# 74HC245; 74HCT245

## Octal bus transceiver; 3-state

Rev. 4 — 26 February 2016 Product data sheet

## 1. General description

The 74HC245; 74HCT245 is an 8-bit transceiver with 3-state outputs. The device features an output enable ($\overline{OE}$) and send/receive (DIR) for direction control. A HIGH on $\overline{OE}$ 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 $V_{CC}$.

## 2. Features and benefits

- Complies with JEDEC standard JESD7A
- Input levels:
  - For 74HC245: CMOS level
  - For 74HCT245: TTL level
- Octal bidirectional bus interface
- Non-inverting 3-state outputs
- ESD protection:
  - HBM JESD22-A114F exceeds 2000 V
  - MM JESD22-A115-A exceeds 200 V
- Multiple package options
- Specified from −40 °C to +85 °C and from −40 °C to +125 °C

## 3. Ordering information

**Table 1. Ordering information**

| Type number | Package | | | |
|---|---|---|---|---|
| | Temperature range | Name | Description | Version |
| 74HC245D | −40 °C to +125 °C | SO20 | plastic small outline package; 20 leads; body width 7.5 mm | SOT163-1 |
| 74HCT245D | | | | |
| 74HC245DB | −40 °C to +125 °C | SSOP20 | plastic shrink small outline package; 20 leads; body width 5.3 mm | SOT339-1 |
| 74HCT245DB | | | | |
| 74HC245PW | −40 °C to +125 °C | TSSOP20 | plastic thin shrink small outline package; 20 leads; body width 4.4 mm | SOT360-1 |
| 74HCT245PW | | | | |
| 74HC245BQ | −40 °C to +125 °C | DHVQFN20 | plastic dual-in-line compatible thermal enhanced very thin quad flat package; no leads; 20 terminals; body 2.5 × 4.5 × 0.85 mm | SOT764-1 |
| 74HCT245BQ | | | | |

## 4. Functional diagram

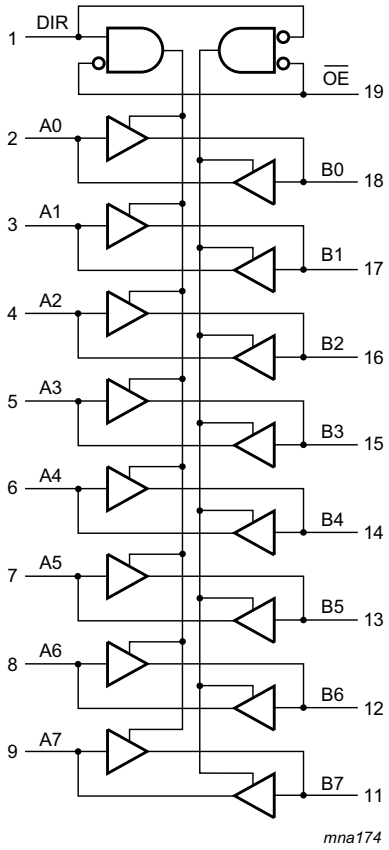



Fig 1. Logic symbol

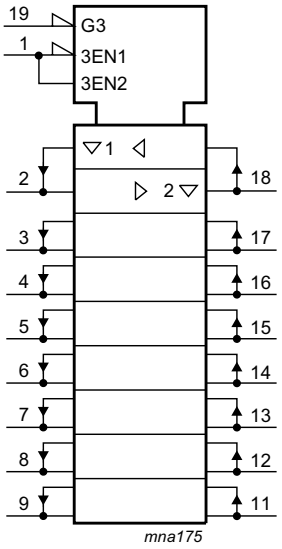



Fig 2. IEC logic symbol

# 5. Pinning information

## 5.1 Pinning

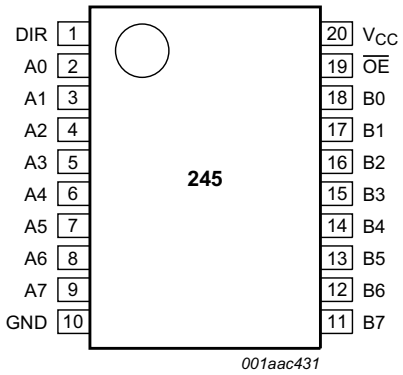
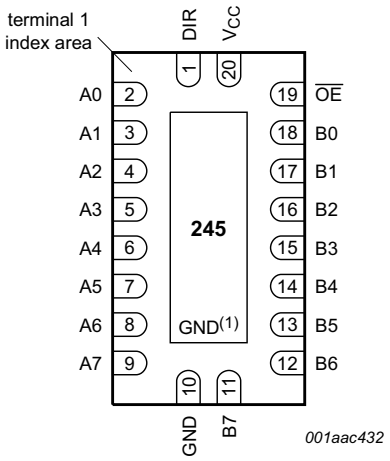



**Fig 3. Pin configuration SO20 and (T)SSOP20**




Transparent top view

(1) This is not a supply pin. The substrate is attached to this pad using conductive die attach material. There is no electrical or mechanical requirement to solder this pad. However, if it is soldered, the solder land should remain floating or be connected to GND.

**Fig 4. Pin configuration DHVQFN20**

## 5.2 Pin description

**Table 2. Pin description**

| Symbol | Pin | Description |
|---|---|---|
| DIR | 1 | direction control |
| A0, A1, A2, A3, A4, A5, A6, A7 | 2, 3, 4, 5, 6, 7, 8, 9 | data input/output |
| GND | 10 | ground (0 V) |
| B7, B6, B5, B4, B3, B2, B1, B0 | 11, 12, 13, 14, 15, 16, 17, 18 | data input/output |
| $\overline{OE}$ | 19 | output enable input (active LOW) |
| $V_{CC}$ | 20 | supply voltage |

# 6. Functional description

## 6.1 Function table

**Table 3. Function table[1]**

| Input | | Input/output | |
|---|---|---|---|
| $\overline{OE}$ | DIR | An | Bn |
| L | L | A = B | input |
| L | H | input | B = A |
| H | X | Z | Z |

[1] H = HIGH voltage level; L = LOW voltage level; X = don't care; Z = high-impedance OFF-state.

