



**THE DATASHEET OF  
BC817K-25HVL**





# BC817K series

45 V, 500 mA NPN general-purpose transistors

Rev. 2 — 6 March 2018

Product data sheet

## 1 Product profile

### 1.1 General description

NPN general-purpose transistors in a small SOT23 (TO-236AB) Surface-Mounted Device (SMD) plastic package.

Table 1. Product overview

| Type number | Package  |          | PNP complement |
|-------------|----------|----------|----------------|
|             | Nexperia | JEDEC    |                |
| BC817K-16   | SOT23    | TO-236AB | BC807K-16      |
| BC817K-25   |          |          | BC807K-25      |
| BC817K-40   |          |          | BC807K-40      |

### 1.2 Features and benefits

- Three current gain selections
- High power dissipation capability
- AEC-Q101 qualified

### 1.3 Applications

- General-purpose switching and amplification

## 1.4 Quick reference data

**Table 2. Quick reference data**

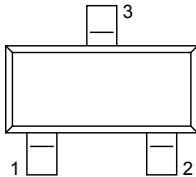
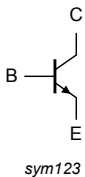
$T_{amb} = 25\text{ °C}$  unless otherwise specified.

| Symbol    | Parameter                 | Conditions                                    | Min | Typ | Max | Unit |   |
|-----------|---------------------------|---|-----|-----|-----|------|---|
| $V_{CEO}$ | collector-emitter voltage | open base                                     | -   | -   | 45  | V    |   |
| $I_C$     | collector current         |   | -   | -   | 500 | mA   |   |
| $I_{CM}$  | peak collector current    | single pulse; $t_p \leq 1\text{ ms}$          | -   | -   | 1   | A    |   |
| $h_{FE}$  | DC current gain           | $V_{CE} = 1\text{ V}$ ; $I_C = 100\text{ mA}$ |     |     |     |      |   |
|           | BC817K-16                 |   | [1] | 100 | -   | 250  | - |
|           | BC817K-25                 |   | [1] | 160 | -   | 400  | - |
|           | BC817K-40                 |   | [1] | 250 | -   | 600  | - |

[1] pulsed;  $t_p \leq 300\text{ }\mu\text{s}$ ;  $\delta \leq 0.02$

## 2 Pinning information

**Table 3. Pinning**

| Pin | Symbol | Description | Simplified outline   | Graphic symbol  |
|-----|--------|-------------|--|---|
| 1   | B      | base        |  | <br>sym123 |
| 2   | E      | emitter     |  |   |
| 3   | C      | collector   |  |   |

## 3 Ordering information

**Table 4. Ordering information**

| Type number | Package  |  | Version |
|-------------|----------|--|---------|
|             | Name     | Description                              |         |
| BC817K-16   | TO-236AB | Plastic surface-mounted package; 3 leads | SOT23   |
| BC817K-25   |          |  |         |
| BC817K-40   |          |  |         |

## 4 Marking

Table 5. Marking

| Type number | Marking code |
|-------------|--------------|
| BC817K-16   | [1] HD%      |
| BC817K-25   | [1] HE%      |
| BC817K-40   | [1] HF%      |

[1] % = placeholder for manufacturing site code

## 5 Limiting values

Table 6. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

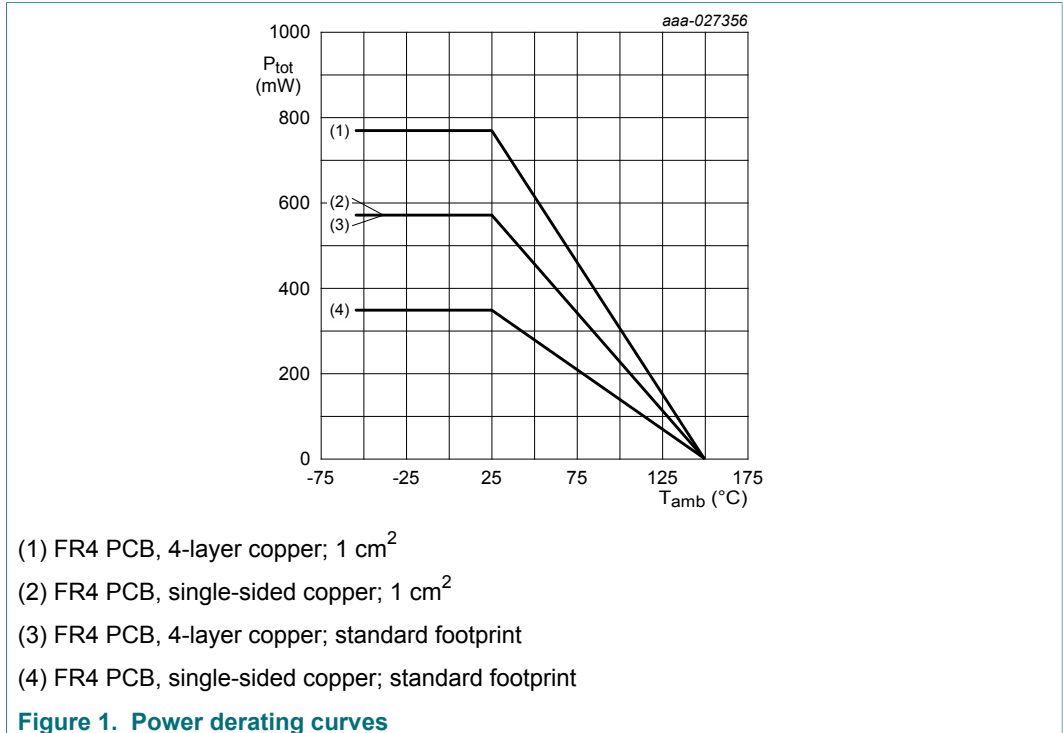
| Symbol    | Parameter                 | Conditions                    | Min | Max | Unit |
|-----------|---------------------------|-------------------------------|-----|-----|------|
| $V_{CBO}$ | collector-base voltage    | open emitter                  | -   | 50  | V    |
| $V_{CEO}$ | collector-emitter voltage | open base                     | -   | 45  | V    |
| $V_{EBO}$ | emitter-base voltage      | open collector                | -   | 5   | V    |
| $I_C$     | collector current         |                               | -   | 500 | mA   |
| $I_{CM}$  | peak collector current    | single pulse; $t_p \leq 1$ ms | -   | 1   | A    |
| $I_{BM}$  | peak base current         | single pulse; $t_p \leq 1$ ms | -   | 200 | mA   |
| $P_{tot}$ | total power dissipation   | $T_{amb} \leq 25$ °C [1]      | -   | 350 | mW   |
|           |                           | [2]                           | -   | 575 | mW   |
|           |                           | [3]                           | -   | 575 | mW   |
|           |                           | [4]                           | -   | 775 | mW   |
| $T_j$     | junction temperature      |                               | -   | 150 | °C   |
| $T_{amb}$ | ambient temperature       |                               | -55 | 150 | °C   |
| $T_{stg}$ | storage temperature       |                               | -65 | 150 | °C   |

[1] Device mounted on an FR4 Printed-Circuit-Board (PCB); single-sided copper; tin-plated and standard footprint.

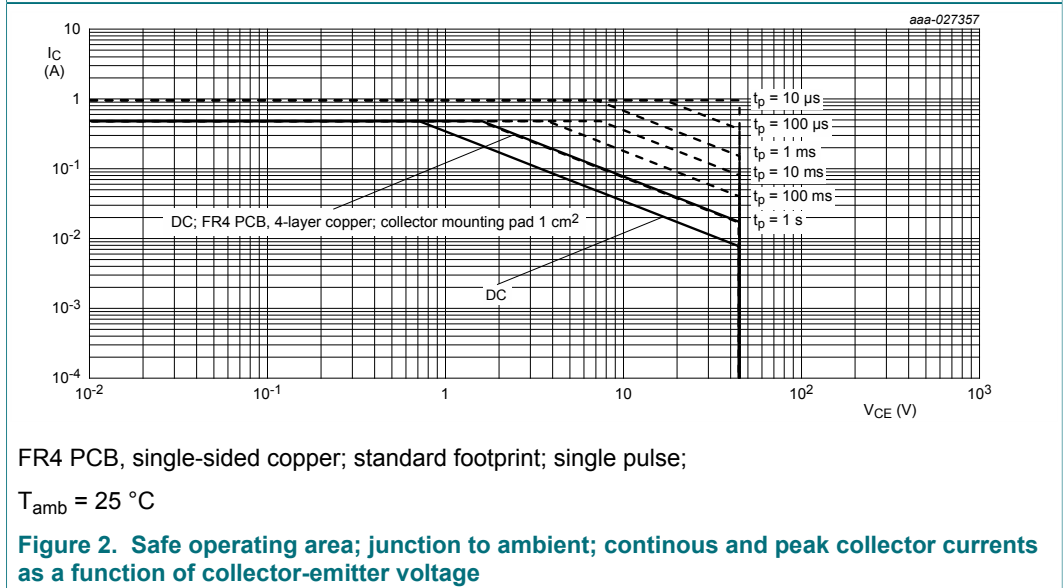
[2] Device mounted on an FR4 Printed-Circuit-Board (PCB); single-sided copper; tin-plated; mounting pad for collector 1 cm<sup>2</sup>.

[3] Device mounted on an FR4 Printed-Circuit-Board (PCB); 4-layer copper; tin-plated and standard footprint.

