V}$	-	0.003	-	pC
		$V_{CC} = 4.5\text{ V}$	-	0.0035	-	pC
		$V_{CC} = 5.5\text{ V}$	-	0.0035	-	pC

11.3 Test circuits



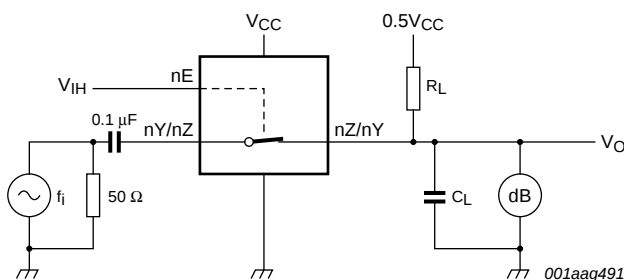
Test conditions:

$V_{CC} = 2.3 \text{ V}$: $V_i = 2 \text{ V}$ (p-p).

$V_{CC} = 3 \text{ V}$: $V_i = 2.5 \text{ V}$ (p-p).

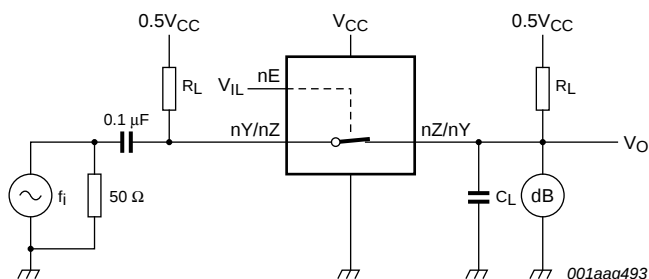
$V_{CC} = 4.5 \text{ V}$: $V_i = 4 \text{ V}$ (p-p).

Fig 16. Test circuit for measuring total harmonic distortion



To obtain 0 dBm level at the output, adjust f_i voltage. Increase f_i frequency until dB meter reads -3 dB.

Fig 17. Test circuit for measuring the frequency response when switch is in ON-state



To obtain 0 dBm level at the input, adjust f_i voltage.

Fig 18. Test circuit for measuring isolation (OFF-state)

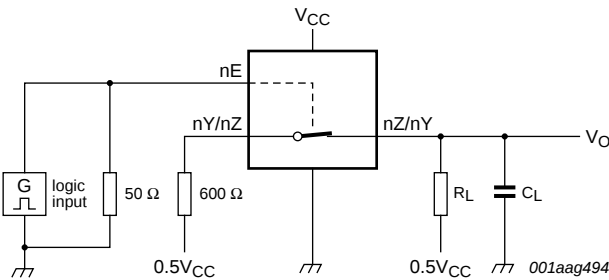
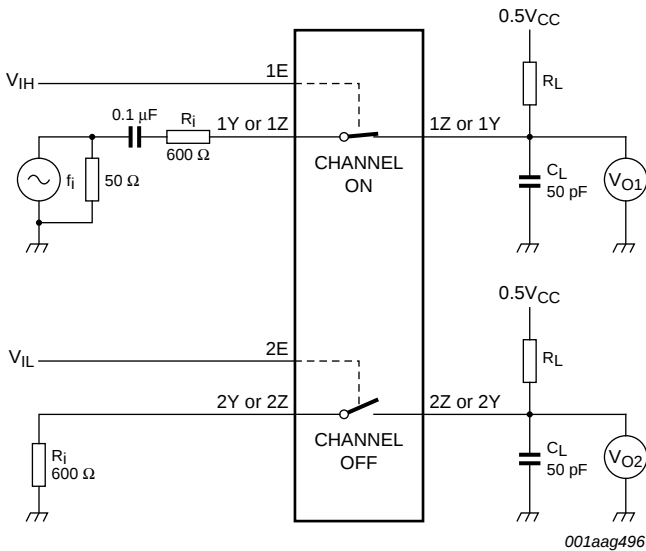
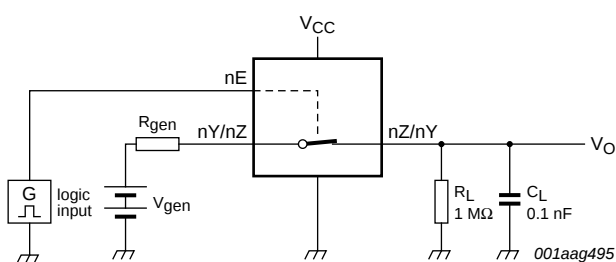


