

# NX3L1G3157

## Low-ohmic single-pole double-throw analog switch

Rev. 10 — 7 August 2012

Product data sheet

### 1. General description

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The NX3L1G3157 is a low-ohmic single-pole double-throw analog switch suitable for use as an analog or digital 2:1 multiplexer/demultiplexer. It has a digital select input (S), two independent inputs/outputs (Y0 and Y1) and a common input/output (Z). Schmitt trigger action at the digital input makes the circuit tolerant to slower input rise and fall times.

The NX3L1G3157 allows signals with amplitude up to  $V_{CC}$  to be transmitted from Z to Y0 or Y1; or from Y0 or Y1 to Z. Its low ON resistance ( $0.5\ \Omega$ ) and flatness ( $0.13\ \Omega$ ) ensures minimal attenuation and distortion of transmitted signals.

### 2. Features and benefits

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- Wide supply voltage range from 1.4 V to 4.3 V
- Very low ON resistance:
  - ◆  $1.6\ \Omega$  (typical) at  $V_{CC} = 1.4\ \text{V}$
  - ◆  $1.0\ \Omega$  (typical) at  $V_{CC} = 1.65\ \text{V}$
  - ◆  $0.55\ \Omega$  (typical) at  $V_{CC} = 2.3\ \text{V}$
  - ◆  $0.50\ \Omega$  (typical) at  $V_{CC} = 2.7\ \text{V}$
  - ◆  $0.50\ \Omega$  (typical) at  $V_{CC} = 4.3\ \text{V}$
- Break-before-make switching
- High noise immunity
- ESD protection:
  - ◆ HBM JESD22-A114F Class 3A exceeds 7500 V
  - ◆ MM JESD22-A115-A exceeds 200 V
  - ◆ CDM AEC-Q100-011 revision B exceeds 1000 V
  - ◆ IEC61000-4-2 contact discharge exceeds 8000 V for switch ports
- CMOS low-power consumption
- Latch-up performance exceeds 100 mA per JESD78 Class II Level A
- Direct interface with TTL levels at 3.0 V
- Control input accepts voltages above supply voltage
- High current handling capability (350 mA continuous current under 3.3 V supply)
- Specified from  $-40\ ^\circ\text{C}$  to  $+85\ ^\circ\text{C}$  and from  $-40\ ^\circ\text{C}$  to  $+125\ ^\circ\text{C}$



### 3. Applications

- Cell phone
- PDA
- Portable media player

### 4. Ordering information

**Table 1. Ordering information**

Type number	Package			Version
	Temperature range	Name	Description	
NX3L1G3157GW	-40 °C to +125 °C	SC-88	plastic surface-mounted package; 6 leads	SOT363
NX3L1G3157GM	-40 °C to +125 °C	XSON6	plastic extremely thin small outline package; no leads; 6 terminals; body 1 × 1.45 × 0.5 mm	SOT886

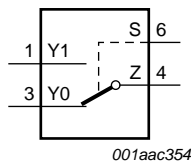
### 5. Marking

**Table 2. Marking codes<sup>[1]</sup>**

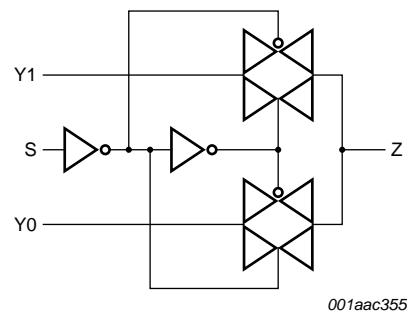
Type number	Marking code
NX3L1G3157GW	MJ
NX3L1G3157GM	MJ

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

### 6. Functional diagram



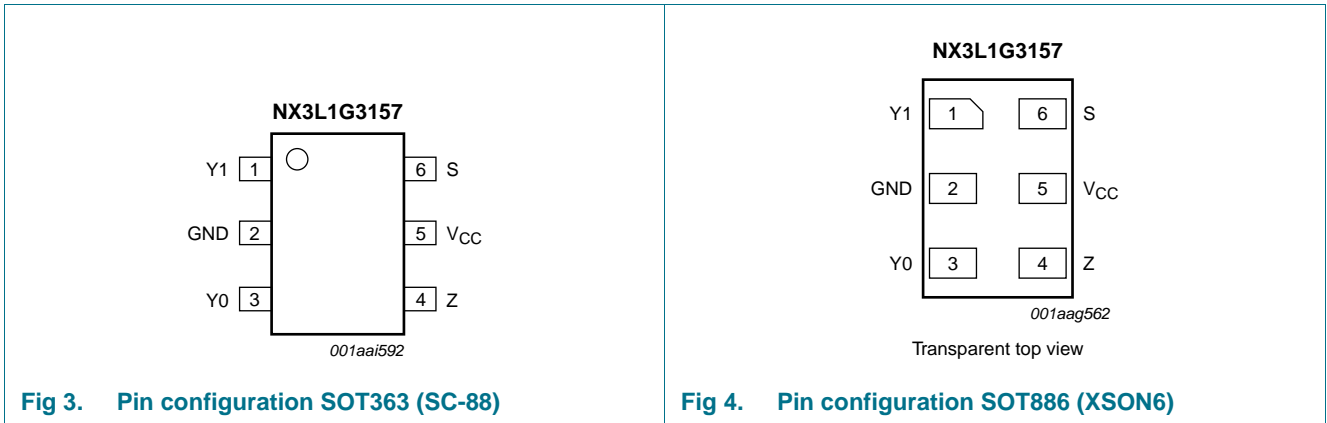
**Fig 1. Logic symbol**



**Fig 2. Logic diagram**

## 7. Pinning information

### 7.1 Pinning



### 7.2 Pin description

**Table 3. Pin description**

Symbol	Pin	Description
Y1	1	independent input or output
GND	2	ground (0 V)
Y0	3	independent input or output
Z	4	common output or input
V <sub>CC</sub>	5	supply voltage
S	6	select input

## 8. Functional description

**Table 4. Function table<sup>[1]</sup>**

Input S	Channel on
L	Y0
H	Y1

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

## 9. 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	+4.6	V
$V_I$	input voltage	select input S	[1] -0.5	+4.6	V
$V_{SW}$	switch voltage		[2] -0.5	$V_{CC} + 0.5$	V
$I_{IK}$	input clamping current	$V_I < -0.5$ V	-50	-	mA
$I_{SK}$	switch clamping current	$V_I < -0.5$ V or $V_I > V_{CC} + 0.5$ V	-	$\pm 50$	mA
$I_{SW}$	switch current	$V_{SW} > -0.5$ V or $V_{SW} < V_{CC} + 0.5$ V; source or sink current	-	$\pm 350$	mA
		$V_{SW} > -0.5$ V or $V_{SW} < V_{CC} + 0.5$ V; pulsed at 1 ms duration, < 10 % duty cycle; peak current	-	$\pm 500$	mA
$T_{stg}$	storage temperature		-65	+150	°C
$P_{tot}$	total power dissipation	$T_{amb} = -40$ °C to +125 °C	[3] -	250	mW

- [1] The minimum input voltage rating may be exceeded if the input current rating is observed.
- [2] The minimum and maximum switch voltage ratings may be exceeded if the switch clamping current rating is observed but may not exceed 4.6 V.
- [3] For SC-88 package: above 87.5 °C the value of  $P_{tot}$  derates linearly with 4.0 mW/K.  
For XSON6 package: above 118 °C the value of  $P_{tot}$  derates linearly with 7.8 mW/K.