# 7. Limiting values

**Table 4. 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 | +7 | V |
| $I_{IK}$ | input clamping current | $V_I < -0.5$ V or $V_I > V_{CC} + 0.5$ V | - | ±20 | mA |
| $I_{OK}$ | output clamping current | $V_O < -0.5$ V or $V_O > V_{CC} + 0.5$ V | - | ±20 | mA |
| $I_O$ | output current | $-0.5$ V $< V_O < V_{CC} + 0.5$ V | - | ±35 | mA |
| $I_{CC}$ | supply current | | - | 70 | mA |
| $I_{GND}$ | ground current | | −70 | - | mA |
| $T_{stg}$ | storage temperature | | −65 | +150 | °C |
| $P_{tot}$ | total power dissipation | SO20, SSOP20, TSSOP20 and DHVQFN20 packages [1] | - | 500 | mW |

[1] For SO20 packages: above 70 °C, $P_{tot}$ derates linearly with 8 mW/K.
For SSOP20 and TSSOP20 packages: above 60 °C, $P_{tot}$ derates linearly with 5.5 mW/K.
For DHVQFN20 packages: above 60 °C, $P_{tot}$ derates linearly with 4.5 mW/K.

# 8. Recommended operating conditions

**Table 5. Recommended operating conditions**

| Symbol | Parameter | Conditions | 74HC245 | | | 74HCT245 | | | Unit |
|---|---|---|---|---|---|---|---|---|---|
| | | | Min | Typ | Max | Min | Typ | Max | |
| $V_{CC}$ | supply voltage | | 2.0 | 5.0 | 6.0 | 4.5 | 5.0 | 5.5 | V |
| $V_I$ | input voltage | | 0 | - | $V_{CC}$ | 0 | - | $V_{CC}$ | V |
| $V_O$ | output voltage | | 0 | - | $V_{CC}$ | 0 | - | $V_{CC}$ | V |
| $\Delta t/\Delta V$ | input transition rise and fall rate | $V_{CC}$ = 2.0 V | - | - | 625 | - | - | - | ns/V |
| | | $V_{CC}$ = 4.5 V | - | 1.67 | 139 | - | 1.67 | 139 | ns/V |
| | | $V_{CC}$ = 6.0 V | - | - | 83 | - | - | - | ns/V |
| $T_{amb}$ | ambient temperature | | −40 | +25 | +125 | −40 | +25 | +125 | °C |

## 9. Static characteristics

**Table 6. Static characteristics**

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

| Symbol | Parameter | Conditions | 25 °C | | | –40 °C to +85 °C | | –40 °C to +125 °C | | Unit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Min | Typ | Max | Min | Max | Min | Max | |
| **74HC245** | | | | | | | | | | |
| $V_{IH}$ | HIGH-level input voltage | $V_{CC}$ = 2.0 V | 1.5 | 1.2 | - | 1.5 | - | 1.5 | - | V |
| | | $V_{CC}$ = 4.5 V | 3.15 | 2.4 | - | 3.15 | - | 3.15 | - | V |
| | | $V_{CC}$ = 6.0 V | 4.2 | 3.2 | - | 4.2 | - | 4.2 | - | V |
| $V_{IL}$ | LOW-level input voltage | $V_{CC}$ = 2.0 V | - | 0.8 | 0.5 | - | 0.5 | - | 0.5 | V |
| | | $V_{CC}$ = 4.5 V | - | 2.1 | 1.35 | - | 1.35 | - | 1.35 | V |
| | | $V_{CC}$ = 6.0 V | - | 2.8 | 1.8 | - | 1.8 | - | 1.8 | V |
| $V_{OH}$ | HIGH-level output voltage | $V_I$ = $V_{IH}$ or $V_{IL}$ | | | | | | | | |
| | | $I_O$ = –20 μA; $V_{CC}$ = 2.0 V | 1.9 | 2.0 | - | 1.9 | - | 1.9 | - | V |
| | | $I_O$ = –20 μA; $V_{CC}$ = 4.5 V | 4.4 | 4.5 | - | 4.4 | - | 4.4 | - | V |
| | | $I_O$ = –20 μA; $V_{CC}$ = 6.0 V | 5.9 | 6.0 | - | 5.9 | - | 5.9 | - | V |
| | | $I_O$ = –6.0 mA; $V_{CC}$ = 4.5 V | 3.98 | 4.32 | - | 3.84 | - | 3.7 | - | V |
| | | $I_O$ = –7.8 mA; $V_{CC}$ = 6.0 V | 5.48 | 5.81 | - | 5.34 | - | 5.2 | - | V |
| $V_{OL}$ | LOW-level output voltage | $V_I$ = $V_{IH}$ or $V_{IL}$ | | | | | | | | |
| | | $I_O$ = 20 μA; $V_{CC}$ = 2.0 V | - | 0 | 0.1 | - | 0.1 | - | 0.1 | V |
| | | $I_O$ = 20 μA; $V_{CC}$ = 4.5 V | - | 0 | 0.1 | - | 0.1 | - | 0.1 | V |
| | | $I_O$ = 20 μA; $V_{CC}$ = 6.0 V | - | 0 | 0.1 | - | 0.1 | - | 0.1 | V |
| | | $I_O$ = 6.0 mA; $V_{CC}$ = 4.5 V | - | 0.15 | 0.26 | - | 0.33 | - | 0.4 | V |
| | | $I_O$ = 7.8 mA; $V_{CC}$ = 6.0 V | - | 0.16 | 0.26 | - | 0.33 | - | 0.4 | V |
| $I_I$ | input leakage current | $V_I$ = $V_{CC}$ or GND; $V_{CC}$ = 6.0 V | - | - | ±0.1 | - | ±1.0 | - | ±1.0 | μA |
| $I_{OZ}$ | OFF-state output current | $V_I$ = $V_{IH}$ or $V_{IL}$; $V_{CC}$ = 6.0 V; $V_O$ = $V_{CC}$ or GND | - | - | ±0.5 | - | ±5.0 | - | ±10 | μA |
| $I_{CC}$ | supply current | $V_I$ = $V_{CC}$ or GND; $I_O$ = 0 A; $V_{CC}$ = 6.0 V | - | - | 8.0 | - | 80 | - | 160 | μA |
| $C_I$ | input capacitance | | - | 3.5 | - | - | - | - | - | pF |
| $C_{I/O}$ | input/output capacitance | | - | 10 | - | - | - | - | - | pF |