Fig 19. Test circuit for measuring crosstalk voltage (between digital inputs and switch)

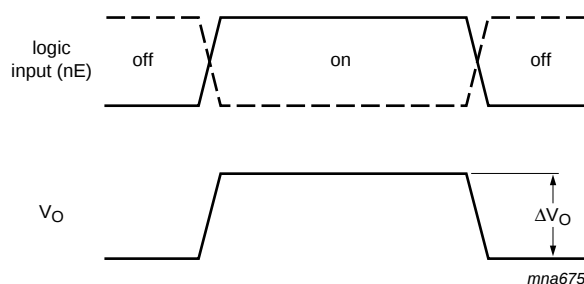


$20 \log_{10} (V_{O2} / V_{O1})$ or $20 \log_{10} (V_{O1} / V_{O2})$.

Fig 20. Test circuit for measuring crosstalk between switches



a. Test circuit



b. Input and output pulse definitions

$$Q_{inj} = \Delta V_O \times C_L$$

 ΔV_O = output voltage variation.

 R_{gen} = generator resistance.

 V_{gen} = generator voltage.

Fig 21. Test circuit for measuring charge injection

12. Application information

The 74LVCV2G66 is used to reduce component count and footprint in low-power portable applications.

Typical '66' devices do not have low-power enable inputs causing a high ΔI_{CC} . To reduce power consumption in portable (battery) applications, a current limiting resistor is used. (see [Figure 22a](#)). The low-power enable inputs of the 74LVCV2G66 have much lower ΔI_{CC} , eliminating the necessity of the current limiting resistor (see [Figure 22b](#)).

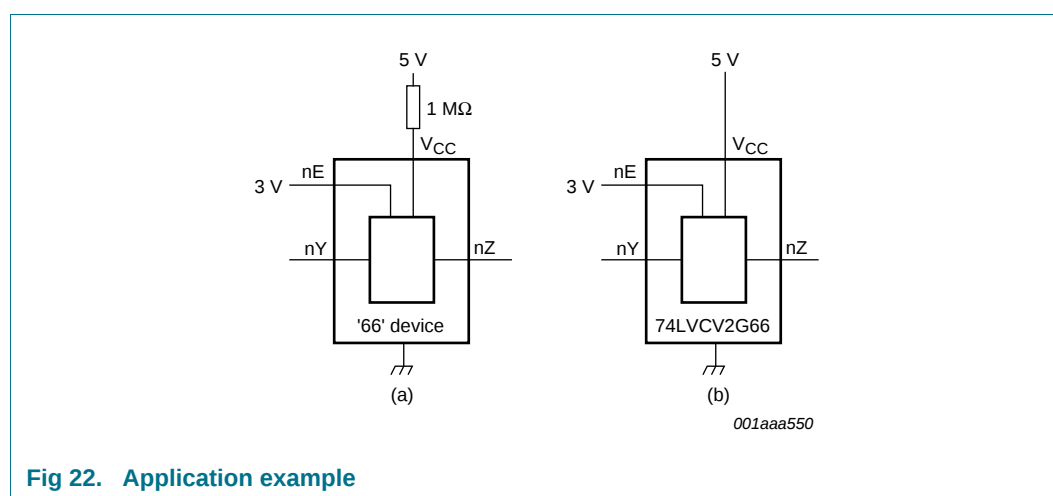


Fig 22. Application example

13. Package outline

TSSOP8: plastic thin shrink small outline package; 8 leads; body width 3 mm; lead length 0.5 mm SOT505-2