## 10. Recommended operating conditions

**Table 6. Recommended operating conditions**

Symbol	Parameter	Conditions	Min	Max	Unit
$V_{CC}$	supply voltage		1.4	4.3	V
$V_I$	input voltage	select input S	0	4.3	V
$V_{SW}$	switch voltage		[1] 0	$V_{CC}$	V
$T_{amb}$	ambient temperature		-40	+125	°C
$\Delta t/\Delta V$	input transition rise and fall rate	$V_{CC} = 1.4$ V to 4.3 V	[2] -	200	ns/V

- [1] To avoid sinking GND current from terminal Z when switch current flows in terminal Yn, the voltage drop across the bidirectional switch must not exceed 0.4 V. If the switch current flows into terminal Z, no GND current flows from terminal Yn. In this case, there is no limit for the voltage drop across the switch.
- [2] Applies to control signal levels.

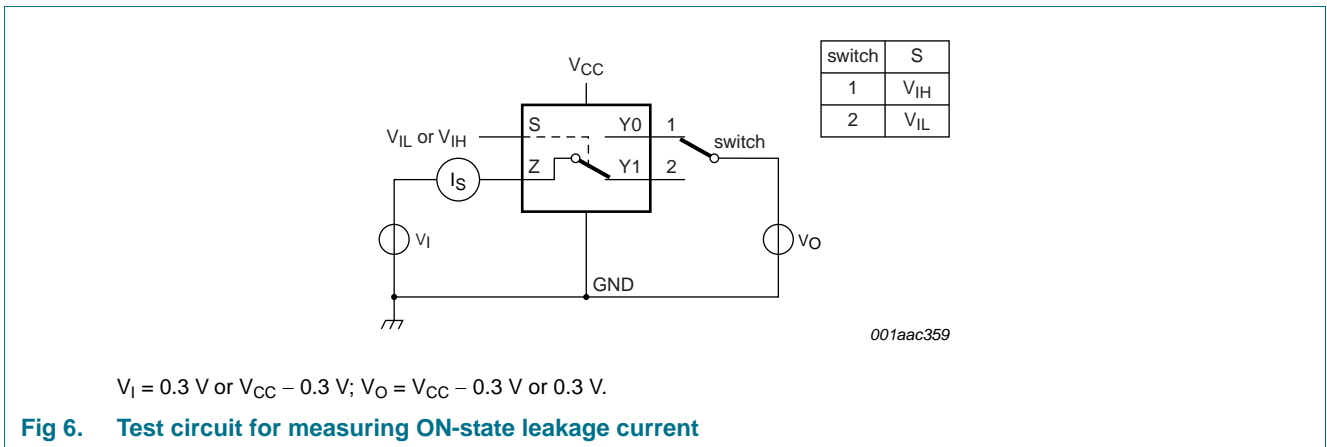
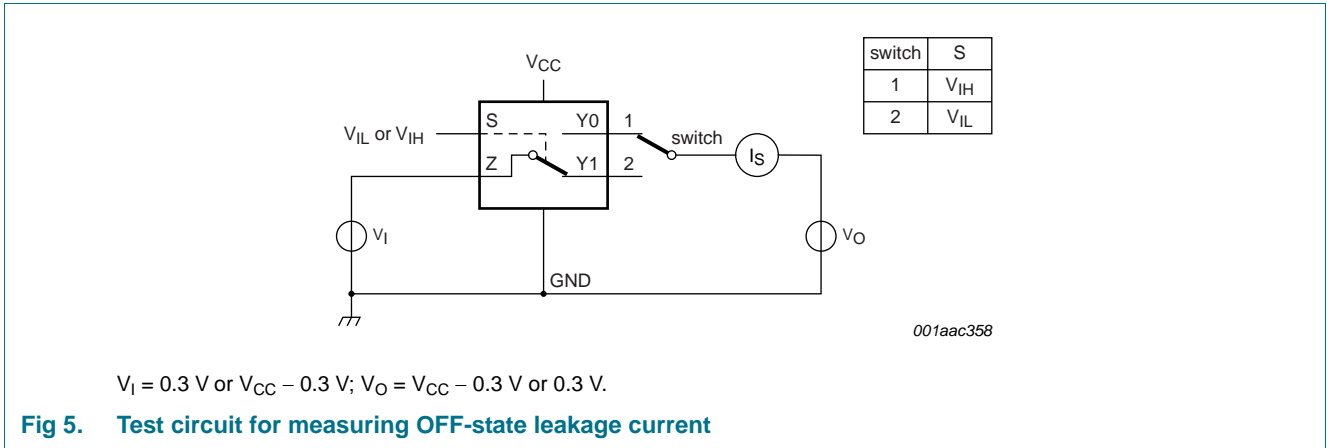
## 11. Static characteristics

**Table 7. Static characteristics**

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

Symbol	Parameter	Conditions	T <sub>amb</sub> = 25 °C			T <sub>amb</sub> = -40 °C to +125 °C			Unit
			Min	Typ	Max	Min	Max (85 °C)	Max (125 °C)	
V <sub>IH</sub>	HIGH-level input voltage	V <sub>CC</sub> = 1.4 V to 1.95 V	0.65V <sub>CC</sub>	-	-	0.65V <sub>CC</sub>	-	-	V
		V <sub>CC</sub> = 2.3 V to 2.7 V	1.7	-	-	1.7	-	-	V
		V <sub>CC</sub> = 2.7 V to 3.6 V	2.0	-	-	2.0	-	-	V
		V <sub>CC</sub> = 3.6 V to 4.3 V	0.7V <sub>CC</sub>	-	-	0.7V <sub>CC</sub>	-	-	V
V <sub>IL</sub>	LOW-level input voltage	V <sub>CC</sub> = 1.4 V to 1.95 V	-	-	0.35V <sub>CC</sub>	-	0.35V <sub>CC</sub>	0.35V <sub>CC</sub>	V
		V <sub>CC</sub> = 2.3 V to 2.7 V	-	-	0.7	-	0.7	0.7	V
		V <sub>CC</sub> = 2.7 V to 3.6 V	-	-	0.8	-	0.8	0.8	V
		V <sub>CC</sub> = 3.6 V to 4.3 V	-	-	0.3V <sub>CC</sub>	-	0.3V <sub>CC</sub>	0.3V <sub>CC</sub>	V
I <sub>I</sub>	input leakage current	select input S; V <sub>I</sub> = GND to 4.3 V; V <sub>CC</sub> = 1.4 V to 4.3 V	-	-	-	-	±0.5	±1	μA
I <sub>S(OFF)</sub>	OFF-state leakage current	Y0 and Y1 port; see <a href="#">Figure 5</a>							
		V <sub>CC</sub> = 1.4 V to 3.6 V	-	-	±5	-	±50	±500	nA
		V <sub>CC</sub> = 3.6 V to 4.3 V	-	-	±10	-	±50	±500	nA
I <sub>S(ON)</sub>	ON-state leakage current	Z port; see <a href="#">Figure 6</a>							
		V <sub>CC</sub> = 1.4 V to 3.6 V	-	-	±5	-	±50	±500	nA
		V <sub>CC</sub> = 3.6 V to 4.3 V	-	-	±10	-	±50	±500	nA
I <sub>CC</sub>	supply current	V <sub>I</sub> = V <sub>CC</sub> or GND; V <sub>SW</sub> = GND or V <sub>CC</sub>							
		V <sub>CC</sub> = 3.6 V	-	-	100	-	690	6000	nA
		V <sub>CC</sub> = 4.3 V	-	-	150	-	800	7000	nA
C <sub>I</sub>	input capacitance		-	1.0	-	-	-	-	pF
C <sub>S(OFF)</sub>	OFF-state capacitance		-	35	-	-	-	-	pF
C <sub>S(ON)</sub>	ON-state capacitance		-	130	-	-	-	-	pF

