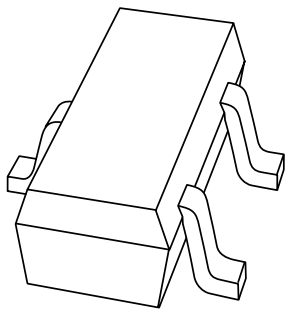


DATA SHEET



BC856T; BC857T series PNP general purpose transistors

Product data sheet
Supersedes data of 1999 Apr 26

2000 Nov 15

PNP general purpose transistors

BC856T; BC857T series

FEATURES

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

APPLICATIONS

- General purpose switching and amplification, especially in portable equipment.

DESCRIPTION

PNP transistor in an SC-75 (SOT416) plastic package. NPN complements: BC846T; BC847T series.

MARKING

| TYPE NUMBER | MARKING CODE |
|-------------|--------------|
| BC856AT | 3A |
| BC856BT | 3B |
| BC857AT | 3E |
| BC857BT | 3F |
| BC857CT | 3G |

PINNING

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

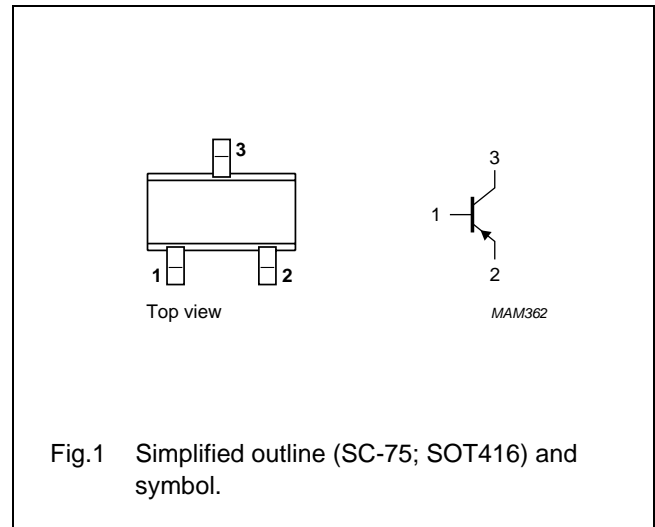


Fig.1 Simplified outline (SC-75; SOT416) and symbol.

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 | – | –80 | V |
| | BC856AT; BC856BT BC857AT; BC857BT; BC857CT | | – | –50 | V |
| V _{CEO} | collector-emitter voltage | open base | – | –65 | V |
| | BC856AT; BC856BT BC857AT; BC857BT; BC857CT | | – | –45 | 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 | | – | –100 | mA |
| P _{tot} | total power dissipation | T _{amb} ≤ 25 °C; note 1 | – | 150 | 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.

PNP general purpose transistors

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THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---------------|---|---------------------|-------|------|
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | in free air; note 1 | 833 | K/W |

Note

1. Transistor mounted on an FR4 printed-circuit board.

CHARACTERISTICS

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|-------------|--|--|------|------|------|---------------|
| I_{CBO} | collector-base cut-off current | $V_{CB} = -30\text{ V}; I_E = 0$ | – | – | –15 | nA |
| | | $V_{CB} = -30\text{ V}; I_E = 0; T_j = 150\text{ °C}$ | – | – | –5 | μA |
| I_{EBO} | emitter cut-off current | $V_{EB} = -5\text{ V}; I_C = 0$ | – | – | –100 | nA |
| h_{FE} | DC current gain BC856AT; BC857AT BC856BT; BC857BT BC857CT | $V_{CE} = -5\text{ V}; I_C = -2\text{ mA}$ | | | | |
| | | | 125 | – | 250 | |
| | | | 220 | – | 475 | |
| | | | 420 | – | 800 | |
| V_{CEsat} | collector-emitter saturation voltage | $I_C = -10\text{ mA}; I_B = -0.5\text{ mA}$ | – | – | –200 | mV |
| | | $I_C = -100\text{ mA}; I_B = -5\text{ mA}; \text{note 1}$ | – | – | –400 | mV |
| V_{BE} | base-emitter voltage | $I_C = -2\text{ mA}; V_{CE} = -5\text{ V}$ | –580 | – | –700 | mV |
| | | $I_C = -10\text{ mA}; V_{CE} = -5\text{ V}$ | – | – | –770 | mV |
| C_c | collector capacitance | $V_{CB} = -10\text{ V}; f = 1\text{ MHz}; I_E = i_e = 0$ | – | – | 2.5 | pF |
| C_e | emitter capacitance | $V_{EB} = -0.5\text{ V}; f = 1\text{ MHz}; I_C = i_c = 0$ | – | 10 | – | pF |
| f_T | transition frequency | $I_C = -10\text{ mA}; V_{CE} = -5\text{ V}; f = 100\text{ MHz}$ | 100 | – | – | MHz |
| F | noise figure | $I_C = -200\text{ }\mu\text{A}; V_{CE} = -5\text{ V}; R_S = 2\text{ k}\Omega; f = 1\text{ kHz}; B = 200\text{ Hz}$ | – | – | 10 | dB |

