

# HEF4104B

## Quad low-to-high voltage translator with 3-state outputs

Rev. 11 — 25 July 2024

Product data sheet

### 1. General description

The HEF4104B is a quad low-to-high voltage translator with complementary 3-state outputs ( $B_n$  and  $\bar{B}_n$ ). A LOW on the output enable input (OE) causes the outputs to assume a high-impedance OFF-state. Inputs include clamp diodes. This enables the use of current limiting resistors to interface inputs to voltages in excess of  $V_{DD}$ .

### 2. Features and benefits

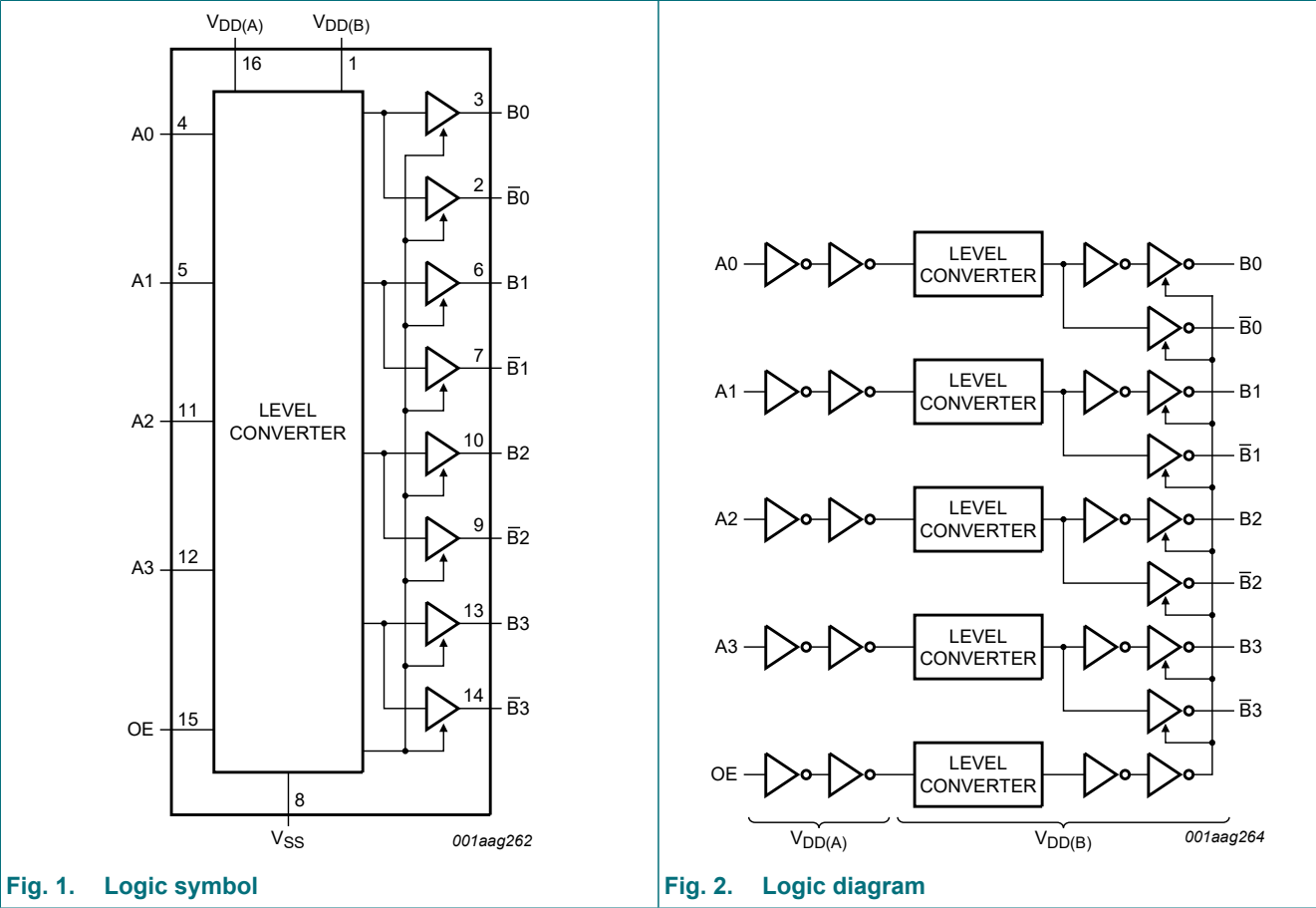
- Wide supply voltage range from 3.0 V to 15.0 V
- CMOS low power dissipation
- High noise immunity
- Fully static operation
- 5 V, 10 V, and 15 V parametric ratings
- Standardized symmetrical output characteristics
- Complies with JEDEC standard JESD 13-B
- ESD protection:
  - HBM: ANSI/ESDA/JEDEC JS-001 class 2 exceeds 2000 V
  - CDM: ANSI/ESDA/JEDEC JS-002 class C3 exceeds 1000 V
- Specified from -40 °C to +85 °C