[4] Device mounted on an FR4 Printed-Circuit-Board (PCB); 4-layer copper; tin-plated; mounting pad for collector 1 cm<sup>2</sup>.



- (1) FR4 PCB, 4-layer copper; 1 cm<sup>2</sup>
- (2) FR4 PCB, single-sided copper; 1 cm<sup>2</sup>
- (3) FR4 PCB, 4-layer copper; standard footprint
- (4) FR4 PCB, single-sided copper; standard footprint



FR4 PCB, single-sided copper; standard footprint; single pulse;

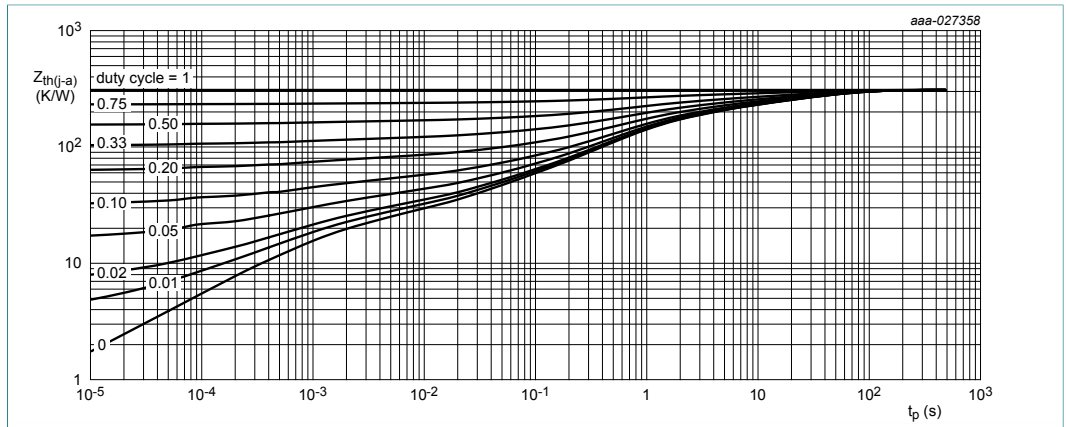
T<sub>amb</sub> = 25 °C

## 6 Thermal characteristics

Table 7. Thermal characteristics

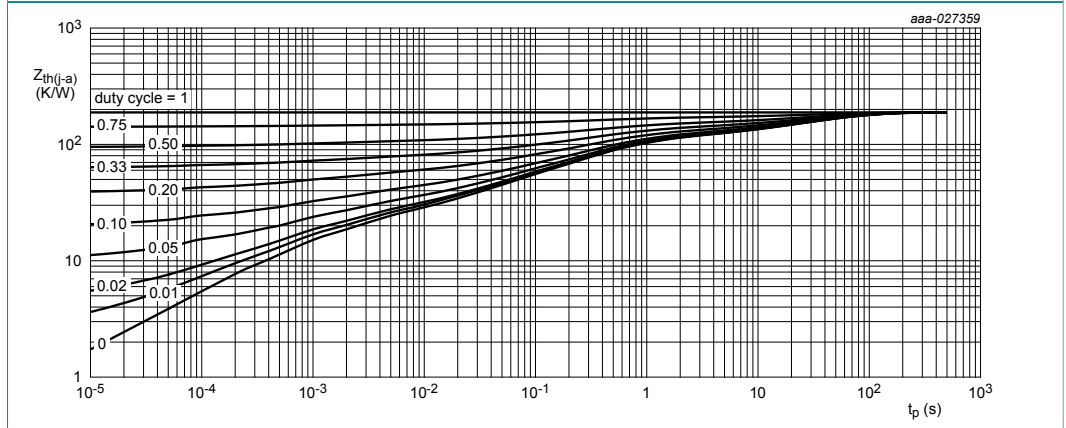
| Symbol         | Parameter  | Conditions  |     | Min | Typ | Max | Unit |
|----------------|--|-------------|-----|-----|-----|-----|------|
| $R_{th(j-a)}$  | thermal resistance from junction to ambient      | in free air | [1] | -   | -   | 358 | K/W  |
|                |  |             | [2] | -   | -   | 218 | K/W  |
|                |  |             | [3] | -   | -   | 218 | K/W  |
|                |  |             | [4] | -   | -   | 162 | K/W  |
| $R_{th(j-sp)}$ | thermal resistance from junction to solder point |             |     | -   | -   | 60  | K/W  |

- [1] Device mounted on an FR4 PCB; single-sided copper; tin-plated and standard footprint.
- [2] Device mounted on an FR4 PCB; single-sided copper; tin-plated; mounting pad for collector 1 cm<sup>2</sup>.
- [3] Device mounted on an FR4 PCB; 4-layer copper; tin-plated and standard footprint.
- [4] Device mounted on an FR4 PCB; 4-layer copper; tin-plated; mounting pad for collector 1 cm<sup>2</sup>.



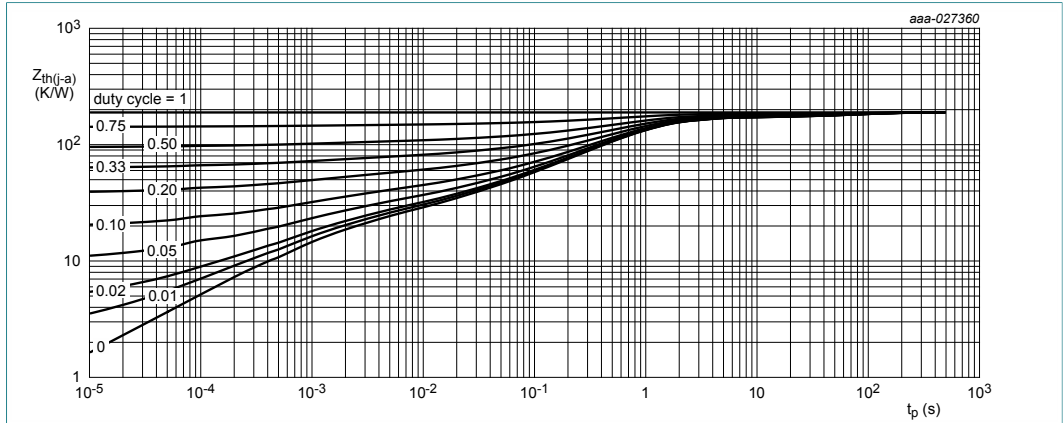
FR4 PCB; single-sided copper; tin-plated and standard footprint

Figure 3. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values



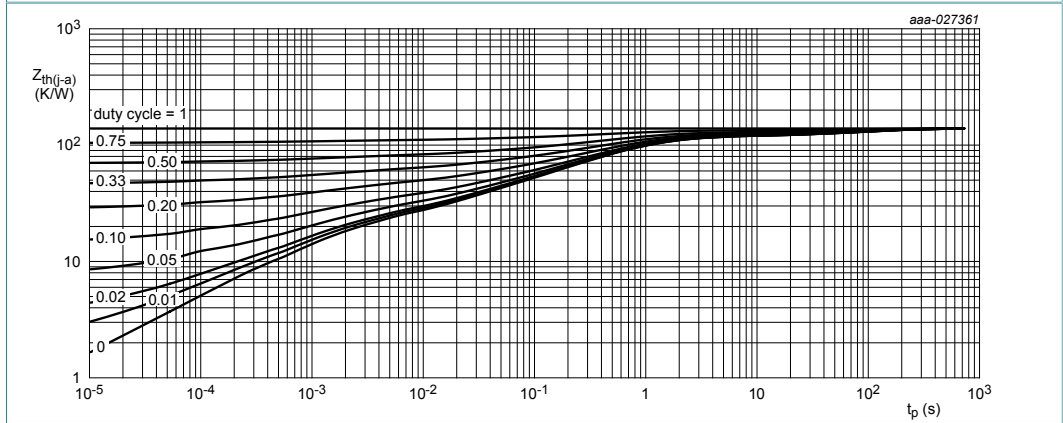
FR4 PCB; single-sided copper; tin-plated; mounting pad for collector 1 cm<sup>2</sup>

Figure 4. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values



FR4 PCB; 4-layer copper; tin plated and standard footprint

**Figure 5. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values**



FR4 PCB; 4-layer copper; tin plated; mounting pad for collector  $1 \text{ cm}^2$

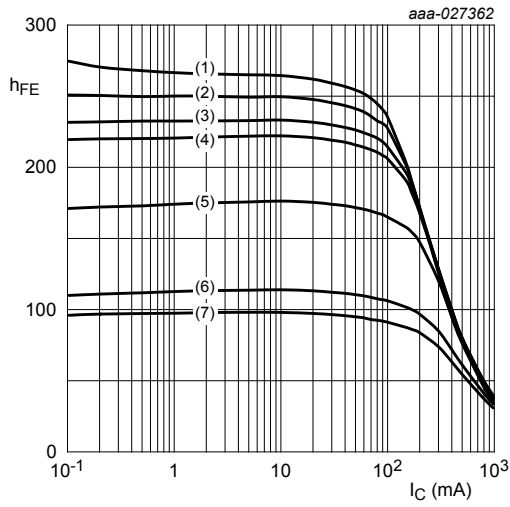
**Figure 6. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values**