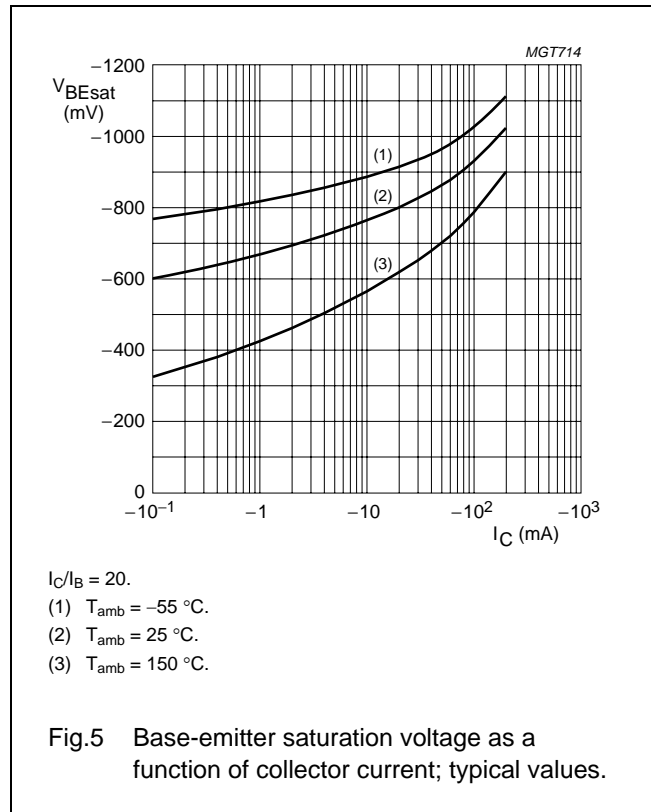
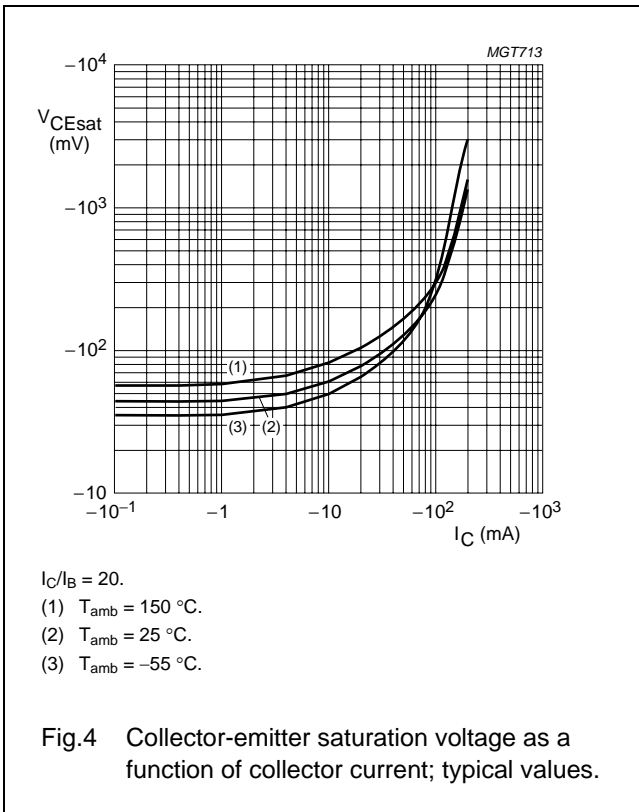
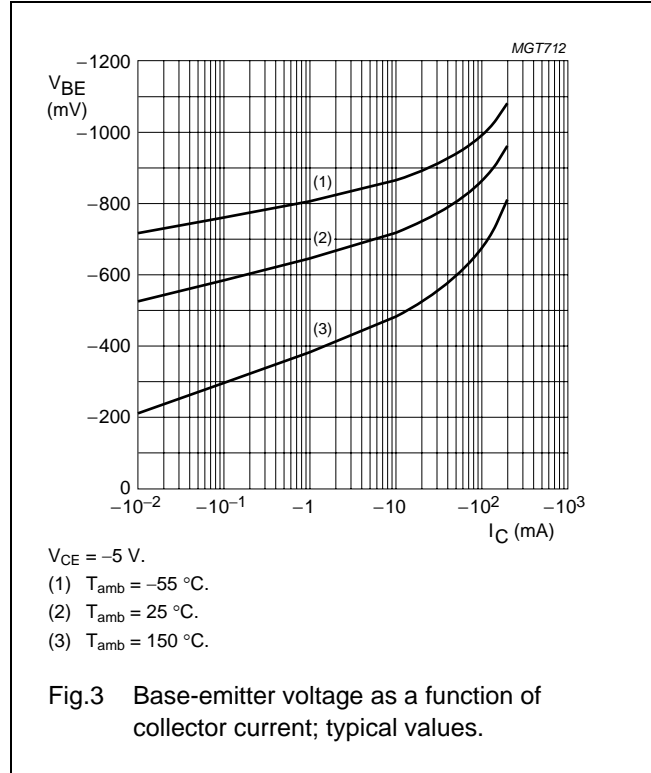
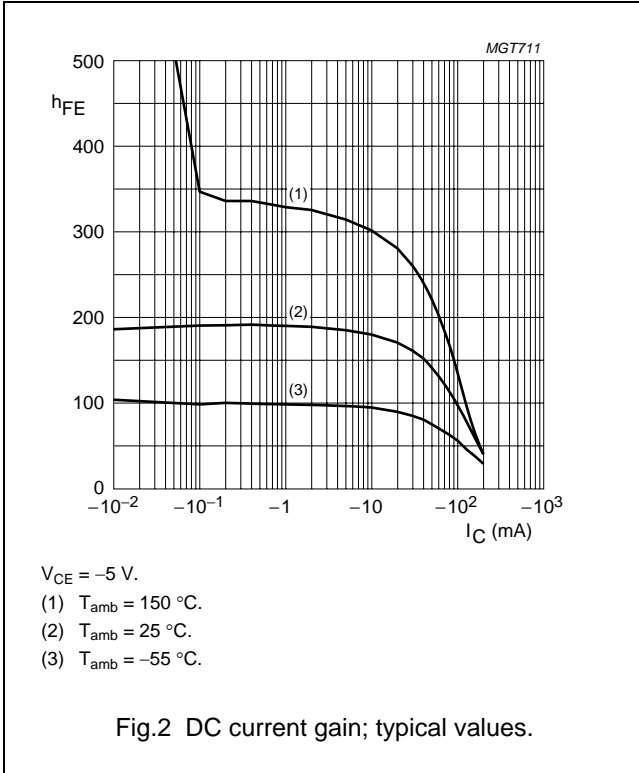
Note