**Table 6. Static characteristics** *…continued*

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

| Symbol | Parameter | Conditions | 25 °C | | | –40 °C to +85 °C | | –40 °C to +125 °C | | Unit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Min | Typ | Max | Min | Max | Min | Max | |
| **74HCT245** | | | | | | | | | | |
| $V_{IH}$ | HIGH-level input voltage | $V_{CC}$ = 4.5 V to 5.5 V | 2.0 | 1.6 | - | 2.0 | - | 2.0 | - | V |
| $V_{IL}$ | LOW-level input voltage | $V_{CC}$ = 4.5 V to 5.5 V | - | 1.2 | 0.8 | - | 0.8 | - | 0.8 | V |
| $V_{OH}$ | HIGH-level output voltage | $V_I$ = $V_{IH}$ or $V_{IL}$; $V_{CC}$ = 4.5 V | | | | | | | | |
| | | $I_O$ = –20 μA | 4.4 | 4.5 | - | 4.4 | - | 4.4 | - | V |
| | | $I_O$ = –6 mA | 3.98 | 4.32 | - | 3.84 | - | 3.7 | - | V |
| $V_{OL}$ | LOW-level output voltage | $V_I$ = $V_{IH}$ or $V_{IL}$; $V_{CC}$ = 4.5 V | | | | | | | | |
| | | $I_O$ = 20 μA | - | 0 | 0.1 | - | 0.1 | - | 0.1 | V |
| | | $I_O$ = 6.0 mA | - | 0.15 | 0.26 | - | 0.33 | - | 0.4 | V |
| $I_I$ | input leakage current | $V_I$ = $V_{CC}$ or GND; $V_{CC}$ = 5.5 V | - | - | ±0.1 | - | ±1.0 | - | ±1.0 | μA |
| $I_{OZ}$ | OFF-state output current | $V_I$ = $V_{IH}$ or $V_{IL}$; $V_{CC}$ = 5.5 V; $V_O$ = $V_{CC}$ or GND | - | - | ±0.5 | - | ±5.0 | - | ±10 | μA |
| $I_{CC}$ | supply current | $V_I$ = $V_{CC}$ or GND; $V_{CC}$ = 5.5 V; $I_O$ = 0 A | - | - | 8.0 | - | 80 | - | 160 | μA |
| $\Delta I_{CC}$ | additional supply current | $V_I$ = $V_{CC}$ – 2.1 V; other inputs at $V_{CC}$ or GND; $V_{CC}$ = 4.5 V to 5.5 V; $I_O$ = 0 A | | | | | | | | |
| | | An or Bn inputs | - | 40 | 144 | - | 180 | - | 196 | μA |
| | | $\overline{OE}$ input | - | 150 | 540 | - | 675 | - | 735 | μA |
| | | DIR input | - | 90 | 324 | - | 405 | - | 441 | μA |
| $C_I$ | input capacitance | | - | 3.5 | - | - | - | - | - | pF |
| $C_{I/O}$ | input/output capacitance | | - | 10 | - | - | - | - | - | pF |

## 10. Dynamic characteristics

**Table 7. Dynamic characteristics**

*GND = 0 V; for load circuit see Figure 7.*

| Symbol | Parameter | Conditions | 25 °C | | | –40 °C to +125 °C | | Unit |
|---|---|---|---|---|---|---|---|---|
| | | | Min | Typ | Max | Max (85 °C) | Max (125 °C) | |
| **74HC245** | | | | | | | | |
| $t_{pd}$ | propagation delay | An to Bn or Bn to An; see Figure 5 [1] | | | | | | |
| | | $V_{CC}$ = 2.0 V | - | 25 | 90 | 115 | 135 | ns |
| | | $V_{CC}$ = 4.5 V | - | 9 | 18 | 23 | 27 | ns |
| | | $V_{CC}$ = 5.0 V; $C_L$ = 15 pF | - | 7 | - | - | - | ns |
| | | $V_{CC}$ = 6.0 V | - | 7 | 15 | 20 | 23 | ns |
| $t_{en}$ | enable time | $\overline{OE}$ to An or Bn; see Figure 6 [2] | | | | | | |
| | | $V_{CC}$ = 2.0 V | - | 30 | 150 | 190 | 225 | ns |
| | | $V_{CC}$ = 4.5 V | - | 11 | 30 | 38 | 45 | ns |
| | | $V_{CC}$ = 6.0 V | - | 9 | 26 | 33 | 38 | ns |
| $t_{dis}$ | disable time | $\overline{OE}$ to An or Bn; see Figure 6 [3] | | | | | | |
| | | $V_{CC}$ = 2.0 V | - | 41 | 150 | 190 | 225 | ns |
| | | $V_{CC}$ = 4.5 V | - | 15 | 30 | 38 | 45 | ns |
| | | $V_{CC}$ = 6.0 V | - | 12 | 26 | 33 | 38 | ns |
| $t_t$ | transition time | see Figure 5 [4] | | | | | | |
| | | $V_{CC}$ = 2.0 V | - | 14 | 60 | 75 | 90 | ns |
| | | $V_{CC}$ = 4.5 V | - | 5 | 12 | 15 | 18 | ns |
| | | $V_{CC}$ = 6.0 V | - | 4 | 10 | 13 | 15 | ns |
| $C_{PD}$ | power dissipation capacitance | per buffer; $V_I$ = GND to $V_{CC}$ [5] | - | 30 | - | - | - | pF |

