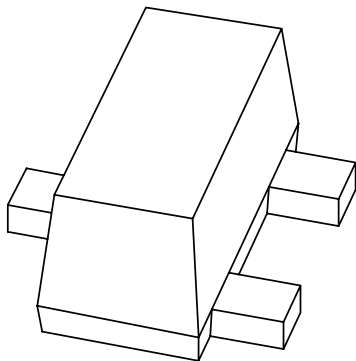


DATA SHEET



BC856F; BC857F; BC858F series PNP general purpose transistors

Preliminary specification
Supersedes data of 1998 Nov 10

1999 May 21

PNP general purpose transistors

BC856F; BC857F; BC858F series

FEATURES

- Power dissipation comparable to SOT23
- Low current (max. 100 mA)
- Low voltage (max. 65 V).

APPLICATIONS

- General purpose switching and amplification especially in portable equipment.

DESCRIPTION

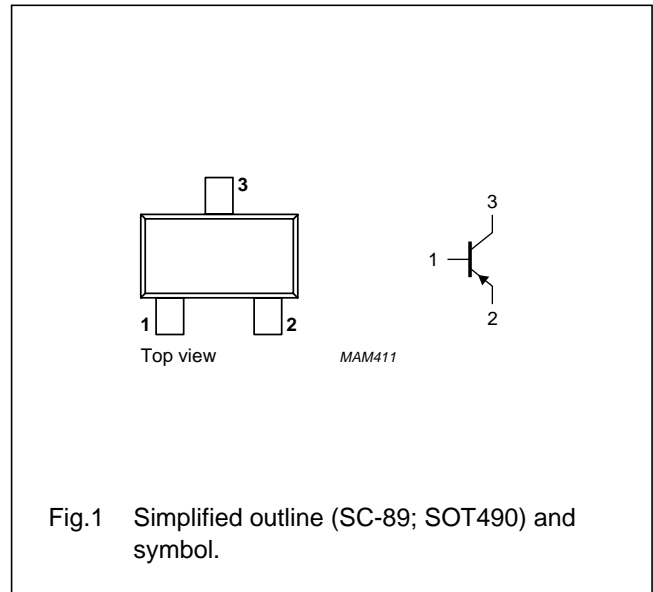
PNP transistor encapsulated in an ultra small SC-89 (SOT490) plastic SMD package.
 NPN complements: BC846F, BC847F and BC848F series.

MARKING

| TYPE NUMBER | MARKING CODE | TYPE NUMBER | MARKING CODE |
|-------------|--------------|-------------|--------------|
| BC856AF | 3A | BC857CF | 3G |
| BC856BF | 3B | BC858AF | 3J |
| BC857AF | 3E | BC858BF | 3K |
| BC857BF | 3F | BC858CF | 3L |

PINNING

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



PNP general purpose transistors

BC856F; BC857F; BC858F series

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|------------------|-------------------------------|----------------------------------|------|------|------|
| V _{CBO} | collector-base voltage | open emitter | | | |
| | BC856AF; BC856BF | | – | –80 | V |
| | BC857AF; BC857BF; BC857CF | | – | –50 | V |
| | BC858AF; BC858BF; BC858CF | | – | –30 | V |
| V _{CEO} | collector-emitter voltage | open base | | | |
| | BC856AF; BC856BF | | – | –65 | |
| | BC857AF; BC857BF; BC857CF | | – | –45 | |
| | BC858AF; BC858BF; BC858CF | | – | –30 | |
| 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 | – | 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.

PNP general purpose transistors

BC856F; BC857F; BC858F series

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | 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.

CHARACTERISTICS

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|-------------|---|---|------|------|---------------|
| I_{CBO} | collector cut-off current | $I_E = 0; V_{CB} = -30\text{ V}$ | – | –15 | nA |
| | | $I_E = 0; V_{CB} = -30\text{ V}; T_j = 150\text{ °C}$ | – | –5 | μA |
| I_{EBO} | emitter cut-off current | $I_C = 0; V_{EB} = -5\text{ V}$ | – | –100 | nA |
| h_{FE} | DC current gain BC856AF; BC857AF; BC858AF BC856BF; BC857BF; BC858BF BC857CF; BC858CF | $I_C = -2\text{ mA}; V_{CE} = -5\text{ V}$ | 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 | $I_C = -2\text{ mA}; V_{CE} = -5\text{ V}$ | –600 | –750 | mV |
| | | $I_C = -10\text{ mA}; V_{CE} = -5\text{ V}$ | – | –820 | mV |
| C_C | collector capacitance | $I_E = I_E = 0; V_{CB} = -10\text{ V}; f = 1\text{ MHz}$ | – | 2.5 | pF |
| f_T | transition frequency | $I_C = -10\text{ mA}; V_{CE} = -5\text{ V}; f = 100\text{ MHz}$ | 100 | – | MHz |
| F | noise figure | $I_C = -200\text{ }\mu\text{A}; V_{CE} = -5\text{ V}; R_S = 2\text{ k}\Omega;$ $f = 1\text{ kHz}; B = 220\text{ Hz}$ | – | 10 | dB |