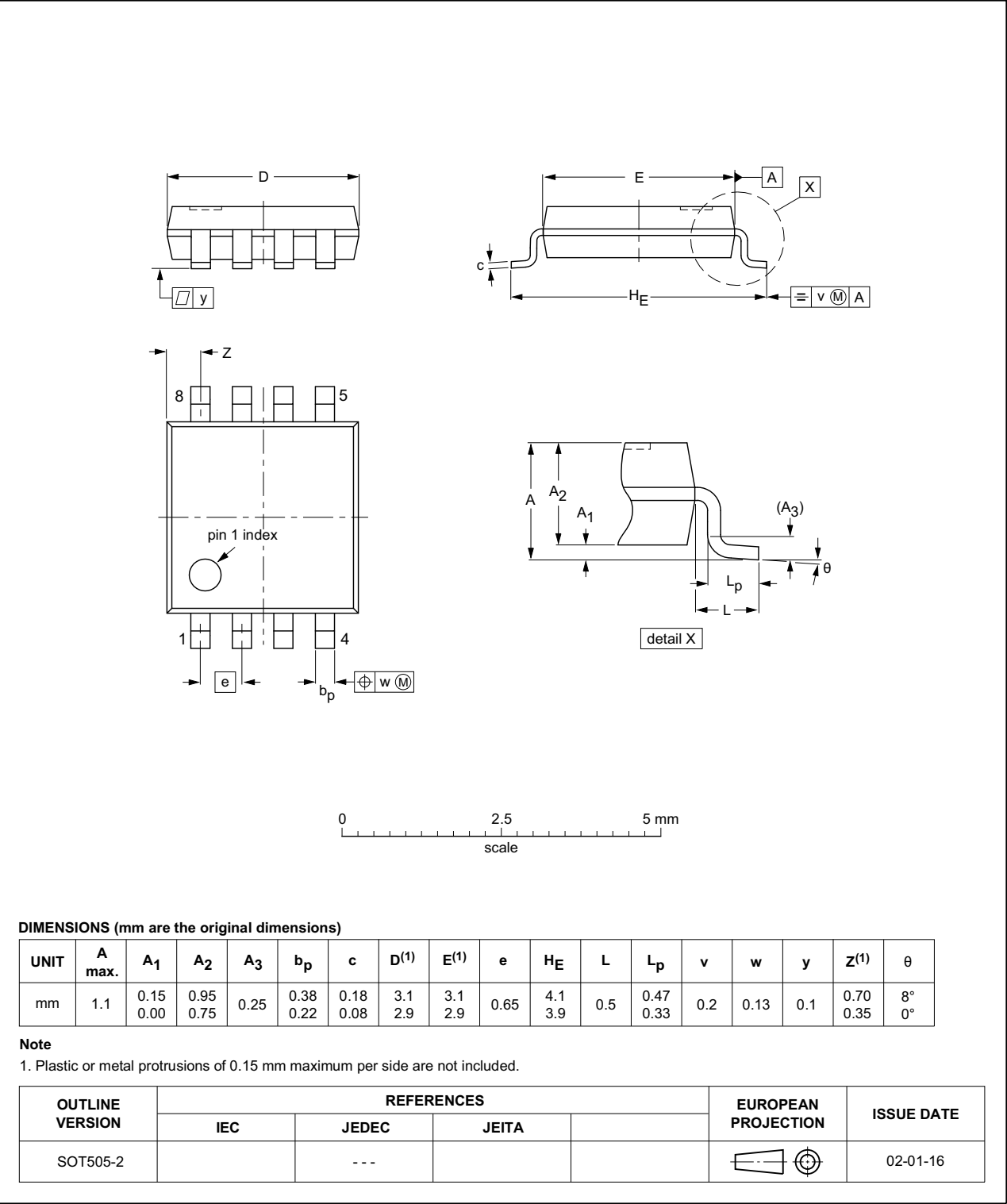


Fig 23. Package outline SOT505-2 (TSSOP8)

VSSOP8: plastic very thin shrink small outline package; 8 leads; body width 2.3 mm