**Table 7. Dynamic characteristics** *…continued*

*GND = 0 V; for load circuit see Figure 7.*

| Symbol | Parameter | Conditions | 25 °C | | | –40 °C to +125 °C | | Unit |
|---|---|---|---|---|---|---|---|---|
| | | | Min | Typ | Max | Max (85 °C) | Max (125 °C) | |
| **74HCT245** | | | | | | | | |
| $t_{pd}$ | propagation delay | An to Bn or Bn to An; see Figure 5 [1] | | | | | | |
| | | $V_{CC}$ = 4.5 V | - | 12 | 22 | 28 | 33 | ns |
| | | $V_{CC}$ = 5.0 V; $C_L$ = 15 pF | - | 10 | - | - | - | ns |
| $t_{en}$ | enable time | $\overline{OE}$ to An or Bn; see Figure 6 [2] | - | 16 | 30 | 38 | 45 | ns |
| $t_{dis}$ | disable time | $\overline{OE}$ to An or Bn; see Figure 6 [3] | - | 16 | 30 | 38 | 45 | ns |
| $t_t$ | transition time | $V_{CC}$ = 4.5 V; see Figure 5 [4] | - | 5 | 12 | 15 | 18 | ns |
| $C_{PD}$ | power dissipation capacitance | per buffer; $V_I$ = GND to $V_{CC}$ − 1.5 V [5] | - | 30 | - | - | - | pF |

[1] $t_{pd}$ is the same as $t_{PHL}$ and $t_{PLH}$.

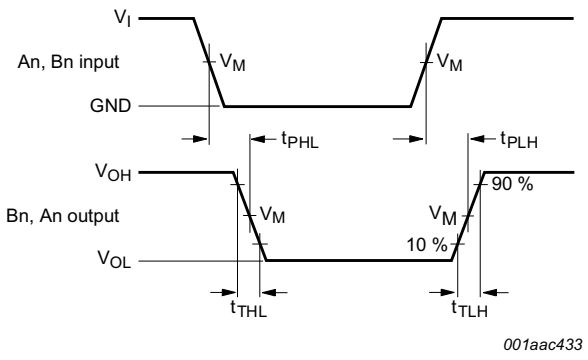
[2] $t_{en}$ is the same as $t_{PZH}$ and $t_{PZL}$.

[3] $t_{dis}$ is the same as $t_{PHZ}$ and $t_{PLZ}$.

[4] $t_t$ is the same as $t_{THL}$ and $t_{TLH}$.

[5] $C_{PD}$ is used to determine the dynamic power dissipation ($P_D$ in μW):
$P_D = C_{PD} \times V_{CC}^2 \times f_i \times N + \Sigma (C_L \times V_{CC}^2 \times f_o)$ where:
$f_i$ = input frequency in MHz;
$f_o$ = output frequency in MHz;
$C_L$ = output load capacitance in pF;
$V_{CC}$ = supply voltage in V;
N = number of inputs switching;
$\Sigma (C_L \times V_{CC}^2 \times f_o)$ = sum of outputs.

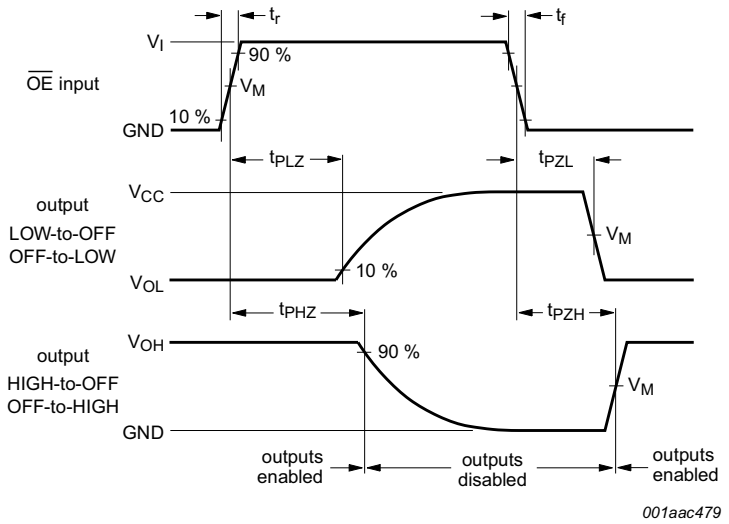
## 11. Waveforms




Measurement points are given in Table 8.

$V_{OL}$ and $V_{OH}$ are typical voltage output drop that occur with the output load.