11.1 Test circuits



## 11.2 ON resistance

**Table 8. ON resistance**

At recommended operating conditions; voltages are referenced to GND (ground = 0 V); for graphs see [Figure 8](#) to [Figure 14](#).

Symbol	Parameter	Conditions	T <sub>amb</sub> = -40 °C to +85 °C			T <sub>amb</sub> = -40 °C to +125 °C		Unit	
			Min	Typ <sup>[1]</sup>	Max	Min	Max		
R <sub>ON(peak)</sub>	ON resistance (peak)	V <sub>I</sub> = GND to V <sub>CC</sub> ; I <sub>SW</sub> = 100 mA; see <a href="#">Figure 7</a>							
			V <sub>CC</sub> = 1.4 V	-	1.6	3.7	-	4.1	Ω
			V <sub>CC</sub> = 1.65 V	-	1.0	1.6	-	1.7	Ω
			V <sub>CC</sub> = 2.3 V	-	0.55	0.8	-	0.9	Ω
			V <sub>CC</sub> = 2.7 V	-	0.5	0.75	-	0.9	Ω
			V <sub>CC</sub> = 4.3 V	-	0.5	0.75	-	0.9	Ω
ΔR <sub>ON</sub>	ON resistance mismatch between channels	V <sub>I</sub> = GND to V <sub>CC</sub> ; I <sub>SW</sub> = 100 mA							
			V <sub>CC</sub> = 1.4 V	-	0.04	0.3	-	0.3	Ω
			V <sub>CC</sub> = 1.65 V	-	0.04	0.2	-	0.3	Ω
			V <sub>CC</sub> = 2.3 V	-	0.02	0.08	-	0.1	Ω
			V <sub>CC</sub> = 2.7 V	-	0.02	0.075	-	0.1	Ω
			V <sub>CC</sub> = 4.3 V	-	0.02	0.075	-	0.1	Ω
R <sub>ON(flat)</sub>	ON resistance (flatness)	V <sub>I</sub> = GND to V <sub>CC</sub> ; I <sub>SW</sub> = 100 mA							
			V <sub>CC</sub> = 1.4 V	-	1.0	3.3	-	3.6	Ω
			V <sub>CC</sub> = 1.65 V	-	0.5	1.2	-	1.3	Ω
			V <sub>CC</sub> = 2.3 V	-	0.15	0.3	-	0.35	Ω
			V <sub>CC</sub> = 2.7 V	-	0.13	0.3	-	0.35	Ω
			V <sub>CC</sub> = 4.3 V	-	0.2	0.4	-	0.45	Ω

[1] Typical values are measured at T<sub>amb</sub> = 25 °C.

[2] Measured at identical V<sub>CC</sub>, temperature and input voltage.

[3] Flatness is defined as the difference between the maximum and minimum value of ON resistance measured at identical V<sub>CC</sub> and temperature.

11.3 ON resistance test circuit and graphs

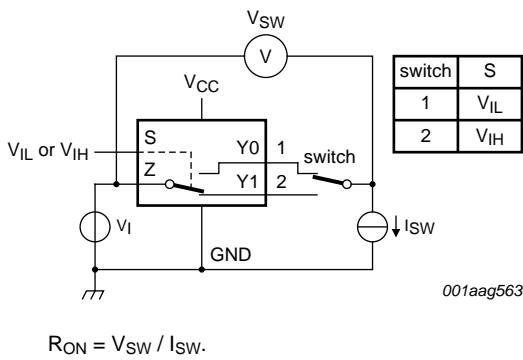
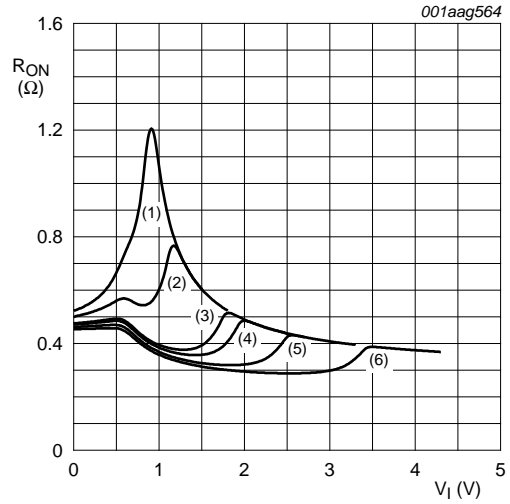


Fig 7. Test circuit for measuring ON resistance

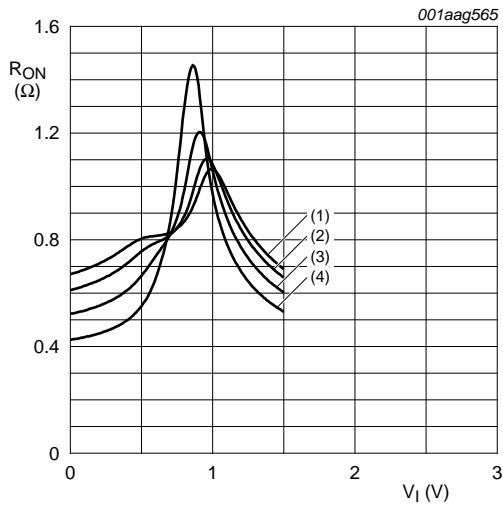


- (1) V<sub>CC</sub> = 1.5 V.
- (2) V<sub>CC</sub> = 1.8 V.
- (3) V<sub>CC</sub> = 2.5 V.
- (4) V<sub>CC</sub> = 2.7 V.
- (5) V<sub>CC</sub> = 3.3 V.
- (6) V<sub>CC</sub> = 4.3 V.