SOT765-1

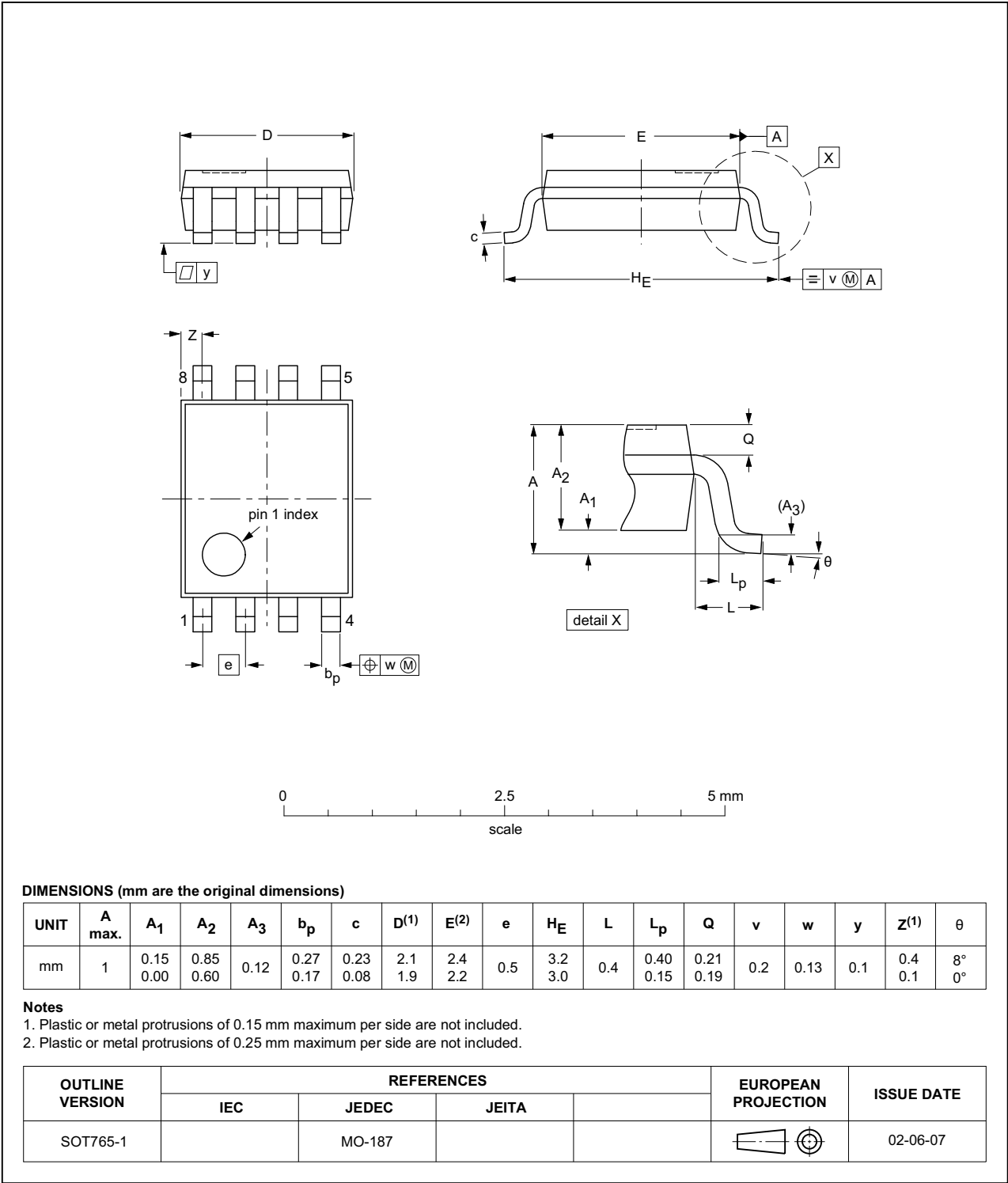


Fig 24. Package outline SOT765-1 (VSSOP8)

XSON8: plastic extremely thin small outline package; no leads; 8 terminals; body 1 x 1.95 x 0.5 mm