**Fig 5. Input (An, Bn) to output (Bn, An) propagation delays and output transition times**



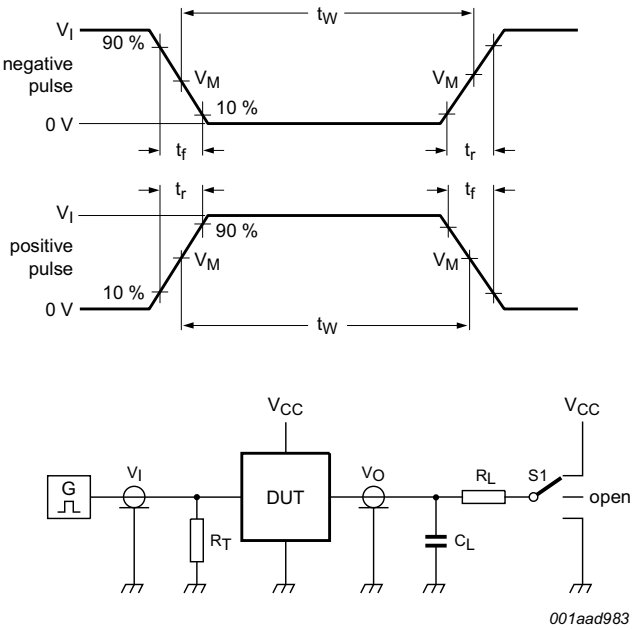

Measurement points are given in Table 8.

$V_{OL}$ and $V_{OH}$ are typical voltage output drop that occur with the output load.

**Fig 6. 3-state output enable and disable times**

**Table 8. Measurement points**

| Type | Input | Output |
|---|---|---|
| | $V_M$ | $V_M$ |
| 74HC245 | $0.5V_{CC}$ | $0.5V_{CC}$ |
| 74HCT245 | 1.3 V | 1.3 V |




Test data is given in Table 9.

Definitions test circuit:

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

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

$R_L$ = Load resistance.

S1 = Test selection switch.

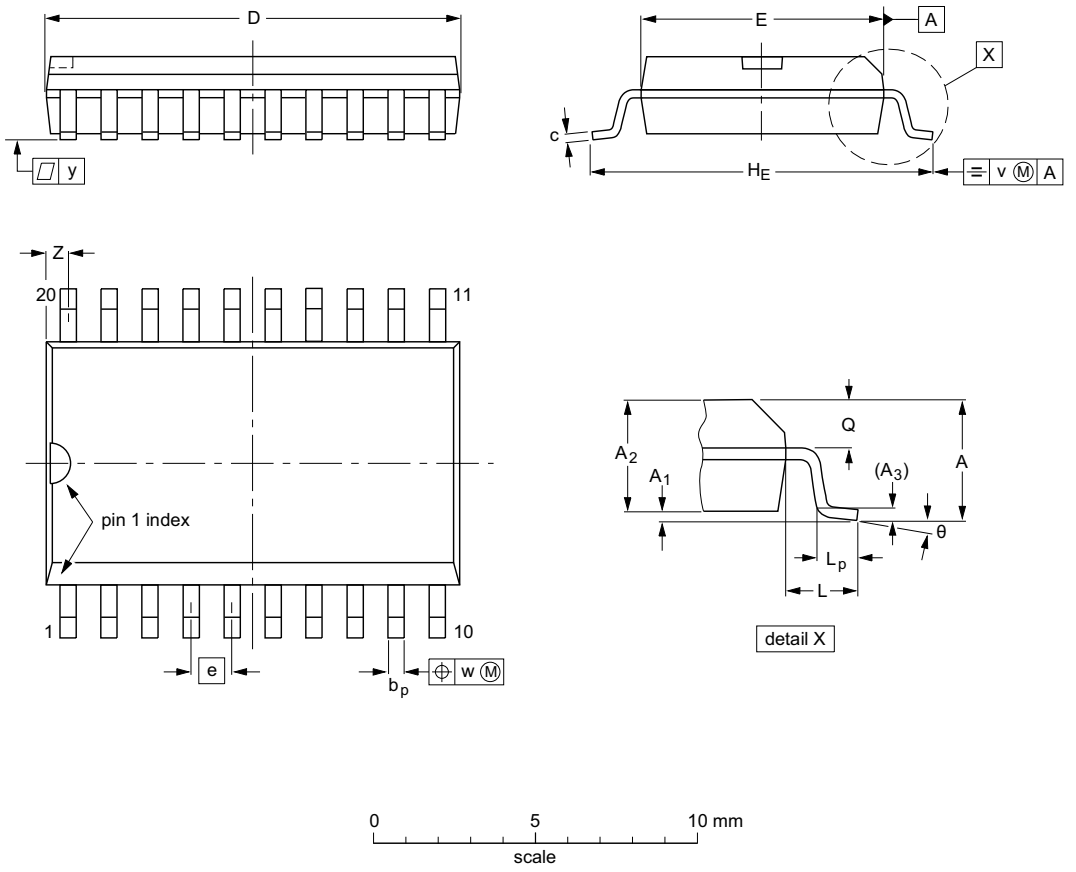
**Fig 7. Test circuit for measuring switching times**

**Table 9. Test data**

| Type | Input | | Load | | S1 position | | |
|---|---|---|---|---|---|---|---|
| | $V_I$ | $t_r$, $t_f$ | $C_L$ | $R_L$ | $t_{PHL}$, $t_{PLH}$ | $t_{PZH}$, $t_{PHZ}$ | $t_{PZL}$, $t_{PLZ}$ |
| 74HC245 | $V_{CC}$ | 6 ns | 15 pF, 50 pF | 1 kΩ | open | GND | $V_{CC}$ |
| 74HCT245 | 3 V | 6 ns | 15 pF, 50 pF | 1 kΩ | open | GND | $V_{CC}$ |