### 3. Ordering information

Table 1. Ordering information

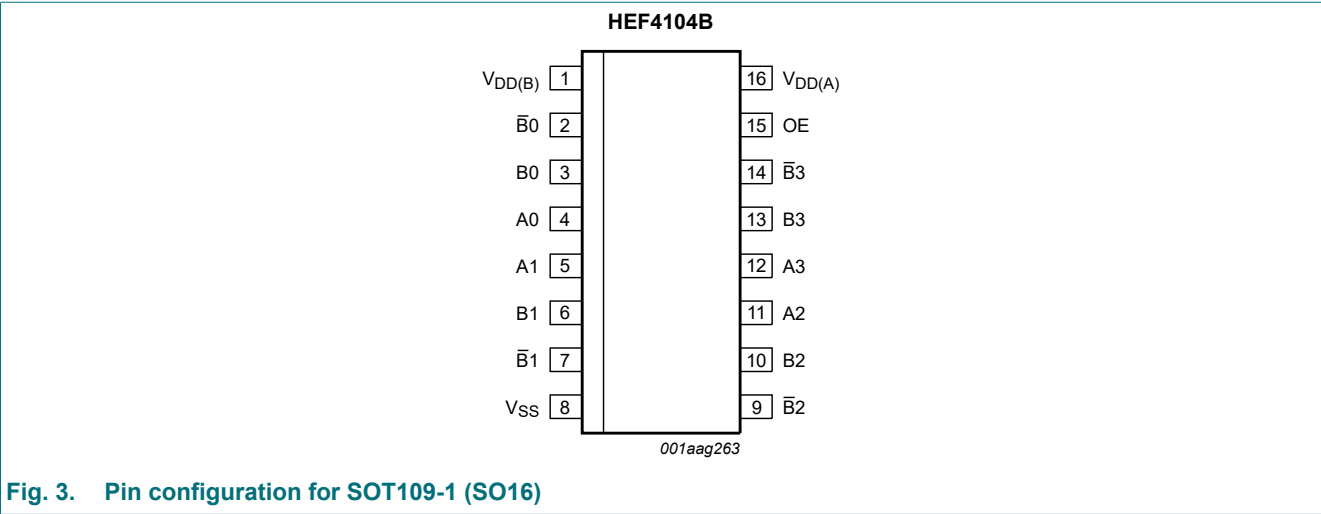
| Type number               | Package           |      |                                                               |                          |
|---------------------------|-------------------|------|---------------------------------------------------------------|--------------------------|
|                           | Temperature range | Name | Description                                                   | Version                  |
| <a href="#">HEF4104BT</a> | -40 °C to +85 °C  | SO16 | plastic small outline package; 16 leads;<br>body width 3.9 mm | <a href="#">SOT109-1</a> |

4. Functional diagram



5. Pinning information

5.1. Pinning



5.2. Pin description

Table 2. Pin description

| Symbol                                                       | Pin          | Description                          |
|--------------------------------------------------------------|--------------|--------------------------------------|
| V <sub>DD(B)</sub>                                           | 1            | supply voltage port B                |
| $\overline{B}0, \overline{B}1, \overline{B}2, \overline{B}3$ | 2, 7, 9, 14  | complementary data output            |
| B0, B1, B2, B3                                               | 3, 6, 10, 13 | data output                          |
| A0, A1, A2, A3                                               | 4, 5, 11, 12 | data input                           |
| V <sub>SS</sub>                                              | 8            | common negative supply voltage (0 V) |
| OE                                                           | 15           | output enable input                  |
| V <sub>DD(A)</sub>                                           | 16           | supply voltage port A                |

6. Functional description

Table 3. Function table

H = HIGH voltage level; L = LOW voltage level; Z = high-impedance OFF-state.

| Control | Output |                 |
|---------|--------|-----------------|
| OE      | Bn     | $\overline{B}n$ |
| H       | An     | $\overline{A}n$ |
| L       | Z      | Z               |

7. Limiting values

Table 4. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134). Voltages are referenced to V<sub>SS</sub> = 0 V (ground).

| Symbol             | Parameter               | Conditions                                                             | Min  | Max                      | Unit |
|--------------------|-------------------------|------------------------------------------------------------------------|------|--------------------------|------|
| V <sub>DD(A)</sub> | supply voltage A        | port A; V <sub>DD(A)</sub> ≤ V <sub>DD(B)</sub>                        | -0.5 | +18                      | V    |
| V <sub>DD(B)</sub> | supply voltage B        | port B; V <sub>DD(B)</sub> ≥ V <sub>DD(A)</sub>                        | -0.5 | +18                      | V    |
| I <sub>IK</sub>    | input clamping current  | V <sub>I</sub> < -0.5 V or V <sub>I</sub> > V <sub>DD(A)</sub> + 0.5 V | -    | ±10                      | mA   |
| V <sub>I</sub>     | input voltage           |                                                                        | -0.5 | V <sub>DD(A)</sub> + 0.5 | V    |
| I <sub>OK</sub>    | output clamping current | V <sub>O</sub> < -0.5 V or V <sub>O</sub> > V <sub>DD(B)</sub> + 0.5 V | -    | ±10                      | mA   |
| I <sub>I/O</sub>   | input/output current    |                                                                        | -    | ±10                      | mA   |
| I <sub>DD</sub>    | supply current          | [1]                                                                    | -    | 50                       | mA   |
| T <sub>stg</sub>   | storage temperature     |                                                                        | -65  | +150                     | °C   |
| T <sub>amb</sub>   | ambient temperature     |                                                                        | -40  | +85                      | °C   |
| P <sub>tot</sub>   | total power dissipation | T <sub>amb</sub> = -40 °C to +85 °C                                    | -    | 500                      | mW   |
| P                  | power dissipation       | per output                                                             | -    | 100                      | mW   |

[1] I<sub>DD</sub> is the combined current of I<sub>DD(A)</sub> and I<sub>DD(B)</sub>.

8. Recommended operating conditions

Table 5. Recommended operating conditions

| Symbol             | Parameter                           | Conditions                | Min                  | Typ | Max                  | Unit |
|--------------------|-------------------------------------|---------------------------|----------------------|-----|----------------------|------|
| V <sub>DD(A)</sub> | supply voltage A                    |                           | 3                    | -   | ≤ V <sub>DD(B)</sub> | V    |
| V <sub>DD(B)</sub> | supply voltage B                    |                           | ≥ V <sub>DD(A)</sub> | -   | 15                   | V    |
| V <sub>I</sub>     | input voltage                       |                           | 0                    | -   | V <sub>DD(A)</sub>   | V    |
| T <sub>amb</sub>   | ambient temperature                 | in free air               | -40                  | -   | +85                  | °C   |
| Δt/ΔV              | input transition rise and fall rate | V <sub>DD(A)</sub> = 5 V  | -                    | -   | 3.75                 | μs/V |
|                    |                                     | V <sub>DD(A)</sub> = 10 V | -                    | -   | 0.5                  | μs/V |
|                    |                                     | V <sub>DD(A)</sub> = 15 V | -                    | -   | 0.08                 | μs/V |

