

# NX3L2467

## Dual low-ohmic double-pole double-throw analog switch

Rev. 5 — 2 July 2012

Product data sheet

### 1. General description

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The NX3L2467 is a dual low-ohmic double-pole double-throw analog switch suitable for use as an analog or digital multiplexer/demultiplexer. It consists of four switches, each with two independent input/outputs ( $nY0$  and  $nY1$ ) and a common input/output ( $nZ$ ). The two digital inputs (1S and 2S) are used to select the switch position. 1S is used in selecting the independent inputs/outputs switched to 1Z and 2Z, and 2S is used in selecting the independent inputs/outputs switched to 3Z and 4Z. Schmitt trigger action at the digital inputs makes the circuit tolerant to slower input rise and fall times. Low threshold digital inputs allows this device to be driven by 1.8 V logic levels in 3.3 V applications without significant increase in supply current  $I_{CC}$ . This makes it possible for the NX3L467 to switch 4.3 V signals with a 1.8 V digital controller, eliminating the need for logic level translation. The NX3L2467 allows signals with amplitude up to  $V_{CC}$  to be transmitted from  $nZ$  to  $nY0$  or  $nY1$ ; or from  $nY0$  or  $nY1$  to  $nZ$ . 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 (peak):
  - ◆  $1.7 \Omega$  (typical) at  $V_{CC} = 1.4$  V
  - ◆  $1.0 \Omega$  (typical) at  $V_{CC} = 1.65$  V
  - ◆  $0.6 \Omega$  (typical) at  $V_{CC} = 2.3$  V
  - ◆  $0.5 \Omega$  (typical) at  $V_{CC} = 2.7$  V
  - ◆  $0.5 \Omega$  (typical) at  $V_{CC} = 4.3$  V
- Break-before-make switching
- High noise immunity
- ESD protection:
  - ◆ HBM JESD22-A114F Class 3A exceeds 4000 V
  - ◆ MM JESD22-A115-A exceeds 200 V
  - ◆ CDM AEC-Q100-011 revision B exceeds 1000 V
  - ◆ IEC61000-4-2 contact discharge exceeds 6000 V for switch ports
- CMOS low-power consumption
- Latch-up performance exceeds 100 mA per JESD 78B Class II Level A
- 1.8 V control logic at  $V_{CC} = 3.6$  V
- Control input accepts voltages above supply voltage
- Very low supply current, even when input is below  $V_{CC}$
- High current handling capability (350 mA continuous current under 3.3 V supply)
- Specified from  $-40$  °C to  $+85$  °C and from  $-40$  °C to  $+125$  °C



### 3. Applications

- Cell phone
- PDA
- Portable media player

### 4. Ordering information

Table 1. Ordering information

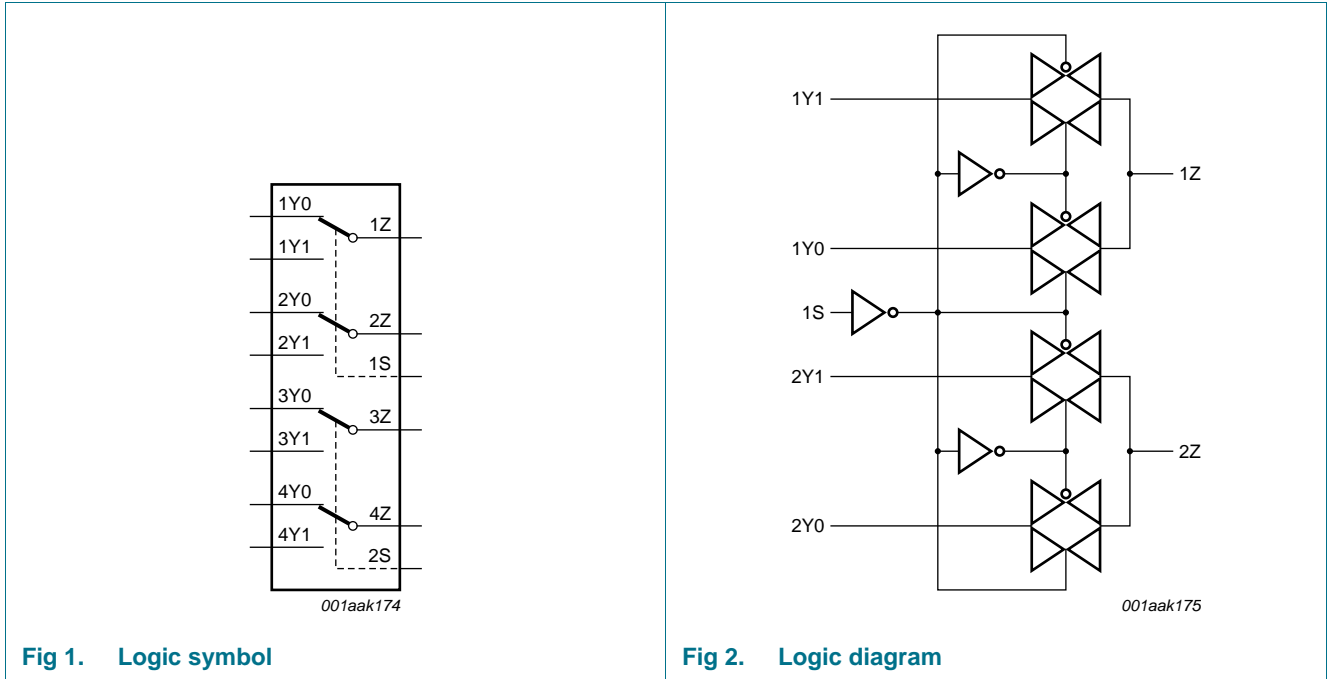
Type number	Package			
	Temperature range	Name	Description	Version
NX3L2467PW	-40 °C to +125 °C	TSSOP16	plastic thin shrink small outline package; 16 leads; body width 4.4 mm	SOT403-1
NX3L2467HR	-40 °C to +125 °C	HXQFN16	plastic thermal enhanced extremely thin quad flat package; no leads; 16 terminals; body 3 × 3 × 0.5 mm	SOT1039-2
NX3L2467GU	-40 °C to +125 °C	XQFN16	plastic, extremely thin quad flat package; no leads; 16 terminals; body 1.80 × 2.60 × 0.50 mm	SOT1161-1

### 5. Marking

Table 2. Marking codes

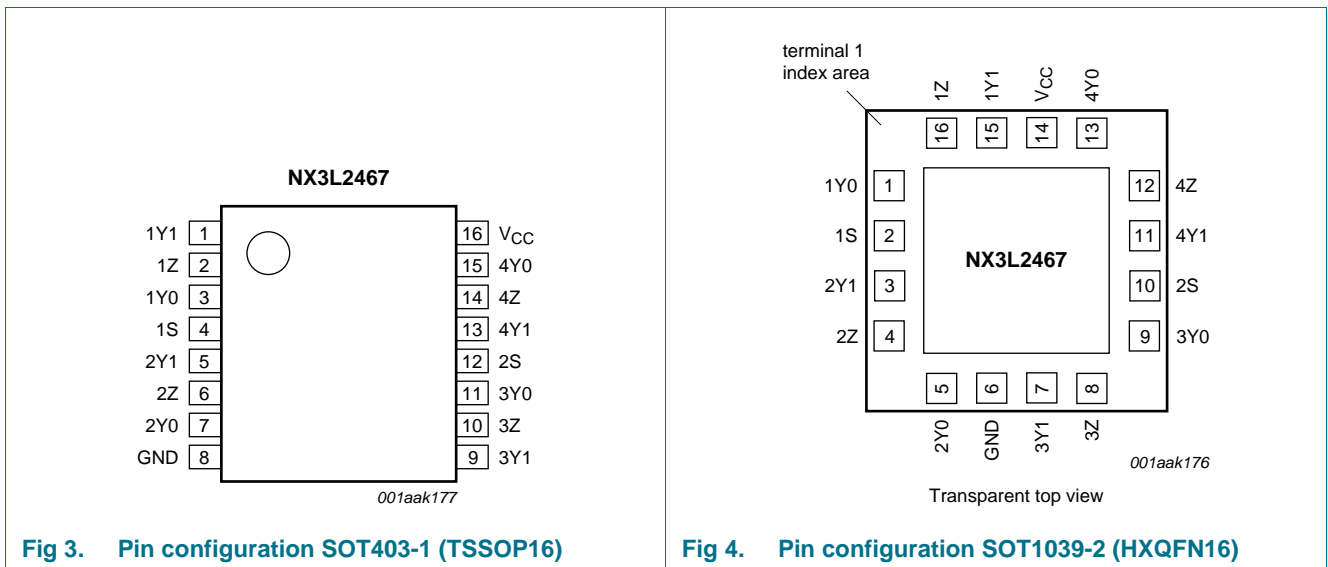
Type number	Marking code
NX3L2467PW	X3L2467
NX3L2467HR	D67
NX3L2467GU	D67