Note

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

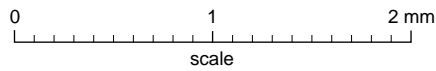
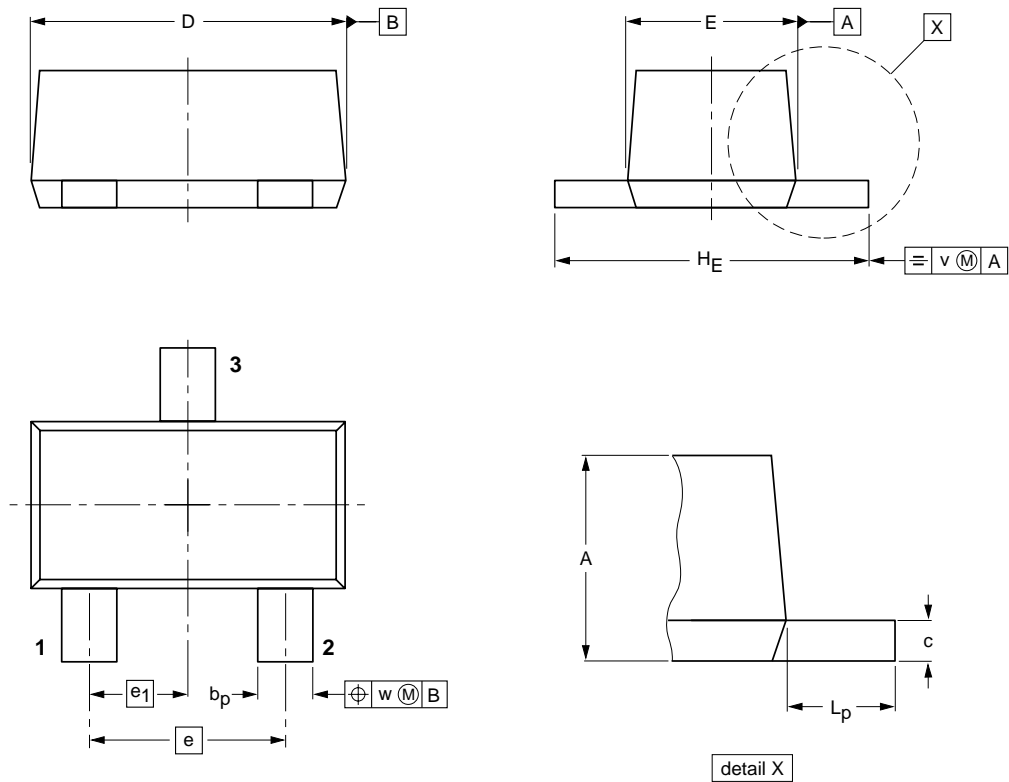
PNP general purpose transistors

BC856F; BC857F; BC858F series

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT490



DIMENSIONS (mm are the original dimensions)

| UNIT | A | b_p | c | D | E | e | e_1 | H_E | L_p | v | w |
|------|------------|--------------|------------|------------|--------------|-----|-------|------------|------------|-----|-----|
| mm | 0.8 0.6 | 0.33 0.23 | 0.2 0.1 | 1.7 1.5 | 0.95 0.75 | 1.0 | 0.5 | 1.7 1.5 | 0.5 0.3 | 0.1 | 0.1 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|-----------------|------------|-------|-------|--|---------------------|------------|
| | IEC | JEDEC | EIAJ | | | |
| SOT490 | | | SC-89 | | | 98-10-23 |

PNP general purpose transistors

BC856F; BC857F; BC858F series

DEFINITIONS

| | |
|---|---|
| Data sheet status | |
| Objective specification | This data sheet contains target or goal specifications for product development. |
| Preliminary specification | This data sheet contains preliminary data; supplementary data may be published later. |
| Product specification | This data sheet contains final product specifications. |
| Limiting values | |
| Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability. | |
| Application information | |
| Where application information is given, it is advisory and does not form part of the specification. | |

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PNP general purpose transistors

BC856F; BC857F; BC858F series

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