Measured at T<sub>amb</sub> = 25 °C.

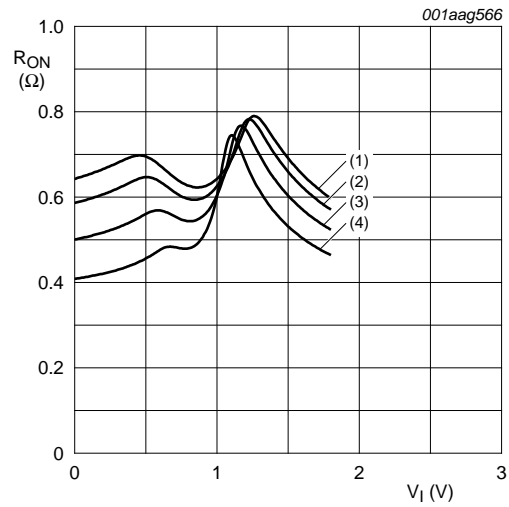
Fig 8. Typical ON resistance as a function of input voltage





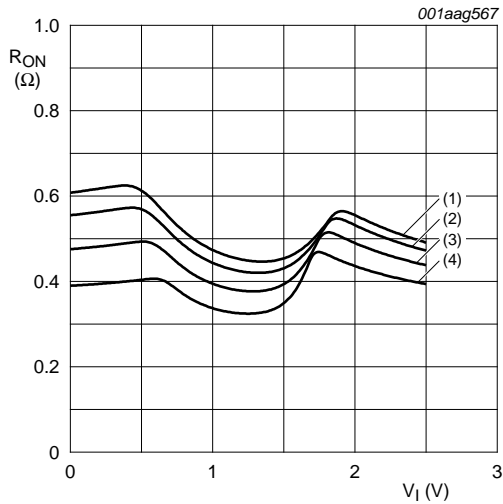
- (1)  $T_{amb} = 125\text{ }^{\circ}\text{C}.$
- (2)  $T_{amb} = 85\text{ }^{\circ}\text{C}.$
- (3)  $T_{amb} = 25\text{ }^{\circ}\text{C}.$
- (4)  $T_{amb} = -40\text{ }^{\circ}\text{C}.$

**Fig 9. ON resistance as a function of input voltage;**  
 $V_{CC} = 1.5\text{ V}$



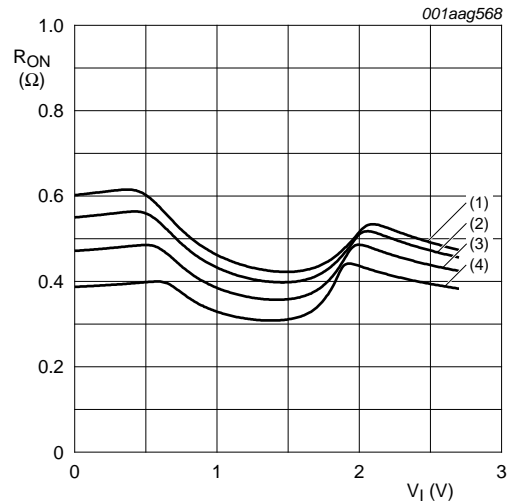
- (1)  $T_{amb} = 125\text{ }^{\circ}\text{C}.$
- (2)  $T_{amb} = 85\text{ }^{\circ}\text{C}.$
- (3)  $T_{amb} = 25\text{ }^{\circ}\text{C}.$
- (4)  $T_{amb} = -40\text{ }^{\circ}\text{C}.$

**Fig 10. ON resistance as a function of input voltage;**  
 $V_{CC} = 1.8\text{ V}$



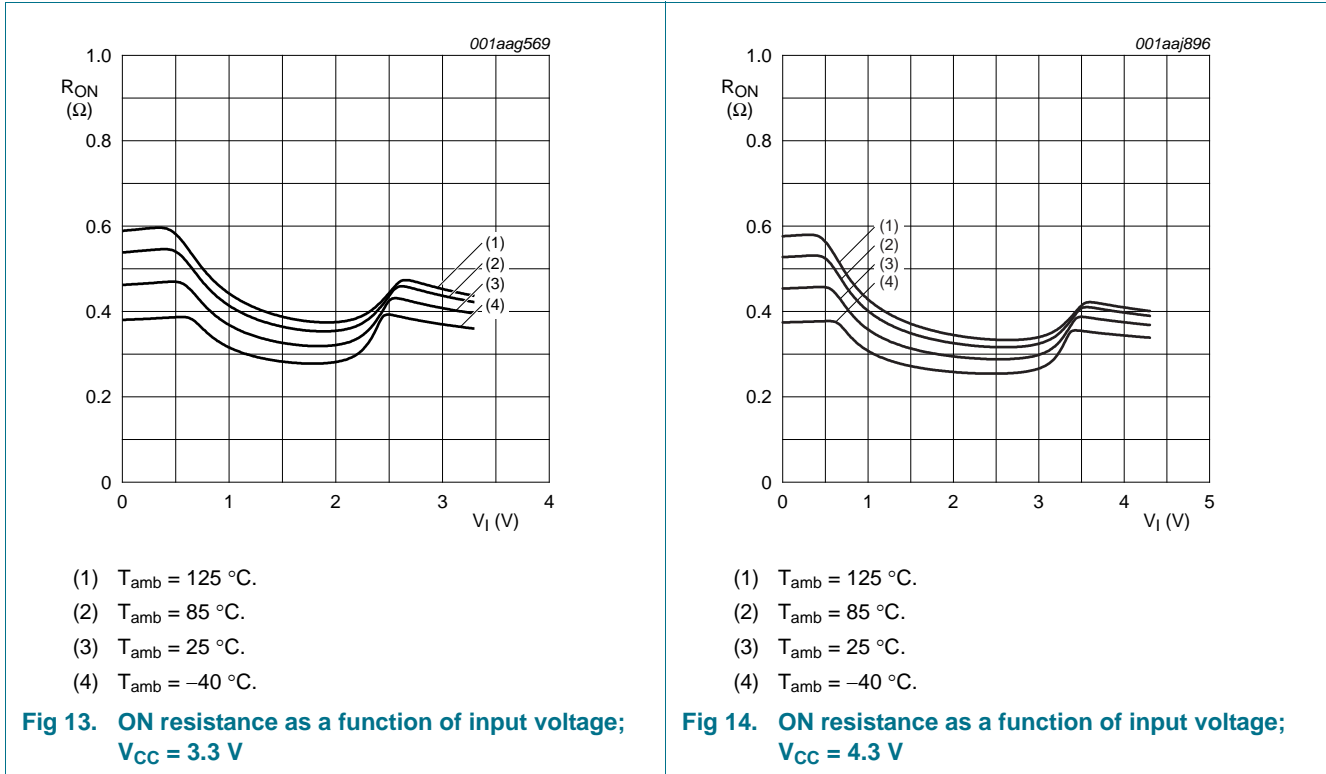
- (1)  $T_{amb} = 125\text{ }^{\circ}\text{C}.$
- (2)  $T_{amb} = 85\text{ }^{\circ}\text{C}.$
- (3)  $T_{amb} = 25\text{ }^{\circ}\text{C}.$
- (4)  $T_{amb} = -40\text{ }^{\circ}\text{C}.$