## 7 Characteristics

**Table 8. Characteristics**
 $T_{amb} = 25\text{ °C}$  unless otherwise specified.

| Symbol        | Parameter                            | Conditions   | Min | Typ | Max | Unit          |  |
|---------------|--------------------------------------|--|-----|-----|-----|---------------|--|
| $V_{(BR)CBO}$ | collector-base breakdown voltage     | $I_C = 100\ \mu\text{A}; I_E = 0\ \text{A}$                          | 50  | -   | -   | V             |  |
| $V_{(BR)CEO}$ | collector-emitter breakdown voltage  | $I_C = 10\ \text{mA}; I_B = 0\ \text{A}$                             | 45  | -   | -   | V             |  |
| $V_{(BR)EBO}$ | emitter-base breakdown voltage       | $I_E = 100\ \mu\text{A}; I_C = 0\ \text{A}$                          | 5   | -   | -   | V             |  |
| $I_{CBO}$     | collector-base cut-off current       | $V_{CB} = 25\ \text{V}; I_E = 0\ \text{A}$                           | -   | -   | 100 | nA            |  |
|               |                                      | $V_{CB} = 25\ \text{V}; I_E = 0\ \text{A}; T_j = 150\ \text{°C}$     | -   | -   | 5   | $\mu\text{A}$ |  |
| $I_{EBO}$     | emitter-base cut-off current         | $V_{EB} = 5\ \text{V}; I_C = 0\ \text{A}$                            | -   | -   | 100 | nA            |  |
| $h_{FE}$      | DC current gain                      |  |     |     |     |               |  |
|               | BC817K-16                            | $V_{CE} = 1\ \text{V}; I_C = 100\ \text{mA}$                         | [1] | 100 | -   | 250           |  |
|               | BC817K-25                            | $V_{CE} = 1\ \text{V}; I_C = 100\ \text{mA}$                         | [1] | 160 | -   | 400           |  |
|               | BC817K-40                            | $V_{CE} = 1\ \text{V}; I_C = 100\ \text{mA}$                         | [1] | 250 | -   | 600           |  |
|               | BC817K-16, -25, -40                  | $V_{CE} = 1\ \text{V}; I_C = 500\ \text{mA}$                         | [1] | 40  | -   | -             |  |
| $V_{CEsat}$   | collector-emitter saturation voltage | $I_C = 500\ \text{mA}; I_B = 50\ \text{mA}$                          | [1] | -   | -   | 700 mV        |  |
| $V_{BEsat}$   | base-emitter saturation voltage      | $I_C = 500\ \text{mA}; I_B = 50\ \text{mA}$                          | [1] | -   | -   | 1.2 V         |  |
| $V_{BE}$      | base-emitter voltage                 | $V_{CE} = 1\ \text{V}; I_C = 500\ \text{mA}$                         | [1] | -   | -   | 1.2 V         |  |
| $f_T$         | transition frequency                 | $V_{CE} = 5\ \text{V}; I_C = 10\ \text{mA}; f = 100\ \text{MHz}$     | 100 | -   | -   | MHz           |  |
| $C_c$         | collector capacitance                | $V_{CB} = 10\ \text{V}; I_E = i_e = 0\ \text{A}; f = 1\ \text{MHz}$  | -   | 3   | -   | pF            |  |
| $C_e$         | emitter capacitance                  | $V_{EB} = 0.5\ \text{V}; I_C = i_c = 0\ \text{A}; f = 1\ \text{MHz}$ |     |     |     |               |  |
|               | BC817K-16                            |  | -   | 44  | -   | pF            |  |
|               | BC817K-25                            |  | -   | 39  | -   | pF            |  |
|               | BC817K-40                            |  | -   | 39  | -   | pF            |  |

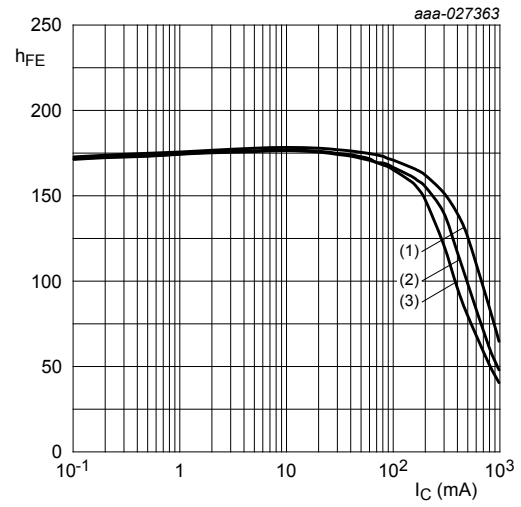
 [1] pulsed;  $t_p \leq 300\ \mu\text{s}$ ;  $\delta \leq 0.02$



$V_{CE} = 1 \text{ V}$

- (1)  $T_{amb} = 150 \text{ }^\circ\text{C}$
- (2)  $T_{amb} = 125 \text{ }^\circ\text{C}$
- (3)  $T_{amb} = 100 \text{ }^\circ\text{C}$
- (4)  $T_{amb} = 85 \text{ }^\circ\text{C}$
- (5)  $T_{amb} = 25 \text{ }^\circ\text{C}$
- (6)  $T_{amb} = -40 \text{ }^\circ\text{C}$
- (7)  $T_{amb} = -55 \text{ }^\circ\text{C}$

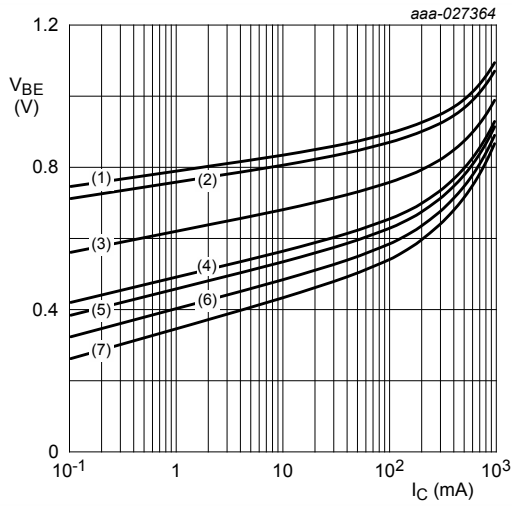
Figure 7. BC817K-16: DC current gain as a function of collector current; typical values



$T_{amb} = 25 \text{ }^\circ\text{C}$

- (1)  $V_{CE} = 5 \text{ V}$
- (2)  $V_{CE} = 2 \text{ V}$
- (3)  $V_{CE} = 1 \text{ V}$

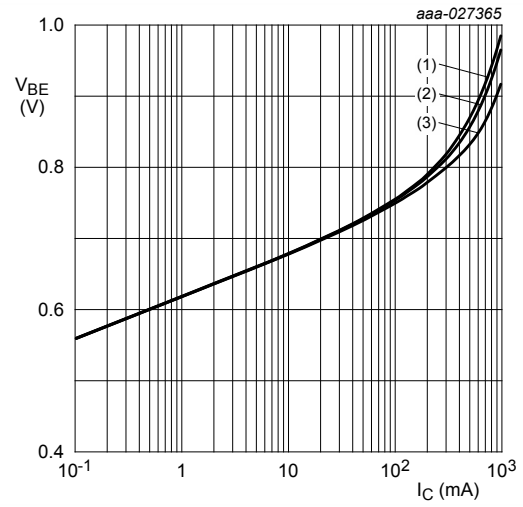
Figure 8. BC817K-16: DC current gain as a function of collector current; typical values



$V_{CE} = 1\text{ V}$

- (1)  $T_{amb} = -55\text{ °C}$
- (2)  $T_{amb} = -40\text{ °C}$
- (3)  $T_{amb} = 25\text{ °C}$
- (4)  $T_{amb} = 85\text{ °C}$
- (5)  $T_{amb} = 100\text{ °C}$
- (6)  $T_{amb} = 125\text{ °C}$
- (7)  $T_{amb} = 150\text{ °C}$

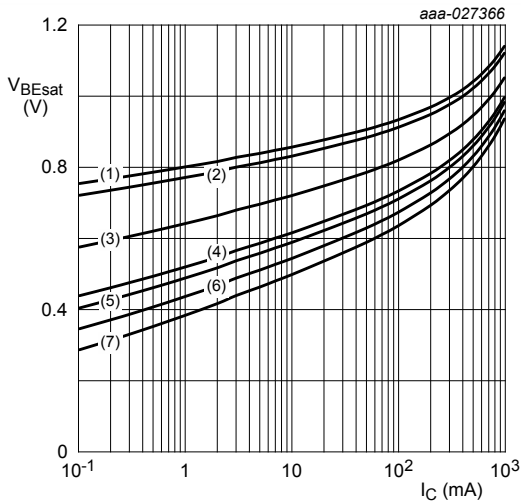
**Figure 9. BC817K-16: Base-emitter voltage as a function of collector current; typical values**



$T_{amb} = 25\text{ °C}$

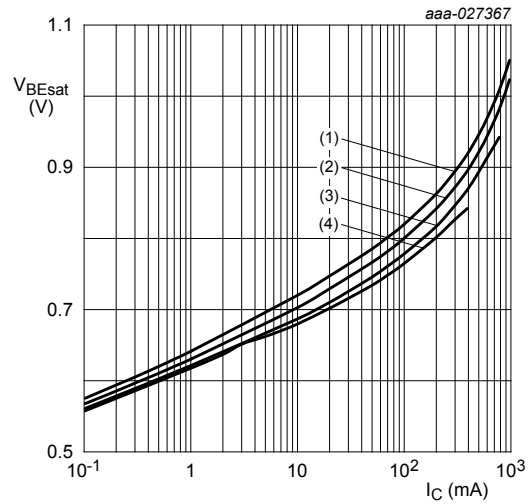
- (1)  $V_{CE} = 1\text{ V}$
- (2)  $V_{CE} = 2\text{ V}$
- (3)  $V_{CE} = 5\text{ V}$