SOT833-1

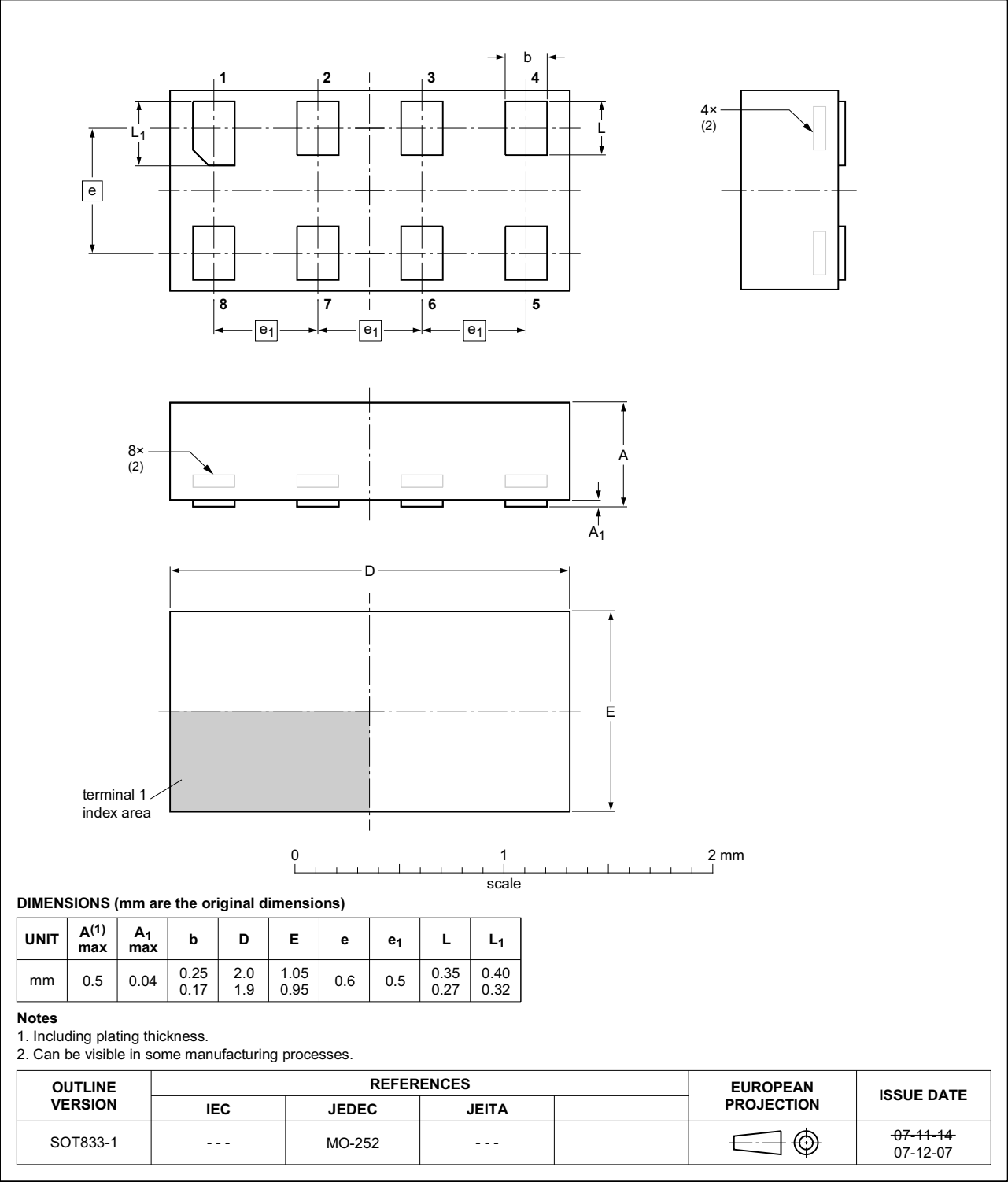


Fig 25. Package outline SOT833-1 (XSON8)

XSON8: plastic extremely thin small outline package; no leads;
8 terminals; body 3 x 2 x 0.5 mm

