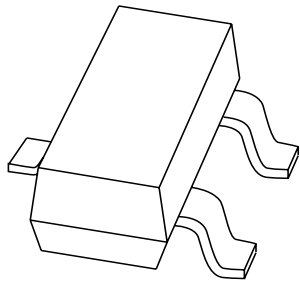


DATA SHEET



BC856; BC857; BC858 PNP general purpose transistors

Product data sheet
Supersedes data of 2003 Apr 09

2004 Jan 16

PNP general purpose transistors

BC856; BC857; BC858

FEATURES

- Low current (max. 100 mA)
- Low voltage (max. 65 V).

APPLICATIONS

- General purpose switching and amplification.

DESCRIPTION

PNP transistor in a SOT23 plastic package.
NPN complements: BC846, BC847 and BC848.

MARKING

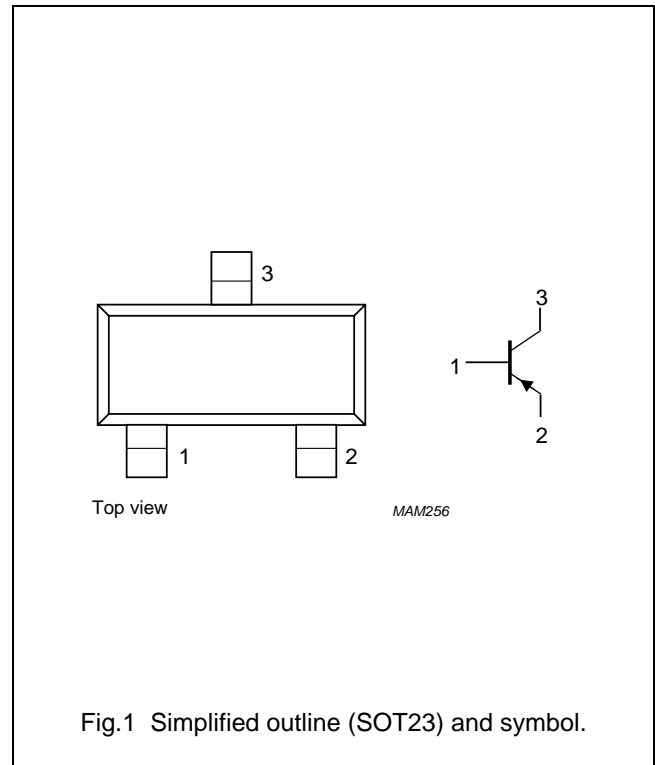
| TYPE NUMBER | MARKING CODE ⁽¹⁾ |
|-------------|-----------------------------|
| BC856 | 3D* |
| BC856A | 3A* |
| BC856B | 3B* |
| BC857 | 3H* |
| BC857A | 3E* |
| BC857B | 3F* |
| BC857C | 3G* |
| BC858B | 3K* |

Note

- * = p: made in Hong Kong.
* = t: made in Malaysia.
* = W: made in China.

PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1 | base |
| 2 | emitter |
| 3 | collector |



ORDERING INFORMATION

| TYPE NUMBER | PACKAGE | | |
|-------------|---------|--|---------|
| | NAME | DESCRIPTION | VERSION |
| BC856 | – | plastic surface mounted package; 3 leads | SOT23 |
| BC857 | – | plastic surface mounted package; 3 leads | SOT23 |
| BC858 | – | plastic surface mounted package; 3 leads | SOT23 |

PNP general purpose transistors

BC856; BC857; BC858

LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|------------------|-------------------------------|----------------------------------|------|------|------|
| V _{CBO} | collector-base voltage | open emitter | | | |
| | BC856 | | – | –80 | V |
| | BC857 | | – | –50 | V |
| | BC858 | | – | –30 | V |
| V _{CEO} | collector-emitter voltage | open base | | | |
| | BC856 | | – | –65 | V |
| | BC857 | | – | –45 | V |
| | BC858 | | – | –30 | V |
| V _{EBO} | emitter-base voltage | open collector | – | –5 | V |
| I _C | collector current (DC) | | – | –100 | mA |
| I _{CM} | peak collector current | | – | –200 | mA |
| I _{BM} | peak base current | | – | –200 | mA |
| P _{tot} | total power dissipation | T _{amb} ≤ 25 °C; note 1 | – | 250 | mW |
| T _{stg} | storage temperature | | –65 | +150 | °C |
| T _j | junction temperature | | – | 150 | °C |
| T _{amb} | operating ambient temperature | | –65 | +150 | °C |

