



BC53PA series

80 V, 1 A PNP medium power transistors

Rev. 11 — 30 September 2025

Product data sheet

1. General description

PNP medium power transistors in an ultra thin SOT1061 leadless small Surface-Mounted Device (SMD) plastic package.

2. Features and benefits

- High current
- Three current gain selections
- High power dissipation capability
- Exposed heatsink for excellent thermal and electrical conductivity
- Leadless very small SMD plastic package with medium power capability
- AEC-Q101 qualified^[1]

[1] Part of the products (as listed in the [revision history](#)) have removed automotive qualification status.

3. Applications

- Linear voltage regulators
- High-side switches
- Battery-driven devices
- Power management
- MOSFET drivers
- Amplifiers

4. Quick reference data

Table 1. Quick reference data

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

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|-----------|---------------------------|--|-----|-----|-----|-----|------|
| V_{CEO} | collector-emitter voltage | open base | | - | - | -80 | V |
| I_C | collector current | | | - | - | -1 | A |
| I_{CM} | peak collector current | single pulse; $t_p \leq 1 \text{ ms}$ | | - | - | -2 | A |
| h_{FE} | DC current gain | | | | | | |
| | BC53PA | $V_{CE} = -2 \text{ V}; I_C = -150 \text{ mA}$ $T_{amb} = 25^{\circ}\text{C}$ | [1] | 63 | - | 250 | |
| | BC53-10PA | | [1] | 63 | - | 160 | |
| | BC53-16PA | | [1] | 100 | - | 250 | |

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

5. Pinning information

Table 2. Pinning

| Pin | Symbol | Description | Simplified outline | Graphic symbol |
|-----|--------|-------------|--------------------------|----------------|
| 1 | B | base | Transparent top view | sym013 |
| 2 | E | emitter | | |
| 3 | C | collector | | |

6. Ordering information

Table 3. Ordering information

| Type number | Package | | Version |
|-------------|---------|---|---------|
| | Name | Description | |
| BC53PA | - | plastic, leadless thermal enhanced ultra thin small outline package ; no leads; 3 terminals; 2 mm x 2 mm x 0.65 mm body | SOT1061 |
| BC53-10PA | | | |
| BC53-16PA | | | |

7. Marking

Table 4. Marking

| Type number | Marking code |
|-------------|--------------|
| BC53PA | BV |
| BC53-10PA | BW |
| BC53-16PA | BX |

8. Limiting values

Table 5. Limiting values

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

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

| Symbol | Parameter | Conditions | Min | Max | Unit |
|-----------|---------------------------|--------------------------------------|-----|------|--------|
| V_{CBO} | collector-base voltage | open emitter | - | -100 | V |
| V_{CEO} | collector-emitter voltage | open base | - | -80 | V |
| V_{EBO} | emitter-base voltage | open collector | - | -5 | V |
| I_C | collector current | | - | -1 | A |
| I_{CM} | peak collector current | single pulse; $t_p \leq 1\text{ ms}$ | - | -2 | A |
| I_B | base current | | - | -0.3 | A |
| I_{BM} | peak base current | single pulse; $t_p \leq 1\text{ ms}$ | - | -0.3 | A |
| P_{tot} | total power dissipation | $T_{amb} \leq 25^\circ\text{C}$ | [1] | - | 0.42 W |
| | | | [2] | - | 0.83 W |
| | | | [3] | - | 1.10 W |
| | | | [4] | - | 0.81 W |
| | | | [5] | - | 1.65 W |
| T_j | junction temperature | | - | 150 | °C |
| T_{amb} | ambient temperature | | -55 | 150 | °C |
| T_{stg} | storage temperature | | -65 | 150 | °C |

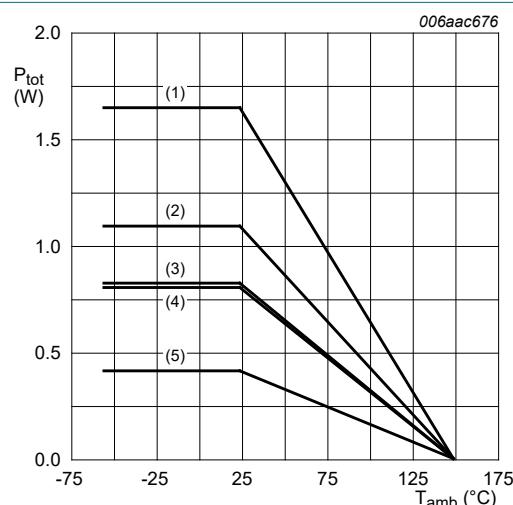
[1] Device mounted on an FR4 Printed-Circuit-Board (PCB); single-sided copper; tin-plated and standard footprint.