## 6. Functional diagram



## 7. Pinning information

### 7.1 Pinning



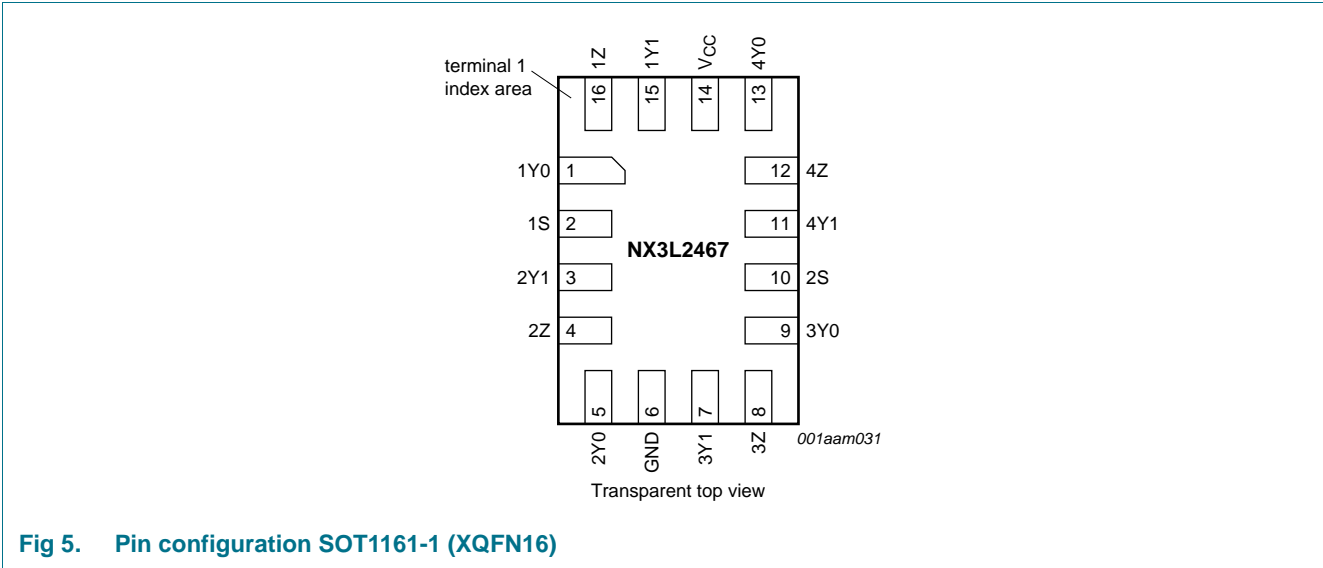


Fig 5. Pin configuration SOT1161-1 (XQFN16)

### 7.2 Pin description

Table 3. Pin description

Symbol	Pin		Description
	SOT1039-2 and SOT1161-1	SOT403-1	
1Y0, 2Y0, 3Y0, 4Y0	1, 5, 9, 13	3, 7, 11, 15	independent input or output
1S, 2S	2, 10	4, 12	select input
1Y1, 2Y1, 3Y1, 4Y1	15, 3, 7, 11	1, 5, 9, 13	independent input or output
1Z, 2Z, 3Z, 4Z	16, 4, 8, 12	2, 6, 10, 14	common output or input
GND	6	8	ground (0 V)
V <sub>CC</sub>	14	16	supply voltage

## 8. Functional description

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

Input nS	Channel on
L	nY0
H	nY1

[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 <sub>CC</sub>	supply voltage		-0.5	+4.6	V
V <sub>I</sub>	input voltage	select input nS	[1] -0.5	+4.6	V
V <sub>SW</sub>	switch voltage		[2] -0.5	V <sub>CC</sub> + 0.5	V

**Table 5. Limiting values ...continued**

In accordance with the Absolute Maximum Rating System (IEC 60134). Voltages are referenced to GND (ground = 0 V).

Symbol	Parameter	Conditions	Min	Max	Unit	
$I_{IK}$	input clamping current	$V_I < -0.5\text{ V}$	-50	-	mA	
$I_{SK}$	switch clamping current	$V_I < -0.5\text{ V}$ or $V_I > V_{CC} + 0.5\text{ V}$	-	$\pm 50$	mA	
$I_{SW}$	switch current	$V_{SW} > -0.5\text{ V}$ or $V_{SW} < V_{CC} + 0.5\text{ V}$ ; source or sink current	-	$\pm 350$	mA	
		$V_{SW} > -0.5\text{ V}$ or $V_{SW} < V_{CC} + 0.5\text{ V}$ ; 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	$T_{amb} = -40\text{ °C}$ to $+125\text{ °C}$				
		TSSOP16	[3]	-	500	mW
		HXQFN16	[4]	-	250	mW
		XQFN16	[5]	-	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 TSSOP16 package: above 60 °C the value of  $P_{tot}$  derates linearly with 5.5 mW/K above.
- [4] For HXQFN16 package: above 135 °C the value of  $P_{tot}$  derates linearly with 16.9 mW/K.
- [5] For XQFN16 package: above 133 °C the value of  $P_{tot}$  derates linearly with 14.5 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 nS	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	$V_{CC} = 1.4\text{ V}$ to $4.3\text{ V}$	[2] -	200	ns/V