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

PNP general purpose transistors

BC856T; BC857T series

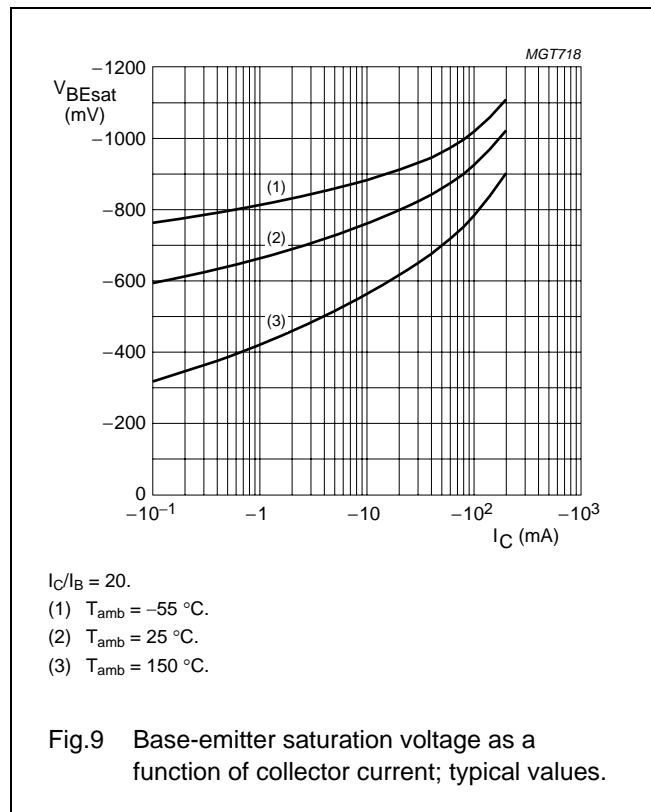
