

# HEF4067B-Q100

16-channel analog multiplexer/demultiplexer

Rev. 2 — 11 September 2014

Product data sheet

## 1. General description

---

The HEF4067B-Q100 is a 16-channel analog multiplexer/demultiplexer. It has four address inputs (A0 to A3), an active LOW enable input ( $\bar{E}$ ), 16 independent inputs/outputs (Y0 to Y15) and a common input/output (Z). The device contains 16 bidirectional analog switches. Each switch has one side connected to an independent input/output (Y0 to Y15) and the other side connected to the common input/output (Z). With  $\bar{E}$  LOW, one of the 16 switches is selected (low-impedance ON-state) by A0 to A3. All unselected switches are in the high-impedance OFF-state. With  $\bar{E}$  HIGH all switches are in the high-impedance OFF-state, independent of A0 to A3. The analog inputs/outputs (Y0 to Y15 and Z) can swing between  $V_{DD}$  as a positive limit and  $V_{SS}$  as a negative limit.  $V_{DD}$  to  $V_{SS}$  may not exceed 15 V.

This product has been qualified to the Automotive Electronics Council (AEC) standard Q100 (Grade 3) and is suitable for use in automotive applications.

## 2. Features and benefits

---

- Automotive product qualification in accordance with AEC-Q100 (Grade 3)
  - ◆ Specified from  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$
- Fully static operation
- 5 V, 10 V, and 15 V parametric ratings
- Standardized symmetrical output characteristics
- ESD protection:
  - ◆ MIL-STD-883, method 3015 exceeds 2000 V
  - ◆ HBM JESD22-A114F exceeds 2000 V
  - ◆ MM JESD22-A115-A exceeds 200 V (C = 200 pF, R = 0  $\Omega$ )
- Complies with JEDEC standard JESD 13-B

## 3. Applications

---

- Analog multiplexing and demultiplexing
- Digital multiplexing and demultiplexing
- Signal gating

## 4. Ordering information

Table 1. Ordering information

Type number	Package			Version
	Temperature range	Name	Description	
HEF4067BT-Q100	-40 °C to +85 °C	SO24	plastic small outline package; 24 leads; body width 7.5 mm	SOT137-1