**Fig 11. ON resistance as a function of input voltage;**  
 $V_{CC} = 2.5\text{ V}$



- (1)  $T_{amb} = 125\text{ }^{\circ}\text{C}.$
- (2)  $T_{amb} = 85\text{ }^{\circ}\text{C}.$
- (3)  $T_{amb} = 25\text{ }^{\circ}\text{C}.$
- (4)  $T_{amb} = -40\text{ }^{\circ}\text{C}.$

**Fig 12. ON resistance as a function of input voltage;**  
 $V_{CC} = 2.7\text{ V}$



## 12. Dynamic characteristics

**Table 9. Dynamic characteristics**

At recommended operating conditions; voltages are referenced to GND (ground = 0 V); for load circuit see [Figure 17](#).

Symbol	Parameter	Conditions	T <sub>amb</sub> = 25 °C			T <sub>amb</sub> = -40 °C to +125 °C			Unit
			Min	Typ <sup>[1]</sup>	Max	Min	Max (85 °C)	Max (125 °C)	
t <sub>en</sub>	enable time	S to Z or Yn; see <a href="#">Figure 15</a>							
		V <sub>CC</sub> = 1.4 V to 1.6 V	-	28	43	-	48	52	ns
		V <sub>CC</sub> = 1.65 V to 1.95 V	-	23	35	-	38	42	ns
		V <sub>CC</sub> = 2.3 V to 2.7 V	-	17	27	-	29	32	ns
		V <sub>CC</sub> = 2.7 V to 3.6 V	-	14	25	-	27	30	ns
		V <sub>CC</sub> = 3.6 V to 4.3 V	-	14	25	-	27	30	ns
t <sub>dis</sub>	disable time	S to Z or Yn; see <a href="#">Figure 15</a>							
		V <sub>CC</sub> = 1.4 V to 1.6 V	-	9	20	-	25	30	ns
		V <sub>CC</sub> = 1.65 V to 1.95 V	-	6	15	-	20	23	ns
		V <sub>CC</sub> = 2.3 V to 2.7 V	-	5	11	-	14	16	ns
		V <sub>CC</sub> = 2.7 V to 3.6 V	-	4	10	-	12	14	ns
		V <sub>CC</sub> = 3.6 V to 4.3 V	-	4	10	-	12	14	ns

**Table 9. Dynamic characteristics ...continued**

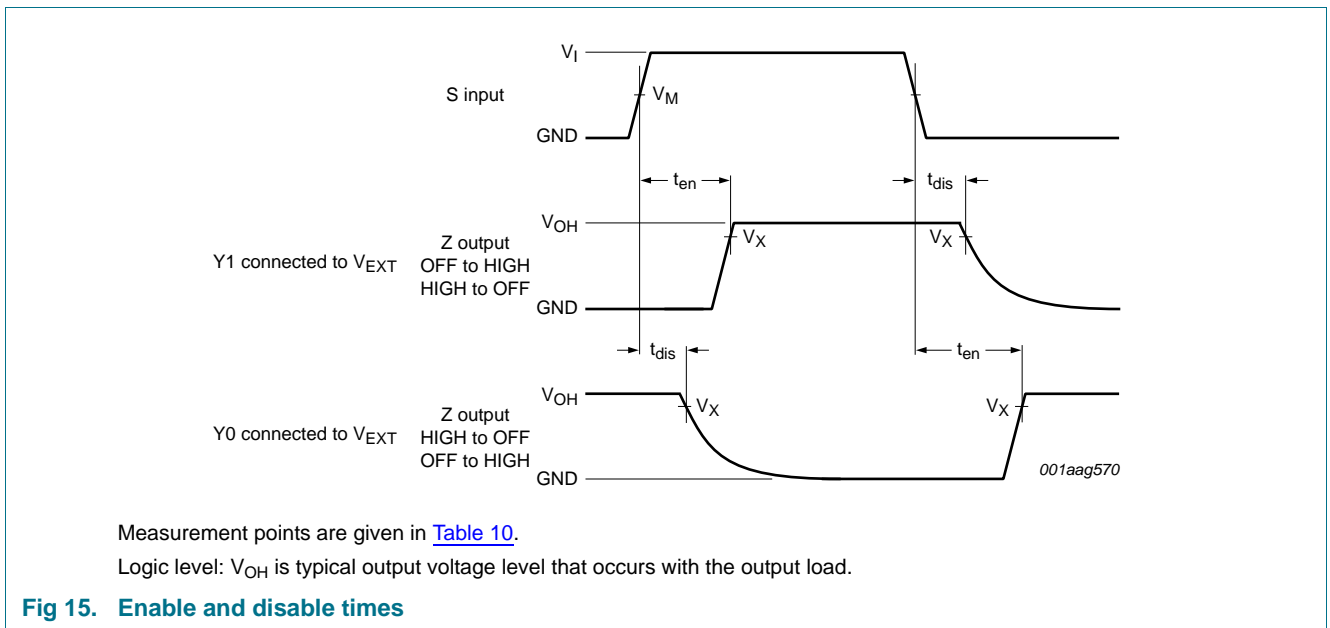
At recommended operating conditions; voltages are referenced to GND (ground = 0 V); for load circuit see [Figure 17](#).

Symbol	Parameter	Conditions	T <sub>amb</sub> = 25 °C			T <sub>amb</sub> = -40 °C to +125 °C			Unit
			Min	Typ <sup>[1]</sup>	Max	Min	Max (85 °C)	Max (125 °C)	
t <sub>b-m</sub>	break-before-make time	see <a href="#">Figure 16</a> <sup>[2]</sup>							
		V <sub>CC</sub> = 1.4 V to 1.6 V	-	19	-	4	-	-	ns
		V <sub>CC</sub> = 1.65 V to 1.95 V	-	17	-	4	-	-	ns
		V <sub>CC</sub> = 2.3 V to 2.7 V	-	13	-	2	-	-	ns
		V <sub>CC</sub> = 2.7 V to 3.6 V	-	10	-	2	-	-	ns
		V <sub>CC</sub> = 3.6 V to 4.3 V	-	10	-	2	-	-	ns

[1] Typical values are measured at T<sub>amb</sub> = 25 °C and V<sub>CC</sub> = 1.5 V, 1.8 V, 2.5 V, 3.3 V and 4.3 V respectively.

[2] Break-before-make guaranteed by design.