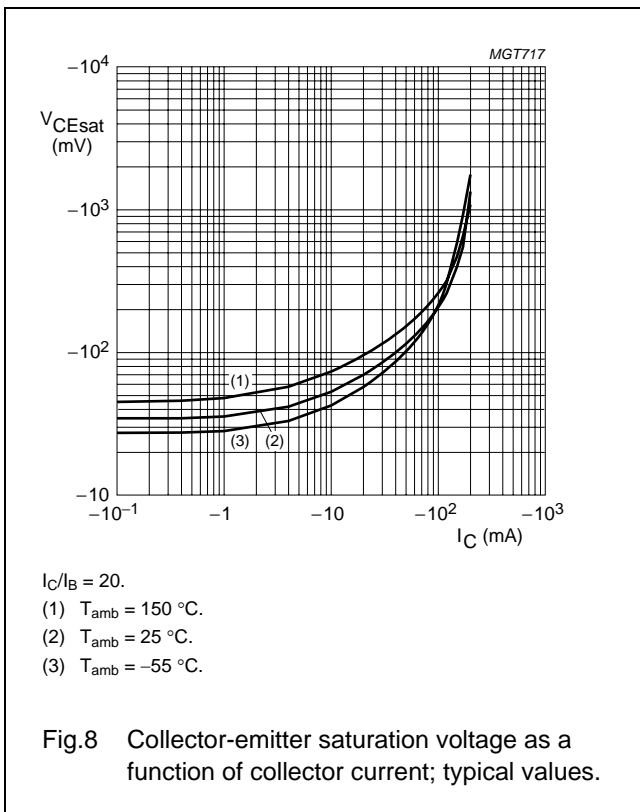
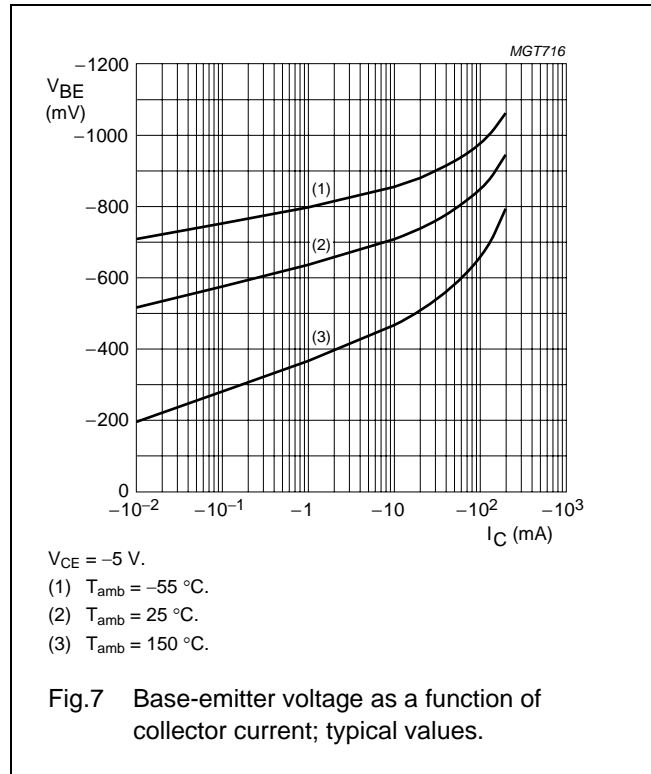
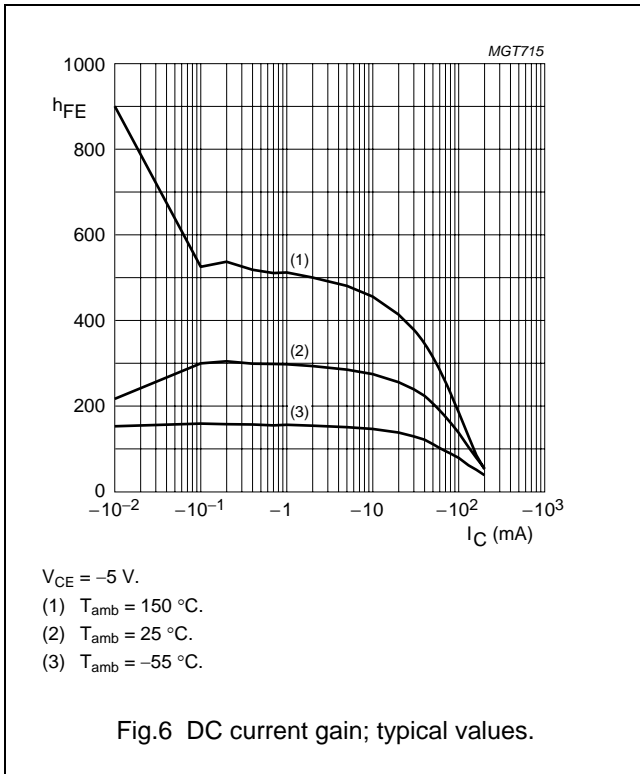
GRAPHICAL INFORMATION BC857AT