## 5. Functional diagram

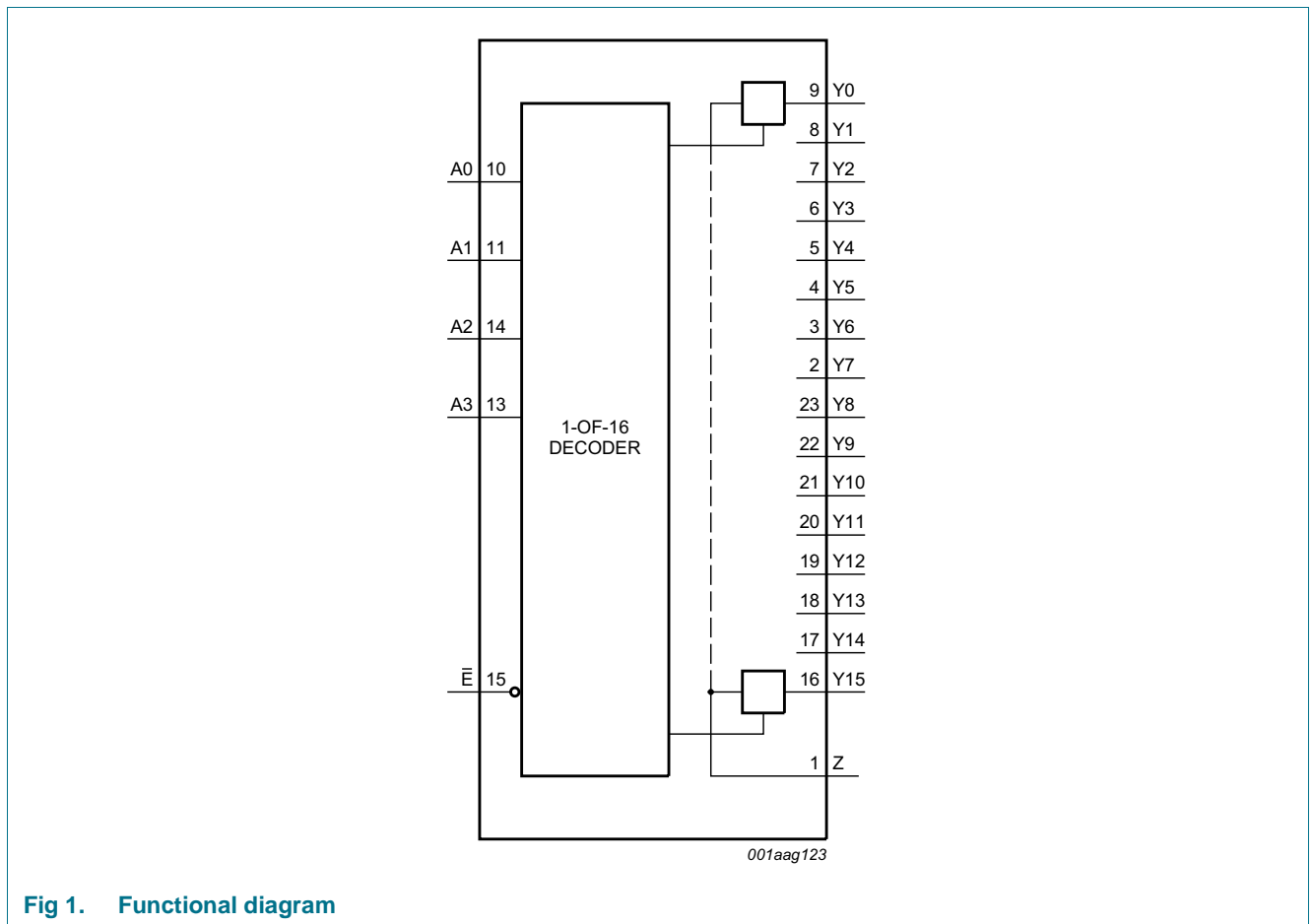


Fig 1. Functional diagram

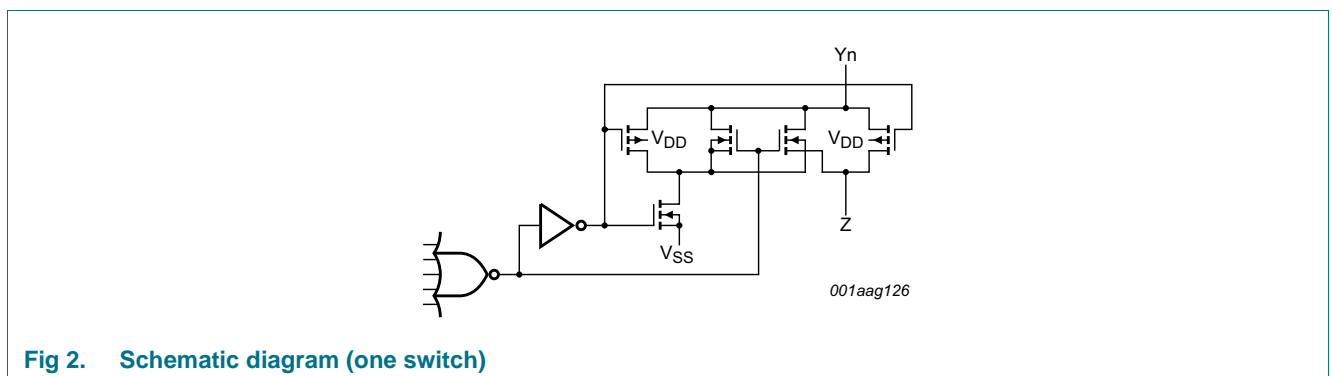


Fig 2. Schematic diagram (one switch)

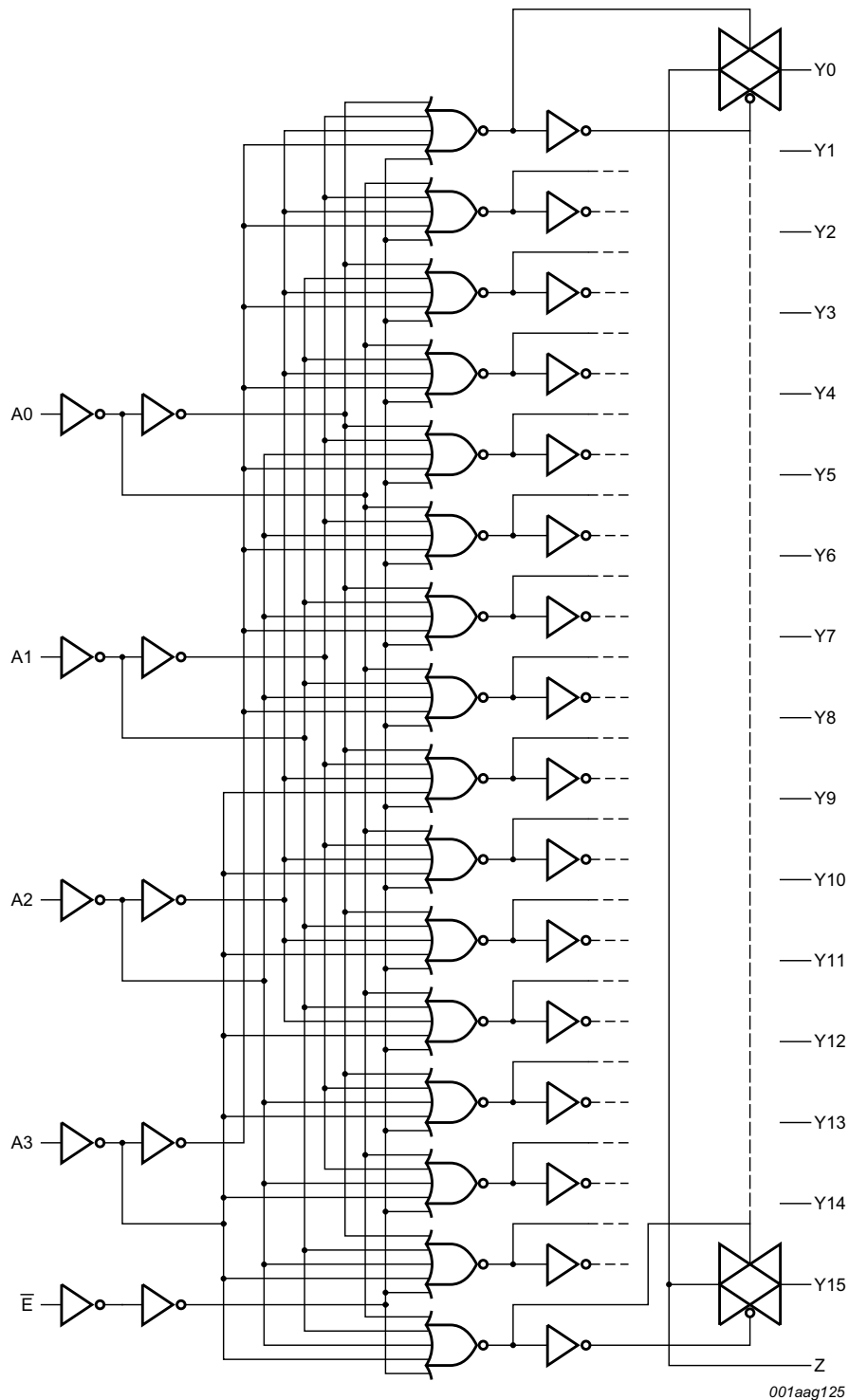
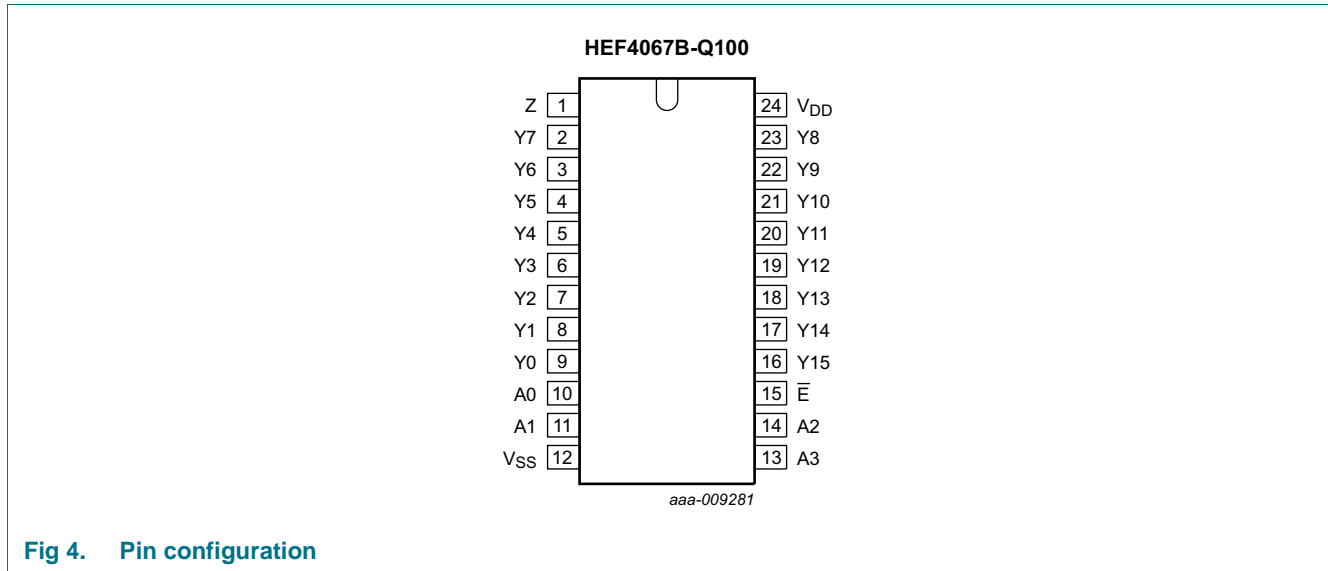