## 12. Package outline

**SO20: plastic small outline package; 20 leads; body width 7.5 mm** **SOT163-1**




**DIMENSIONS (inch dimensions are derived from the original mm dimensions)**

| UNIT | A max. | $A_1$ | $A_2$ | $A_3$ | $b_p$ | c | D (1) | E (1) | e | $H_E$ | L | $L_p$ | Q | v | w | y | Z (1) | θ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | 2.65 | 0.3<br>0.1 | 2.45<br>2.25 | 0.25 | 0.49<br>0.36 | 0.32<br>0.23 | 13.0<br>12.6 | 7.6<br>7.4 | 1.27 | 10.65<br>10.00 | 1.4 | 1.1<br>0.4 | 1.1<br>1.0 | 0.25 | 0.25 | 0.1 | 0.9<br>0.4 | 8°<br>0° |
| inches | 0.1 | 0.012<br>0.004 | 0.096<br>0.089 | 0.01 | 0.019<br>0.014 | 0.013<br>0.009 | 0.51<br>0.49 | 0.30<br>0.29 | 0.05 | 0.419<br>0.394 | 0.055 | 0.043<br>0.016 | 0.043<br>0.039 | 0.01 | 0.01 | 0.004 | 0.035<br>0.016 | |

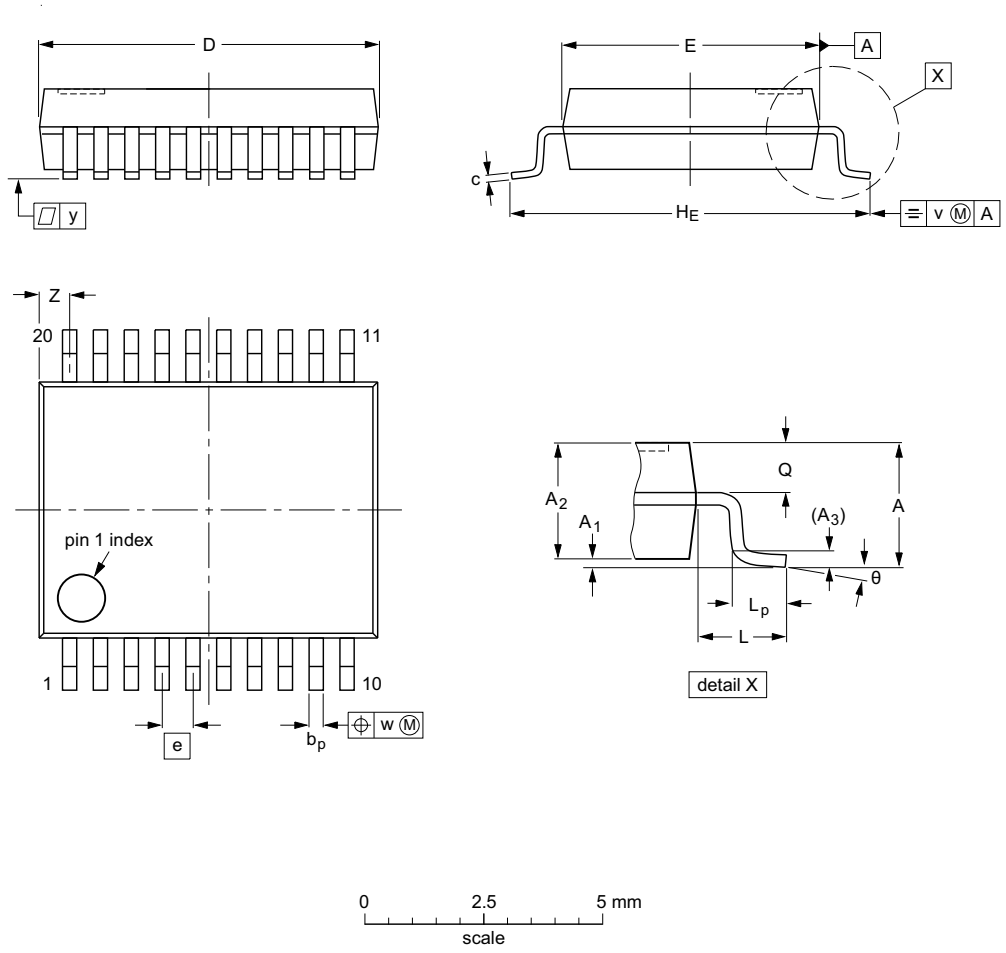
**Note**

1. Plastic or metal protrusions of 0.15 mm (0.006 inch) maximum per side are not included.

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | JEITA | | | |
| SOT163-1 | 075E04 | MS-013 | | | | ~~99-12-27~~<br>03-02-19 |

**Fig 8. Package outline SOT163-1 (SO20)**

**SSOP20: plastic shrink small outline package; 20 leads; body width 5.3 mm** **SOT339-1**




**DIMENSIONS (mm are the original dimensions)**

| UNIT | A max. | $A_1$ | $A_2$ | $A_3$ | $b_p$ | c | $D^{(1)}$ | $E^{(1)}$ | e | $H_E$ | L | $L_p$ | Q | v | w | y | $Z^{(1)}$ | θ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | 2 | 0.21<br>0.05 | 1.80<br>1.65 | 0.25 | 0.38<br>0.25 | 0.20<br>0.09 | 7.4<br>7.0 | 5.4<br>5.2 | 0.65 | 7.9<br>7.6 | 1.25 | 1.03<br>0.63 | 0.9<br>0.7 | 0.2 | 0.13 | 0.1 | 0.9<br>0.5 | $8^o$<br>$0^o$ |