**Figure 10. BC817K-16: Base-emitter voltage as a function of collector current; typical values**



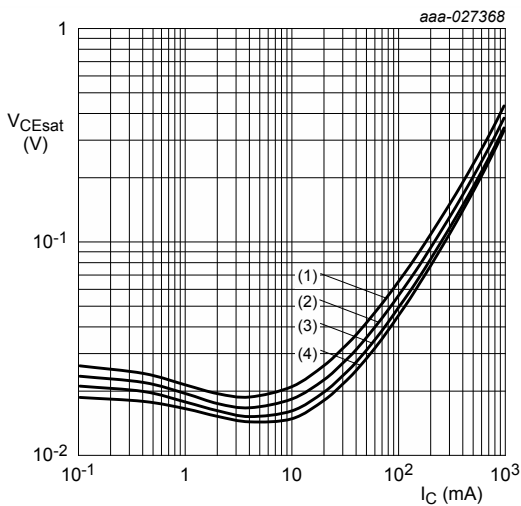
- $I_C/I_B = 10$
- (1)  $T_{amb} = -55\text{ °C}$
  - (2)  $T_{amb} = -40\text{ °C}$
  - (3)  $T_{amb} = 25\text{ °C}$
  - (4)  $T_{amb} = 85\text{ °C}$
  - (5)  $T_{amb} = 100\text{ °C}$
  - (6)  $T_{amb} = 125\text{ °C}$
  - (7)  $T_{amb} = 150\text{ °C}$

Figure 11. BC817K-16: Base-emitter saturation voltage as a function of collector current; typical values



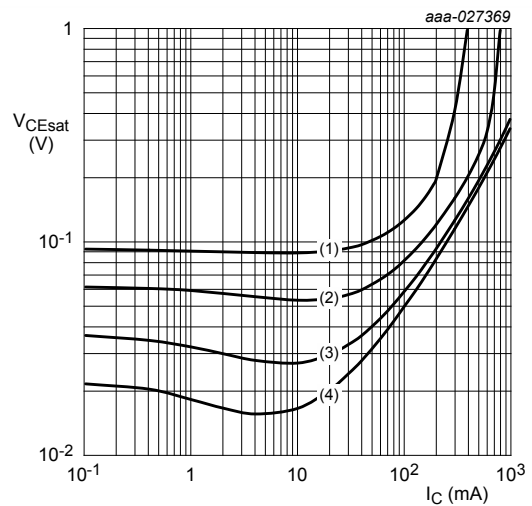
- $T_{amb} = 25\text{ °C}$
- (1)  $I_C/I_B = 10$
  - (2)  $I_C/I_B = 20$
  - (3)  $I_C/I_B = 50$
  - (4)  $I_C/I_B = 100$

Figure 12. BC817K-16: Base-emitter saturation voltage as a function of collector current; typical values



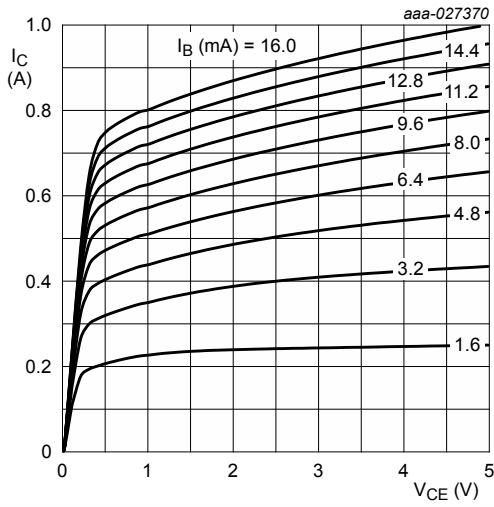
- $I_C/I_B = 10$
- (1)  $T_{amb} = 150\text{ °C}$
  - (2)  $T_{amb} = 85\text{ °C}$
  - (3)  $T_{amb} = 25\text{ °C}$
  - (4)  $T_{amb} = -40\text{ °C}$

Figure 13. BC817K-16: Collector-emitter saturation voltage as a function of collector current; typical values



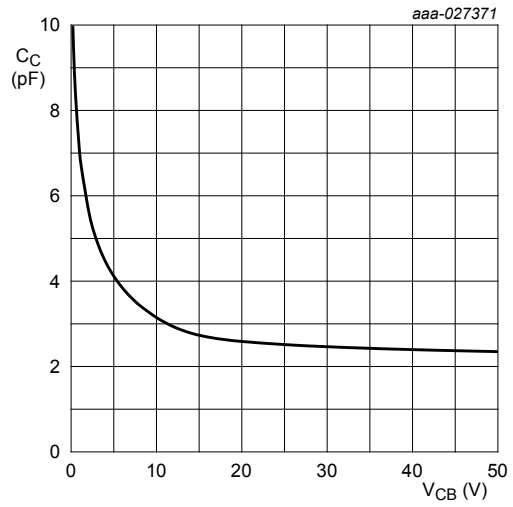
- $T_{amb} = 25\text{ °C}$
- (1)  $I_C/I_B = 100$
  - (2)  $I_C/I_B = 50$
  - (3)  $I_C/I_B = 20$
  - (4)  $I_C/I_B = 10$

Figure 14. BC817K-16: Collector-emitter saturation voltage as a function of collector current; typical values



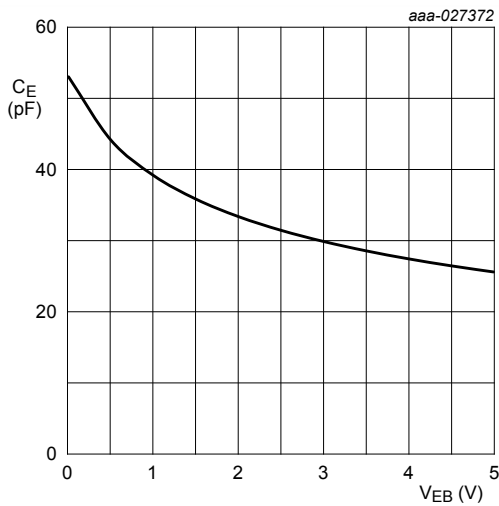
$T_{amb} = 25^\circ\text{C}$

Figure 15. BC817K-16: Collector current as a function of collector-emitter voltage; typical values



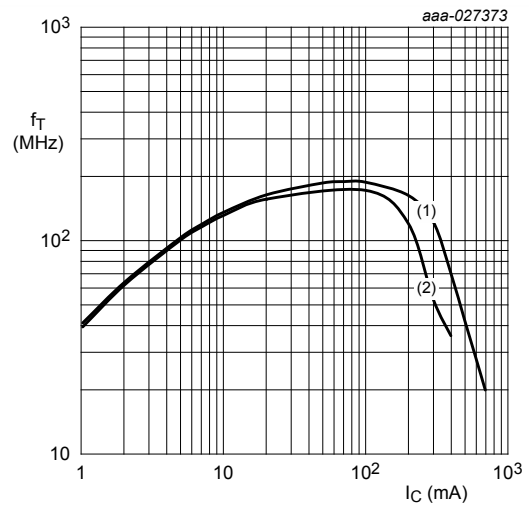
$f = 1\text{ MHz}; T_{amb} = 25^\circ\text{C}$

Figure 16. BC817K-16: Collector capacitance as a function of collector-base voltage; typical values



$f = 1\text{ MHz}; T_{amb} = 25^\circ\text{C}$

Figure 17. BC817K-16: Emitter capacitance as a function of emitter-base voltage; typical values

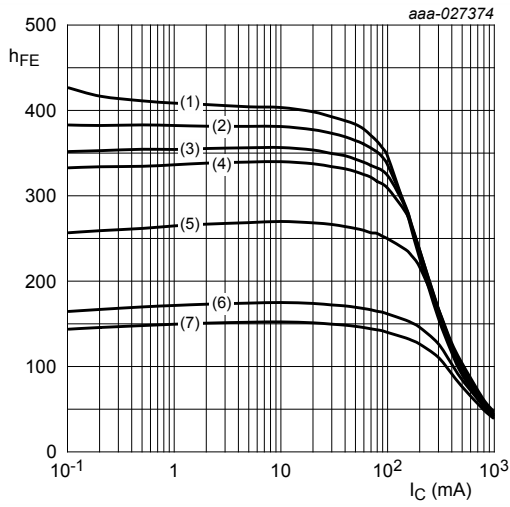


$f = 100\text{ MHz}; T_{amb} = 25^\circ\text{C}$

(1)  $V_{CE} = 5\text{ V}$

(2)  $V_{CE} = 1\text{ V}$

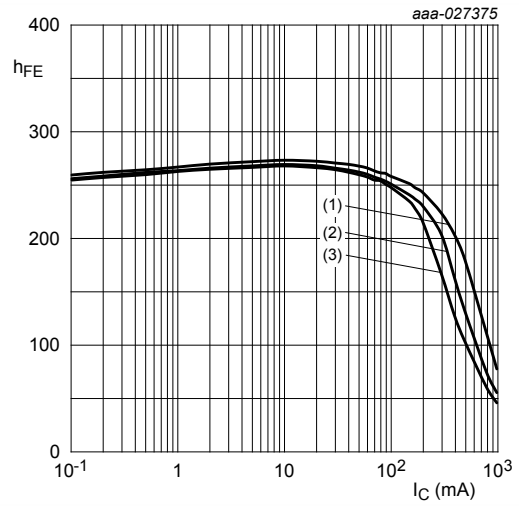
Figure 18. BC817K-16: Transition frequency as a function of collector current voltage; typical values