Fig 3. Logic diagram

## 6. Pinning information

### 6.1 Pinning



### 6.2 Pin description

**Table 2. Pin description**

Symbol	Pin	Description
Z	1	common input/output
Y0 to Y15	9, 8, 7, 6, 5, 4, 3, 2, 23, 22, 21, 20, 19, 18, 17, 16	independent input/output
A0 to A3	10, 11, 14, 13	address input
V <sub>SS</sub>	12	ground (0 V)
$\bar{E}$	15	enable input (active LOW)
V <sub>DD</sub>	24	supply voltage

## 7. Functional description

Table 3. Function table<sup>[1]</sup>

Control	Address				Channel ON
	A3	A2	A1	A0	
$\bar{E}$					
L	L	L	L	L	Y0 = Z
L	L	L	L	H	Y1 = Z
L	L	L	H	L	Y2 = Z
L	L	L	H	H	Y3 = Z
L	L	H	L	L	Y4 = Z
L	L	H	L	H	Y5 = Z
L	L	H	H	L	Y6 = Z
L	L	H	H	H	Y7 = Z
L	H	L	L	L	Y8 = Z
L	H	L	L	H	Y9 = Z
L	H	L	H	L	Y10 = Z
L	H	L	H	H	Y11 = Z
L	H	H	L	L	Y12 = Z
L	H	H	L	H	Y13 = Z
L	H	H	H	L	Y14 = Z
L	H	H	H	H	Y15 = Z
H	X	X	X	X	none

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

## 8. Limiting values

Table 4. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134). Voltages are referenced to  $V_{SS} = 0$  V (ground).

Symbol	Parameter	Conditions	Min	Max	Unit
$V_{DD}$	supply voltage		-0.5	+18	V
$I_{IK}$	input clamping current	pins An and $\bar{E}$ ; $V_I < -0.5$ V or $V_I > V_{DD} + 0.5$ V	-	$\pm 10$	mA
$V_I$	input voltage		-0.5	$V_{DD} + 0.5$	V
$I_{I/O}$	input/output current		[1] -	$\pm 10$	mA
$I_{DD}$	supply current		-	50	mA
$T_{stg}$	storage temperature		-65	+150	°C
$T_{amb}$	ambient temperature		-40	+85	°C
$P_{tot}$	total power dissipation	$T_{amb} = -40$ °C to +125 °C	[2] -	500	mW
P	power dissipation	per output	-	100	mW

[1] To avoid drawing  $V_{DD}$  current from terminal Z, when switch current flows into terminals Yn, the voltage drop across the bidirectional switch must not exceed 0.4 V. If the switch current flows into terminal Z, no  $V_{DD}$  current flows from terminals Yn. In this case, there is no limit for the voltage drop across the switch, but the voltages at Y and Z may not exceed  $V_{DD}$  or  $V_{SS}$ .

[2] For SO24 packages: above  $T_{amb} = 70$  °C,  $P_{tot}$  derates linearly at 8 mW/K.

## 9. Recommended operating conditions

Table 5. Recommended operating conditions

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{DD}$	supply voltage		3	-	15	V
$V_I$	input voltage		0	-	$V_{DD}$	V
$T_{amb}$	ambient temperature	in free air	-40	-	+85	°C
$\Delta t/\Delta V$	input transition rise and fall rate	$V_{DD} = 5\text{ V}$	-	-	3.75	$\mu\text{s/V}$
		$V_{DD} = 10\text{ V}$	-	-	0.5	$\mu\text{s/V}$
		$V_{DD} = 15\text{ V}$	-	-	0.08	$\mu\text{s/V}$

## 10. Static characteristics

Table 6. Static characteristics

$V_{SS} = 0\text{ V}$ ;  $V_I = V_{SS}$  or  $V_{DD}$ ; unless otherwise specified.