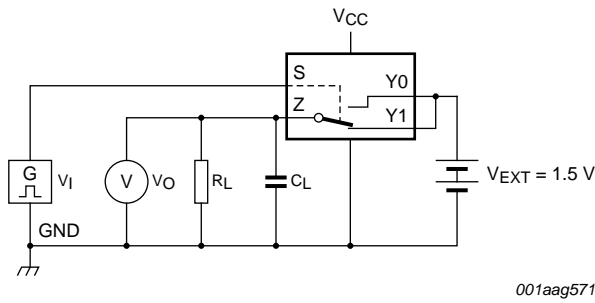
### 12.1 Waveform and test circuits



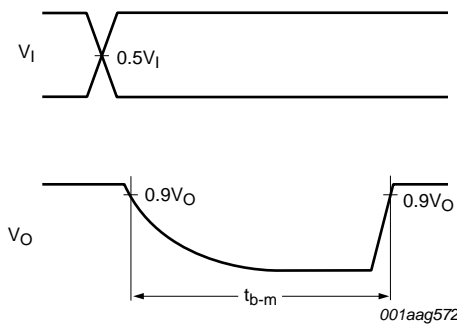
**Fig 15. Enable and disable times**

**Table 10. Measurement points**

Supply voltage	Input	Output
V <sub>CC</sub>	V <sub>M</sub>	V <sub>X</sub>
1.4 V to 4.3 V	0.5V <sub>CC</sub>	0.9V <sub>OH</sub>

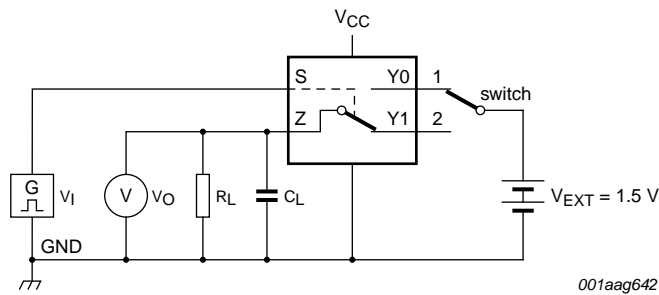


a. Test circuit



b. Input and output measurement points

Fig 16. Test circuit for measuring break-before-make timing



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

Definitions test circuit:

$R_L$  = Load resistance.

$C_L$  = Load capacitance including jig and probe capacitance.

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

Fig 17. Load circuit for switching times

Table 11. Test data

Supply voltage	Input		Load	
$V_{CC}$	$V_I$	$t_r, t_f$	$C_L$	$R_L$
1.4 V to 4.3 V	$V_{CC}$	$\leq 2.5$ ns	35 pF	50 $\Omega$

12.2 Additional dynamic characteristics

Table 12. Additional dynamic characteristics

At recommended operating conditions; voltages are referenced to GND (ground = 0 V);  $V_I = GND$  or  $V_{CC}$  (unless otherwise specified);  $t_r = t_f \leq 2.5$  ns;  $T_{amb} = 25$  °C.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
THD	total harmonic distortion	$f_i = 20$ Hz to 20 kHz; $R_L = 32$ $\Omega$ ; see <a href="#">Figure 18</a>	[1]			
		$V_{CC} = 1.4$ V; $V_I = 1$ V (p-p)	-	0.15	-	%
		$V_{CC} = 1.65$ V; $V_I = 1.2$ V (p-p)	-	0.10	-	%
		$V_{CC} = 2.3$ V; $V_I = 1.5$ V (p-p)	-	0.02	-	%
		$V_{CC} = 2.7$ V; $V_I = 2$ V (p-p)	-	0.02	-	%
		$V_{CC} = 4.3$ V; $V_I = 2$ V (p-p)	-	0.02	-	%
$f_{(-3dB)}$	-3 dB frequency response	$R_L = 50$ $\Omega$ ; see <a href="#">Figure 19</a>	[1]			
		$V_{CC} = 1.4$ V to 4.3 V	-	60	-	MHz
$\alpha_{iso}$	isolation (OFF-state)	$f_i = 100$ kHz; $R_L = 50$ $\Omega$ ; see <a href="#">Figure 20</a>	[1]			
		$V_{CC} = 1.4$ V to 4.3 V	-	-90	-	dB
$V_{ct}$	crosstalk voltage	between digital inputs and switch; $f_i = 1$ MHz; $C_L = 50$ pF; $R_L = 50$ $\Omega$ ; see <a href="#">Figure 21</a>				
		$V_{CC} = 1.4$ V to 3.6 V	-	0.2	-	V
		$V_{CC} = 3.6$ V to 4.3 V	-	0.3	-	V
$Q_{inj}$	charge injection	$f_i = 1$ MHz; $C_L = 0.1$ nF; $R_L = 1$ M $\Omega$ ; $V_{gen} = 0$ V; $R_{gen} = 0$ $\Omega$ ; see <a href="#">Figure 22</a>				
		$V_{CC} = 1.5$ V	-	3	-	pC
		$V_{CC} = 1.8$ V	-	4	-	pC
		$V_{CC} = 2.5$ V	-	6	-	pC
		$V_{CC} = 3.3$ V	-	9	-	pC
		$V_{CC} = 4.3$ V	-	15	-	pC

[1]  $f_i$  is biased at  $0.5V_{CC}$ .

12.3 Test circuits

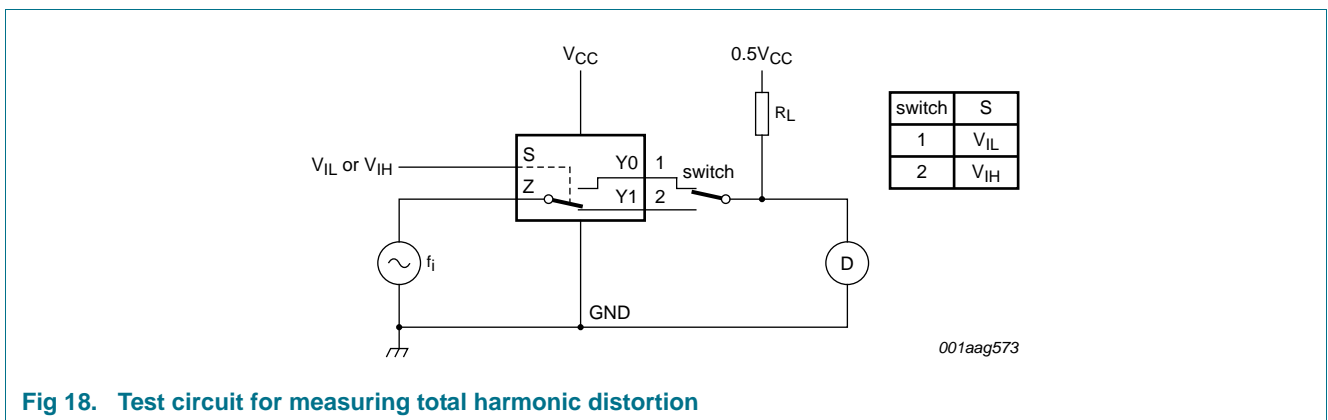
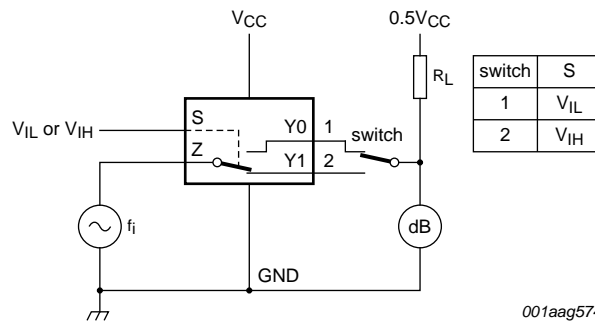