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

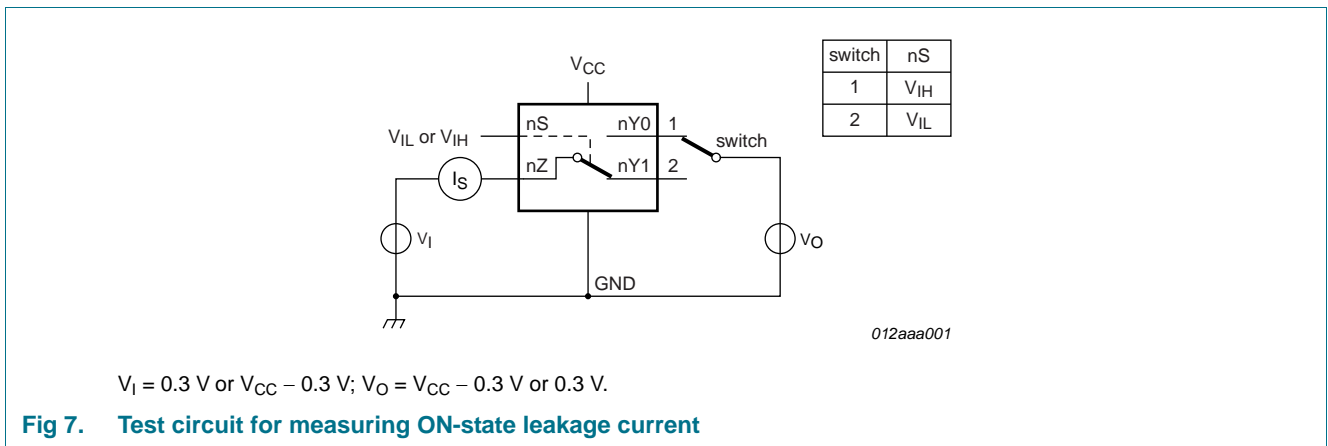
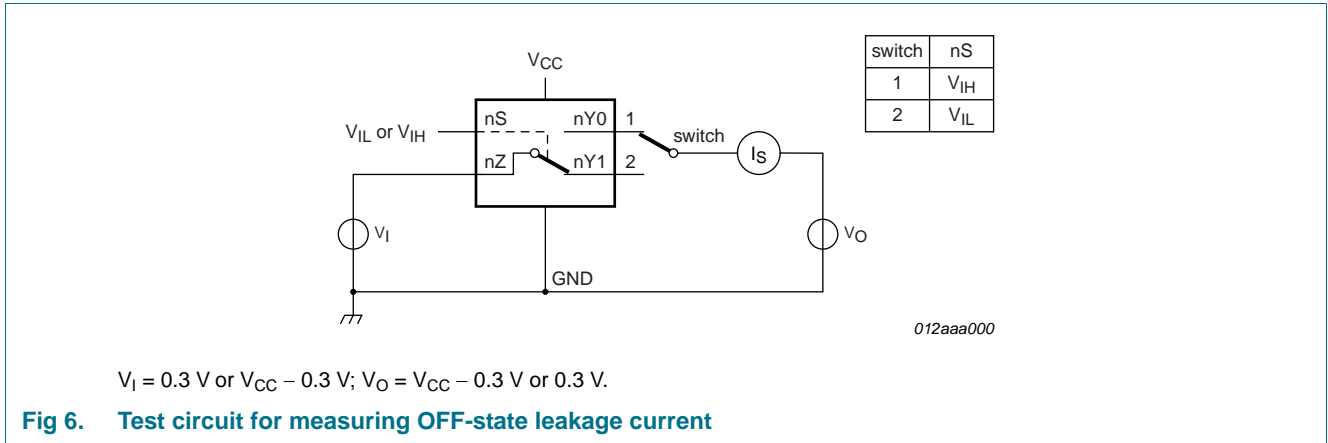
## 11. Static characteristics

**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 1.6 V	0.9	-	-	0.9	-	-	V
		V <sub>CC</sub> = 1.65 V to 1.95 V	0.9	-	-	0.9	-	-	V
		V <sub>CC</sub> = 2.3 V to 2.7 V	1.1	-	-	1.1	-	-	V
		V <sub>CC</sub> = 2.7 V to 3.6 V	1.3	-	-	1.3	-	-	V
		V <sub>CC</sub> = 3.6 V to 4.3 V	1.4	-	-	1.4	-	-	V
V <sub>IL</sub>	LOW-level input voltage	V <sub>CC</sub> = 1.4 V to 1.6 V	-	-	0.3	-	0.3	0.3	V
		V <sub>CC</sub> = 1.65 V to 1.95 V	-	-	0.4	-	0.4	0.3	V
		V <sub>CC</sub> = 2.3 V to 2.7 V	-	-	0.4	-	0.4	0.4	V
		V <sub>CC</sub> = 2.7 V to 3.6 V	-	-	0.5	-	0.5	0.5	V
		V <sub>CC</sub> = 3.6 V to 4.3 V	-	-	0.6	-	0.6	0.6	V
I <sub>I</sub>	input leakage current	select input nS; 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	nY0 and nY1 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>S(ON)</sub>	ON-state leakage current	nZ port; V <sub>CC</sub> = 1.4 V to 3.6 V; see <a href="#">Figure 7</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	-	500	5000	nA
		V <sub>CC</sub> = 4.3 V	-	-	150	-	800	6000	nA
ΔI <sub>CC</sub>	additional supply current	V <sub>SW</sub> = GND or V <sub>CC</sub>							
		V <sub>I</sub> = 2.6 V; V <sub>CC</sub> = 4.3 V	-	2.0	4.0	-	7	7	µA
		V <sub>I</sub> = 2.6 V; V <sub>CC</sub> = 3.6 V	-	0.35	0.7	-	1	1	µA
		V <sub>I</sub> = 1.8 V; V <sub>CC</sub> = 4.3 V	-	7.0	10.0	-	15	15	µA
		V <sub>I</sub> = 1.8 V; V <sub>CC</sub> = 3.6 V	-	2.5	4.0	-	5	5	µA
C <sub>I</sub>	input capacitance	V <sub>I</sub> = 1.8 V; V <sub>CC</sub> = 2.5 V	-	50	200	-	300	500	nA
			-	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<sup>[1]</sup>

At recommended operating conditions; voltages are referenced to GND (ground = 0 V); for graphs see [Figure 9](#) to [Figure 15](#).

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>[2]</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 8</a>						
		V <sub>CC</sub> = 1.4 V	-	1.7	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	-	0.6	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

**Table 8. ON resistance**<sup>[1]</sup>

At recommended operating conditions; voltages are referenced to GND (ground = 0 V); for graphs see [Figure 9](#) to [Figure 15](#).

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>[2]</sup>	Max	Min	Max	
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 <sup>[3]</sup>						
		V <sub>CC</sub> = 1.4 V; V <sub>SW</sub> = 0.4 V	-	0.18	0.3	-	0.3	Ω
		V <sub>CC</sub> = 1.65 V; V <sub>SW</sub> = 0.5 V	-	0.18	0.2	-	0.3	Ω
		V <sub>CC</sub> = 2.3 V; V <sub>SW</sub> = 0.7 V	-	0.07	0.1	-	0.13	Ω
		V <sub>CC</sub> = 2.7 V; V <sub>SW</sub> = 0.8 V	-	0.07	0.1	-	0.13	Ω
		V <sub>CC</sub> = 4.3 V; V <sub>SW</sub> = 0.8 V	-	0.07	0.1	-	0.13	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 <sup>[4]</sup>						
		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] For NX3L2467PW (TSSOP16 package), all ON resistance values are up to 0.05 Ω higher.

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

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

[4] 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

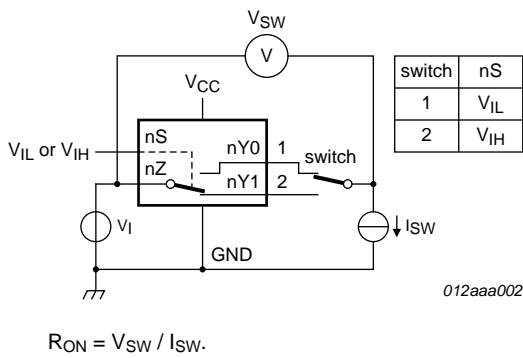
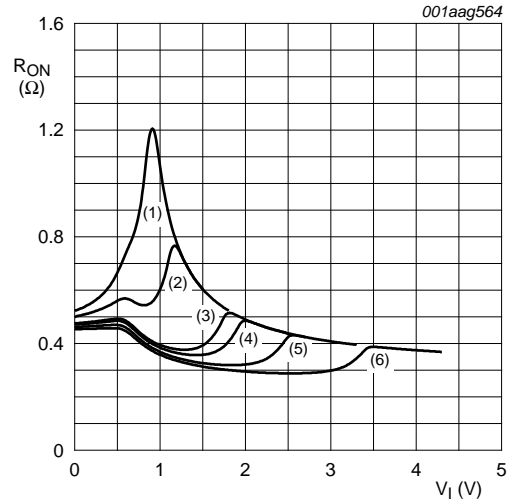
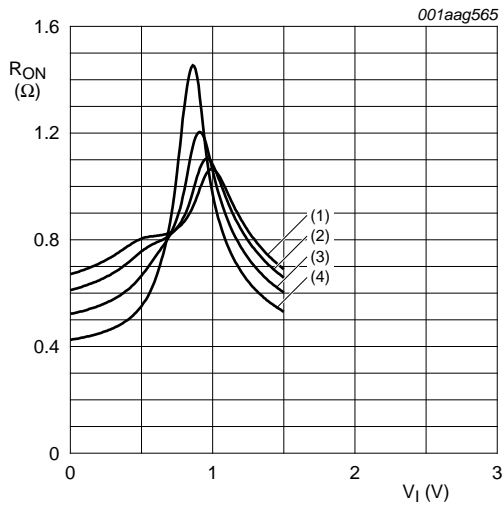