Symbol	Parameter	Conditions	$V_{DD}$		$T_{amb} = -40\text{ °C}$		$T_{amb} = +25\text{ °C}$		$T_{amb} = +85\text{ °C}$		Unit
			Min	Max	Min	Max	Min	Max			
$V_{IL}$	LOW-level input voltage	$ I_O  < 1\ \mu\text{A}$									
		$V_O = 0.5\text{ V or }4.5\text{ V}$	5 V	-	1	-	1	-	1	V	
		$V_O = 1.0\text{ V or }9.0\text{ V}$	10 V	-	2	-	2	-	2	V	
		$V_O = 1.5\text{ V or }13.5\text{ V}$	15 V	-	2.5	-	2.5	-	2.5	V	
$V_{IH}$	HIGH-level input voltage	$ I_O  < 1\ \mu\text{A}$									
		$V_O = 0.5\text{ V or }4.5\text{ V}$	5 V	4	-	4	-	4	-	V	
		$V_O = 1.0\text{ V or }9.0\text{ V}$	10 V	8	-	8	-	8	-	V	
		$V_O = 1.5\text{ V or }13.5\text{ V}$	15 V	12.5	-	12.5	-	12.5	-	V	
$I_I$	input leakage current	$V_I = 0\text{ V or }15\text{ V}$	15 V	-	$\pm 0.3$	-	$\pm 0.3$	-	$\pm 1.0$	$\mu\text{A}$	
$I_{OZ}$	OFF-state output current	output at $V_{DD}$	15 V	-	1.6	-	1.6	-	12.0	$\mu\text{A}$	
		output at $V_{SS}$	15 V	-	-1.6	-	-1.6	-	-12.0	$\mu\text{A}$	
$I_{S(OFF)}$	OFF-state leakage current	Z port; all channels OFF; see <a href="#">Figure 5</a>	15 V	-	-	-	1000	-	-	nA	
		Yn port; per channel; see <a href="#">Figure 6</a>	15 V	-	-	-	200	-	-	nA	
$I_{DD}$	supply current	all valid input combinations; $I_O = 0\text{ A}$	5 V	-	20	-	20	-	150	$\mu\text{A}$	
			10 V	-	40	-	40	-	300	$\mu\text{A}$	
			15 V	-	80	-	80	-	600	$\mu\text{A}$	
$C_I$	input capacitance	digital inputs	15 V	-	-	-	7.5	-	-	pF	

10.1 Test circuits

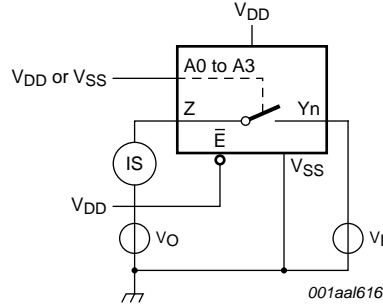


Fig 5. Test circuit for measuring OFF-state leakage current Z port

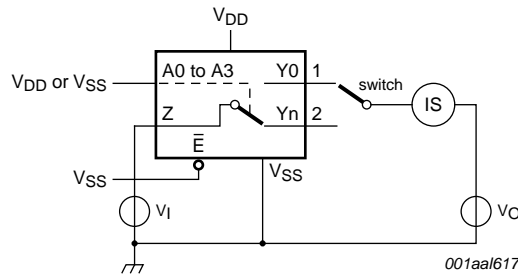


Fig 6. Test circuit for measuring OFF-state leakage current Yn port

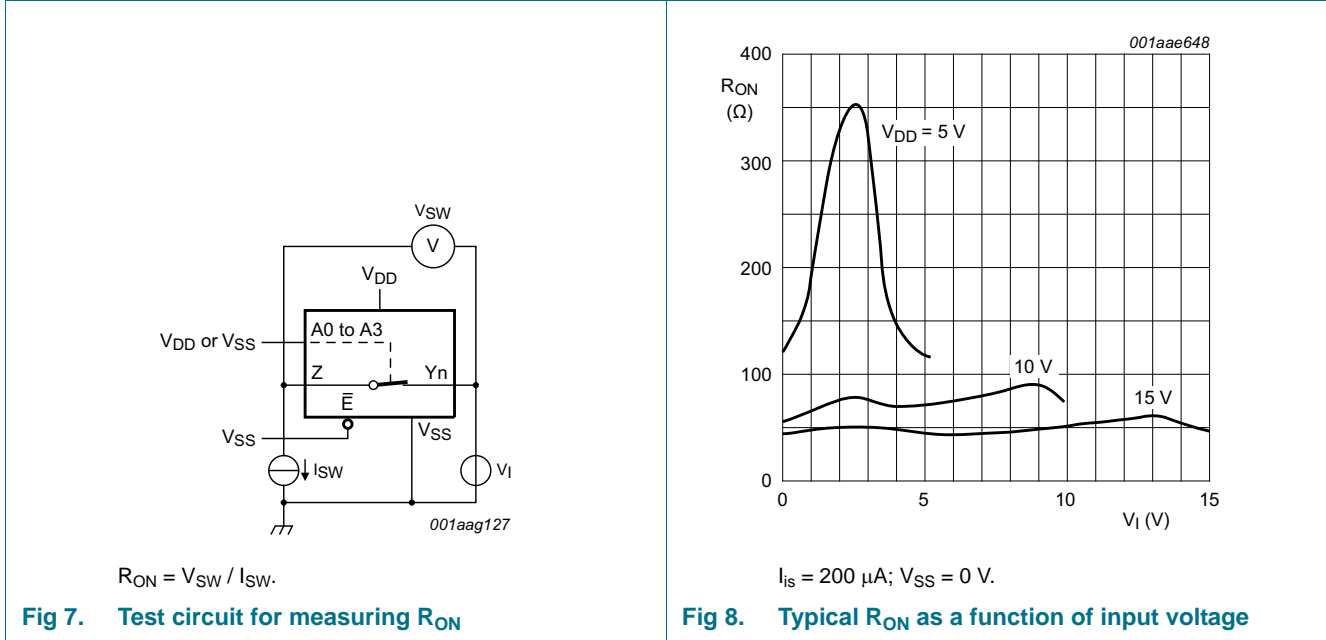
10.2 On resistance

Table 7. ON resistance

$T_{amb} = 25\text{ }^{\circ}\text{C}$ ;  $I_{SW} = 200\text{ }\mu\text{A}$ ;  $V_{SS} = 0\text{ V}$ .

Symbol	Parameter	Conditions	V <sub>DD</sub>	Typ	Max	Unit
R <sub>ON(peak)</sub>	ON resistance (peak)	$V_I = 0\text{ V to }V_{DD}$ ; see <a href="#">Figure 7</a> and <a href="#">Figure 8</a>	5 V	350	2500	$\Omega$
			10 V	80	245	$\Omega$
			15 V	60	175	$\Omega$
R <sub>ON(rail)</sub>	ON resistance (rail)	$V_I = 0\text{ V}$ ; see <a href="#">Figure 7</a> and <a href="#">Figure 8</a>	5 V	115	340	$\Omega$
			10 V	50	160	$\Omega$
			15 V	40	115	$\Omega$
		$V_I = V_{DD}$ ; see <a href="#">Figure 7</a> and <a href="#">Figure 8</a>	5 V	120	365	$\Omega$
			10 V	65	200	$\Omega$
			15 V	50	155	$\Omega$
$\Delta R_{ON}$	ON resistance mismatch between channels	$V_I = 0\text{ V to }V_{DD}$ ; see <a href="#">Figure 7</a>	5 V	25	-	$\Omega$
			10 V	10	-	$\Omega$
			15 V	5	-	$\Omega$

10.2.1 On resistance waveform and test circuit



11. Dynamic characteristics

Table 8. Dynamic characteristics  
 $T_{amb} = 25 \text{ }^\circ\text{C}; V_{SS} = 0 \text{ V};$  for test circuit, see [Figure 12](#).