SOT996-2

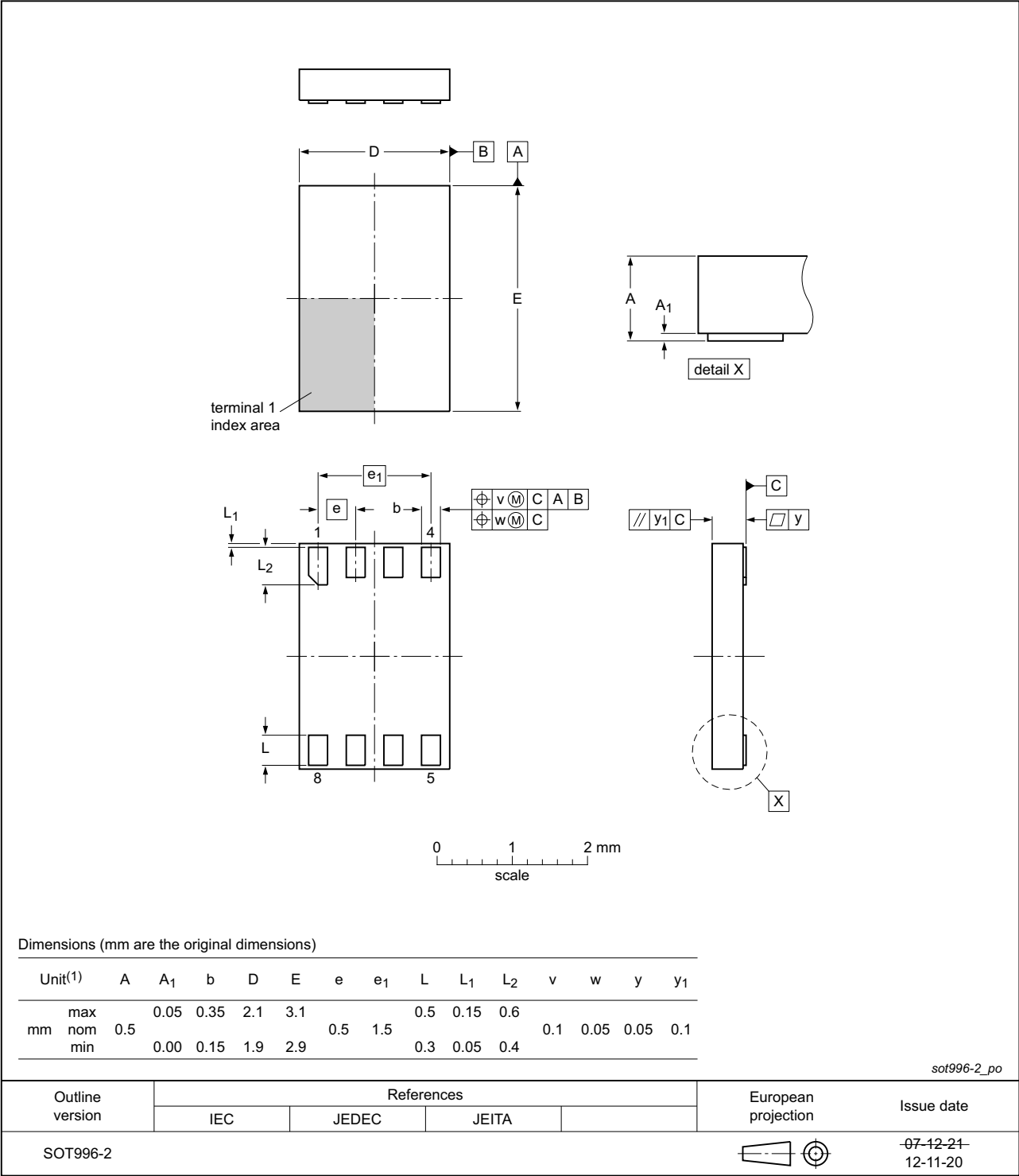


Fig 26. Package outline SOT996-2 (XSON8)

XQFN8: plastic, extremely thin quad flat package; no leads;
8 terminals; body 1.6 x 1.6 x 0.5 mm