$V_{CE} = 1 \text{ V}$

- (1)  $T_{amb} = 150 \text{ }^\circ\text{C}$
- (2)  $T_{amb} = 125 \text{ }^\circ\text{C}$
- (3)  $T_{amb} = 100 \text{ }^\circ\text{C}$
- (4)  $T_{amb} = 85 \text{ }^\circ\text{C}$
- (5)  $T_{amb} = 25 \text{ }^\circ\text{C}$
- (6)  $T_{amb} = -40 \text{ }^\circ\text{C}$
- (7)  $T_{amb} = -55 \text{ }^\circ\text{C}$

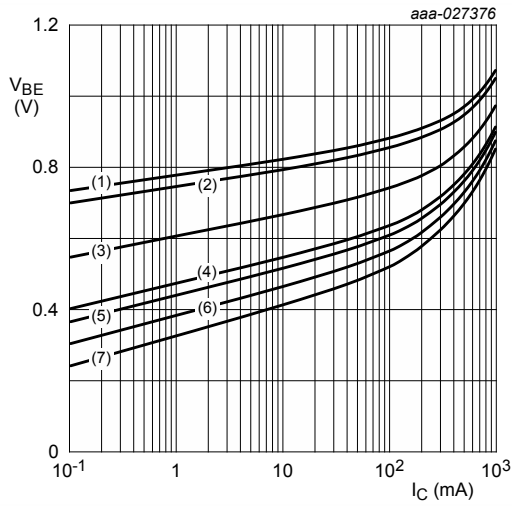
Figure 19. BC817K-25: DC current gain as a function of collector current; typical values



$T_{amb} = 25 \text{ }^\circ\text{C}$

- (1)  $V_{CE} = 5 \text{ V}$
- (2)  $V_{CE} = 2 \text{ V}$
- (3)  $V_{CE} = 1 \text{ V}$

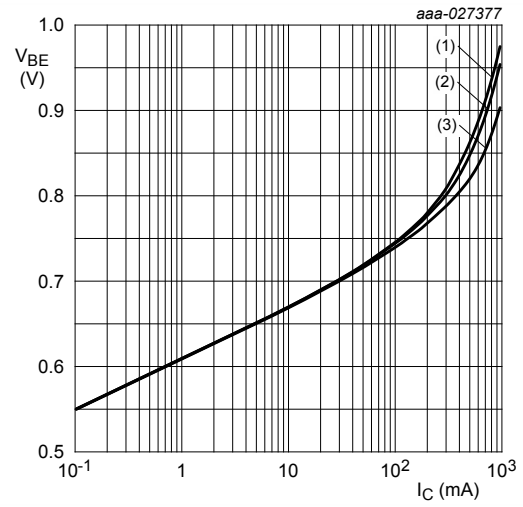
Figure 20. BC817K-25: DC current gain as a function of collector current; typical values



$V_{CE} = 1\text{ V}$

- (1)  $T_{amb} = -55\text{ }^{\circ}\text{C}$
- (2)  $T_{amb} = -40\text{ }^{\circ}\text{C}$
- (3)  $T_{amb} = 25\text{ }^{\circ}\text{C}$
- (4)  $T_{amb} = 85\text{ }^{\circ}\text{C}$
- (5)  $T_{amb} = 100\text{ }^{\circ}\text{C}$
- (6)  $T_{amb} = 125\text{ }^{\circ}\text{C}$
- (7)  $T_{amb} = 150\text{ }^{\circ}\text{C}$

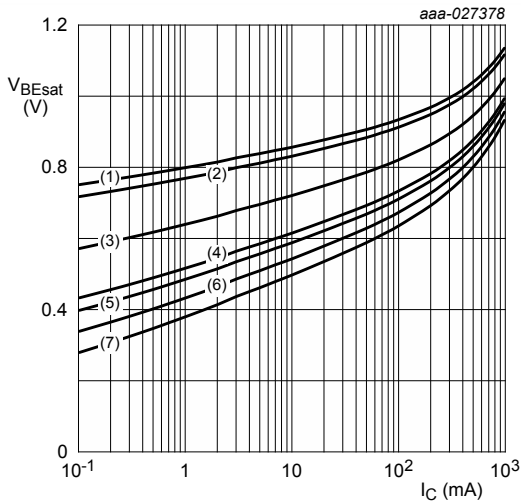
**Figure 21. BC817K-25: Base-emitter voltage as a function of collector current; typical values**



$T_{amb} = 25\text{ }^{\circ}\text{C}$

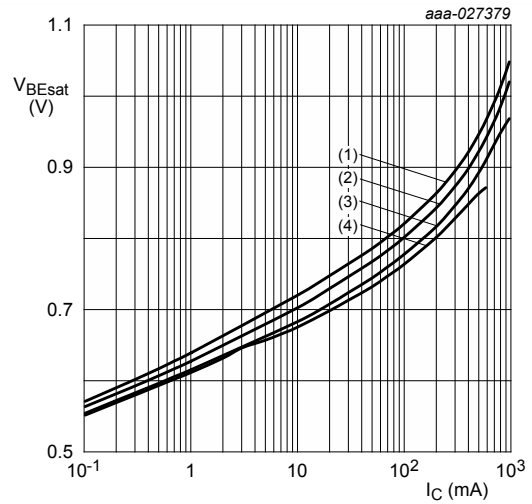
- (1)  $V_{CE} = 1\text{ V}$
- (2)  $V_{CE} = 2\text{ V}$
- (3)  $V_{CE} = 5\text{ V}$

**Figure 22. BC817K-25: Base-emitter voltage as a function of collector current; typical values**



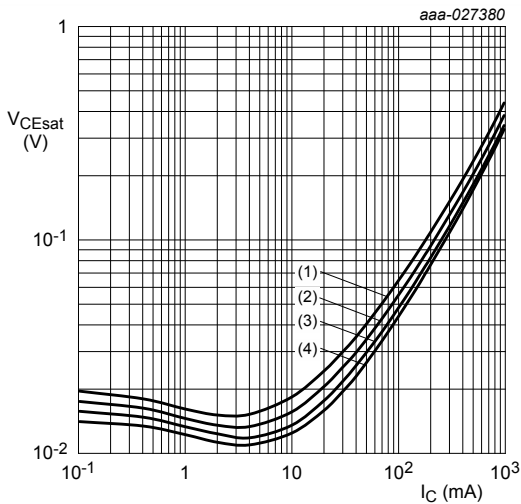
- $I_C/I_B = 10$
- (1)  $T_{amb} = -55\text{ }^\circ\text{C}$
  - (2)  $T_{amb} = -40\text{ }^\circ\text{C}$
  - (3)  $T_{amb} = 25\text{ }^\circ\text{C}$
  - (4)  $T_{amb} = 85\text{ }^\circ\text{C}$
  - (5)  $T_{amb} = 100\text{ }^\circ\text{C}$
  - (6)  $T_{amb} = 125\text{ }^\circ\text{C}$
  - (7)  $T_{amb} = 150\text{ }^\circ\text{C}$

Figure 23. BC817K-25: Base-emitter saturation voltage as a function of collector current; typical values



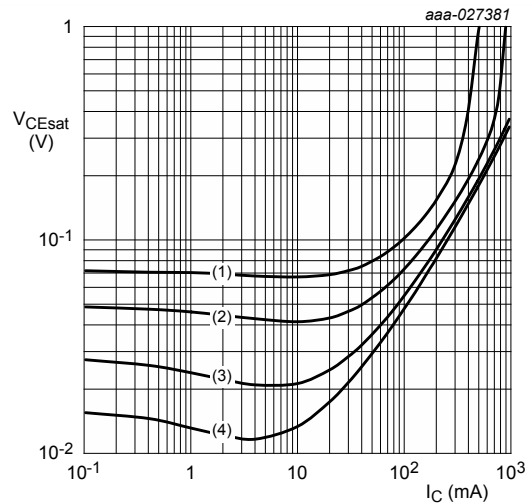
- $T_{amb} = 25\text{ }^\circ\text{C}$
- (1)  $I_C/I_B = 10$
  - (2)  $I_C/I_B = 20$
  - (3)  $I_C/I_B = 50$
  - (4)  $I_C/I_B = 100$

Figure 24. BC817K-25: Base-emitter saturation voltage as a function of collector current; typical values



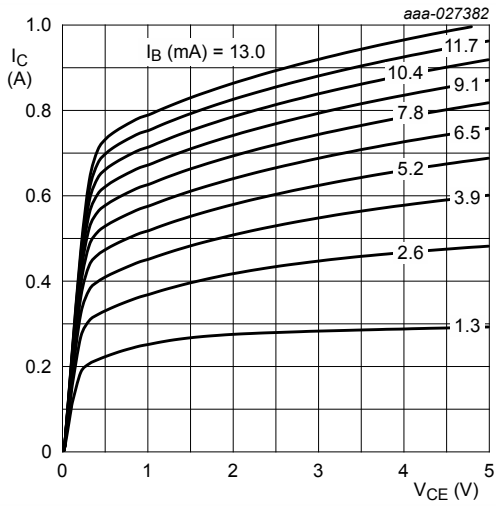
- $I_C/I_B = 10$
- (1)  $T_{amb} = 150\text{ }^\circ\text{C}$
  - (2)  $T_{amb} = 85\text{ }^\circ\text{C}$
  - (3)  $T_{amb} = 25\text{ }^\circ\text{C}$
  - (4)  $T_{amb} = -40\text{ }^\circ\text{C}$