9. Static characteristics

Table 6. Static characteristics

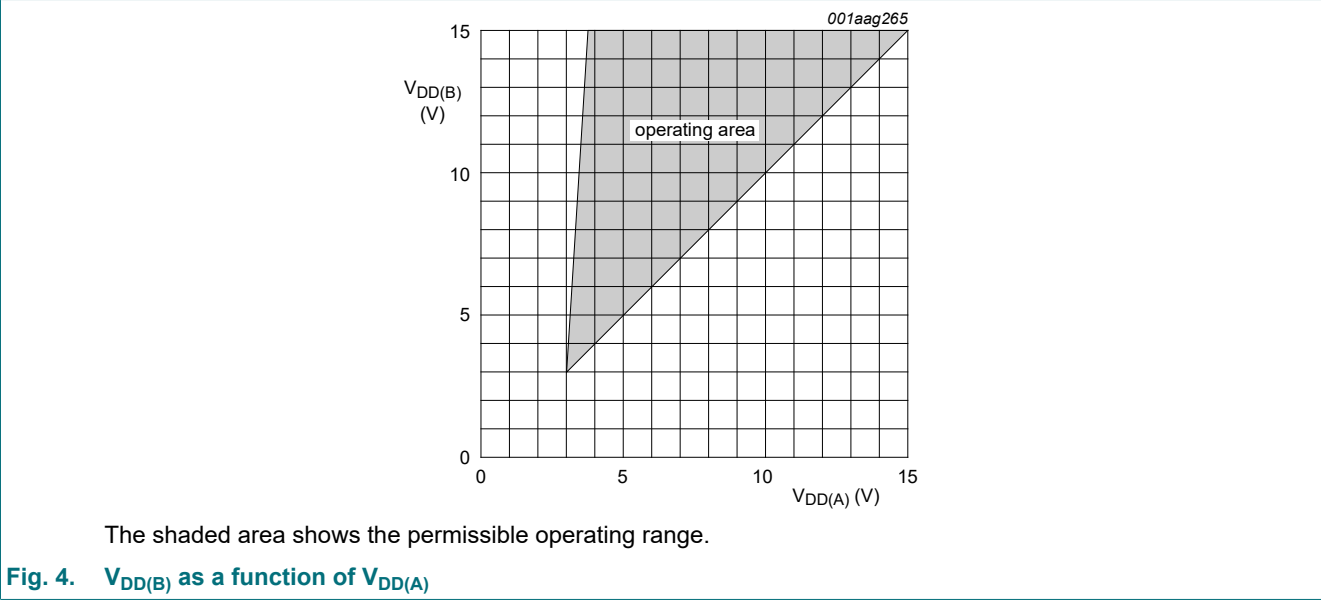
V<sub>DD(A)</sub> = V<sub>DD(B)</sub>; V<sub>SS</sub> = 0 V; V<sub>I</sub> = V<sub>SS</sub> or V<sub>DD(A)</sub>; unless otherwise specified.

| Symbol          | Parameter                 | Conditions                                            | V <sub>DD</sub> [1] | T <sub>amb</sub> = -40 °C |       | T <sub>amb</sub> = +25 °C |       | T <sub>amb</sub> = +85 °C |       | Unit |
|-----------------|---------------------------|-------------------------------------------------------|---------------------|---------------------------|-------|---------------------------|-------|---------------------------|-------|------|
|                 |                           |                                                       |                     | Min                       | Max   | Min                       | Max   | Min                       | Max   |      |
| V <sub>IH</sub> | HIGH-level input voltage  | I <sub>O</sub>   < 1 μA                               | 5 V                 | 3.5                       | -     | 3.5                       | -     | 3.5                       | -     | V    |
|                 |                           |                                                       | 10 V                | 7.0                       | -     | 7.0                       | -     | 7.0                       | -     | V    |
|                 |                           |                                                       | 15 V                | 11.0                      | -     | 11.0                      | -     | 11.0                      | -     | V    |
| V <sub>IL</sub> | LOW-level input voltage   | I <sub>O</sub>   < 1 μA                               | 5 V                 | -                         | 1.5   | -                         | 1.5   | -                         | 1.5   | V    |
|                 |                           |                                                       | 10 V                | -                         | 3.0   | -                         | 3.0   | -                         | 3.0   | V    |
|                 |                           |                                                       | 15 V                | -                         | 4.0   | -                         | 4.0   | -                         | 4.0   | V    |
| V <sub>OH</sub> | HIGH-level output voltage | I <sub>O</sub>   < 1 μA                               | 5 V                 | 4.95                      | -     | 4.95                      | -     | 4.95                      | -     | V    |
|                 |                           |                                                       | 10 V                | 9.95                      | -     | 9.95                      | -     | 9.95                      | -     | V    |
|                 |                           |                                                       | 15 V                | 14.95                     | -     | 14.95                     | -     | 14.95                     | -     | V    |
| V <sub>OL</sub> | LOW-level output voltage  | I <sub>O</sub>   < 1 μA                               | 5 V                 | -                         | 0.05  | -                         | 0.05  | -                         | 0.05  | V    |
|                 |                           |                                                       | 10 V                | -                         | 0.05  | -                         | 0.05  | -                         | 0.05  | V    |
|                 |                           |                                                       | 15 V                | -                         | 0.05  | -                         | 0.05  | -                         | 0.05  | V    |
| I <sub>OH</sub> | HIGH-level output current | V <sub>O</sub> = 2.5 V                                | 5 V                 | -                         | -1.7  | -                         | -1.4  | -                         | -1.1  | mA   |
|                 |                           | V <sub>O</sub> = 4.6 V                                | 5 V                 | -                         | -0.52 | -                         | -0.44 | -                         | -0.36 | mA   |
|                 |                           | V <sub>O</sub> = 9.5 V                                | 10 V                | -                         | -1.3  | -                         | -1.1  | -                         | -0.9  | mA   |
|                 |                           | V <sub>O</sub> = 13.5 V                               | 15 V                | -                         | -3.6  | -                         | -3.0  | -                         | -2.4  | mA   |
| I <sub>OL</sub> | LOW-level output current  | V <sub>O</sub> = 0.4 V                                | 5 V                 | 0.52                      | -     | 0.44                      | -     | 0.36                      | -     | mA   |
|                 |                           | V <sub>O</sub> = 0.5 V                                | 10 V                | 1.3                       | -     | 1.1                       | -     | 0.9                       | -     | mA   |
|                 |                           | V <sub>O</sub> = 1.5 V                                | 15 V                | 3.6                       | -     | 3.0                       | -     | 2.4                       | -     | mA   |
| I <sub>I</sub>  | input leakage current     |                                                       | 15 V                | -                         | ±0.3  | -                         | ±0.3  | -                         | ±1.0  | μA   |
| I <sub>DD</sub> | supply current            | all valid input combinations;<br>I <sub>O</sub> = 0 A | 5 V [2]             | -                         | 20    | -                         | 20    | -                         | 150   | μA   |
|                 |                           |                                                       | 10 V                | -                         | 40    | -                         | 40    | -                         | 300   | μA   |
|                 |                           |                                                       | 15 V                | -                         | 80    | -                         | 80    | -                         | 600   | μA   |
| I <sub>OZ</sub> | OFF-state output current  | HIGH; V <sub>O</sub> = V <sub>DD(B)</sub>             | 15 V                | -                         | 1.6   | -                         | 1.6   | -                         | 12.0  | μA   |
|                 |                           | LOW; V <sub>O</sub> = V <sub>SS</sub>                 | 15 V                | -                         | -1.6  | -                         | -1.6  | -                         | -12.0 | μA   |