Note

1. Transistor mounted on an FR4 printed-circuit board, standard footprint.

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | TYPICAL | UNIT |
|----------------------|---|---------------------|---------|------|
| R _{th(j-a)} | thermal resistance from junction to ambient | in free air; note 1 | 500 | K/W |

Note

1. Transistor mounted on an FR4 printed-circuit board, standard footprint.

PNP general purpose transistors

BC856; BC857; BC858

CHARACTERISTICS

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

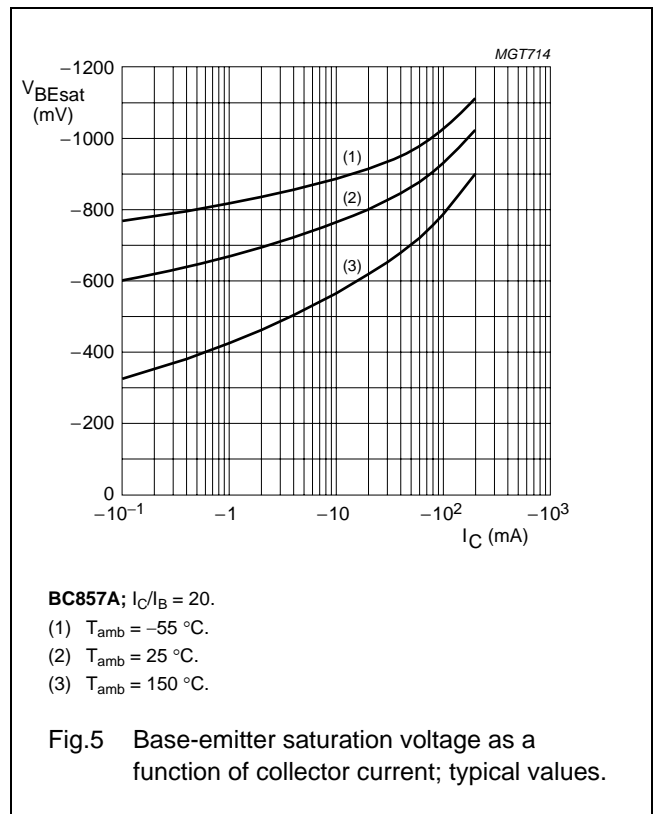
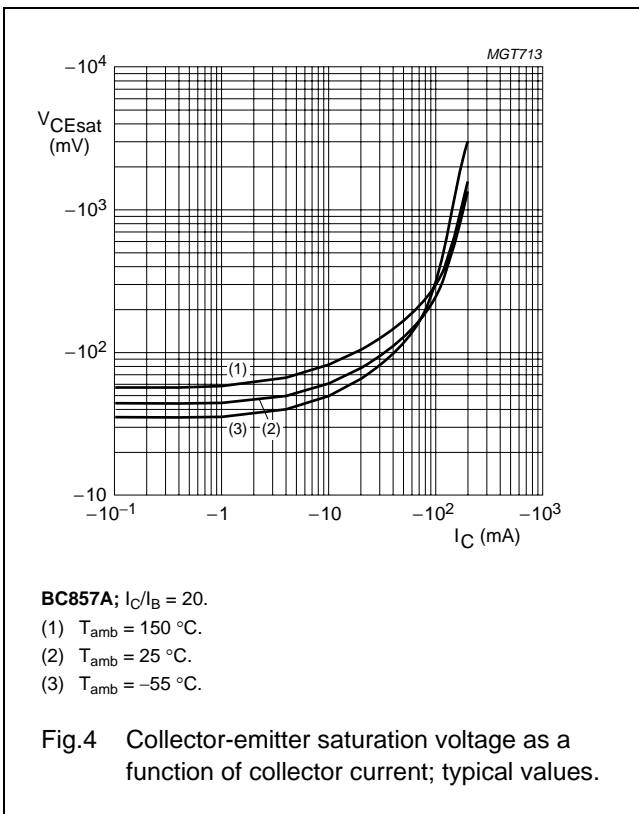
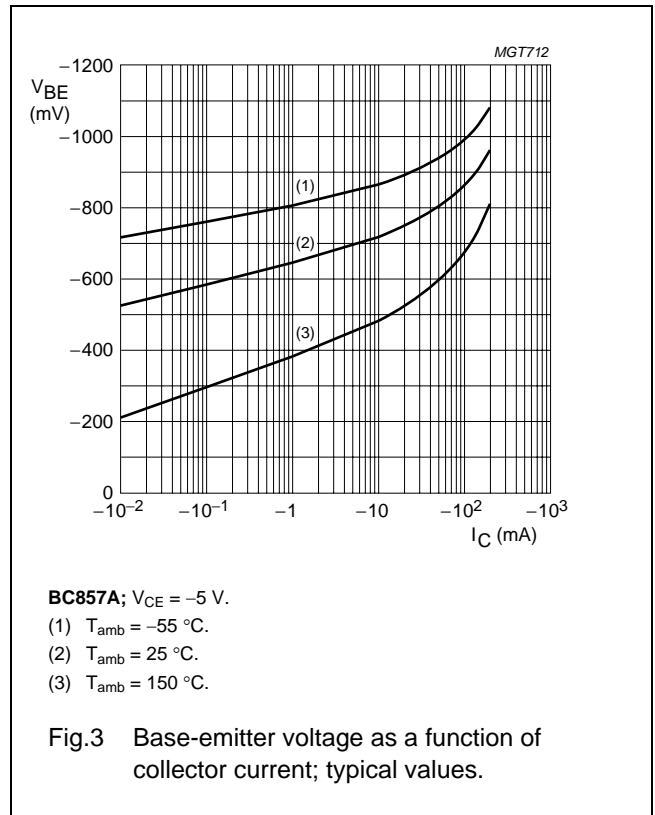
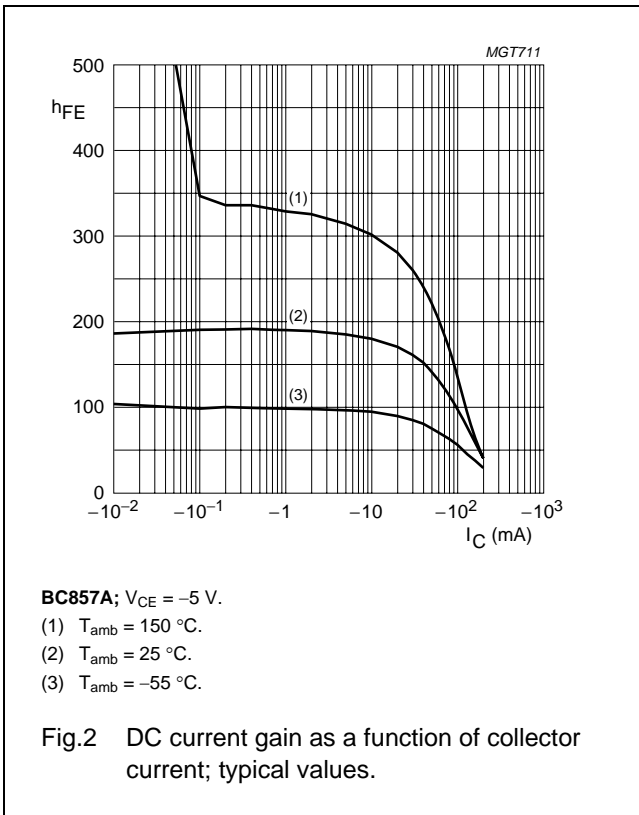
| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT | | | | |
|-------------|--------------------------------------|--|------|------|------|---------------|------------------------|-----|---|-----|
| I_{CBO} | collector-base cut-off current | $V_{CB} = -30\text{ V}; I_E = 0$ | – | –1 | –15 | nA | | | | |
| | | $V_{CB} = -30\text{ V}; I_E = 0;$ $T_j = 150\text{ °C}$ | – | – | –4 | μA | | | | |
| I_{EBO} | emitter-base cut-off current | $V_{EB} = -5\text{ V}; I_C = 0$ | – | – | –100 | nA | | | | |
| h_{FE} | DC current gain | $I_C = -2\text{ mA}; V_{CE} = -5\text{ V}$ | | | | | | | | |