Fig 8. Test circuit for measuring ON resistance



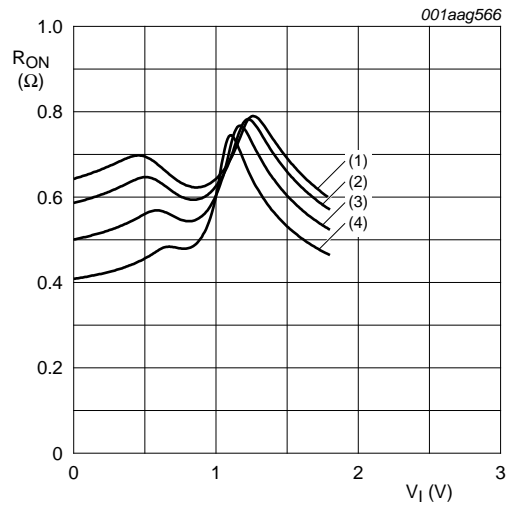
- (1) V<sub>CC</sub> = 1.5 V.
  - (2) V<sub>CC</sub> = 1.8 V.
  - (3) V<sub>CC</sub> = 2.5 V.
  - (4) V<sub>CC</sub> = 2.7 V.
  - (5) V<sub>CC</sub> = 3.3 V.
  - (6) V<sub>CC</sub> = 4.3 V.
- Measured at T<sub>amb</sub> = 25 °C.

Fig 9. Typical ON resistance as a function of input voltage



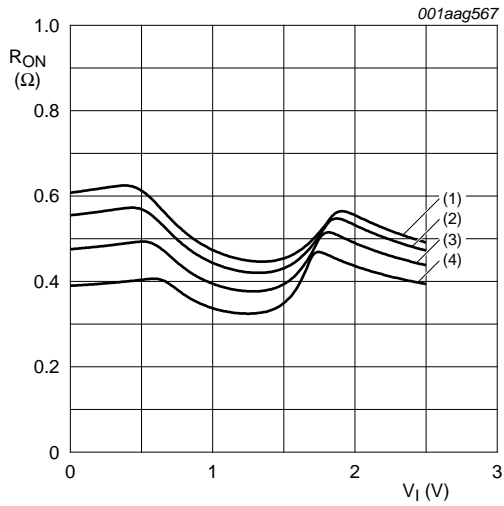
- (1)  $T_{amb} = 125\text{ °C.}$
- (2)  $T_{amb} = 85\text{ °C.}$
- (3)  $T_{amb} = 25\text{ °C.}$
- (4)  $T_{amb} = -40\text{ °C.}$

**Fig 10. ON resistance as a function of input voltage;**  
 $V_{CC} = 1.5\text{ V}$



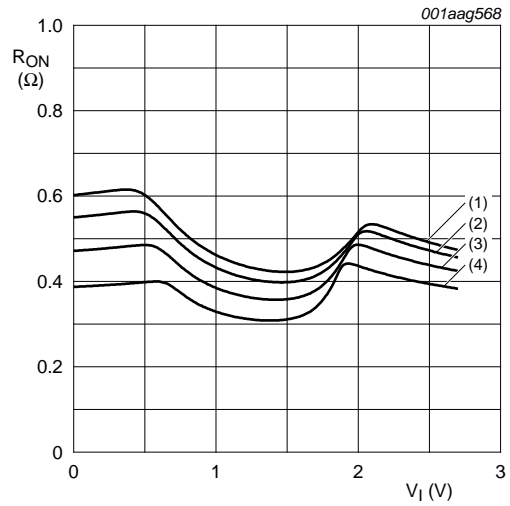
- (1)  $T_{amb} = 125\text{ °C.}$
- (2)  $T_{amb} = 85\text{ °C.}$
- (3)  $T_{amb} = 25\text{ °C.}$
- (4)  $T_{amb} = -40\text{ °C.}$

**Fig 11. ON resistance as a function of input voltage;**  
 $V_{CC} = 1.8\text{ V}$



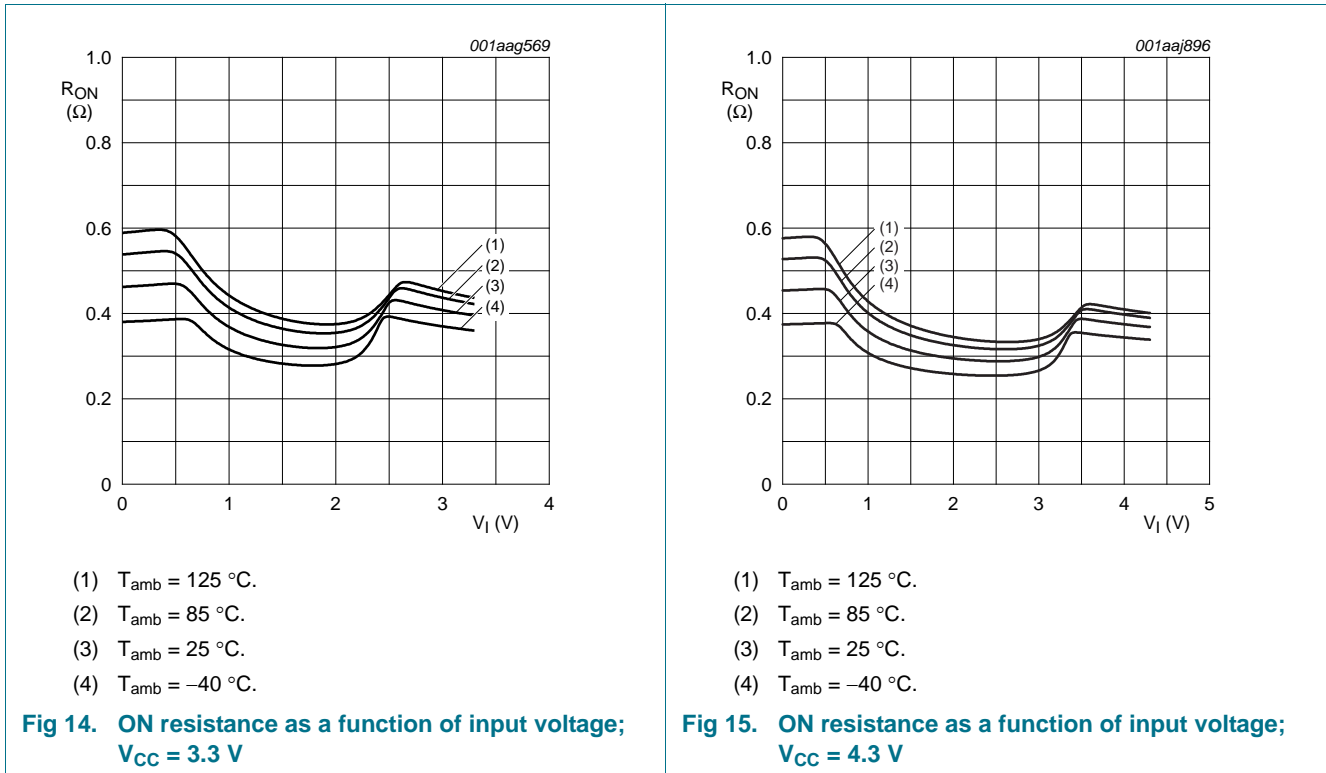
- (1)  $T_{amb} = 125\text{ °C.}$
- (2)  $T_{amb} = 85\text{ °C.}$
- (3)  $T_{amb} = 25\text{ °C.}$
- (4)  $T_{amb} = -40\text{ °C.}$