PNP general purpose transistors

BC856T; BC857T series

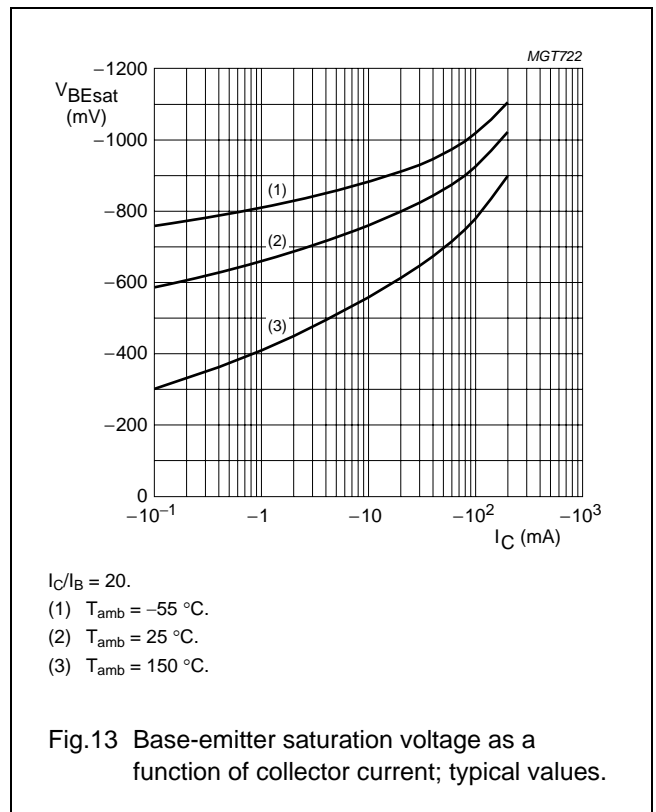
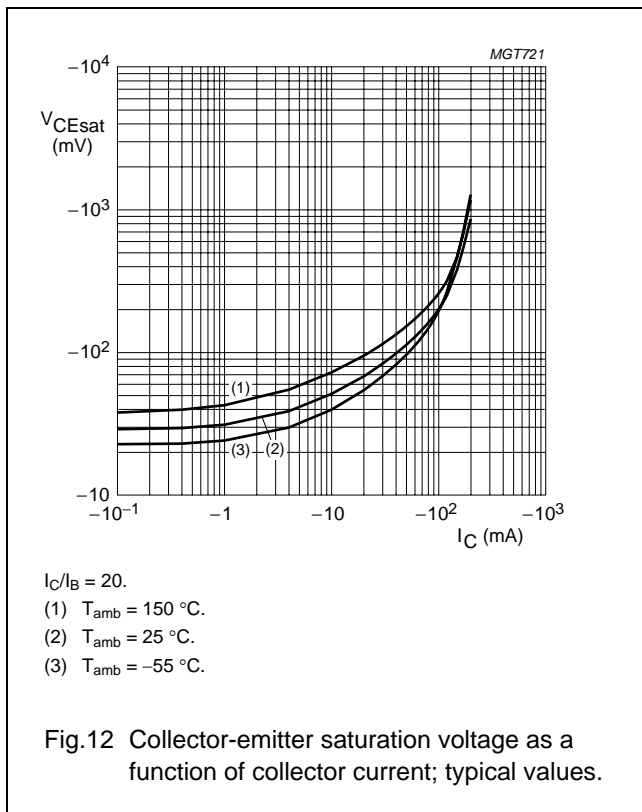