Quad low-to-high voltage translator with 3-state outputs

| Symbol         | Parameter         | Conditions     | V <sub>DD</sub> [1] | T <sub>amb</sub> = -40 °C |     | T <sub>amb</sub> = +25 °C |     | T <sub>amb</sub> = +85 °C |     | Unit |
|----------------|-------------------|----------------|---------------------|---------------------------|-----|---------------------------|-----|---------------------------|-----|------|
|                |                   |                |                     | Min                       | Max | Min                       | Max | Min                       | Max |      |
| C <sub>I</sub> | input capacitance | digital inputs | -                   | -                         | -   | -                         | 7.5 | -                         | -   | pF   |

[1] V<sub>DD</sub> is the same as V<sub>DD(A)</sub> and V<sub>DD(B)</sub>.  
[2] I<sub>DD</sub> is the combined current of I<sub>DD(A)</sub> and I<sub>DD(B)</sub>.



10. Dynamic characteristics

Table 7. Dynamic characteristics

T<sub>amb</sub> = 25 °C unless otherwise specified; for test circuit see Fig. 7.

| Symbol           | Parameter                          | Conditions                                     | Extrapolation formula[1]            | Min | Typ | Max | Unit |
|------------------|------------------------------------|------------------------------------------------|-------------------------------------|-----|-----|-----|------|
| t <sub>PHL</sub> | HIGH to LOW propagation delay      | An to Bn, $\overline{Bn}$ ; see Fig. 5         |                                     |     |     |     |      |
|                  |                                    | V <sub>DD(A)</sub> = V <sub>DD(B)</sub> = 5 V  | 143 ns + (0.55 ns/pF)C <sub>L</sub> | -   | 170 | 340 | ns   |
|                  |                                    | V <sub>DD(A)</sub> = V <sub>DD(B)</sub> = 10 V | 69 ns + (0.23 ns/pF)C <sub>L</sub>  | -   | 80  | 160 | ns   |
|                  |                                    | V <sub>DD(A)</sub> = V <sub>DD(B)</sub> = 15 V | 57 ns + (0.16 ns/pF)C <sub>L</sub>  | -   | 65  | 135 | ns   |
| t <sub>PLH</sub> | LOW to HIGH propagation delay      | An to Bn, $\overline{Bn}$ ; see Fig. 5         |                                     |     |     |     |      |
|                  |                                    | V <sub>DD(A)</sub> = V <sub>DD(B)</sub> = 5 V  | 143 ns + (0.55 ns/pF)C <sub>L</sub> | -   | 170 | 340 | ns   |
|                  |                                    | V <sub>DD(A)</sub> = V <sub>DD(B)</sub> = 10 V | 69 ns + (0.23 ns/pF)C <sub>L</sub>  | -   | 80  | 160 | ns   |
|                  |                                    | V <sub>DD(A)</sub> = V <sub>DD(B)</sub> = 15 V | 62 ns + (0.16 ns/pF)C <sub>L</sub>  | -   | 70  | 140 | ns   |
| t <sub>THL</sub> | HIGH to LOW output transition time | Bn or $\overline{Bn}$ ; see Fig. 6             |                                     |     |     |     |      |
|                  |                                    | V <sub>DD(A)</sub> = V <sub>DD(B)</sub> = 5 V  | 10 ns + (1.00 ns/pF)C <sub>L</sub>  | -   | 60  | 120 | ns   |
|                  |                                    | V <sub>DD(A)</sub> = V <sub>DD(B)</sub> = 10 V | 9 ns + (0.42 ns/pF)C <sub>L</sub>   | -   | 30  | 60  | ns   |
|                  |                                    | V <sub>DD(A)</sub> = V <sub>DD(B)</sub> = 15 V | 6 ns + (0.28 ns/pF)C <sub>L</sub>   | -   | 20  | 40  | ns   |
| t <sub>TLH</sub> | LOW to HIGH output transition time | Bn or $\overline{Bn}$ ; see Fig. 6             |                                     |     |     |     |      |
|                  |                                    | V <sub>DD(A)</sub> = V <sub>DD(B)</sub> = 5 V  | 10 ns + (1.00 ns/pF)C <sub>L</sub>  | -   | 60  | 120 | ns   |
|                  |                                    | V <sub>DD(A)</sub> = V <sub>DD(B)</sub> = 10 V | 9 ns + (0.42 ns/pF)C <sub>L</sub>   | -   | 30  | 60  | ns   |
|                  |                                    | V <sub>DD(A)</sub> = V <sub>DD(B)</sub> = 15 V | 6 ns + (0.28 ns/pF)C <sub>L</sub>   | -   | 20  | 40  | ns   |