[2] Device mounted on an FR4 PCB; single-sided copper; tin-plated; mounting pad for collector 1 cm^2 .

[3] Device mounted on an FR4 PCB; single-sided copper; tin-plated; mounting pad for collector 6 cm^2 .

[4] Device mounted on an FR4 PCB, 4-layer copper, tin-plated and standard footprint.

[5] Device mounted on an FR4 PCB, 4-layer copper, tin-plated, mounting pad for collector 1 cm^2 .



(1) FR4 PCB, 4-layer copper, mounting pad for collector 1 cm^2

(2) FR4 PCB, single-sided copper, mounting pad for collector 6 cm^2

(3) FR4 PCB, single-sided copper, mounting pad for collector 1 cm^2

(4) FR4 PCB, 4-layer copper, standard footprint

(5) FR4 PCB, single-sided copper, standard footprint

Fig. 1. Power derating curves SOT1061

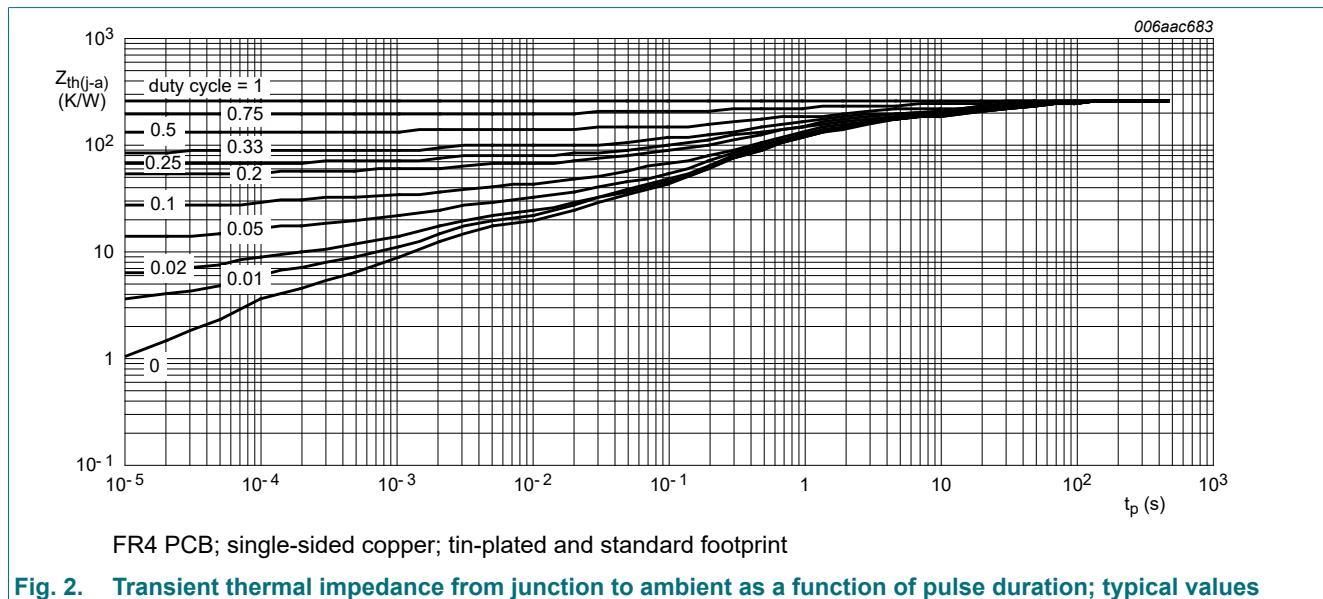
9. Thermal characteristics

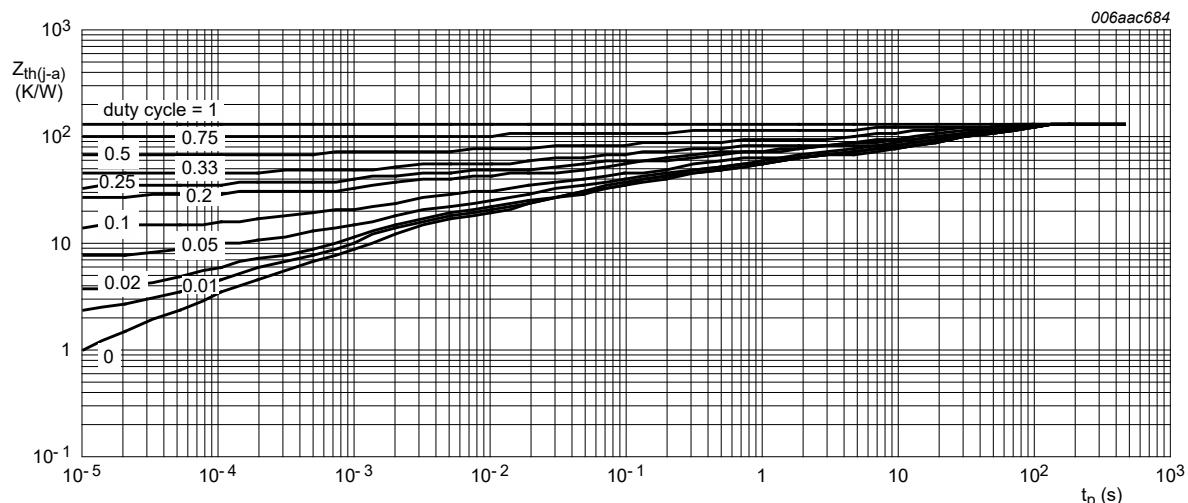
Table 6. Thermal characteristics

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