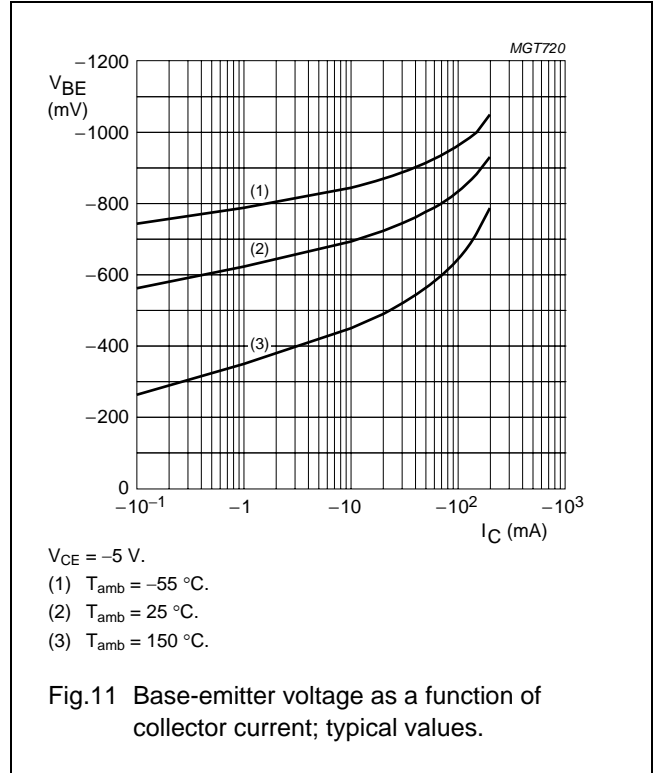
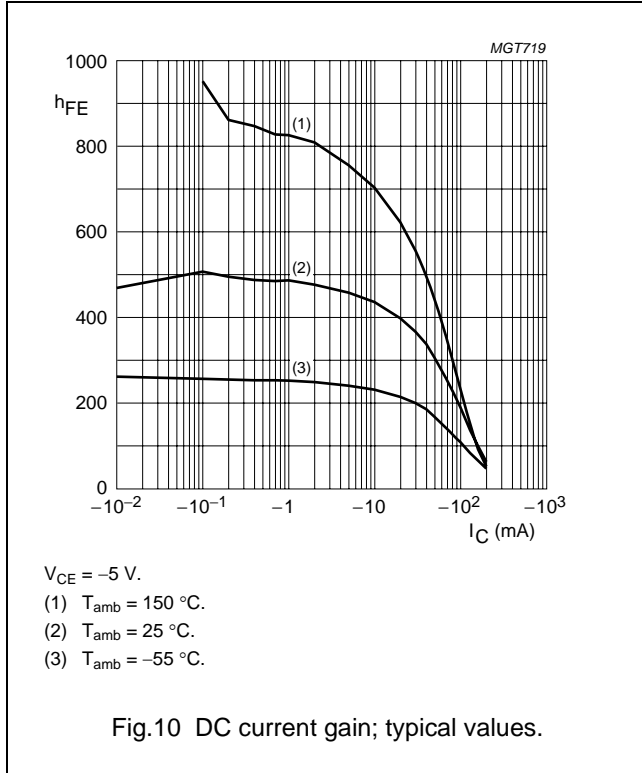
GRAPHICAL INFORMATION BC857BT