**Fig 12. ON resistance as a function of input voltage;**  
 $V_{CC} = 2.5\text{ V}$



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

**Fig 13. 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 18](#).

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	nS to nZ or nYn; see <a href="#">Figure 16</a>							
		V <sub>CC</sub> = 1.4 V to 1.6 V	-	41	90	-	120	120	ns
		V <sub>CC</sub> = 1.65 V to 1.95 V	-	30	70	-	80	90	ns
		V <sub>CC</sub> = 2.3 V to 2.7 V	-	20	45	-	50	55	ns
		V <sub>CC</sub> = 2.7 V to 3.6 V	-	19	40	-	45	50	ns
		V <sub>CC</sub> = 3.6 V to 4.3 V	-	19	40	-	45	50	ns
t <sub>dis</sub>	disable time	nS to nZ or nYn; see <a href="#">Figure 16</a>							
		V <sub>CC</sub> = 1.4 V to 1.6 V	-	24	70	-	80	90	ns
		V <sub>CC</sub> = 1.65 V to 1.95 V	-	15	55	-	60	65	ns
		V <sub>CC</sub> = 2.3 V to 2.7 V	-	9	25	-	30	35	ns
		V <sub>CC</sub> = 2.7 V to 3.6 V	-	8	20	-	25	30	ns
		V <sub>CC</sub> = 3.6 V to 4.3 V	-	8	20	-	25	30	ns

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

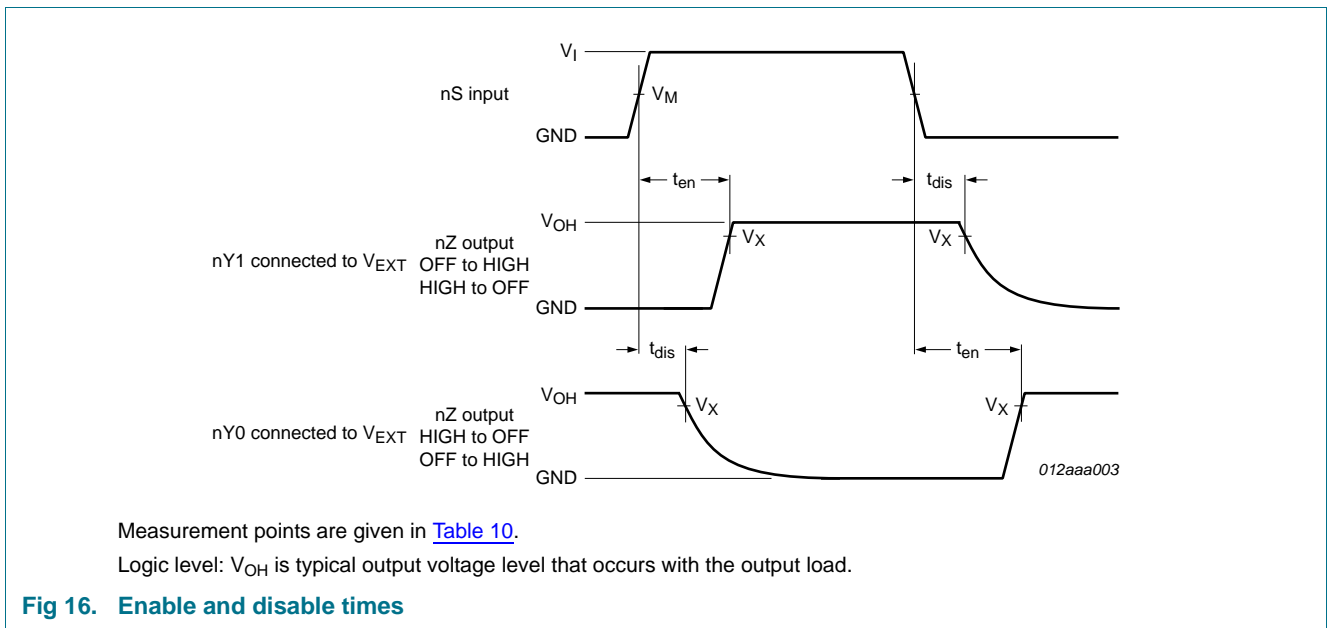
At recommended operating conditions; voltages are referenced to GND (ground = 0 V); for load circuit see [Figure 18](#).

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 17</a> <sup>[2]</sup>							
		V <sub>CC</sub> = 1.4 V to 1.6 V	-	20	-	9	-	-	ns
		V <sub>CC</sub> = 1.65 V to 1.95 V	-	17	-	7	-	-	ns
		V <sub>CC</sub> = 2.3 V to 2.7 V	-	13	-	4	-	-	ns
		V <sub>CC</sub> = 2.7 V to 3.6 V	-	11	-	3	-	-	ns
		V <sub>CC</sub> = 3.6 V to 4.3 V	-	11	-	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.