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---------------|--|-------------|-----|-----|-----|-----|------|
| $R_{th(j-a)}$ | thermal resistance from junction to ambient | in free air | [1] | - | - | 298 | K/W |
| | | | [2] | - | - | 151 | K/W |
| | | | [3] | - | - | 114 | K/W |
| | | | [4] | - | - | 154 | K/W |
| | | | [5] | - | - | 76 | K/W |
| | | | | - | - | 20 | K/W |
| $R_{(j-sp)}$ | thermal resistance from junction to solder point | | | | | | |

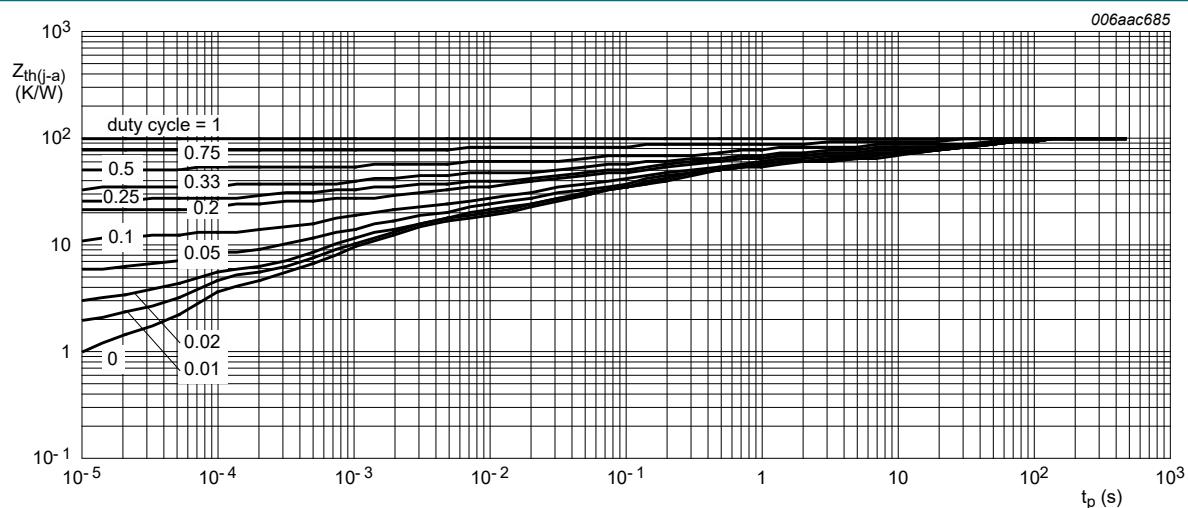
- [1] Device mounted on an FR4 PCB; single-sided copper; tin-plated and standard footprint.
- [2] Device mounted on an FR4 PCB; single-sided copper; tin-plated; mounting pad for collector 1 cm².
- [3] Device mounted on an FR4 PCB; single-sided copper; tin-plated; mounting pad for collector 6 cm².
- [4] Device mounted on an FR4 PCB, 4-layer copper, tin-plated and standard footprint.
- [5] Device mounted on an FR4 PCB, 4-layer copper, tin-plated, mounting pad for collector 1 cm².