Figure 25. BC817K-25: Collector-emitter saturation voltage as a function of collector current; typical values



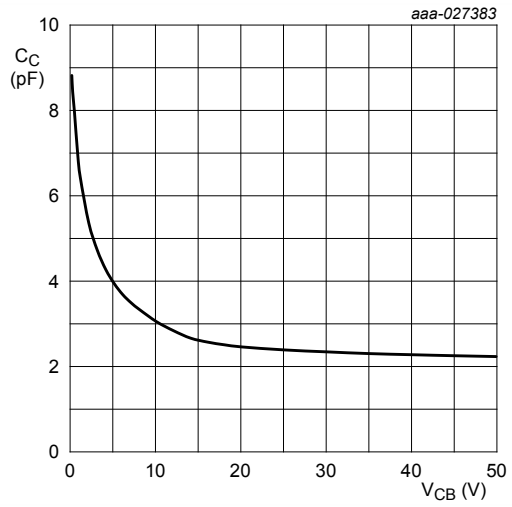
- $T_{amb} = 25\text{ }^\circ\text{C}$
- (1)  $I_C/I_B = 100$
  - (2)  $I_C/I_B = 50$
  - (3)  $I_C/I_B = 20$
  - (4)  $I_C/I_B = 10$

Figure 26. BC817K-25: Collector-emitter saturation voltage as a function of collector current; typical values



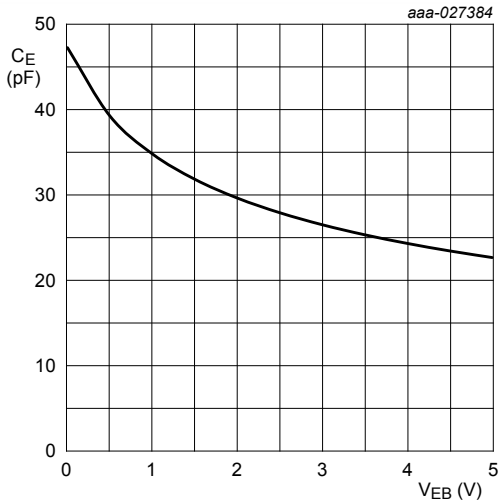
$T_{amb} = 25^\circ\text{C}$

Figure 27. BC817K-25: Collector current as a function of collector-emitter voltage; typical values



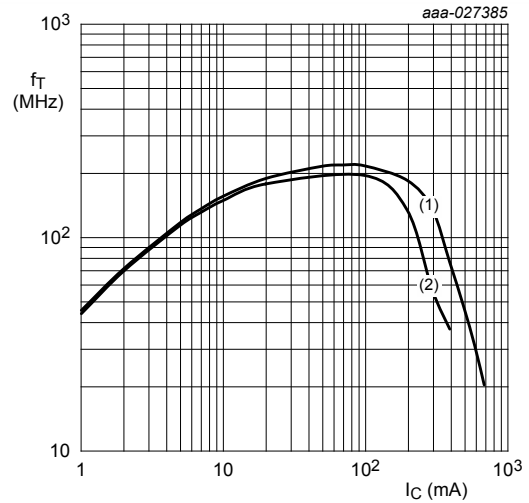
$f = 1\text{ MHz}; T_{amb} = 25^\circ\text{C}$

Figure 28. BC817K-25: Collector capacitance as a function of collector-base voltage; typical values



$f = 1\text{ MHz}; T_{amb} = 25^\circ\text{C}$

Figure 29. BC817K-25: Emitter capacitance as a function of emitter-base voltage; typical values

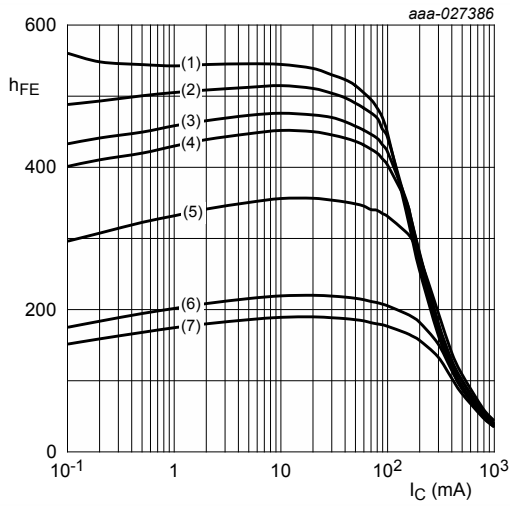


$f = 100\text{ MHz}; T_{amb} = 25^\circ\text{C}$

(1)  $V_{CE} = 5\text{ V}$

(2)  $V_{CE} = 1\text{ V}$

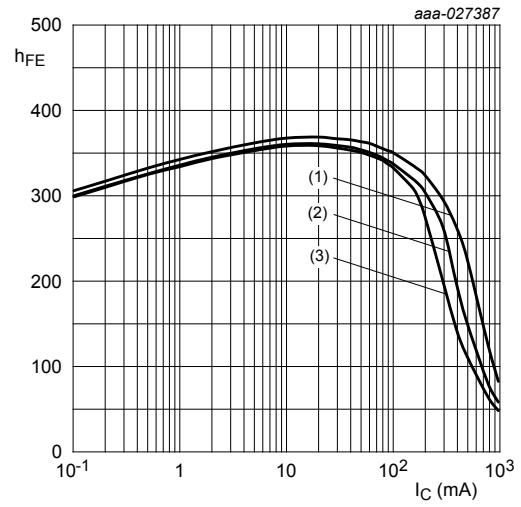
Figure 30. BC817K-25: Transition frequency as a function of collector current voltage; typical values



$V_{CE} = 1 \text{ V}$

- (1)  $T_{amb} = 150 \text{ }^\circ\text{C}$
- (2)  $T_{amb} = 125 \text{ }^\circ\text{C}$
- (3)  $T_{amb} = 100 \text{ }^\circ\text{C}$
- (4)  $T_{amb} = 85 \text{ }^\circ\text{C}$
- (5)  $T_{amb} = 25 \text{ }^\circ\text{C}$
- (6)  $T_{amb} = -40 \text{ }^\circ\text{C}$
- (7)  $T_{amb} = -55 \text{ }^\circ\text{C}$

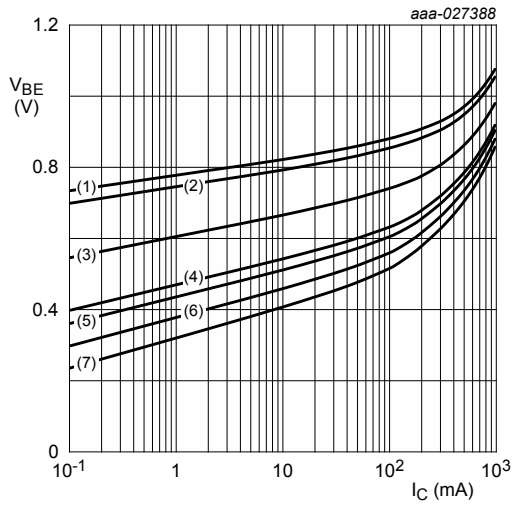
Figure 31. BC817K-40: DC current gain as a function of collector current; typical values



$T_{amb} = 25 \text{ }^\circ\text{C}$

- (1)  $V_{CE} = 5 \text{ V}$
- (2)  $V_{CE} = 2 \text{ V}$
- (3)  $V_{CE} = 1 \text{ V}$

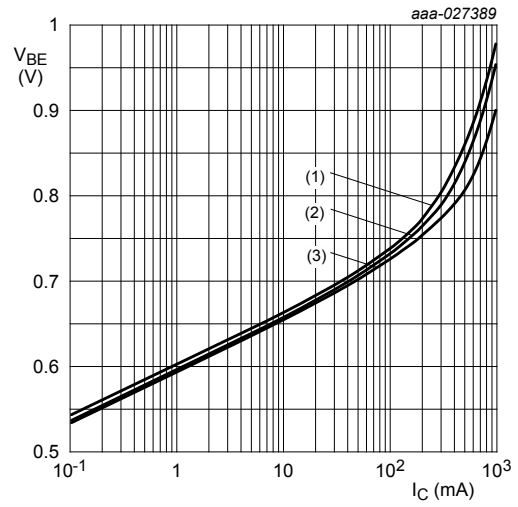
Figure 32. BC817K-40: DC current gain as a function of collector current; typical values



$V_{CE} = 1\text{ V}$

- (1)  $T_{amb} = -55\text{ °C}$
- (2)  $T_{amb} = -40\text{ °C}$
- (3)  $T_{amb} = 25\text{ °C}$
- (4)  $T_{amb} = 85\text{ °C}$
- (5)  $T_{amb} = 100\text{ °C}$
- (6)  $T_{amb} = 125\text{ °C}$
- (7)  $T_{amb} = 150\text{ °C}$