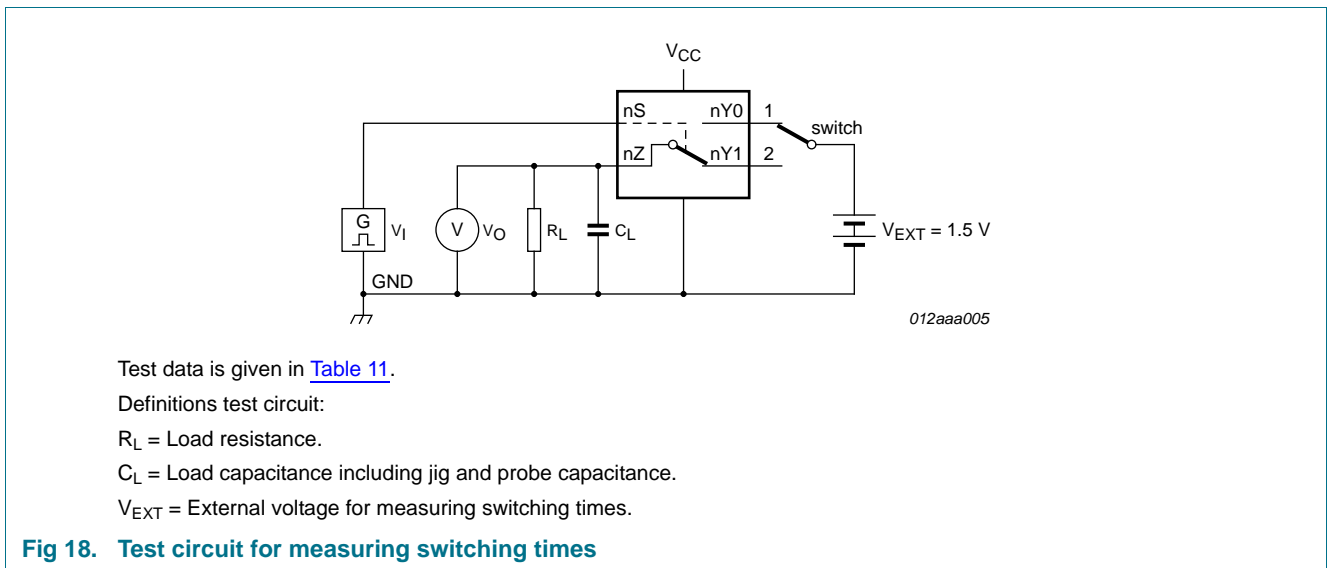
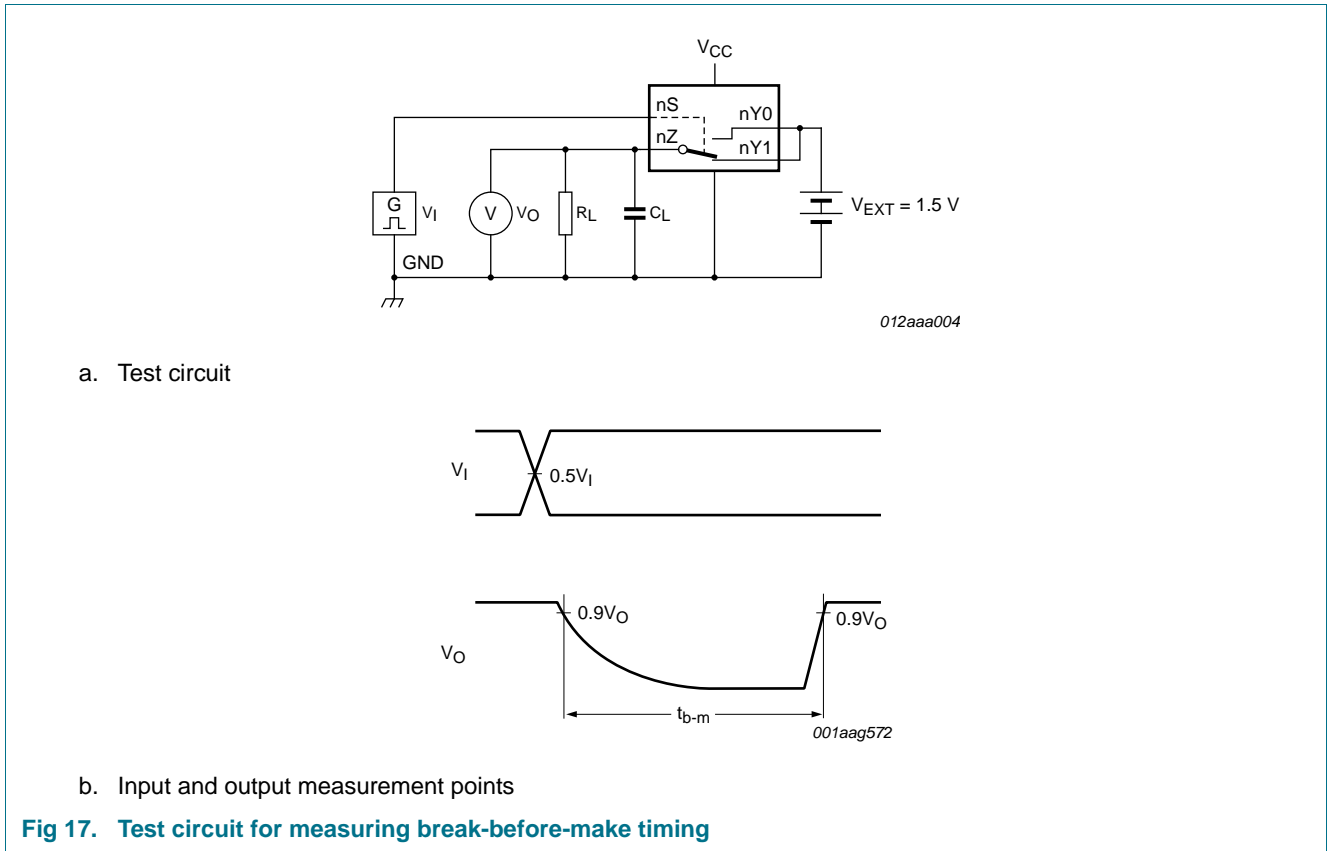
[2] Break-before-make guaranteed by design.

### 12.1 Waveform and test circuits



**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>



**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 19</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	-	%
$f_{(-3dB)}$	-3 dB frequency response	$R_L = 50$ $\Omega$ ; see <a href="#">Figure 20</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 21</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 22</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
Xtalk	crosstalk	between switches; $f_i = 100$ kHz; $R_L = 50$ $\Omega$ ; see <a href="#">Figure 23</a>	[1]			
		$V_{CC} = 1.4$ V to 4.3 V	-	-90	-	dB
$Q_{inj}$	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 24</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

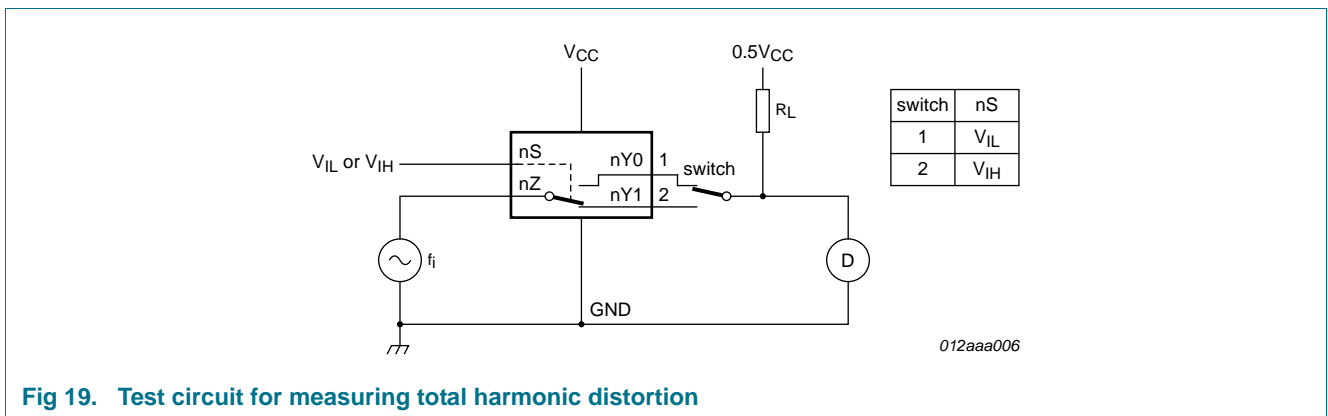
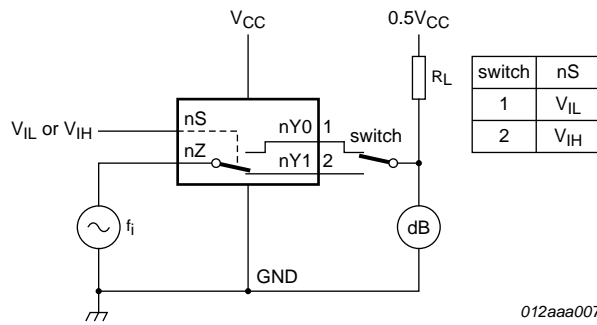


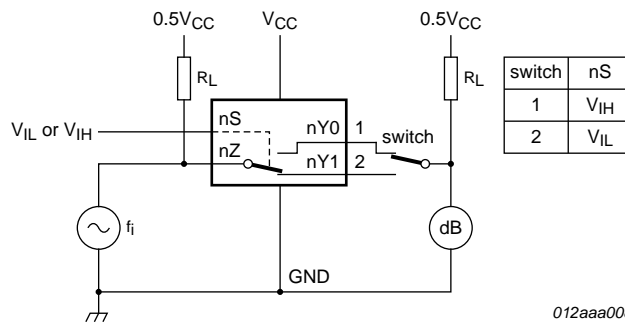
Fig 19. Test circuit for measuring total harmonic distortion



012aaa007

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

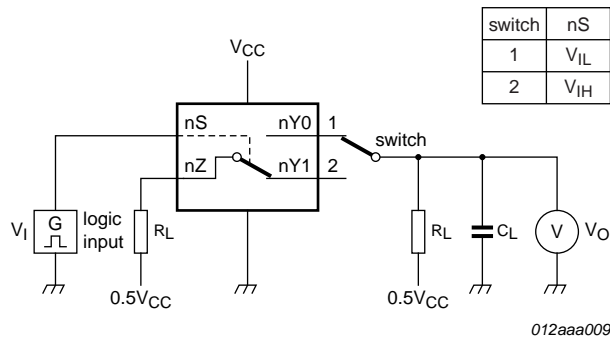
**Fig 20. Test circuit for measuring the frequency response when channel is in ON-state**