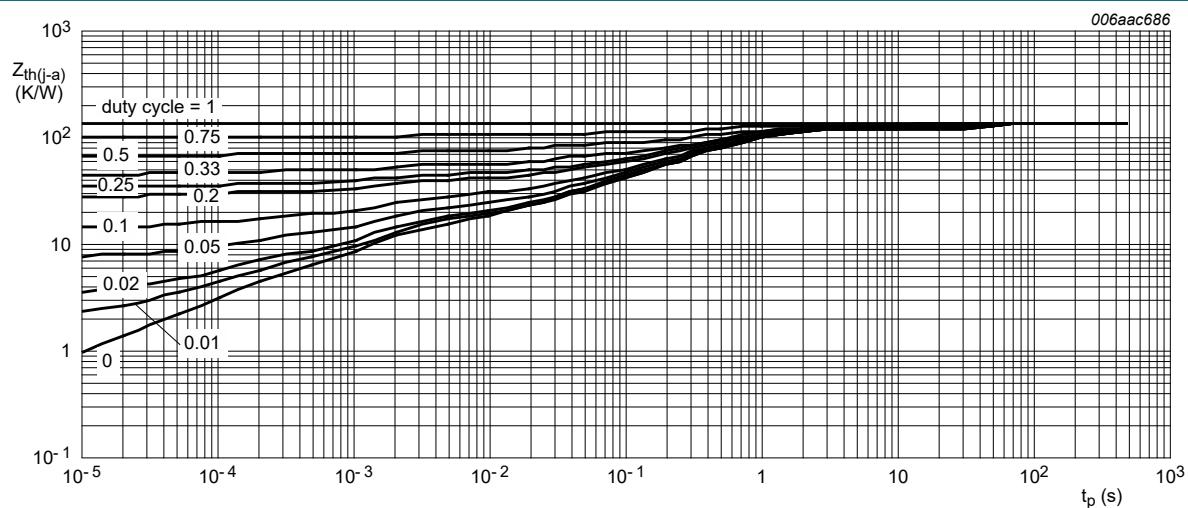
FR4 PCB; single-sided copper; tin-plated; mounting pad for collector 1 cm^2