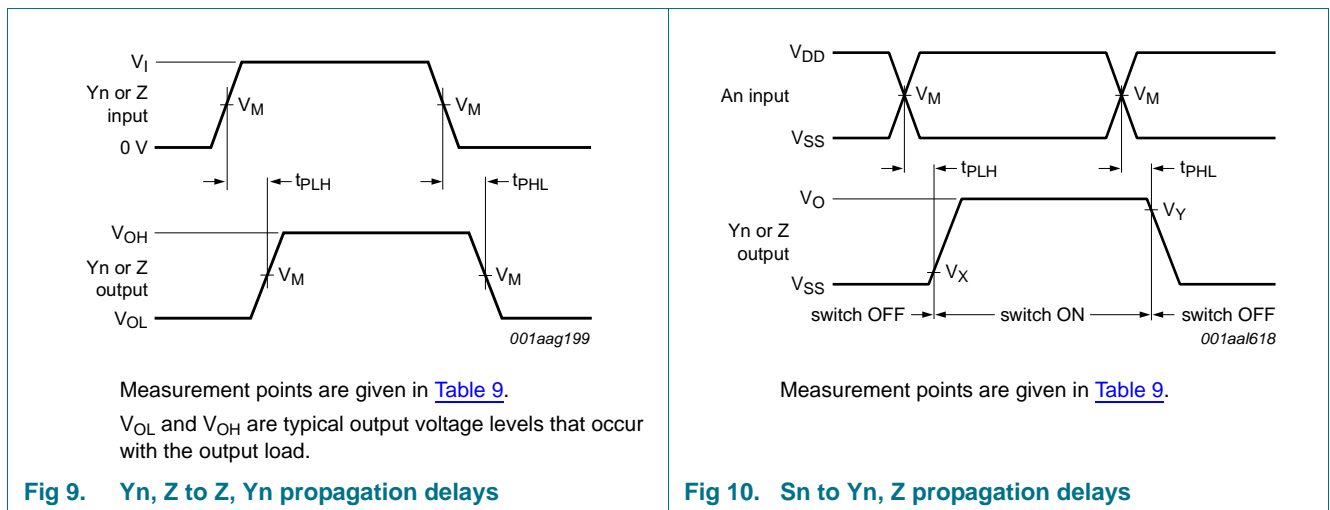
Symbol	Parameter	Conditions	$V_{DD}$	Min	Typ	Max	Unit
$t_{PHL}$	HIGH to LOW propagation delay	$Y_n, Z$ to $Z, Y_n$ ; see <a href="#">Figure 9</a>	5 V	-	30	60	ns
			10 V	-	15	25	ns
			15 V	-	10	20	ns
		$A_n$ to $Y_n, Z$ ; see <a href="#">Figure 10</a>	5 V	-	190	380	ns
			10 V	-	70	145	ns
			15 V	-	50	100	ns
$t_{PLH}$	LOW to HIGH propagation delay	$Y_n, Z$ to $Z, Y_n$ ; see <a href="#">Figure 9</a>	5 V	-	25	50	ns
			10 V	-	10	20	ns
			15 V	-	10	20	ns
		$A_n$ to $Y_n, Z$ ; see <a href="#">Figure 10</a>	5 V	-	175	345	ns
			10 V	-	70	140	ns
			15 V	-	50	100	ns
$t_{PHZ}$	HIGH to OFF-state propagation delay	$\bar{E}$ to $Y_n, Z$ ; see <a href="#">Figure 11</a>	5 V	-	195	385	ns
			10 V	-	140	280	ns
			15 V	-	130	260	ns
$t_{PLZ}$	LOW to OFF-state propagation delay	$\bar{E}$ to $Y_n, Z$ ; see <a href="#">Figure 11</a>	5 V	-	215	435	ns
			10 V	-	180	355	ns
			15 V	-	170	340	ns

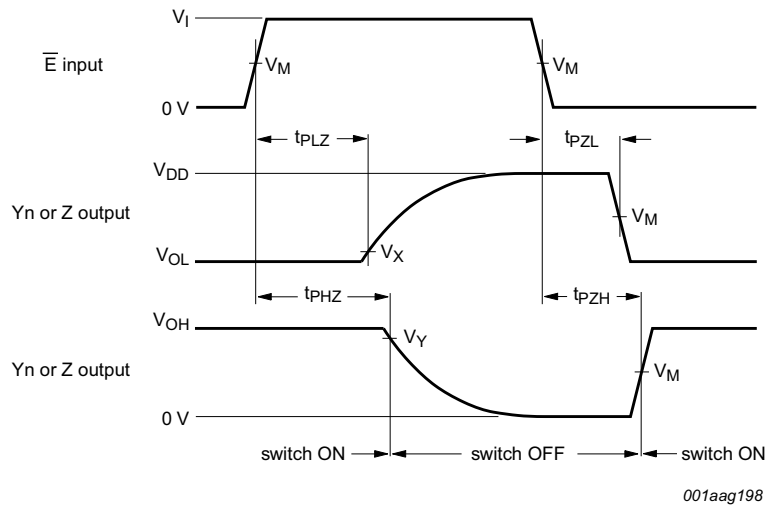


**Table 8. Dynamic characteristics ...continued**  
 $T_{amb} = 25\text{ }^{\circ}\text{C}$ ;  $V_{SS} = 0\text{ V}$ ; for test circuit, see [Figure 12](#).