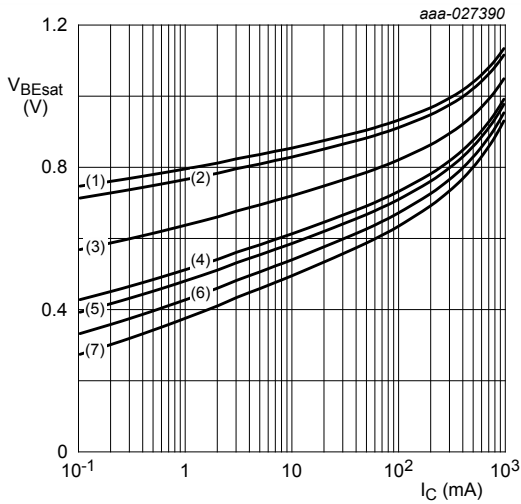
**Figure 33. BC817K-40: Base-emitter voltage as a function of collector current; typical values**



$T_{amb} = 25\text{ °C}$

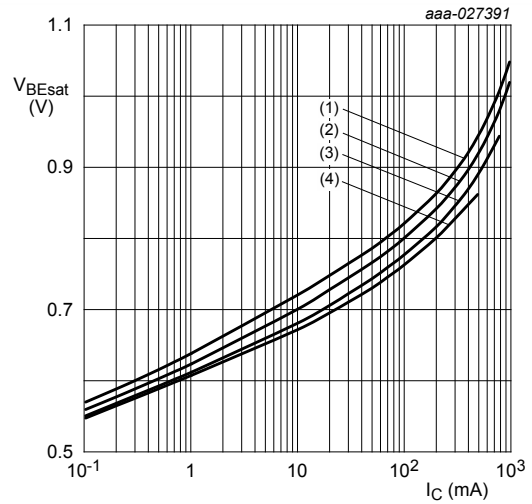
- (1)  $V_{CE} = 1\text{ V}$
- (2)  $V_{CE} = 2\text{ V}$
- (3)  $V_{CE} = 5\text{ V}$

**Figure 34. BC817K-40: Base-emitter voltage as a function of collector current; typical values**



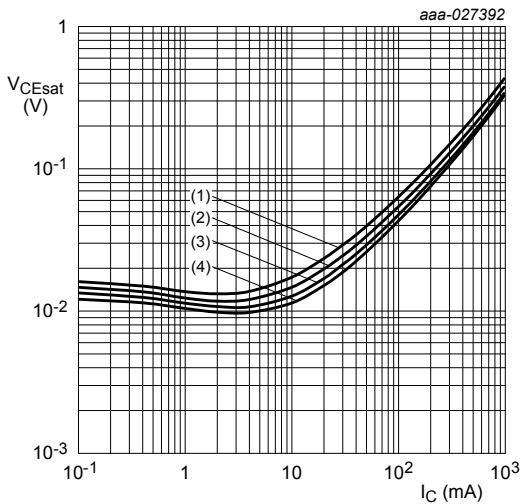
- $I_C/I_B = 10$
- (1)  $T_{amb} = -55\text{ }^\circ\text{C}$
  - (2)  $T_{amb} = -40\text{ }^\circ\text{C}$
  - (3)  $T_{amb} = 25\text{ }^\circ\text{C}$
  - (4)  $T_{amb} = 85\text{ }^\circ\text{C}$
  - (5)  $T_{amb} = 100\text{ }^\circ\text{C}$
  - (6)  $T_{amb} = 125\text{ }^\circ\text{C}$
  - (7)  $T_{amb} = 150\text{ }^\circ\text{C}$

Figure 35. BC817K-40: Base-emitter saturation voltage as a function of collector current; typical values



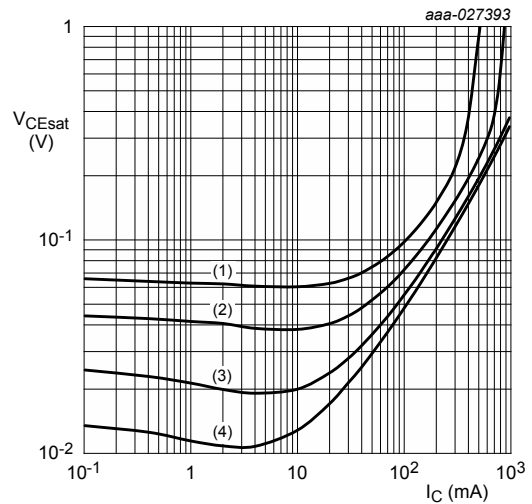
- $T_{amb} = 25\text{ }^\circ\text{C}$
- (1)  $I_C/I_B = 10$
  - (2)  $I_C/I_B = 20$
  - (3)  $I_C/I_B = 50$
  - (4)  $I_C/I_B = 100$

Figure 36. BC817K-40: Base-emitter saturation voltage as a function of collector current; typical values



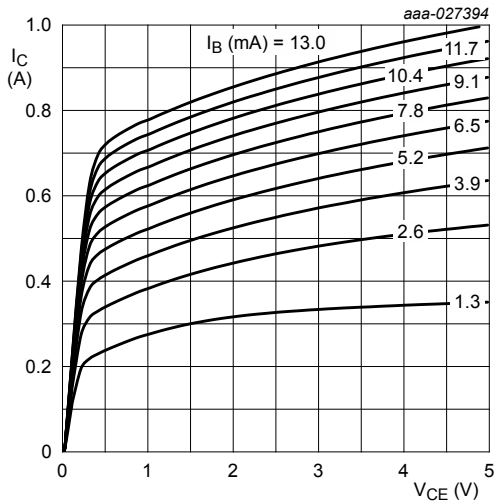
- $I_C/I_B = 10$
- (1)  $T_{amb} = 150\text{ }^\circ\text{C}$
  - (2)  $T_{amb} = 85\text{ }^\circ\text{C}$
  - (3)  $T_{amb} = 25\text{ }^\circ\text{C}$
  - (4)  $T_{amb} = -40\text{ }^\circ\text{C}$

Figure 37. BC817K-40: Collector-emitter saturation voltage as a function of collector current; typical values



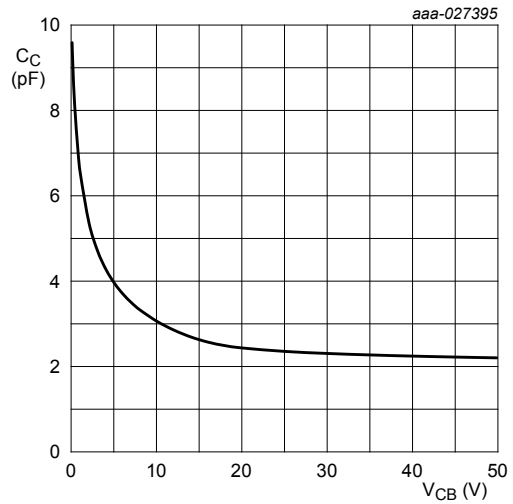
- $T_{amb} = 25\text{ }^\circ\text{C}$
- (1)  $I_C/I_B = 100$
  - (2)  $I_C/I_B = 50$
  - (3)  $I_C/I_B = 20$
  - (4)  $I_C/I_B = 10$

Figure 38. BC817K-40: Collector-emitter saturation voltage as a function of collector current; typical values



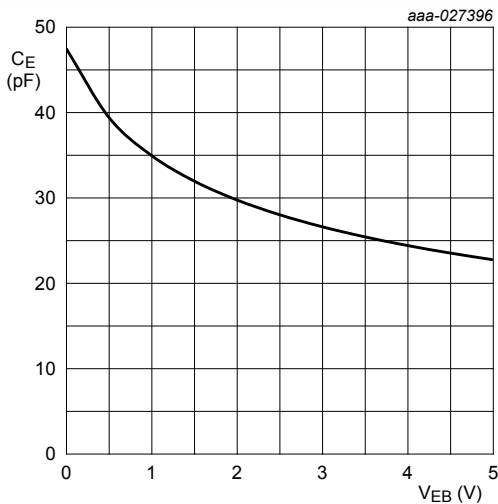
$T_{amb} = 25\text{ }^\circ\text{C}$

Figure 39. BC817K-40: Collector current as a function of collector-emitter voltage; typical values



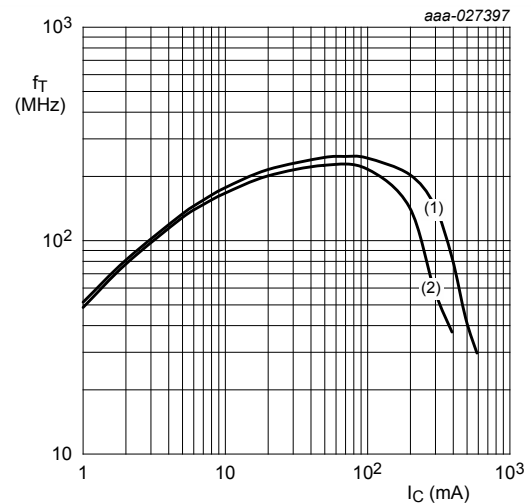
$f = 1\text{ MHz}$ ;  $T_{amb} = 25\text{ }^\circ\text{C}$

Figure 40. BC817K-40: Collector capacitance as a function of collector-base voltage; typical values



$f = 1\text{ MHz}$ ;  $T_{amb} = 25\text{ }^\circ\text{C}$

Figure 41. BC817K-40: Emitter capacitance as a function of emitter-base voltage; typical values



$f = 100\text{ MHz}$ ;  $T_{amb} = 25\text{ }^\circ\text{C}$

(1)  $V_{CE} = 5\text{ V}$

(2)  $V_{CE} = 1\text{ V}$

Figure 42. BC817K-40: Transition frequency as a function of collector current voltage; typical values

## 8 Test information

### 8.1 Quality information

This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard Q101 - Stress test qualification for discrete semiconductors, and is suitable for use in automotive applications.