Fig. 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 6 cm^2

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



FR4 PCB; 4-layer copper, standard footprint

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

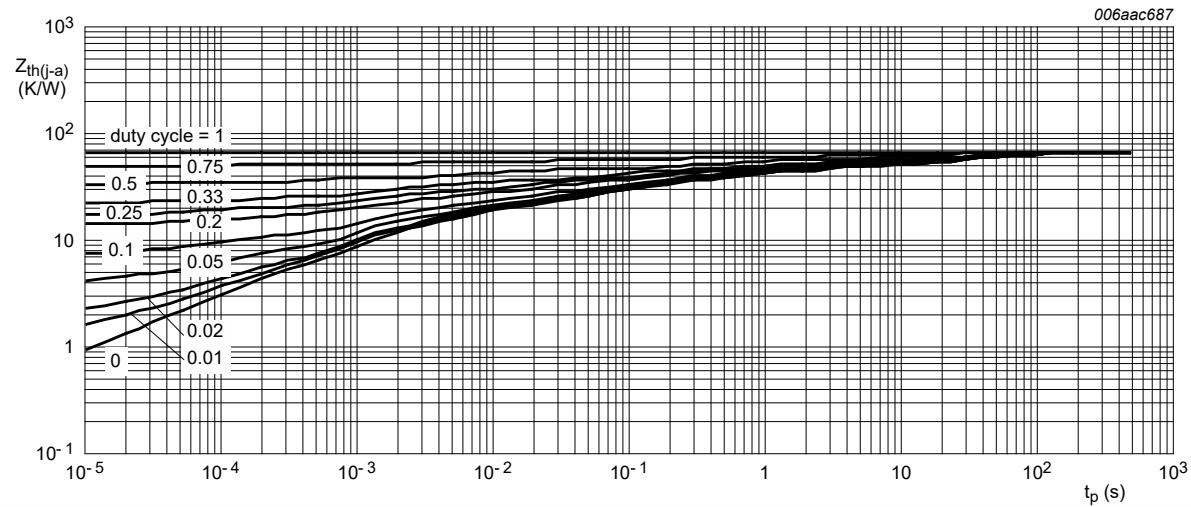


Fig. 6. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

10. Characteristics

Table 7. Characteristics

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|-------------|--------------------------------------|---|-----|-----|-----|------|------|
| I_{CBO} | collector-base cut-off current | $V_{CB} = -30 \text{ V}$; $I_E = 0 \text{ A}$ $T_{amb} = 25 \text{ }^\circ\text{C}$ | | - | - | -100 | nA |
| | | $V_{CB} = -30 \text{ V}$; $I_E = 0 \text{ A}$; $T_j = 150 \text{ }^\circ\text{C}$ | | - | - | -10 | µA |
| I_{EBO} | emitter-base cut-off current | $V_{EB} = -5 \text{ V}$; $I_C = 0 \text{ A}$ $T_{amb} = 25 \text{ }^\circ\text{C}$ | | - | - | -100 | nA |
| h_{FE} | DC current gain | | | | | | |
| | BC53PA | $V_{CE} = -2 \text{ V}$; $I_C = -5 \text{ mA}$ $T_{amb} = 25 \text{ }^\circ\text{C}$ | [1] | 63 | - | - | |
| | | $V_{CE} = -2 \text{ V}$; $I_C = -150 \text{ mA}$ $T_{amb} = 25 \text{ }^\circ\text{C}$ | | 63 | - | 250 | |
| | | $V_{CE} = -2 \text{ V}$; $I_C = -500 \text{ mA}$ $T_{amb} = 25 \text{ }^\circ\text{C}$ | | 40 | - | - | |
| | BC53-10PA | $V_{CE} = -2 \text{ V}$; $I_C = -5 \text{ mA}$ $T_{amb} = 25 \text{ }^\circ\text{C}$ | [1] | 63 | - | - | |
| | | $V_{CE} = -2 \text{ V}$; $I_C = -150 \text{ mA}$ $T_{amb} = 25 \text{ }^\circ\text{C}$ | | 63 | - | 160 | |
| | | $V_{CE} = -2 \text{ V}$; $I_C = -500 \text{ mA}$ $T_{amb} = 25 \text{ }^\circ\text{C}$ | | 40 | - | - | |
| | BC53-16PA | $V_{CE} = -2 \text{ V}$; $I_C = -5 \text{ mA}$ $T_{amb} = 25 \text{ }^\circ\text{C}$ | [1] | 63 | - | - | |
| | | $V_{CE} = -2 \text{ V}$; $I_C = -150 \text{ mA}$ $T_{amb} = 25 \text{ }^\circ\text{C}$ | | 100 | - | 250 | |
| | | $V_{CE} = -2 \text{ V}$; $I_C = -500 \text{ mA}$ $T_{amb} = 25 \text{ }^\circ\text{C}$ | | 40 | - | - | |
| V_{CEsat} | collector-emitter saturation voltage | $I_C = -500 \text{ mA}$; $I_B = -50 \text{ mA}$ $T_{amb} = 25 \text{ }^\circ\text{C}$ | [1] | - | - | -0.5 | V |
| V_{BE} | base-emitter voltage | $V_{CE} = -2 \text{ V}$; $I_C = -500 \text{ mA}$ $T_{amb} = 25 \text{ }^\circ\text{C}$ | [1] | - | - | -1 | V |
| C_c | collector capacitance | $V_{CB} = -10 \text{ V}$; $I_E = i_e = 0 \text{ A}$; $f = 1 \text{ MHz}$ $T_{amb} = 25 \text{ }^\circ\text{C}$ | | - | 15 | - | pF |
| f_T | transition frequency | $V_{CE} = -5 \text{ V}$; $I_C = -50 \text{ mA}$; $f = 100 \text{ MHz}$ $T_{amb} = 25 \text{ }^\circ\text{C}$ | | - | 145 | - | MHz |