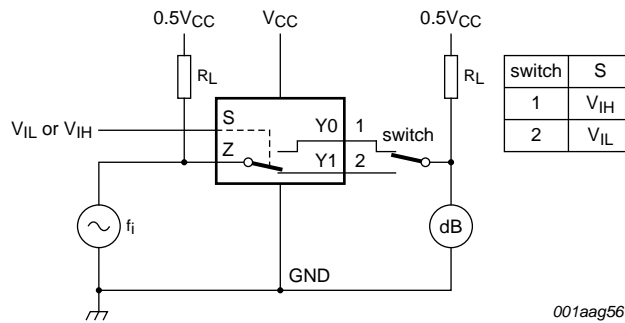
Fig 18. Test circuit for measuring total harmonic distortion



001aag574

Adjust  $f_i$  voltage to obtain 0 dBm level at output. Increase  $f_i$  frequency until dB meter reads -3 dB.

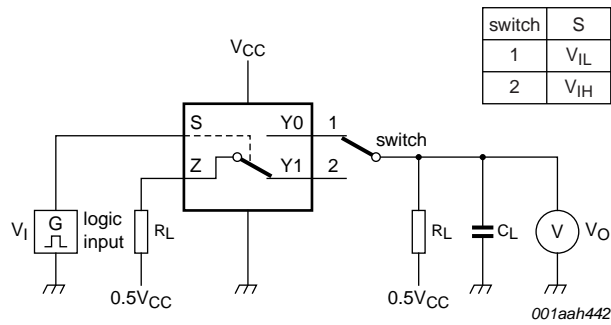
**Fig 19. Test circuit for measuring the frequency response when channel is in ON-state**



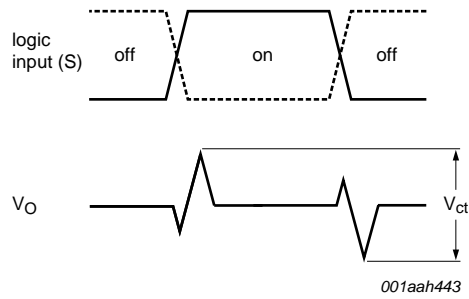
001aag561

Adjust  $f_i$  voltage to obtain 0 dBm level at input.

**Fig 20. Test circuit for measuring isolation (OFF-state)**

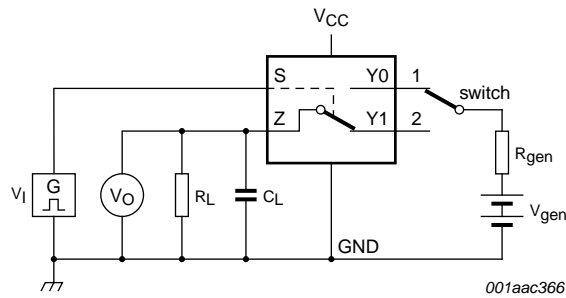


a. Test circuit

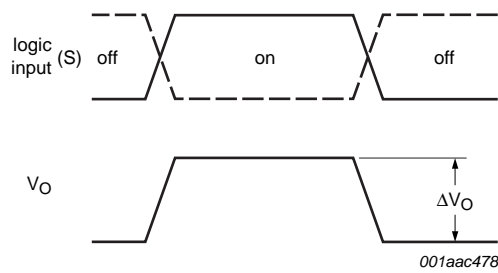


b. Input and output pulse definitions

**Fig 21. Test circuit for measuring crosstalk voltage between digital inputs and switch**



a. Test circuit



b. Input and output pulse definitions

Definition:  $Q_{inj} = \Delta V_O \times C_L$ .

$\Delta V_O$  = output voltage variation.

$R_{gen}$  = generator resistance.

$V_{gen}$  = generator voltage.

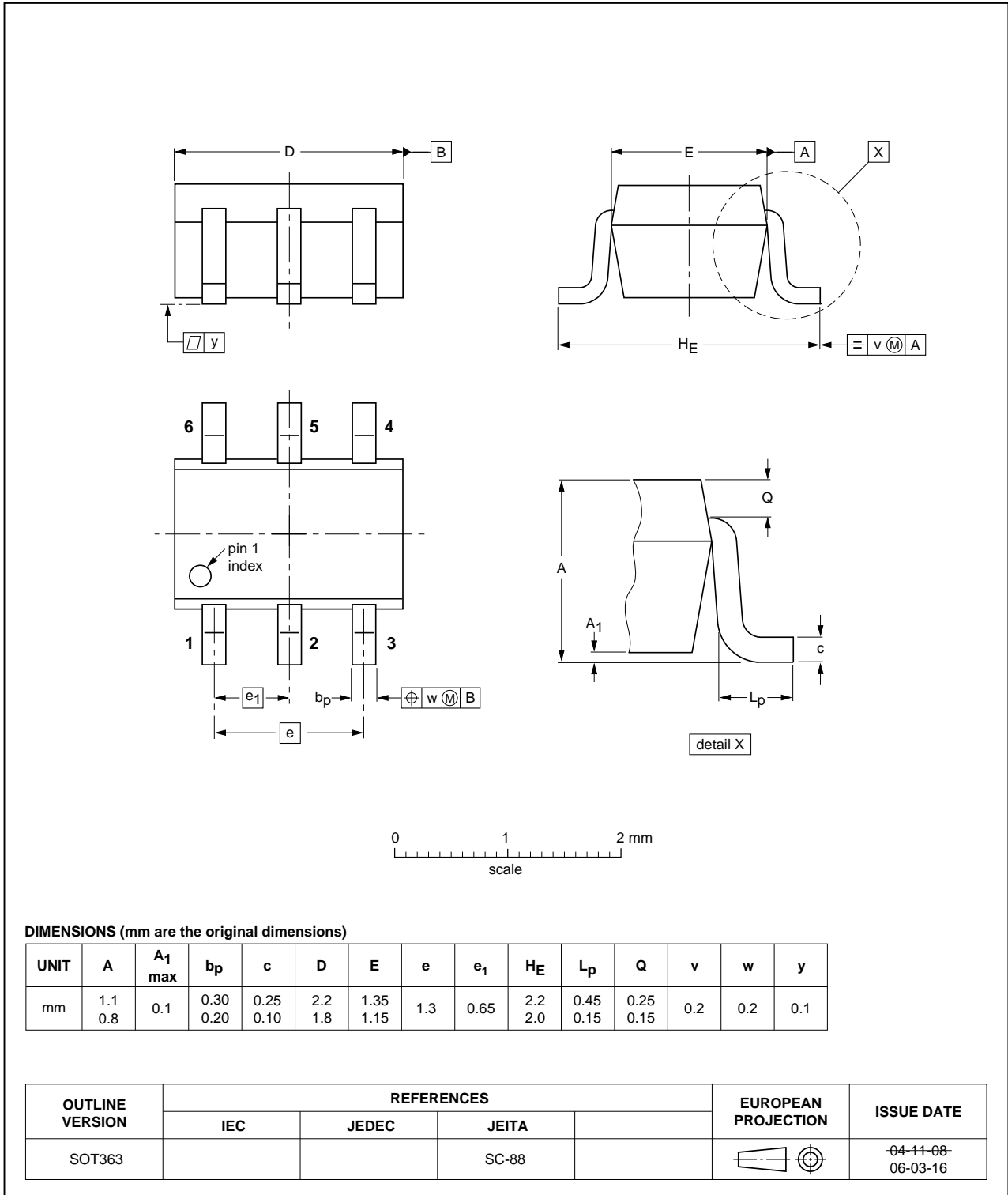
**Fig 22. Test circuit for measuring charge injection**