| | | | | | | | BC856 | 125 | – | 475 |
| | | | | | | | BC857 | 125 | – | 800 |
| | | | | | | | BC856A; BC857A | 125 | – | 250 |
| | | | | | | | BC856B; BC857B; BC858B | 220 | – | 475 |
| BC857C | 420 | – | 800 | | | | | | | |
| V_{CEsat} | collector-emitter saturation voltage | $I_C = -10\text{ mA}; I_B = -0.5\text{ mA}$ | – | –75 | –300 | mV | | | | |
| | | $I_C = -100\text{ mA}; I_B = -5\text{ mA};$ note 1 | – | –250 | –650 | mV | | | | |
| V_{BEsat} | base-emitter saturation voltage | $I_C = -10\text{ mA}; I_B = -0.5\text{ mA}$ | – | –700 | – | mV | | | | |
| | | $I_C = -100\text{ mA}; I_B = -5\text{ mA};$ note 1 | – | –850 | – | mV | | | | |
| V_{BE} | base-emitter voltage | $I_C = -2\text{ mA}; V_{CE} = -5\text{ V}$ | –600 | –650 | –750 | mV | | | | |
| | | $I_C = -10\text{ mA}; V_{CE} = -5\text{ V}$ | – | – | –820 | mV | | | | |
| C_c | collector capacitance | $V_{CB} = -10\text{ V}; I_E = I_e = 0;$ $f = 1\text{ MHz}$ | – | 4.5 | – | pF | | | | |
| f_T | transition frequency | $V_{CE} = -5\text{ V}; I_C = -10\text{ mA};$ $f = 100\text{ MHz}$ | 100 | – | – | MHz | | | | |
| F | noise figure | $I_C = -200\text{ }\mu\text{A}; V_{CE} = -5\text{ V};$ $R_S = 2\text{ k}\Omega; f = 1\text{ kHz};$ $B = 200\text{ Hz}$ | – | 2 | 10 | dB | | | | |