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

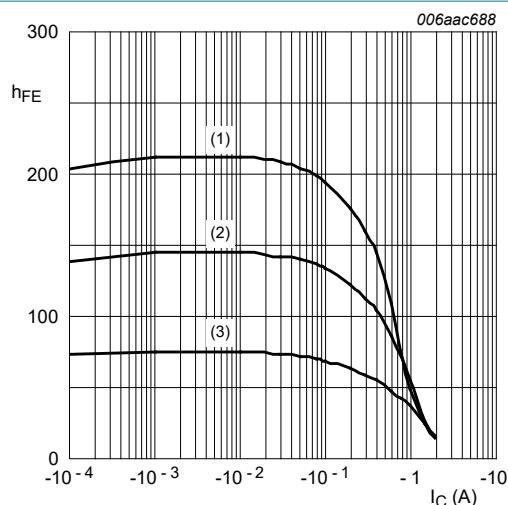


Fig. 7. DC current gain as a function of collector current; typical values

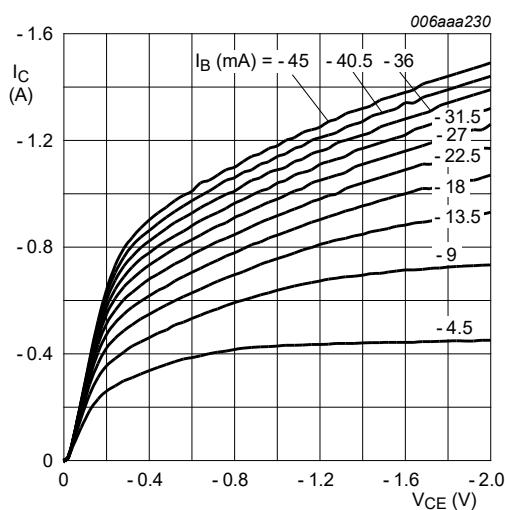


Fig. 8. Collector current as a function of collector-emitter voltage; typical values

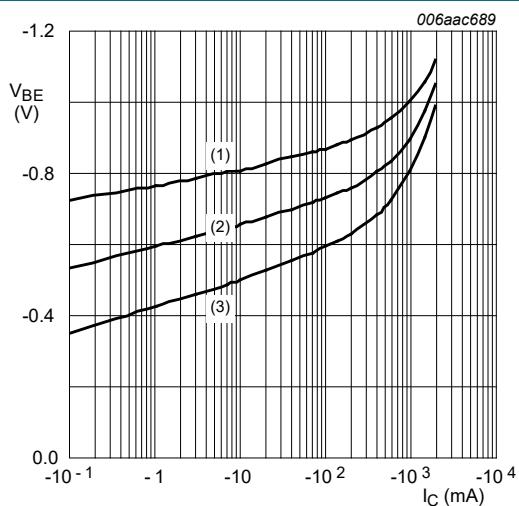


Fig. 9. Base-emitter voltage as a function of collector current; typical values

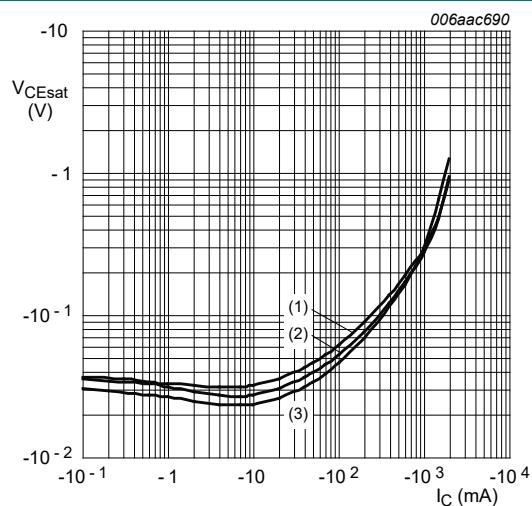


Fig. 10. Collector-emitter saturation voltage as a function of collector current; typical values

11. Test information

11.1. 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.