Symbol	Parameter	Conditions	$V_{DD}$	Min	Typ	Max	Unit
$t_{PZH}$	OFF-state to HIGH propagation delay	$\bar{E}$ to $Y_n, Z$ ; see <a href="#">Figure 11</a>	5 V	-	155	315	ns
			10 V	-	70	135	ns
		$\bar{E}$ to $Y_n, Z$ ; see <a href="#">Figure 11</a>	15 V	-	50	100	ns
$t_{PZL}$	OFF-state to LOW propagation delay		5 V	-	170	340	ns
			10 V	-	70	140	ns
			15 V	-	50	100	ns

### 11.1 Waveforms and test circuit



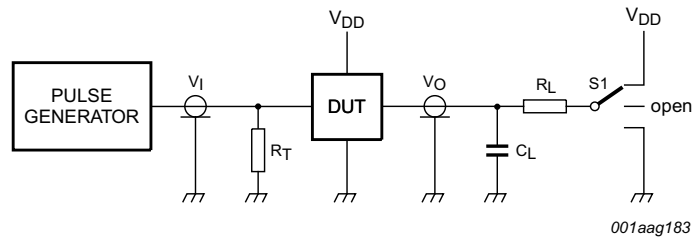


Measurement points are shown in [Table 9](#).  
 $V_{OL}$  and  $V_{OH}$  are typical output voltage levels that occur with the output load.

**Fig 11. Enable and disable times**

**Table 9. Measurement points**

Supply voltage	Input		Output		
$V_{CC}$	$V_M$	$V_I$	$V_M$	$V_X$	$V_Y$
5 V to 15 V	$0.5V_{DD}$	GND to $V_{DD}$	$0.5V_{DD}$	10%	90%



Test data is given in [Table 10](#).  
 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 resistor  
 $S1$  = test selection switch

**Fig 12. Test circuit for measuring switching times**

**Table 10. Test data**

Input				Load		S1 position				
Yn, Z	An and $\bar{E}$	$t_r, t_f$	$V_M$	$C_L$	$R_L$	$t_{PHL}$ [1]	$t_{PLH}$	$t_{PZH}, t_{PHZ}$	$t_{PZL}, t_{PLZ}$	other
$V_{DD}$ or $V_{SS}$	$V_{DD}$ or $V_{SS}$	$\leq 20$ ns	$0.5V_{DD}$	50 pF	10 k $\Omega$	$V_{DD}$ or $V_{SS}$	$V_{SS}$	$V_{SS}$	$V_{DD}$	$V_{SS}$

[1] For Yn to Z or Z to Yn propagation delays, use  $V_{SS}$ . For An or to Yn or Z propagation delays, use  $V_{DD}$ .

11.2 Additional dynamic parameters

Table 11. Additional dynamic characteristics

$V_{SS} = 0\text{ V}$ ;  $T_{amb} = 25\text{ }^{\circ}\text{C}$ .

Symbol	Parameter	Conditions	$V_{DD}$	Typ	Max	Unit	
THD	total harmonic distortion	see Figure 13; $R_L = 10\text{ k}\Omega$ ; $C_L = 15\text{ pF}$ ; channel ON; $V_I = 0.5V_{DD}$ (p-p); $f_i = 1\text{ kHz}$	5 V	[1]	0.25	-	%
			10 V	[1]	0.04	-	%
			15 V	[1]	0.04	-	%
$f_{(-3dB)}$	-3 dB frequency response	see Figure 14; $R_L = 1\text{ k}\Omega$ ; $C_L = 5\text{ pF}$ ; channel ON; $V_I = 0.5V_{DD}$ (p-p)	5 V	[1]	13	-	MHz
			10 V	[1]	40	-	MHz
			15 V	[1]	70	-	MHz
$\alpha_{iso}$	isolation (OFF-state)	see Figure 15; $f_i = 1\text{ MHz}$ ; $R_L = 1\text{ k}\Omega$ ; $C_L = 5\text{ pF}$ ; channel OFF; $V_I = 0.5V_{DD}$ (p-p)	10 V	[1]	-50	-	dB
$V_{ct}$	crosstalk voltage	digital inputs to switch; see Figure 16; $R_L = 10\text{ k}\Omega$ ; $C_L = 15\text{ pF}$ ; $\bar{E}$ or $A_n = V_{DD}$ (square-wave)	10 V		50	-	mV
Xtalk	crosstalk	between switches; see Figure 17; $f_i = 1\text{ MHz}$ ; $R_L = 1\text{ k}\Omega$ ; $V_I = 0.5V_{DD}$ (p-p)	10 V	[1]	-50	-	dB

[1]  $f_i$  is biased at  $0.5 V_{DD}$ ;  $V_I = 0.5V_{DD}$  (p-p).

Table 12. Dynamic power dissipation  $P_D$

$P_D$  can be calculated from the formulas shown;  $V_{SS} = 0\text{ V}$ ;  $t_r = t_f \leq 20\text{ ns}$ ;  $T_{amb} = 25\text{ }^{\circ}\text{C}$ .

Symbol	Parameter	$V_{DD}$	Typical formula for $P_D$ ( $\mu\text{W}$ )	where:
$P_D$	dynamic power dissipation	5 V	$P_D = 1000 \times f_i + \Sigma(f_o \times C_L) \times V_{DD}^2$	$f_i$ = input frequency in MHz; $f_o$ = output frequency in MHz; $C_L$ = output load capacitance in pF; $V_{DD}$ = supply voltage in V; $\Sigma(C_L \times f_o)$ = sum of the outputs.
		10 V	$P_D = 5500 \times f_i + \Sigma(f_o \times C_L) \times V_{DD}^2$	
		15 V	$P_D = 15000 \times f_i + \Sigma(f_o \times C_L) \times V_{DD}^2$	

11.2.1 Test circuits

**Fig 13. Test circuit for measuring total harmonic distortion**

**Fig 14. Test circuit for measuring frequency response**

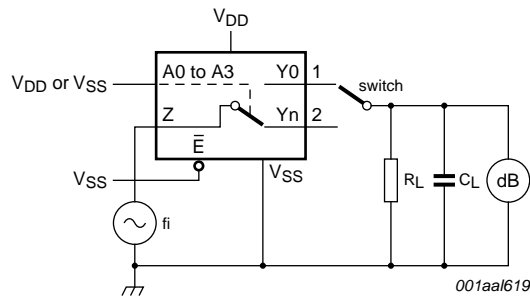
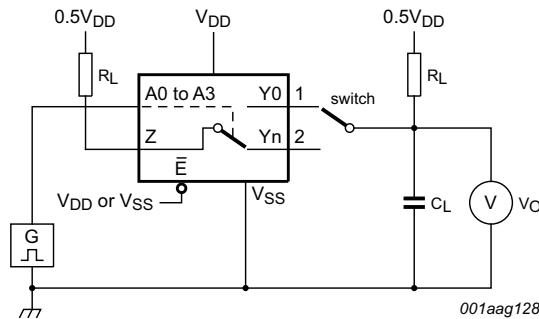
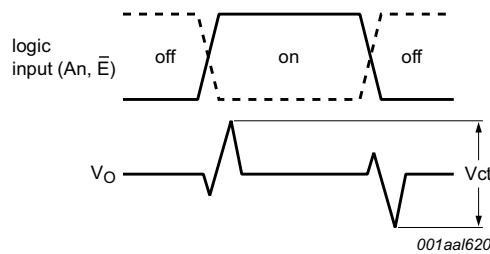