Note

1. Pulse test: $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02$.

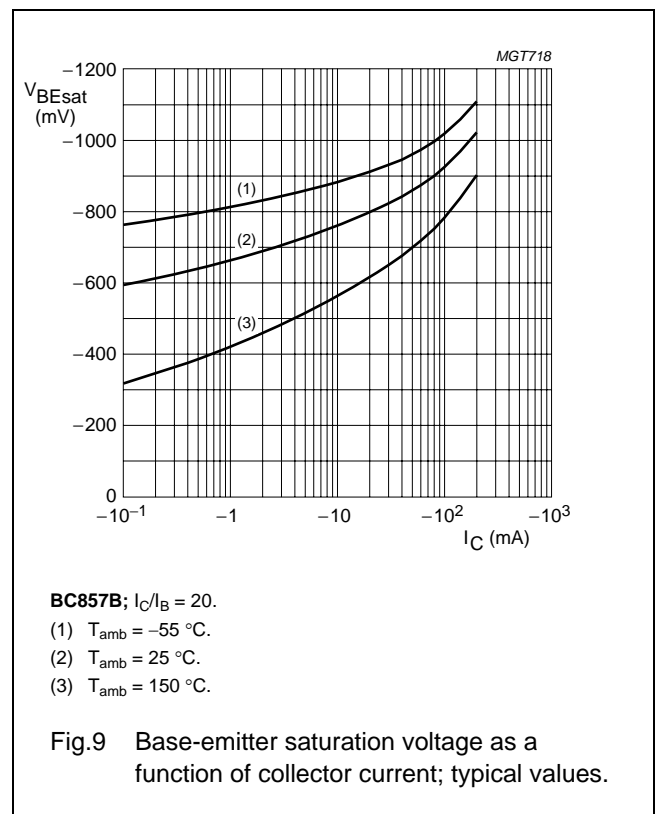