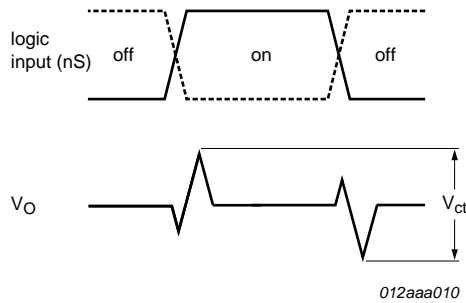
012aaa008

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

**Fig 21. Test circuit for measuring isolation (OFF-state)**

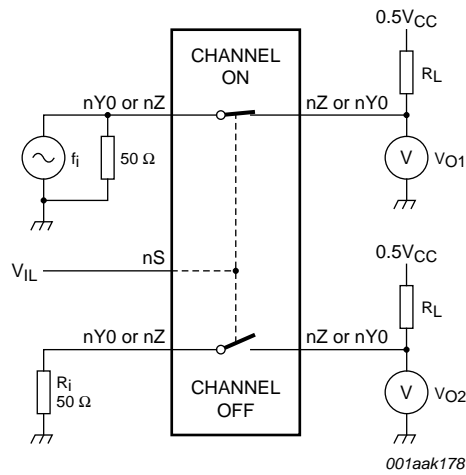


a. Test circuit



b. Input and output pulse definitions

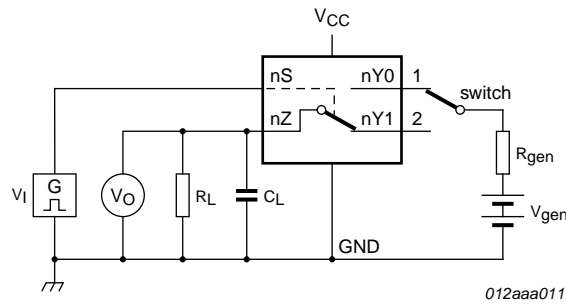
**Fig 22. Test circuit for measuring crosstalk voltage between digital inputs and switch**



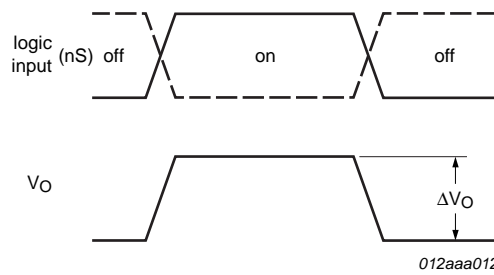
$20 \log_{10} (V_{O2} / V_{O1})$  or  $20 \log_{10} (V_{O1} / V_{O2})$ .

**Fig 23. Test circuit for measuring crosstalk between switches**





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 24. Test circuit for measuring charge injection**

13. Package outline

HXQFN16: plastic thermal enhanced extremely thin quad flat package; no leads;  
16 terminals; body 3 x 3 x 0.5 mm

SOT1039-2

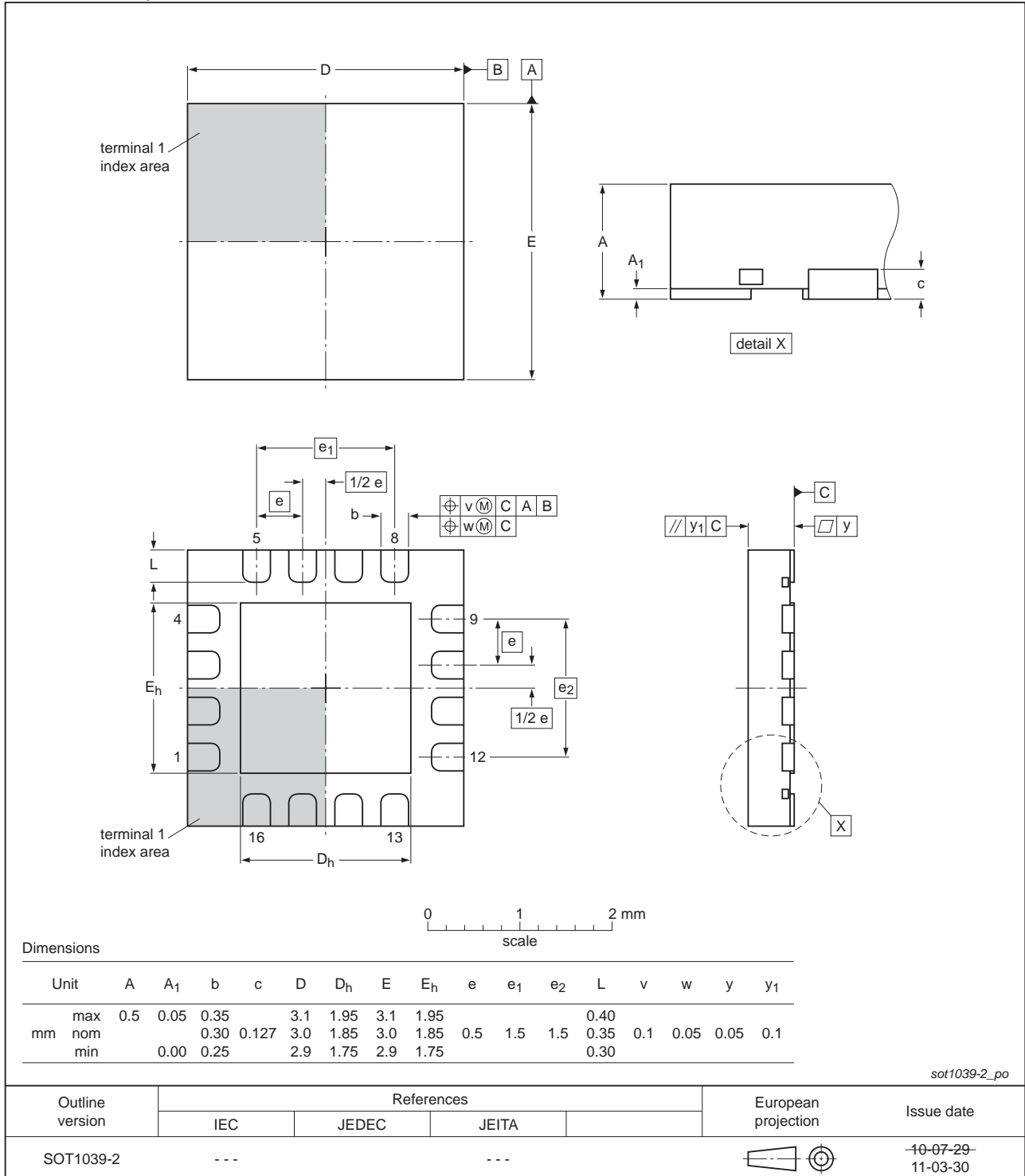


Fig 25. Package outline SOT1039-2 (HXQFN16)