## 9 Package outline

Table 9. Package outline

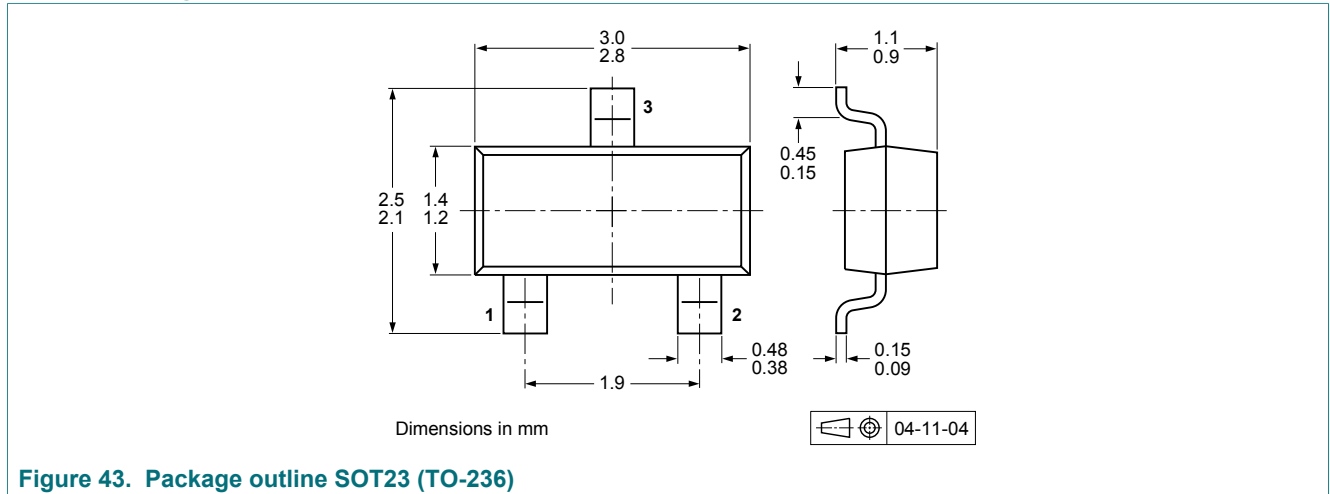


Figure 43. Package outline SOT23 (TO-236)

## 10 Soldering

Table 10. Soldering

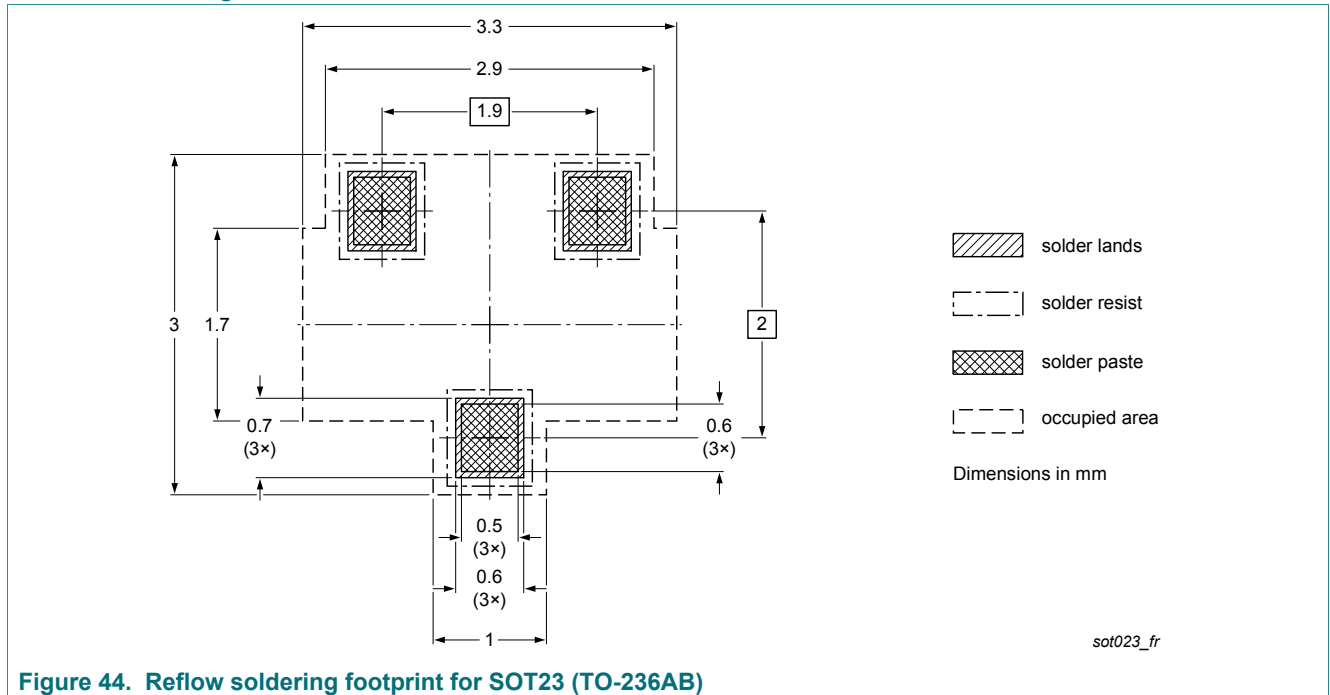
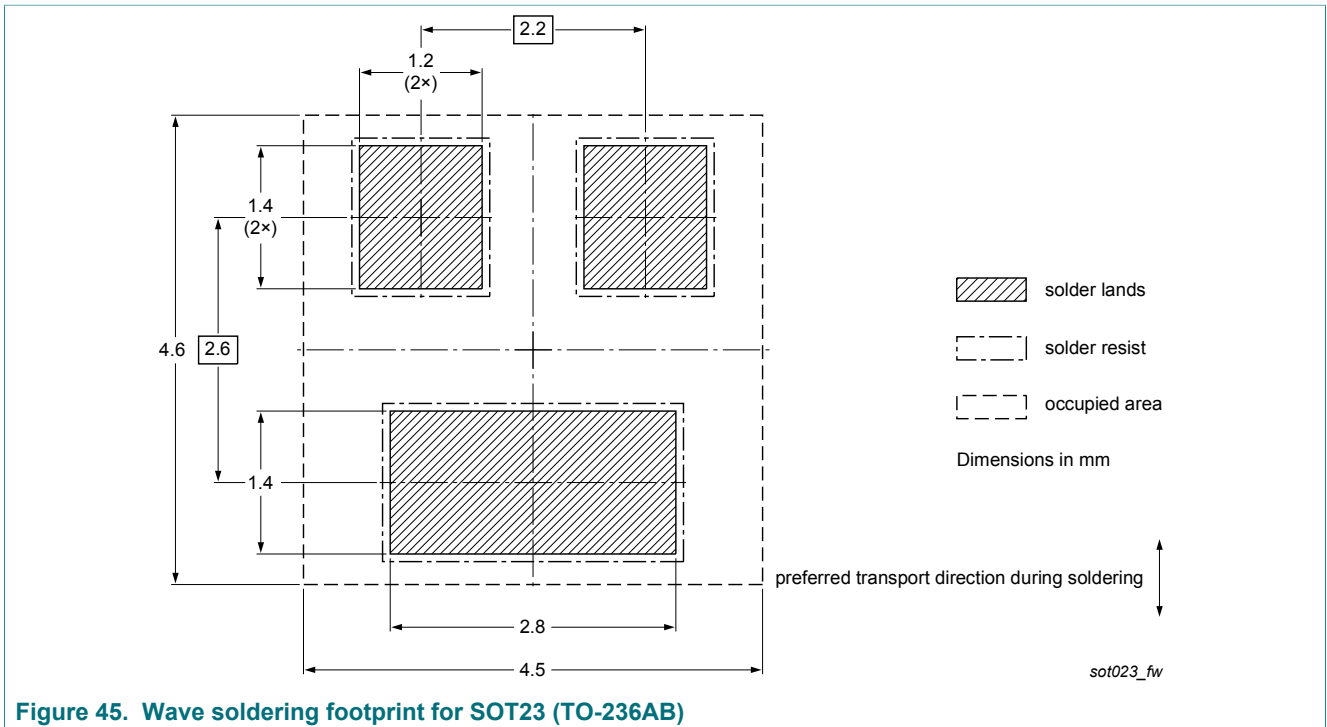


Figure 44. Reflow soldering footprint for SOT23 (TO-236AB)



## 11 Revision history

Table 11. Revision history

| Document ID    | Release date                           | Data sheet status  |  | Supersedes     |
|----------------|--|--------------------|--|----------------|
| BC817K_SER v.2 | 20180306                               | Product data sheet |  | BC817K_SER v.1 |
| Modification:  | • Characteristics: Figures are updated |                    |  |                |
| BC817K_SER v.1 | 20171108                               |                    |  | -              |

## 12 Legal information

### 12.1 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".

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Date of release: 6 March 2018

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