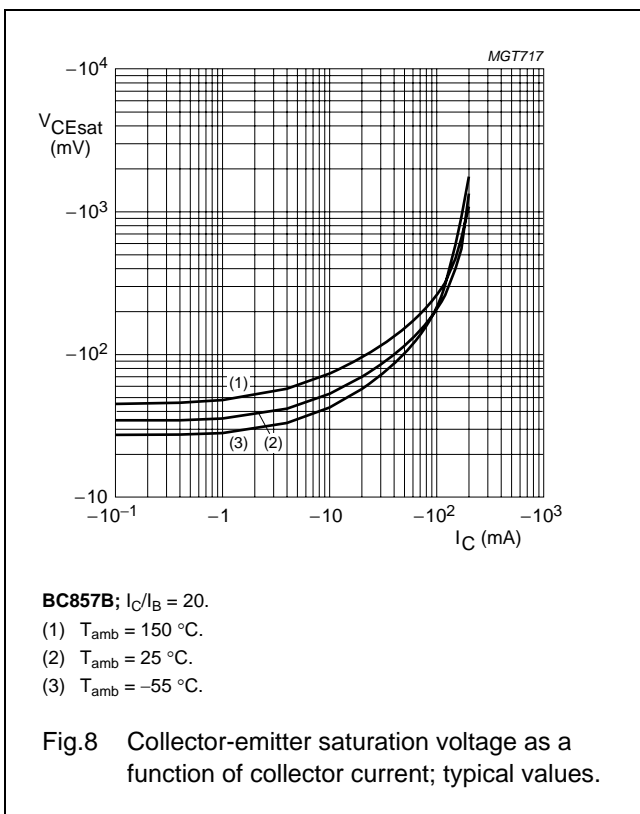
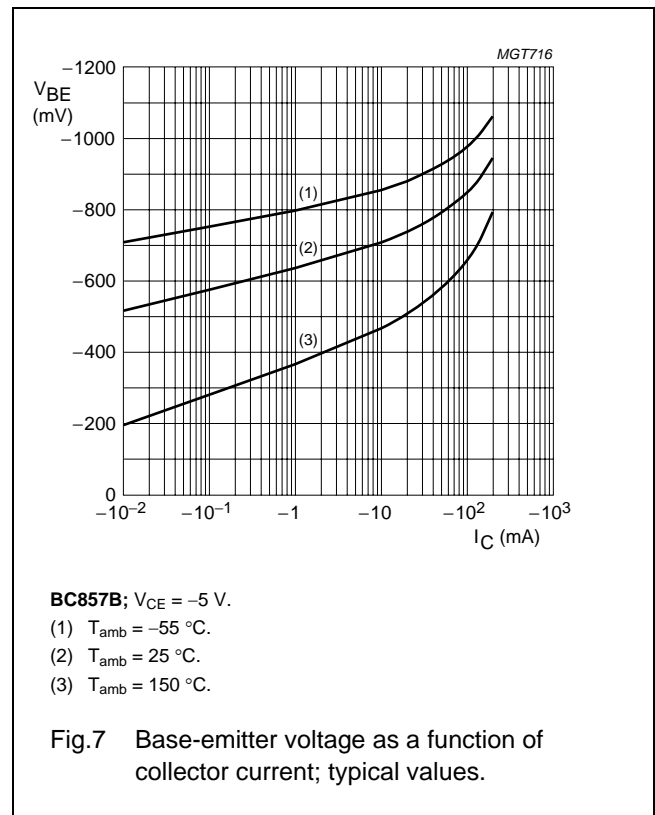
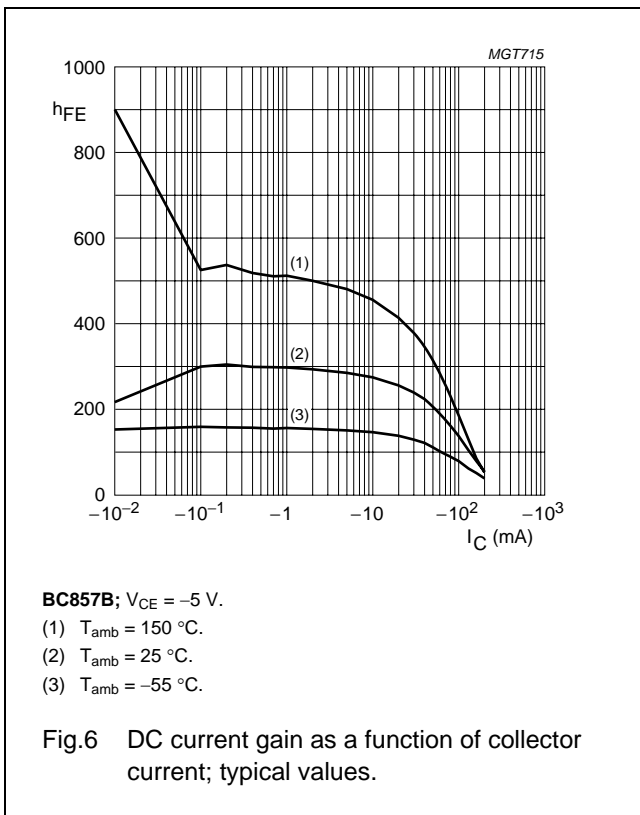
PNP general purpose transistors