TSSOP16: plastic thin shrink small outline package; 16 leads; body width 4.4 mm

SOT403-1

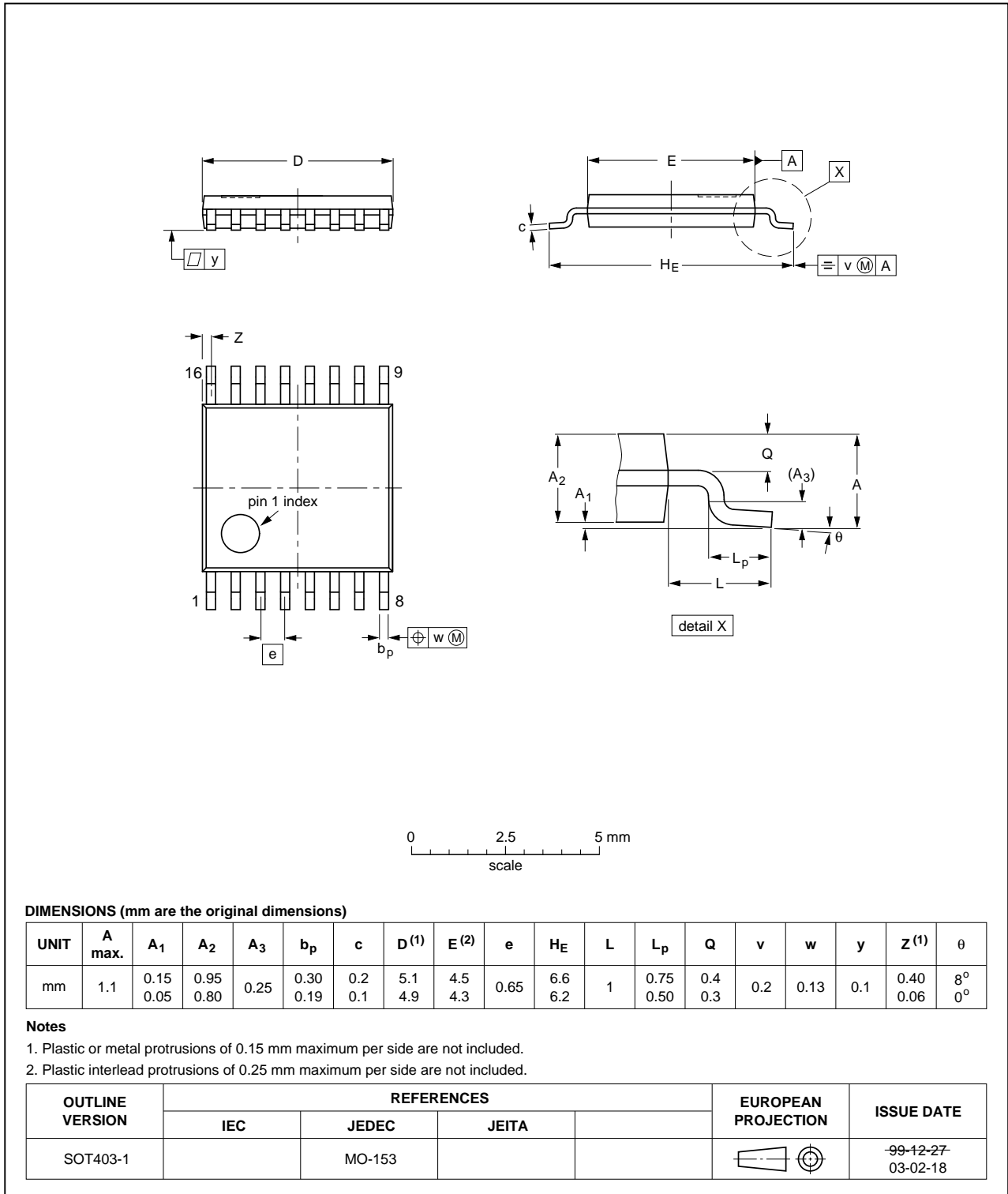


Fig 26. Package outline SOT403-1 (TSSOP16)

XQFN16: plastic, extremely thin quad flat package; no leads; 16 terminals; body 1.80 x 2.60 x 0.50 mm

SOT1161-1

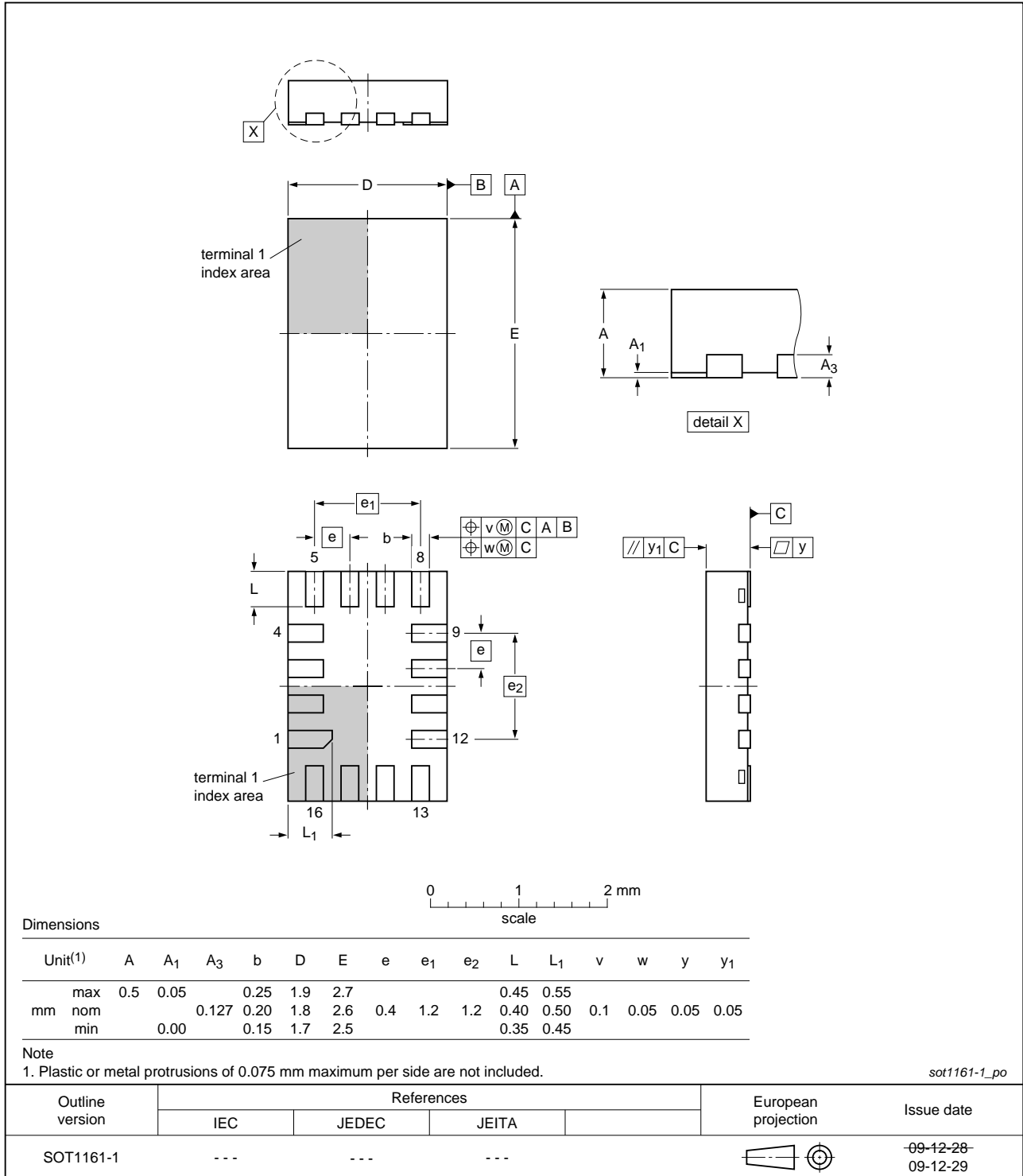


Fig 27. Package outline SOT1161-1 (XQFN16)

## 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

## 15. Revision history

Table 14. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
NX3L2467 v.5	20120702	Product data sheet	-	NX3L2467 v.4
Modifications:	<ul style="list-style-type: none"> <li>For type number NX3L2467HR the sot code has changed to SOT1039-2.</li> </ul>			
NX3L2467 v.4	20111108	Product data sheet	-	NX3L2467 v.3
Modifications:	<ul style="list-style-type: none"> <li>Legal pages updated.</li> </ul>			
NX3L2467 v.3	20101229	Product data sheet	-	NX3L2467 v.2
NX3L2467 v.2	20100519	Product data sheet	-	NX3L2467 v.1
NX3L2467 v.1	20090623	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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