Quad low-to-high voltage translator with 3-state outputs

| Symbol           | Parameter                           | Conditions                                     | Extrapolation formula[1] | Min | Typ | Max | Unit |
|------------------|-------------------------------------|------------------------------------------------|--------------------------|-----|-----|-----|------|
| t <sub>PHZ</sub> | HIGH to OFF-state propagation delay | OE to Bn, $\overline{Bn}$ ; see Fig. 6         |                          |     |     |     |      |
|                  |                                     | V <sub>DD(A)</sub> = V <sub>DD(B)</sub> = 5 V  |                          | -   | 70  | 135 | ns   |
|                  |                                     | V <sub>DD(A)</sub> = V <sub>DD(B)</sub> = 10 V |                          | -   | 55  | 110 | ns   |
|                  |                                     | V <sub>DD(A)</sub> = V <sub>DD(B)</sub> = 15 V |                          | -   | 60  | 120 | ns   |
| t <sub>PLZ</sub> | LOW to OFF-state propagation delay  | OE to Bn, $\overline{Bn}$ ; see Fig. 6         |                          |     |     |     |      |
|                  |                                     | V <sub>DD(A)</sub> = V <sub>DD(B)</sub> = 5 V  |                          | -   | 70  | 135 | ns   |
|                  |                                     | V <sub>DD(A)</sub> = V <sub>DD(B)</sub> = 10 V |                          | -   | 55  | 105 | ns   |
|                  |                                     | V <sub>DD(A)</sub> = V <sub>DD(B)</sub> = 15 V |                          | -   | 55  | 110 | ns   |
| t <sub>PZH</sub> | OFF-state to HIGH propagation delay | OE to Bn, $\overline{Bn}$ ; see Fig. 6         |                          |     |     |     |      |
|                  |                                     | V <sub>DD(A)</sub> = V <sub>DD(B)</sub> = 5 V  |                          | -   | 195 | 395 | ns   |
|                  |                                     | V <sub>DD(A)</sub> = V <sub>DD(B)</sub> = 10 V |                          | -   | 95  | 195 | ns   |
|                  |                                     | V <sub>DD(A)</sub> = V <sub>DD(B)</sub> = 15 V |                          | -   | 80  | 165 | ns   |
| t <sub>PZL</sub> | OFF-state to LOW propagation delay  | OE to Bn, $\overline{Bn}$ ; see Fig. 6         |                          |     |     |     |      |
|                  |                                     | V <sub>DD(A)</sub> = V <sub>DD(B)</sub> = 5 V  |                          | -   | 195 | 395 | ns   |
|                  |                                     | V <sub>DD(A)</sub> = V <sub>DD(B)</sub> = 10 V |                          | -   | 95  | 190 | ns   |
|                  |                                     | V <sub>DD(A)</sub> = V <sub>DD(B)</sub> = 15 V |                          | -   | 80  | 160 | ns   |

[1] Typical value of the propagation delay and output transition time can be calculated with the extrapolation formula (C<sub>L</sub> in pF).

Table 8. Dynamic power dissipation

V<sub>DD(A)</sub> = V<sub>DD(B)</sub>; V<sub>SS</sub> = 0 V; t<sub>r</sub> = t<sub>f</sub> ≤ 20 ns; T<sub>amb</sub> = 25 °C.

| Symbol         | Parameter                 | V <sub>DD</sub> [1] | Typical formula (μW)                                                                                         | where                                                                                                                                                                                                                                           |
|----------------|---------------------------|---------------------|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P <sub>D</sub> | dynamic power dissipation | 5 V                 | P <sub>D</sub> = 3000 × f <sub>i</sub> + Σ(f <sub>o</sub> × C <sub>L</sub> ) × V <sub>DD</sub> <sup>2</sup>  | f <sub>i</sub> = input frequency in MHz;<br>f <sub>o</sub> = output frequency in MHz;<br>C <sub>L</sub> = output load capacitance in pF;<br>Σ(f <sub>o</sub> × C <sub>L</sub> ) = sum of the outputs;<br>V <sub>DD</sub> = supply voltage in V. |
|                |                           | 10 V                | P <sub>D</sub> = 12200 × f <sub>i</sub> + Σ(f <sub>o</sub> × C <sub>L</sub> ) × V <sub>DD</sub> <sup>2</sup> |                                                                                                                                                                                                                                                 |
|                |                           | 15 V                | P <sub>D</sub> = 31000 × f <sub>i</sub> + Σ(f <sub>o</sub> × C <sub>L</sub> ) × V <sub>DD</sub> <sup>2</sup> |                                                                                                                                                                                                                                                 |

[1] V<sub>DD</sub> is the same as V<sub>DD(A)</sub> and V<sub>DD(B)</sub>.