BC856; BC857; BC858



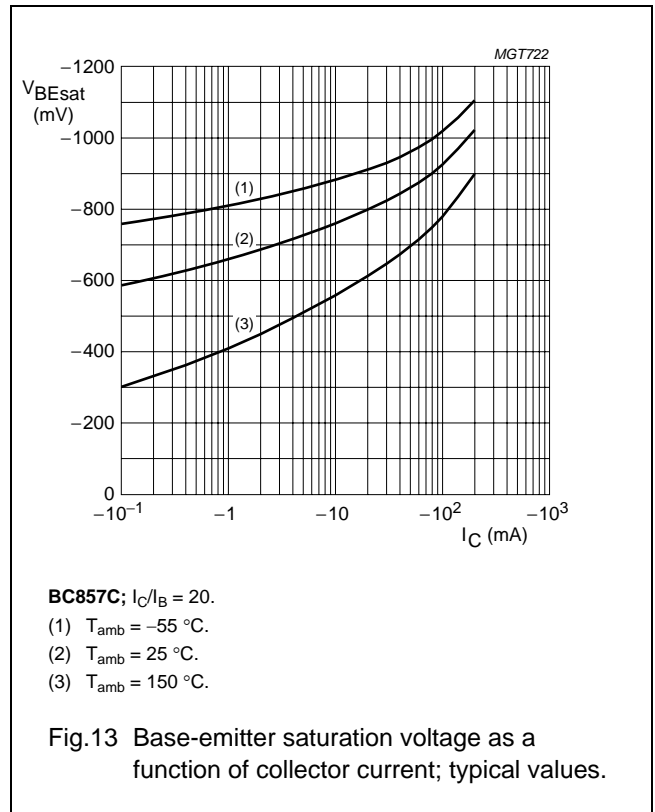
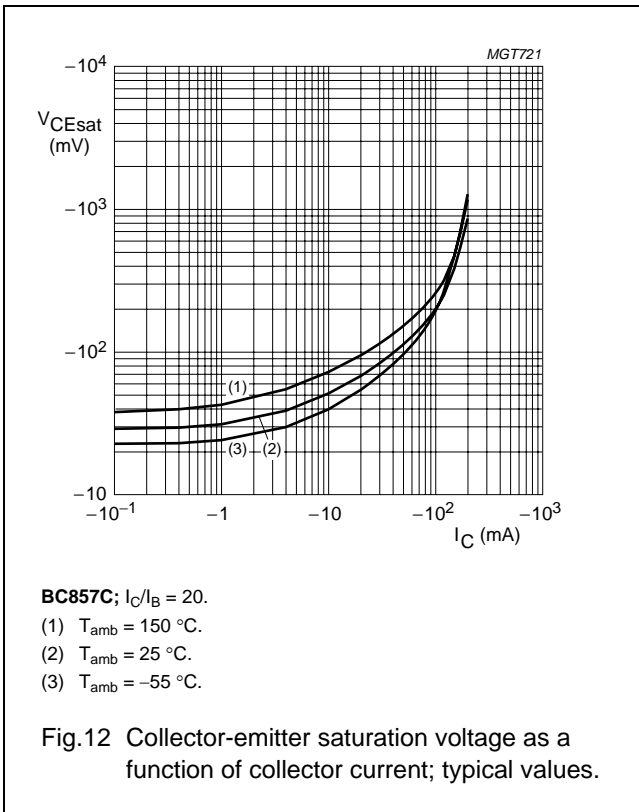