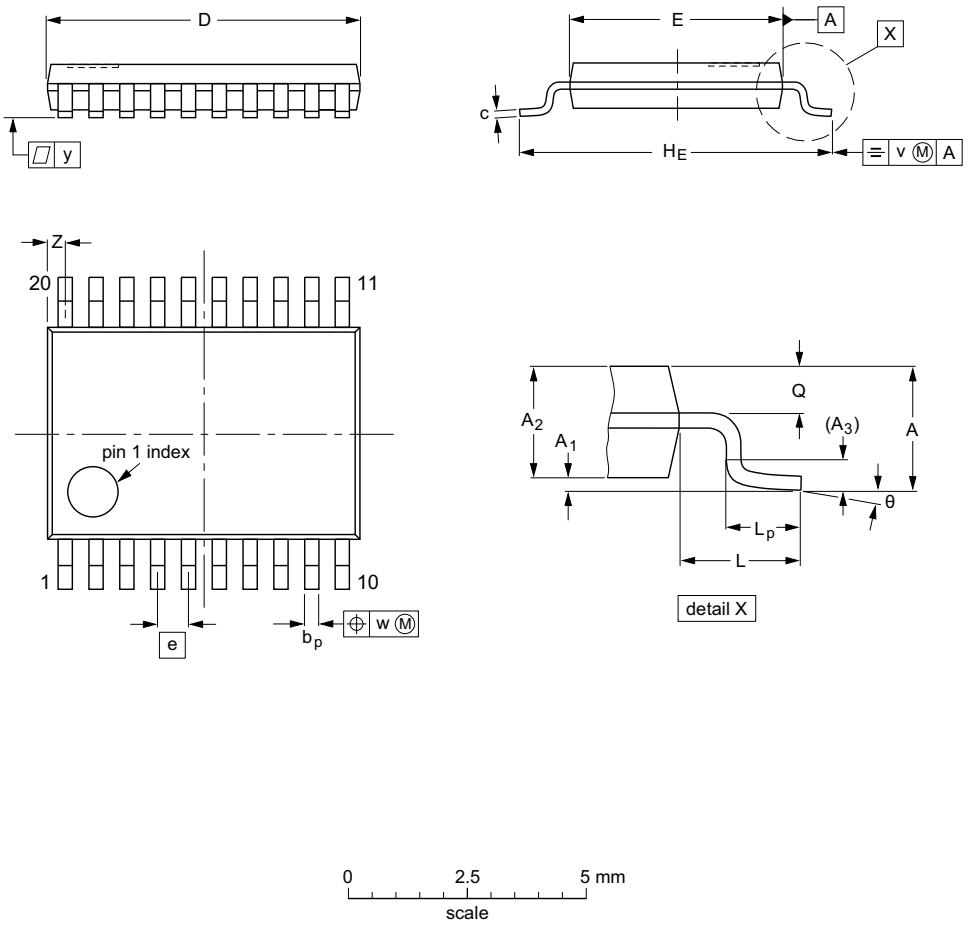
**Note**

1. Plastic or metal protrusions of 0.2 mm maximum per side are not included.

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | JEITA | | | |
| SOT339-1 | | MO-150 | | | | ~~99-12-27~~<br>03-02-19 |

**Fig 9. Package outline SOT339-1 (SSOP20)**

**TSSOP20: plastic thin shrink small outline package; 20 leads; body width 4.4 mm** **SOT360-1**




**DIMENSIONS (mm are the original dimensions)**

| UNIT | A max. | $A_1$ | $A_2$ | $A_3$ | $b_p$ | c | D (1) | E (2) | e | $H_E$ | L | $L_p$ | Q | v | w | y | Z (1) | θ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | 1.1 | 0.15<br>0.05 | 0.95<br>0.80 | 0.25 | 0.30<br>0.19 | 0.2<br>0.1 | 6.6<br>6.4 | 4.5<br>4.3 | 0.65 | 6.6<br>6.2 | 1 | 0.75<br>0.50 | 0.4<br>0.3 | 0.2 | 0.13 | 0.1 | 0.5<br>0.2 | 8°<br>0° |