10.1. Waveforms and test circuit

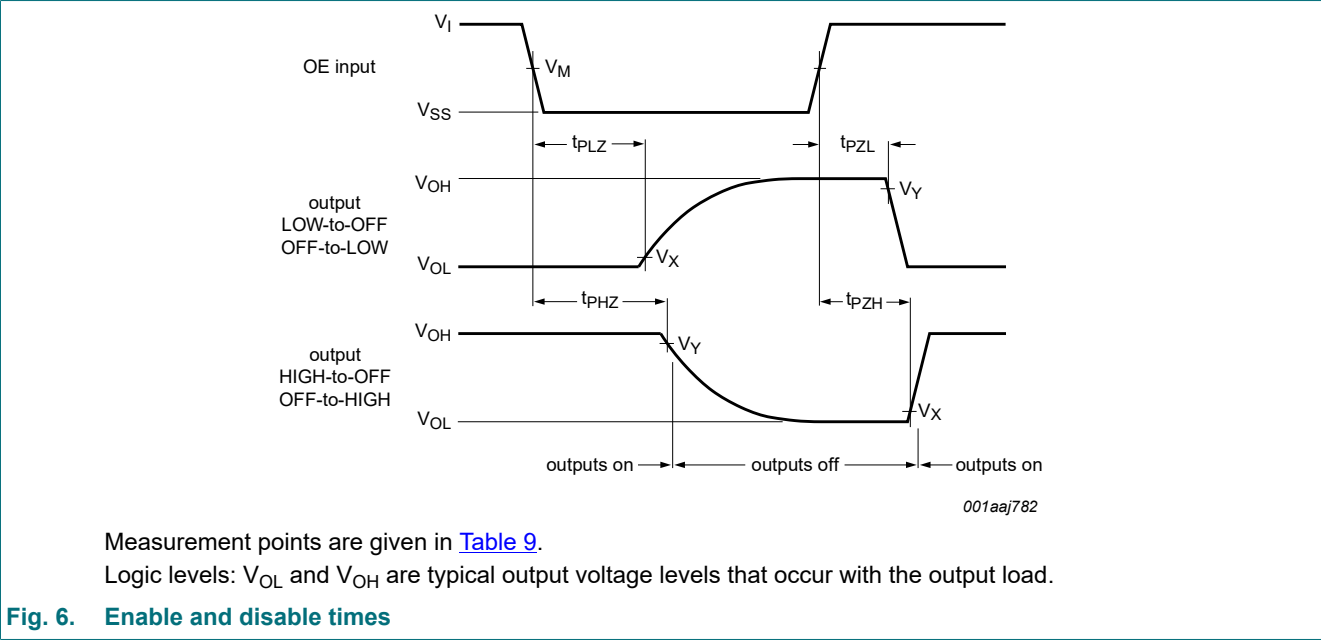
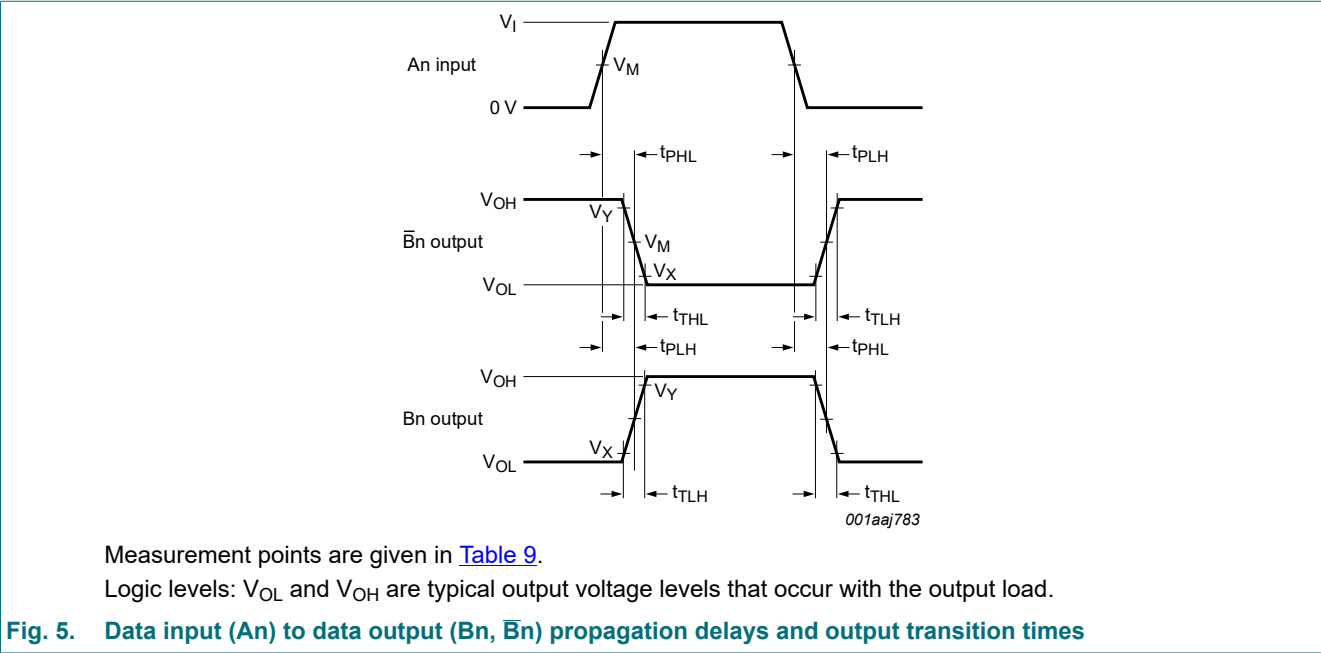


Table 9. Measurement points

| Input                                 |                       | Output                |                       |                       |
|---------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| V <sub>I</sub>                        | V <sub>M</sub>        | V <sub>M</sub>        | V <sub>X</sub>        | V <sub>Y</sub>        |
| V <sub>SS</sub> or V <sub>DD(A)</sub> | 0.5V <sub>DD(A)</sub> | 0.5V <sub>DD(B)</sub> | 0.1V <sub>DD(B)</sub> | 0.9V <sub>DD(B)</sub> |