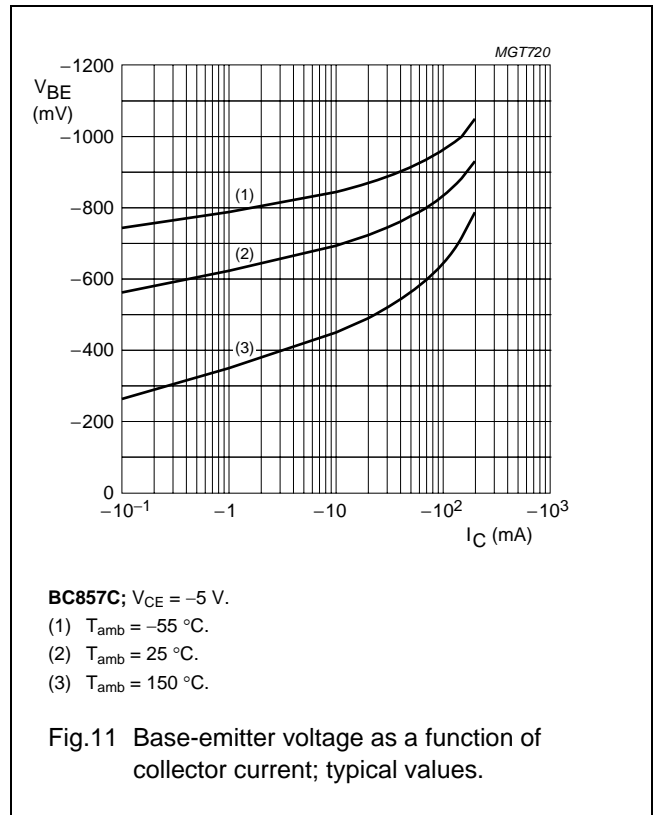
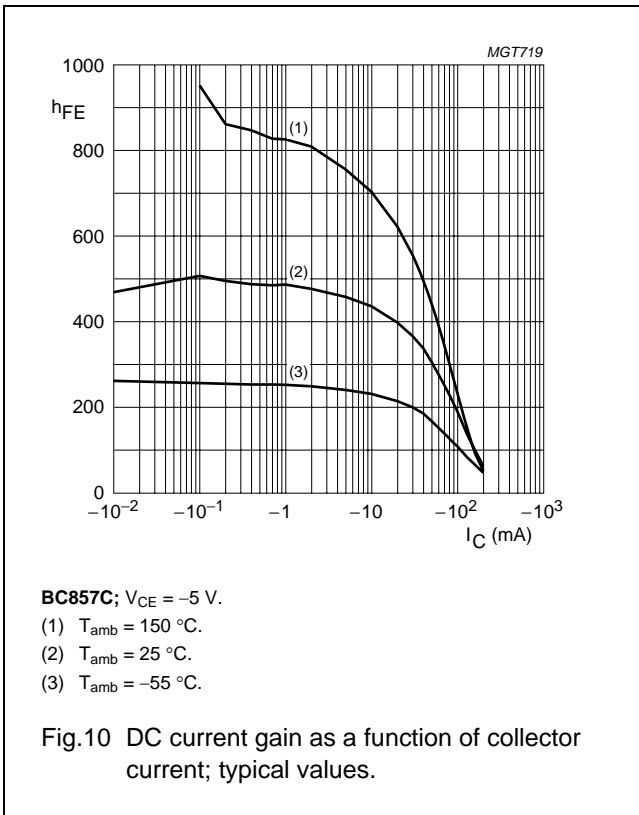
PNP general purpose transistors