PNP general purpose transistors

BC856T; BC857T series

GRAPHICAL INFORMATION BC857CT



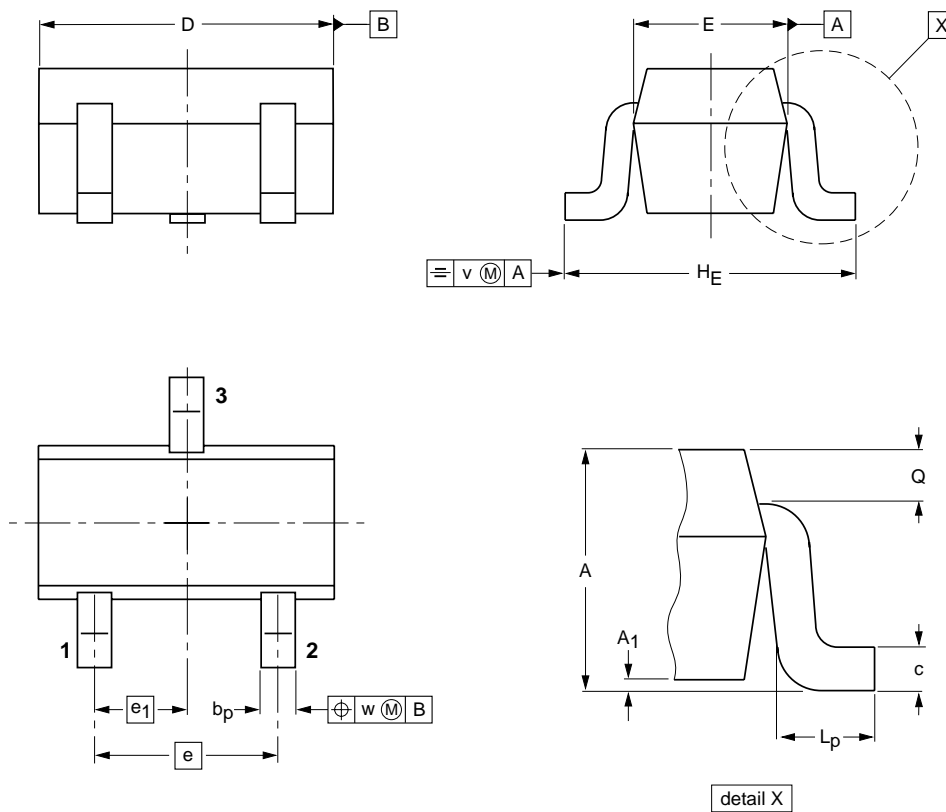
PNP general purpose transistors

BC856T; BC857T series

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT416



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 | 0.95 0.60 | 0.1 | 0.30 0.15 | 0.25 0.10 | 1.8 1.4 | 0.9 0.7 | 1 | 0.5 | 1.75 1.45 | 0.45 0.15 | 0.23 0.13 | 0.2 | 0.2 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|--------------------|------------|-------|-------|--|------------------------|------------|
| | IEC | JEDEC | EIAJ | | | |
| SOT416 | | | SC-75 | | | 97-02-28 |

PNP general purpose transistors

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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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