**13. Package outline**

Plastic surface-mounted package; 6 leads

SOT363



**Fig 23. 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

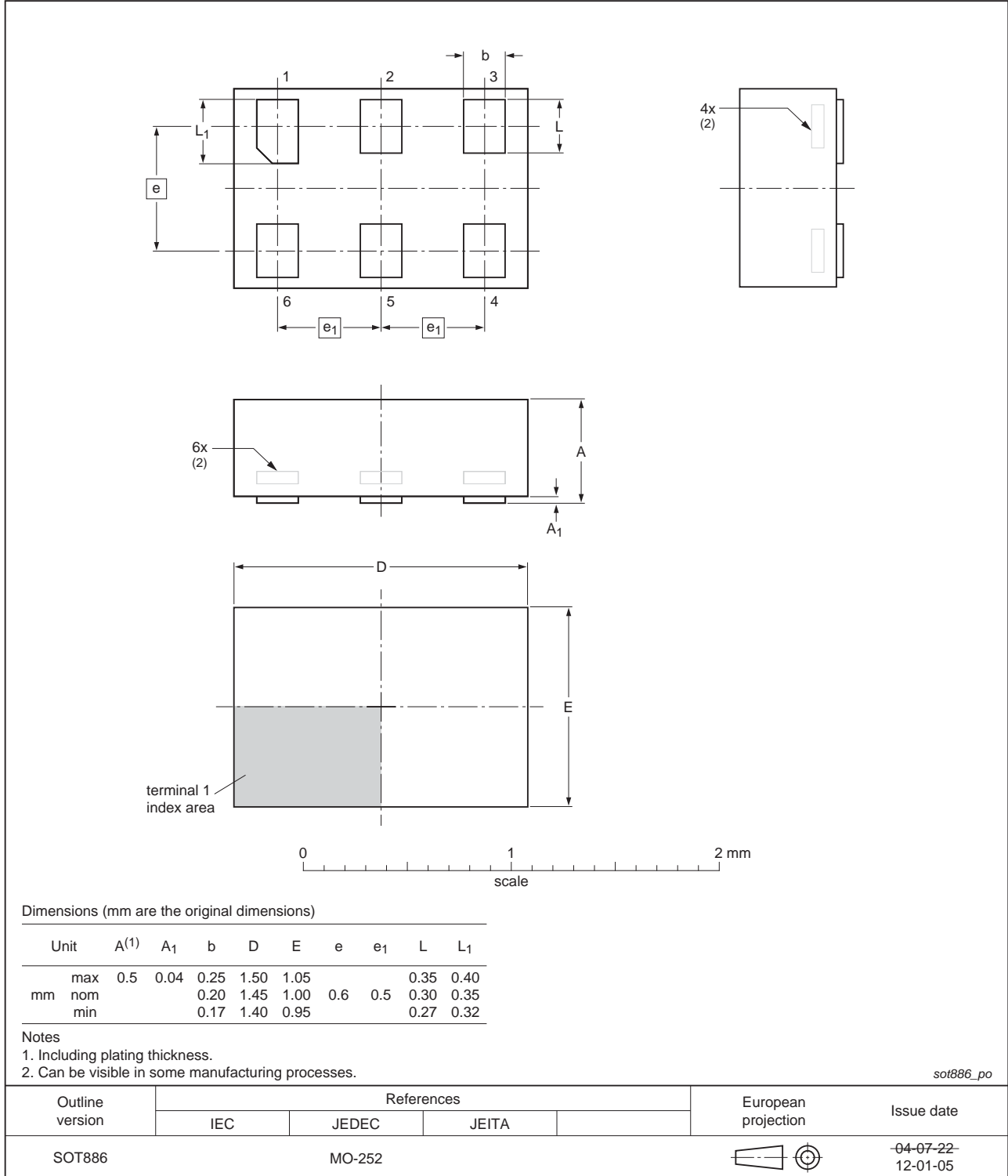


Fig 24. Package outline SOT886 (XSON6)

## 14. Abbreviations

Table 13. Abbreviations

Acronym	Description
CDM	Charged Device Model
CMOS	Complementary Metal-Oxide Semiconductor
ESD	ElectroStatic Discharge
HBM	Human Body Model
MM	Machine Model
PDA	Personal Digital Assistant
TTL	Transistor-Transistor Logic

## 15. Revision history

Table 14. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
NX3L1G3157 v.10	20120807	Product data sheet	-	NX3L1G3157 v.9
Modifications:	<ul style="list-style-type: none"> <li>Package outline drawing of SOT886 (<a href="#">Figure 24</a>) modified.</li> </ul>			
NX3L1G3157 v.9	20111109	Product data sheet	-	NX3L1G3157 v.8
Modifications:	<ul style="list-style-type: none"> <li>Legal pages updated.</li> </ul>			
NX3L1G3157 v.8	20100426	Product data sheet	-	NX3L1G3157 v.7
NX3L1G3157 v.7	20100324	Product data sheet	-	NX3L1G3157 v.6
NX3L1G3157 v.6	20100208	Product data sheet	-	NX3L1G3157 v.5
NX3L1G3157 v.5	20090407	Product data sheet	-	NX3L1G3157 v.4
NX3L1G3157 v.4	20080730	Product data sheet	-	NX3L1G3157 v.3
NX3L1G3157 v.3	20080721	Product data sheet	-	NX3L1G3157 v.2
NX3L1G3157 v.2	20080415	Product data sheet	-	NX3L1G3157 v.1
NX3L1G3157 v.1	20071008	Product data sheet	-	-

## 16. Legal information

### 16.1 Data sheet status

Document status <sup>[1][2]</sup>	Product status <sup>[3]</sup>	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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