12. Package outline

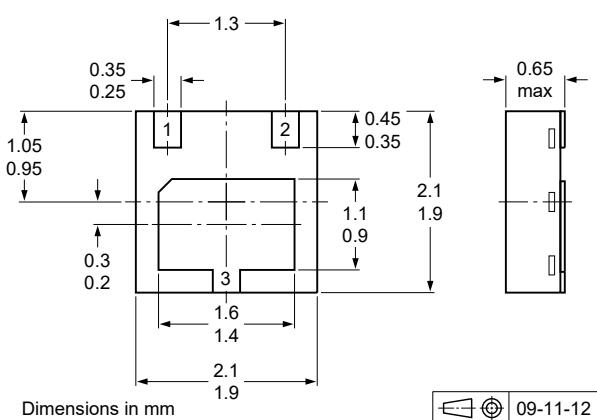


Fig. 11. Package outline SOT1061

13. Soldering

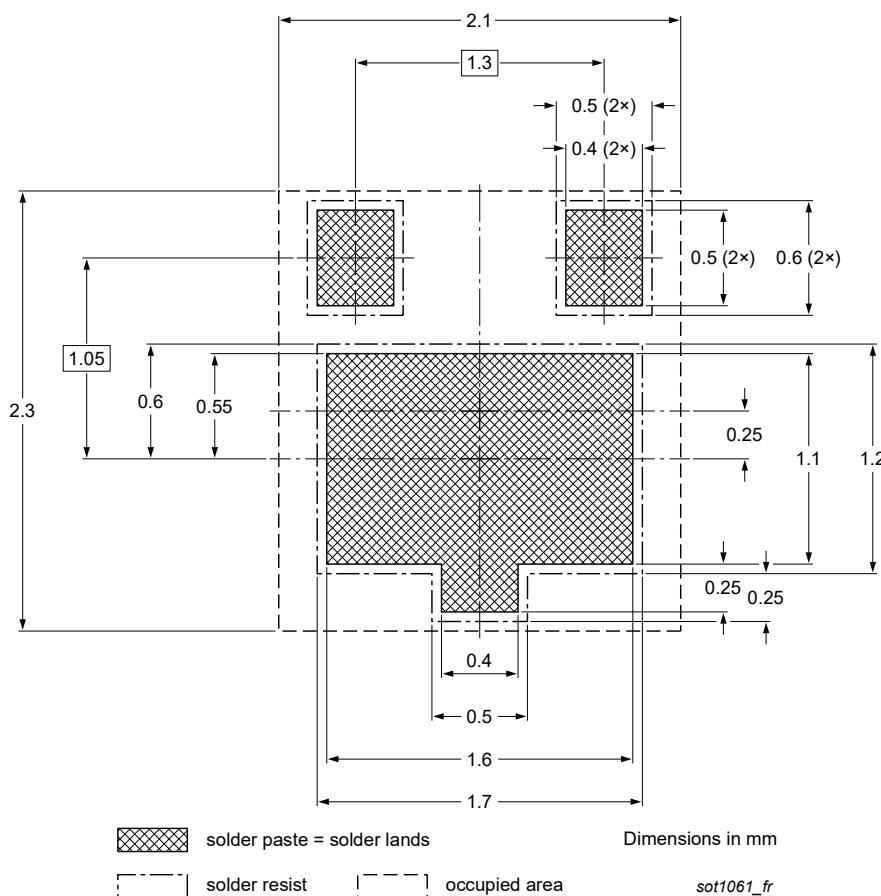


Fig. 12. Reflow soldering footprint for SOT1061

14. Revision history

Table 8. Revision history

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|------------------------|--|-----------------------|-------------------|---|
| BC53PA_SER v.11 | 20250930 | Product data sheet | - | BC53PA_SER v.10 |
| Modifications: | • BC53PA changed to non-automotive qualification. Please refer to nexperia.com for automotive (-Q) product alternative(s). | | | |
| BC53PA_SER v.10 | 20230804 | Product data sheet | - | BCP53_BCX53_BC53PA v.9 |
| BCP53_BCX53_BC53PA v.9 | 20220106 | Product data sheet | - | BC640_BCP53_BCX53 v.8 |
| BC640_BCP53_BCX53 v.8 | 20111021 | Product data sheet | - | BC640_BCP53_BCX53 v.7 |
| BC640_BCP53_BCX53 v.7 | 20070604 | Product data sheet | - | BC640_BCP53_BCX53 v.6 |
| BC640_BCP53_BCX53 v.6 | 20050225 | Product data sheet | CPCN200405 029 | BC636_638_640 v.5 BCP51_52_53 v.5 BCX51_52_53 v.4 |
| BC636_638_640 v.5 | 20011010 | Product specification | - | BCX51_52_53 v.5 |
| BCX51_52_53 v.5 | 20030206 | Product specification | - | BCX51_52_53 v.4 |
| BCX51_52_53 v.4 | 20011010 | Product specification | - | BCX54_55_56 v.3 |

15. 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. |
| 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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