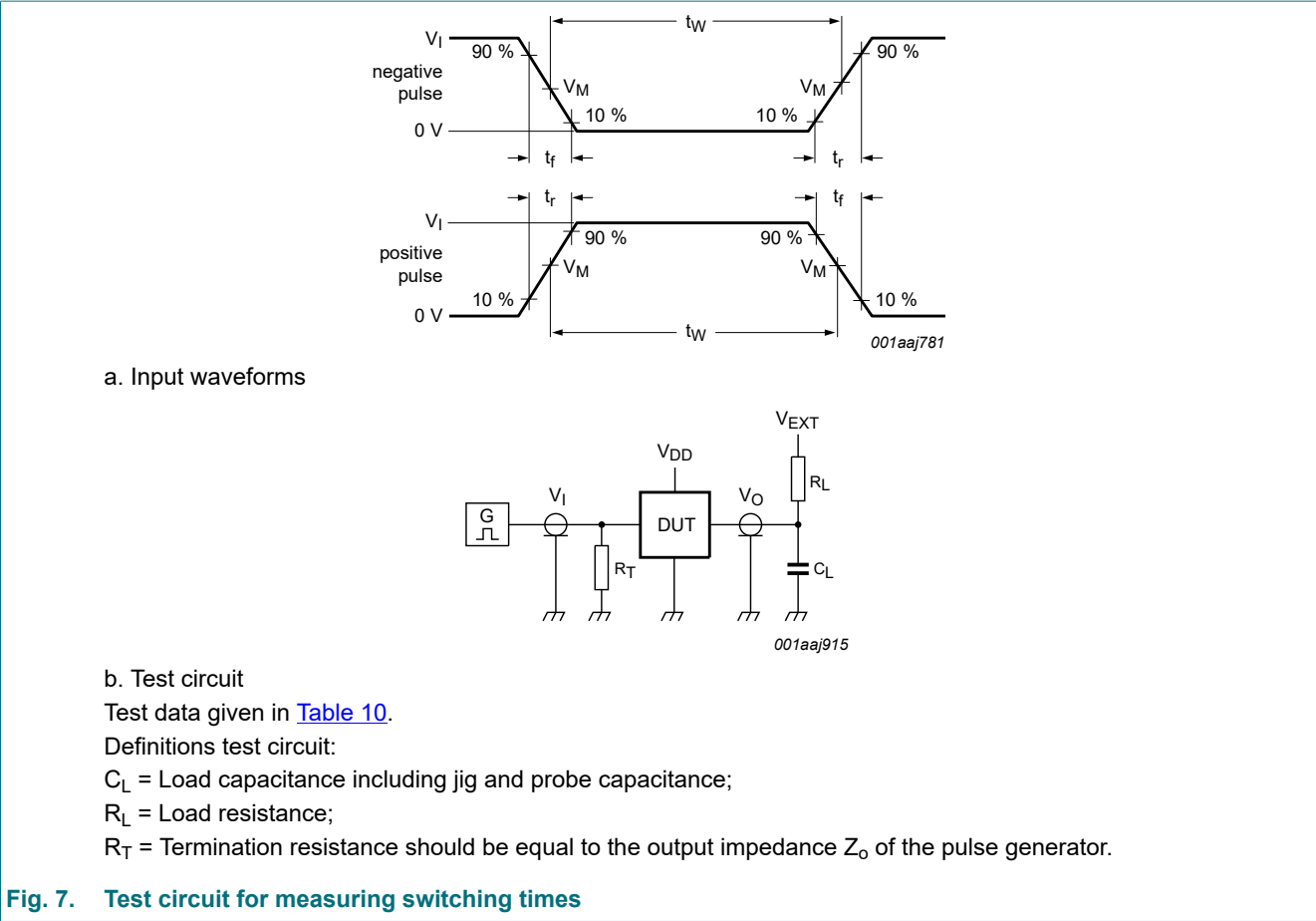


Table 10. Test data

| Supplies                | Input        | Load         |       | $V_{EXT}$          |                    |                    |
|-------------------------|--------------|--------------|-------|--------------------|--------------------|--------------------|
| $V_{DD(A)} = V_{DD(B)}$ | $t_r, t_f$   | $R_L$        | $C_L$ | $t_{PHL}, t_{PLH}$ | $t_{PZL}, t_{PLZ}$ | $t_{PZH}, t_{PHZ}$ |
| 5 V to 15 V             | $\leq 20$ ns | 1 k $\Omega$ | 50 pF | open               | $V_{DD(B)}$        | $V_{SS}$           |