Fig 15. Test circuit for measuring isolation (OFF-state)

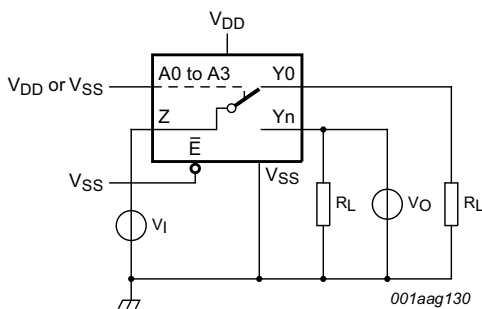


a. Test circuit

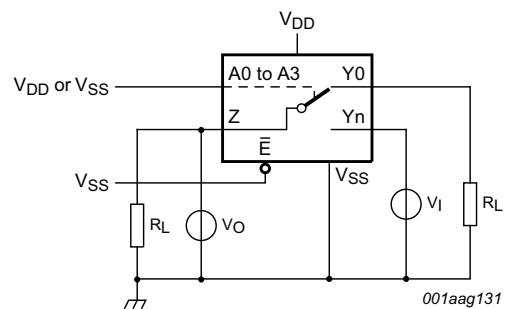


b. Input and output pulse definitions

Fig 16. Test circuit for measuring crosstalk voltage between digital inputs and switch



a. Switch closed condition



b. Switch open condition

Fig 17. Test circuit for measuring crosstalk between switches

12. Package outline

SO24: plastic small outline package; 24 leads; body width 7.5 mm

SOT137-1

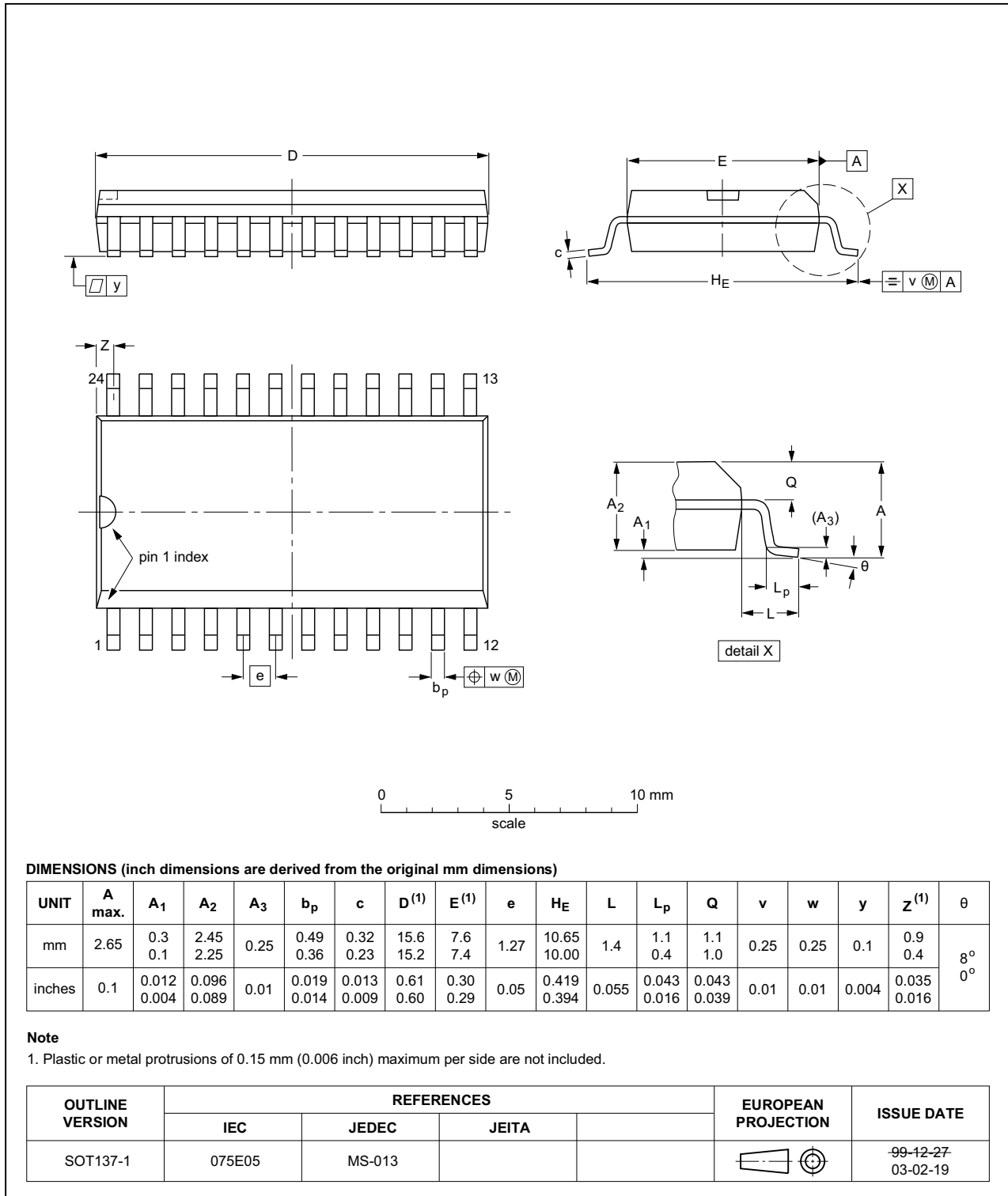


Fig 18. Package outline SOT137-1 (SO24)

## 13. Abbreviations

Table 13. Abbreviations

Acronym	Description
HBM	Human Body Model
ESD	ElectroStatic Discharge
MM	Machine Model
MIL	Military

## 14. Revision history

Table 14. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
HEF4067B-Q100 v.2	20140911	Product data sheet	-	HEF4067B-Q100 v.1
Modifications:	• <a href="#">Figure 16</a> : Test circuit modified			
HEF4067B-Q100 v.1	20130924	Product data sheet	-	-

## 15. Legal information

### 15.1 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.nexperia.com>.

### 15.2 Definitions

**Draft** — The document is a draft version only. The content is still under internal review and subject to formal approval, which may result in modifications or additions. Nexperia does not give any representations or warranties as to the accuracy or completeness of information included herein and shall have no liability for the consequences of use of such information.