BC856; BC857; BC858



PNP general purpose transistors

BC856; BC857; BC858



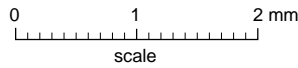
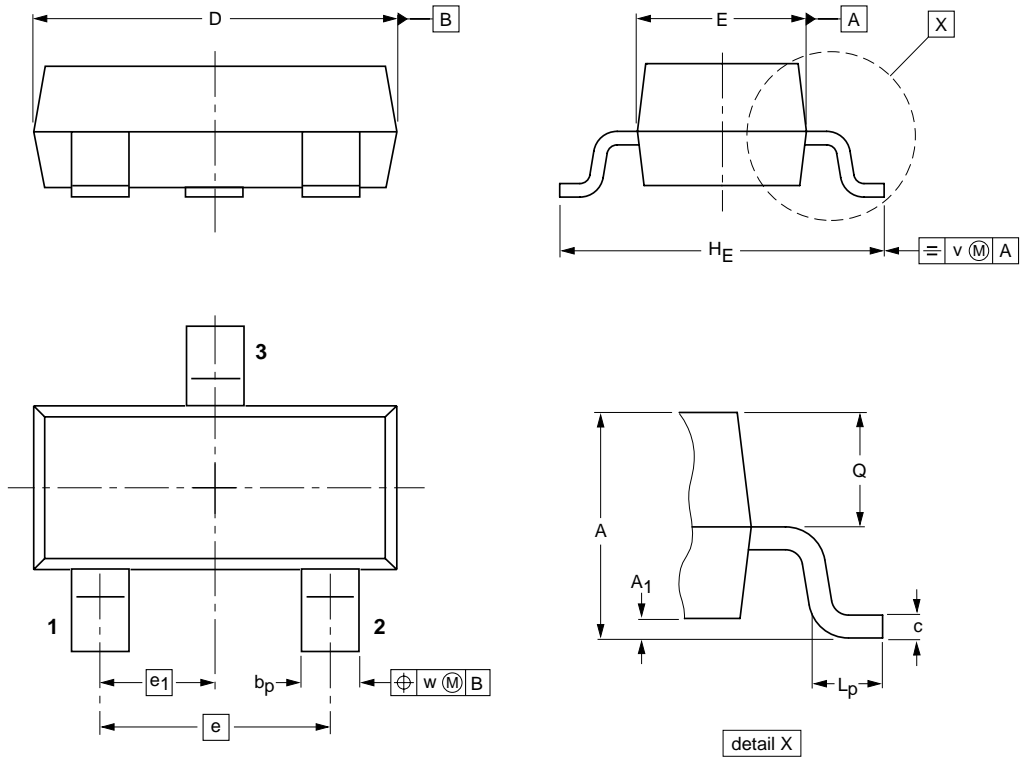
PNP general purpose transistors

BC856; BC857; BC858

PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads

SOT23



DIMENSIONS (mm are the original dimensions)

| UNIT | A | A ₁ max. | b _p | c | D | E | e | e ₁ | H _E | L _p | Q | v | w |
|------|------------|------------------------|----------------|--------------|------------|------------|-----|----------------|----------------|----------------|--------------|-----|-----|
| mm | 1.1 0.9 | 0.1 | 0.48 0.38 | 0.15 0.09 | 3.0 2.8 | 1.4 1.2 | 1.9 | 0.95 | 2.5 2.1 | 0.45 0.15 | 0.55 0.45 | 0.2 | 0.1 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|-----------------|------------|----------|-------|--|---------------------|----------------------|
| | IEC | JEDEC | JEITA | | | |
| SOT23 | | TO-236AB | | | | 04-11-04 06-03-16 |

PNP general purpose transistors

BC856; BC857; BC858

DATA SHEET STATUS

| DOCUMENT STATUS ⁽¹⁾ | PRODUCT STATUS ⁽²⁾ | DEFINITION |
|--------------------------------|-------------------------------|---|
| Objective data sheet | Development | This document contains data from the objective specification for product development. |
| Preliminary data sheet | Qualification | This document contains data from the preliminary specification. |
| Product data sheet | Production | This document contains the product specification. |

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