11. Package outline

SO16: plastic small outline package; 16 leads; body width 3.9 mm

SOT109-1

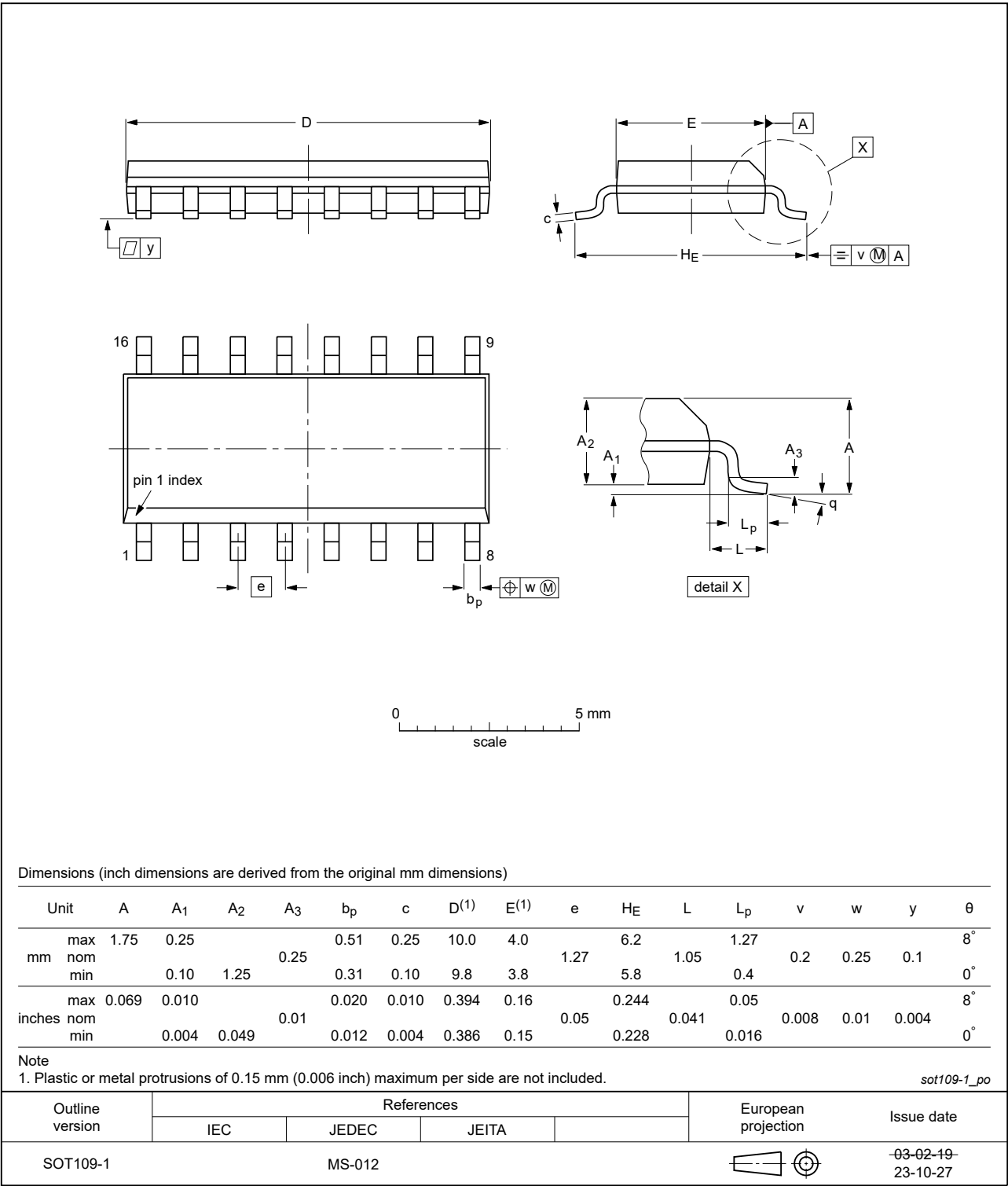


Fig. 8. Package outline SOT109-1 (SO16)

12. Abbreviations

Table 11. Abbreviations

| Acronym | Description                               |
|---------|-------------------------------------------|
| ANSI    | American National Standards Institute     |
| CDM     | Charged Device Model                      |
| CMOS    | Complementary Metal Oxide Semiconductor   |
| DUT     | Device Under Test                         |
| ESD     | ElectroStatic Discharge                   |
| ESDA    | ElectroStatic Discharge Association       |
| HBM     | Human Body Model                          |
| JEDEC   | Joint Electron Device Engineering Council |

13. Revision history

Table 12. Revision history

| Document ID      | Release date                                                                                                                                                                                                                                                                                                                                                      | Data sheet status     | Change notice | Supersedes       |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------|------------------|
| HEF4104B v.11    | 20240725                                                                                                                                                                                                                                                                                                                                                          | Product data sheet    | -             | HEF4104B v.10    |
| Modifications:   | <ul style="list-style-type: none"><li>• <a href="#">Section 2</a>: ESD specification updated according to the latest JEDEC standard.</li><li>• <a href="#">Fig. 8</a>: Aligned SO package outline drawing to JEDEC MS-012.</li></ul>                                                                                                                              |                       |               |                  |
| HEF4104B v.10    | 20211214                                                                                                                                                                                                                                                                                                                                                          | Product data sheet    | -             | HEF4104B v.9     |
| Modifications:   | <ul style="list-style-type: none"><li>• The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia.</li><li>• Legal texts have been adapted to the new company name where appropriate.</li><li>• <a href="#">Section 1</a> and <a href="#">Section 2</a> updated.</li><li>• <a href="#">Section 12</a> added.</li></ul> |                       |               |                  |
| HEF4104B v.9     | 20160329                                                                                                                                                                                                                                                                                                                                                          | Product data sheet    | -             | HEF4104B v.8     |
| Modifications:   | <ul style="list-style-type: none"><li>• Type number HEF4104BP (SOT38-4) removed.</li></ul>                                                                                                                                                                                                                                                                        |                       |               |                  |
| HEF4104B v.8     | 20111111                                                                                                                                                                                                                                                                                                                                                          | Product data sheet    | -             | HEF4104B v.7     |
| Modifications:   | <ul style="list-style-type: none"><li>• Section Applications removed</li><li>• <a href="#">Table 6</a>: I<sub>OH</sub> minimum values changed to maximum</li></ul>                                                                                                                                                                                                |                       |               |                  |
| HEF4104B v.7     | 20091216                                                                                                                                                                                                                                                                                                                                                          | Product data sheet    | -             | HEF4104B v.6     |
| HEF4104B v.6     | 20091102                                                                                                                                                                                                                                                                                                                                                          | Product data sheet    | -             | HEF4104B v.5     |
| HEF4104B v.5     | 20090728                                                                                                                                                                                                                                                                                                                                                          | Product data sheet    | -             | HEF4104B v.4     |
| HEF4104B v.4     | 20090305                                                                                                                                                                                                                                                                                                                                                          | Product data sheet    | -             | HEF4104B_CNV v.3 |
| HEF4104B_CNV v.3 | 19950101                                                                                                                                                                                                                                                                                                                                                          | Product specification | -             | HEF4104B_CNV v.2 |
| HEF4104B_CNV v.2 | 19950101                                                                                                                                                                                                                                                                                                                                                          | Product specification | -             | -                |

14. Legal information

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

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