**Short data sheet** — A short data sheet is an extract from a full data sheet with the same product type number(s) and title. A short data sheet is intended for quick reference only and should not be relied upon to contain detailed and full information. For detailed and full information see the relevant full data sheet, which is available on request via the local Nexperia sales office. In case of any inconsistency or conflict with the short data sheet, the full data sheet shall prevail.

**Product specification** — The information and data provided in a Product data sheet shall define the specification of the product as agreed between Nexperia and its customer, unless Nexperia and customer have explicitly agreed otherwise in writing. In no event however, shall an agreement be valid in which the Nexperia product is deemed to offer functions and qualities beyond those described in the Product data sheet.

### 15.3 Disclaimers

**Limited warranty and liability** — Information in this document is believed to be accurate and reliable. However, Nexperia does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information. Nexperia takes no responsibility for the content in this document if provided by an information source outside of Nexperia.

In no event shall Nexperia be liable for any indirect, incidental, punitive, special or consequential damages (including - without limitation - lost profits, lost savings, business interruption, costs related to the removal or replacement of any products or rework charges) whether or not such damages are based on tort (including negligence), warranty, breach of contract or any other legal theory.

Notwithstanding any damages that customer might incur for any reason whatsoever, Nexperia's aggregate and cumulative liability towards customer for the products described herein shall be limited in accordance with the *Terms and conditions of commercial sale* of Nexperia.

**Right to make changes** — Nexperia reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.

**Suitability for use in automotive applications** — This Nexperia product has been qualified for use in automotive applications. Unless otherwise agreed in writing, the product is not designed, authorized or warranted to be suitable for use in life support, life-critical or safety-critical systems or equipment, nor in applications where failure or malfunction of a Nexperia product can reasonably be expected to result in personal injury, death or severe property or environmental damage. Nexperia and its suppliers accept no liability for inclusion and/or use of Nexperia products in such equipment or applications and therefore such inclusion and/or use is at the customer's own risk.

**Applications** — Applications that are described herein for any of these products are for illustrative purposes only. Nexperia makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

Customers are responsible for the design and operation of their applications and products using Nexperia products, and Nexperia accepts no liability for any assistance with applications or customer product design. It is customer's sole responsibility to determine whether the Nexperia product is suitable and fit for the customer's applications and products planned, as well as for the planned application and use of customer's third party customer(s). Customers should provide appropriate design and operating safeguards to minimize the risks associated with their applications and products.

Nexperia does not accept any liability related to any default, damage, costs or problem which is based on any weakness or default in the customer's applications or products, or the application or use by customer's third party customer(s). Customer is responsible for doing all necessary testing for the customer's applications and products using Nexperia products in order to avoid a default of the applications and the products or of the application or use by customer's third party customer(s). Nexperia does not accept any liability in this respect.

**Limiting values** — Stress above one or more limiting values (as defined in the Absolute Maximum Ratings System of IEC 60134) will cause permanent damage to the device. Limiting values are stress ratings only and (proper) operation of the device at these or any other conditions above those given in the Recommended operating conditions section (if present) or the Characteristics sections of this document is not warranted. Constant or repeated exposure to limiting values will permanently and irreversibly affect the quality and reliability of the device.

**Terms and conditions of commercial sale** — Nexperia products are sold subject to the general terms and conditions of commercial sale, as published at <http://www.nexperia.com/profile/terms>, unless otherwise agreed in a valid written individual agreement. In case an individual agreement is concluded only the terms and conditions of the respective agreement shall apply. Nexperia hereby expressly objects to applying the customer's general terms and conditions with regard to the purchase of Nexperia products by customer.

**No offer to sell or license** — Nothing in this document may be interpreted or construed as an offer to sell products that is open for acceptance or the grant, conveyance or implication of any license under any copyrights, patents or other industrial or intellectual property rights.

**Export control** — This document as well as the item(s) described herein may be subject to export control regulations. Export might require a prior authorization from competent authorities.

**Translations** — A non-English (translated) version of a document is for reference only. The English version shall prevail in case of any discrepancy between the translated and English versions.

## 15.4 Trademarks

Notice: All referenced brands, product names, service names and trademarks are the property of their respective owners.

## 16. Contact information

---

For more information, please visit: <http://www.nexperia.com>

For sales office addresses, please send an email to: [salesaddresses@nexperia.com](mailto:salesaddresses@nexperia.com)



## 17. Contents

---

<b>1</b>	<b>General description</b> .....	<b>1</b>
<b>2</b>	<b>Features and benefits</b> .....	<b>1</b>
<b>3</b>	<b>Applications</b> .....	<b>1</b>
<b>4</b>	<b>Ordering information</b> .....	<b>2</b>
<b>5</b>	<b>Functional diagram</b> .....	<b>2</b>
<b>6</b>	<b>Pinning information</b> .....	<b>4</b>
6.1	Pinning .....	4
6.2	Pin description .....	4
<b>7</b>	<b>Functional description</b> .....	<b>5</b>
<b>8</b>	<b>Limiting values</b> .....	<b>5</b>
<b>9</b>	<b>Recommended operating conditions</b> .....	<b>6</b>
<b>10</b>	<b>Static characteristics</b> .....	<b>6</b>
10.1	Test circuits .....	7
10.2	On resistance .....	7
10.2.1	On resistance waveform and test circuit .....	8
<b>11</b>	<b>Dynamic characteristics</b> .....	<b>8</b>
11.1	Waveforms and test circuit .....	9
11.2	Additional dynamic parameters .....	11
11.2.1	Test circuits .....	11
<b>12</b>	<b>Package outline</b> .....	<b>13</b>
<b>13</b>	<b>Abbreviations</b> .....	<b>14</b>
<b>14</b>	<b>Revision history</b> .....	<b>14</b>
<b>15</b>	<b>Legal information</b> .....	<b>15</b>
15.1	Data sheet status .....	15
15.2	Definitions .....	15
15.3	Disclaimers .....	15
15.4	Trademarks .....	16
<b>16</b>	<b>Contact information</b> .....	<b>16</b>
<b>17</b>	<b>Contents</b> .....	<b>17</b>