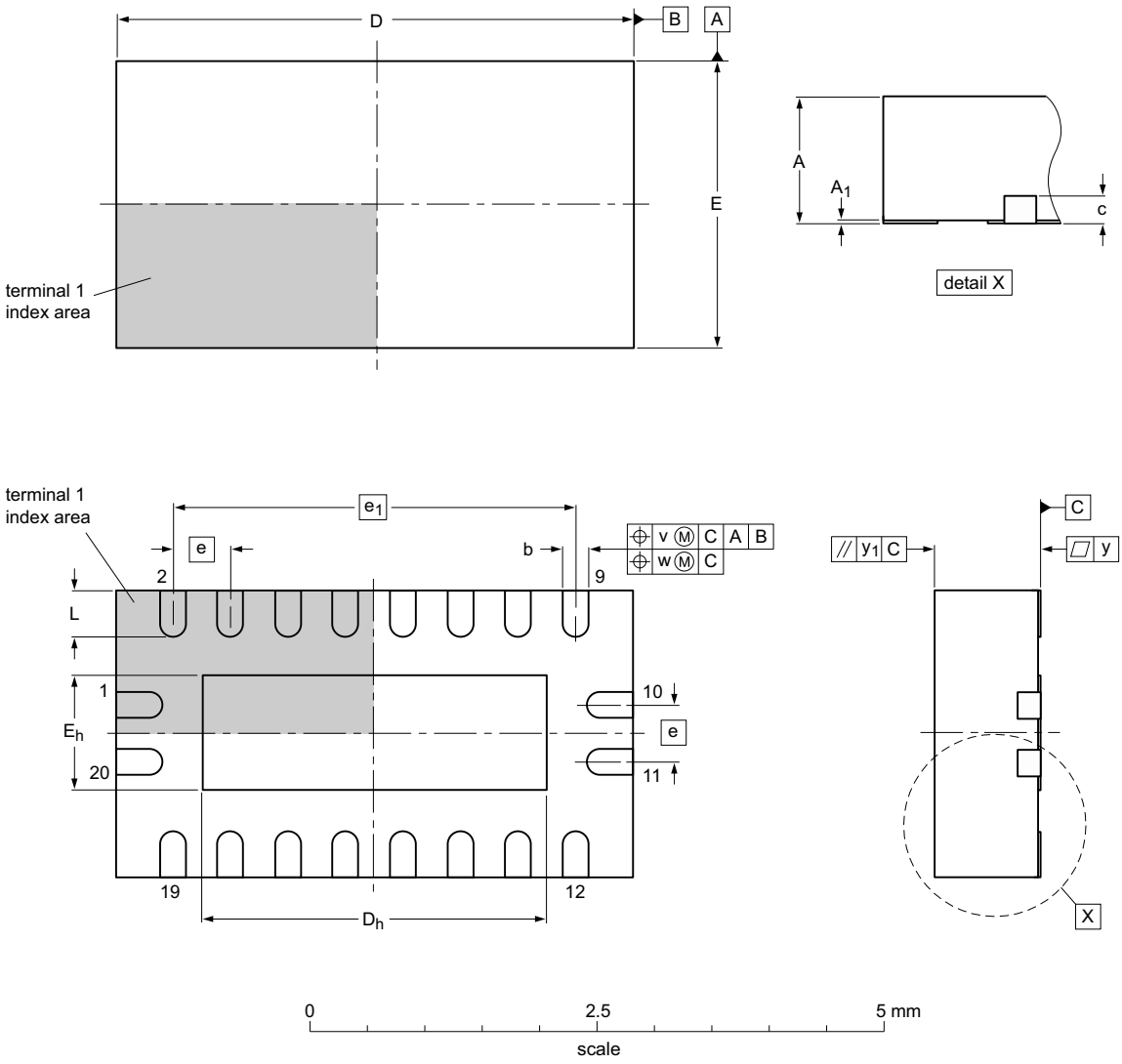
**Notes**

1. Plastic or metal protrusions of 0.15 mm maximum per side are not included.
2. Plastic interlead protrusions of 0.25 mm maximum per side are not included.

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | JEITA | | | |
| SOT360-1 | | MO-153 | | | | ~~99-12-27~~<br>03-02-19 |

**Fig 10. Package outline SOT360-1 (TSSOP20)**

**DHVQFN20: plastic dual in-line compatible thermal enhanced very thin quad flat package; no leads; 20 terminals; body 2.5 x 4.5 x 0.85 mm** **SOT764-1**




Dimensions (mm are the original dimensions)

| Unit | | $A^{(1)}$ | $A_1$ | b | c | $D^{(1)}$ | $D_h$ | $E^{(1)}$ | $E_h$ | e | $e_1$ | L | v | w | y | $y_1$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | max | 1.00 | 0.05 | 0.30 | | 4.6 | 3.15 | 2.6 | 1.15 | | | 0.5 | | | | |
| mm | nom | 0.90 | 0.02 | 0.25 | 0.2 | 4.5 | 3.00 | 2.5 | 1.00 | 0.5 | 3.5 | 0.4 | 0.1 | 0.05 | 0.05 | 0.1 |
| | min | 0.80 | 0.00 | 0.18 | | 4.4 | 2.85 | 2.4 | 0.85 | | | 0.3 | | | | |

Note

1. Plastic or metal protrusions of 0.075 mm maximum per side are not included.

*sot764-1_po*

| Outline version | References | | | | European projection | Issue date |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | JEITA | | | |
| SOT764-1 | - - - | MO-241 | - - - | | | ~~03-01-27~~ 14-12-12 |

**Fig 11. Package outline SOT764-1 (DHVQFN20)**

## 13. Abbreviations

**Table 10. Abbreviations**

| Acronym | Description |
|---|---|
| CMOS | Complementary Metal Oxide Semiconductor |
| DUT | Device Under Test |
| ESD | ElectroStatic Discharge |
| HBM | Human Body Model |
| MM | Machine Model |
| TTL | Transistor-Transistor Logic |

## 14. Revision history

**Table 11. Revision history**

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|---|---|---|---|---|
| 74HC_HCT245 v.4 | 20160226 | Product data sheet | - | 74HC_HCT245 v.3 |
| Modifications: | • Type numbers 74HC245N and 74HCT245N (SOT146-1) removed. | | | |
| 74HC_HCT245 v.3 | 20050131 | Product data sheet | - | 74HC_HCT245_CNV v.2 |
| Modifications: | • The format of this data sheet is redesigned to comply with the new presentation and information standard of Philips Semiconductors<br>• Section 3 “Ordering information”, Section 5 “Pinning information” and Section 12 “Package outline” are modified to include the DHVQFN20 package. | | | |
| 74HC_HCT245_CNV v.2 | 19930930 | Product specification | - | - |

# 15. Legal information

## 15.1 Data sheet status

| Document status[1][2] | Product status[3] | Definition |
|---|---|---|
| Objective [short] data sheet | Development | This document contains data from the objective specification for product development. |
| Preliminary [short] data sheet | Qualification | This document contains data from the preliminary specification. |
| Product [short] data sheet | Production | This document contains the product specification. |

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

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

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

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## 17. Contents





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**Document identifier: 74HC_HCT245**