SOT902-2

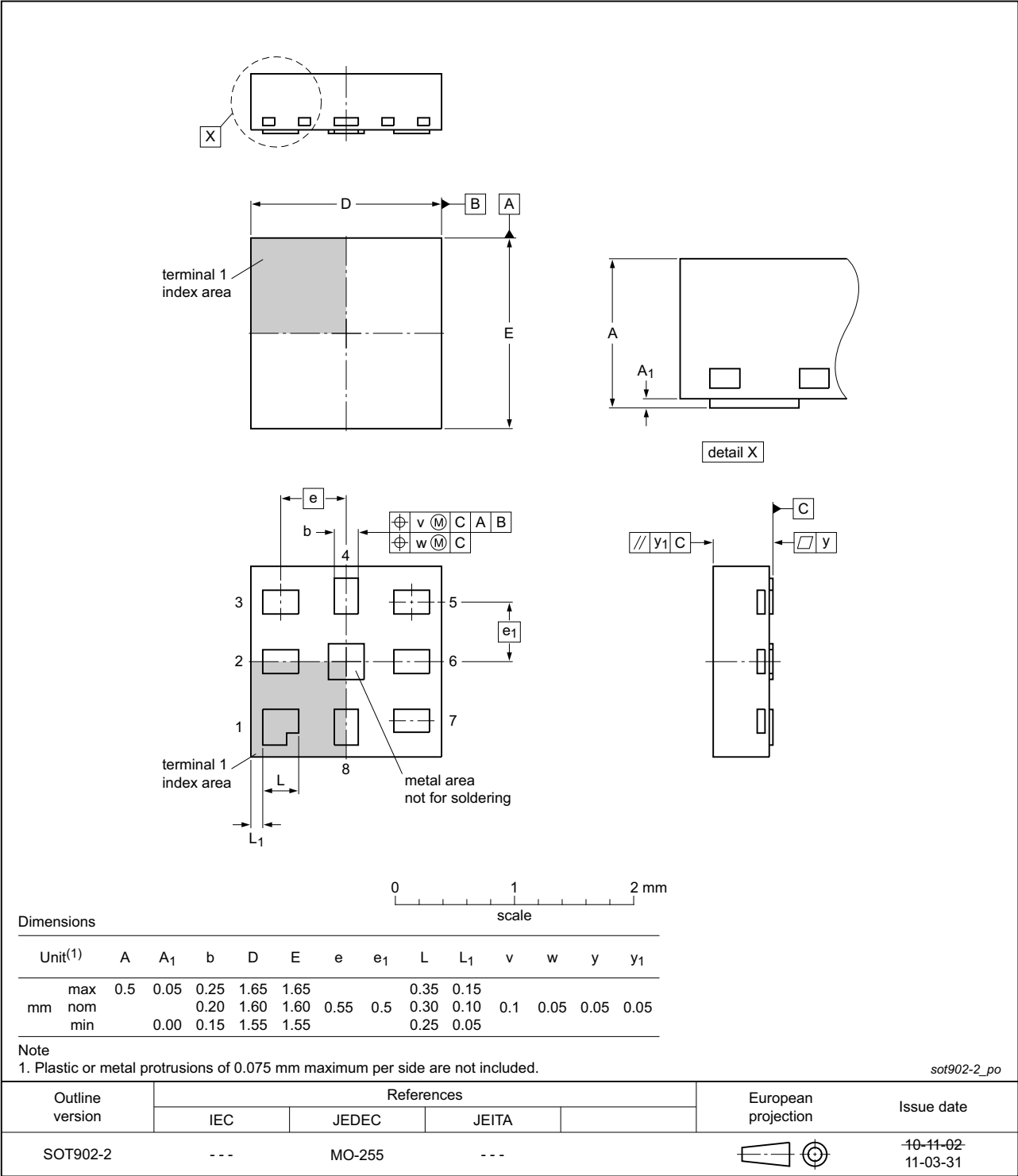


Fig 27. Package outline SOT902-2 (XQFN8)

14. Abbreviations

Table 13. Abbreviations

Acronym	Description
CMOS	Complementary Metal-Oxide Semiconductor
DUT	Device Under Test

15. Revision history

Table 14. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
74LVCV2G66 v.6	20150722	Product data sheet	-	74LVCV2G66 v.5
Modifications:	• Added type numbers 74LVCV2G66GT and 74LVCV2G66GM			
74LVCV2G66 v.5	20130329	Product data sheet	-	74LVCV2G66 v.4
Modifications:	• For type number 74LVCV2G66GD XSON8U has changed to XSON8.			
74LVCV2G66 v.4	20111122	Product data sheet	-	74LVCV2G66 v.3
Modifications:	• Legal pages updated.			
74LVCV2G66 v.3	20100616	Product data sheet	-	74LVCV2G66 v.2
74LVCV2G66 v.2	20080703	Product data sheet	-	74LVCV2G66 v.1
74LVCV2G66 v.1	20040402	Product data sheet	-	-

16. Legal information

16.1 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.

[1] Please consult the most recently issued document before initiating or completing a design.

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

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.nxp.com>.

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Date of release: 22 July 2015

Document identifier: 74LVCV2G66