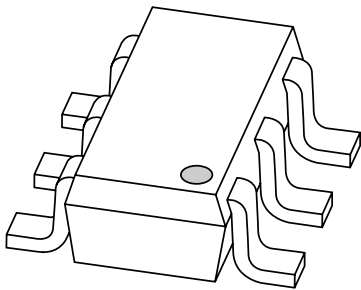


# DATA SHEET



**BC807DS**

PNP general purpose double  
transistor

Product data sheet  
Supersedes data of 2002 Aug 09

2002 Nov 22

## PNP general purpose double transistor

## BC807DS

## FEATURES

- High current (500 mA)
- 600 mW total power dissipation
- Replaces two SOT23 packaged transistors on same PCB area.

## APPLICATIONS

- General purpose switching and amplification
- Push-pull amplifiers
- Multi-phase stepper motor drivers.

## DESCRIPTION

PNP transistor pair in a SOT457 (SC-74) plastic package.

## MARKING

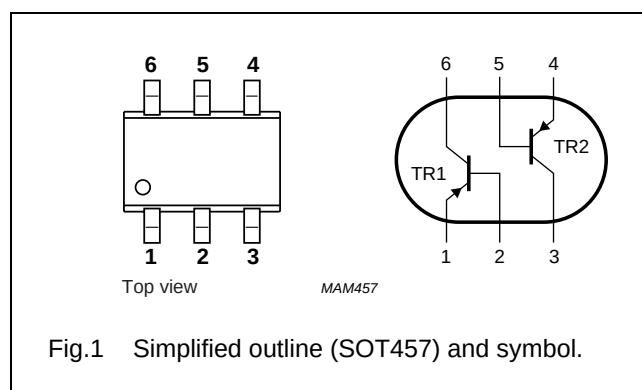
| TYPE NUMBER | MARKING CODE |
|-------------|--------------|
| BC807DS     | N2           |

## QUICK REFERENCE DATA

| SYMBOL    | PARAMETER                 | MAX. | UNIT |
|-----------|---------------------------|------|------|
| $V_{CEO}$ | collector-emitter voltage | -45  | V    |
| $I_C$     | collector current (DC)    | -500 | mA   |
| $I_{CM}$  | peak collector current    | -1   | A    |

## PINNING

| PIN  | DESCRIPTION        |
|------|--------------------|
| 1, 4 | emitter TR1; TR2   |
| 2, 5 | base TR1; TR2      |
| 6, 3 | collector TR1; TR2 |



## LIMITING VALUES

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

| SYMBOL                                           | PARAMETER                     | CONDITIONS                                         | MIN. | MAX. | UNIT               |
|--------------------------------------------------|-------------------------------|----------------------------------------------------|------|------|--------------------|
| <b>Per transistor unless otherwise specified</b> |                               |                                                    |      |      |                    |
| $V_{CBO}$                                        | 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 (DC)        |                                                    | -    | -500 | mA                 |
| $I_{CM}$                                         | peak collector current        |                                                    | -    | -1   | A                  |
| $I_{BM}$                                         | peak base current             |                                                    | -    | -200 | mA                 |
| $P_{tot}$                                        | total power dissipation       | $T_{amb} \leq 25\text{ }^{\circ}\text{C}$ ; note 1 | -    | 370  | mW                 |
| $T_{stg}$                                        | storage temperature           |                                                    | -65  | +150 | $^{\circ}\text{C}$ |
| $T_j$                                            | junction temperature          |                                                    | -    | 150  | $^{\circ}\text{C}$ |
| $T_{amb}$                                        | operating ambient temperature |                                                    | -65  | +150 | $^{\circ}\text{C}$ |
| <b>Per device</b>                                |                               |                                                    |      |      |                    |
| $P_{tot}$                                        | total power dissipation       | $T_{amb} \leq 25\text{ }^{\circ}\text{C}$ ; note 1 | -    | 600  | mW                 |

## Note

1. Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 1 cm<sup>2</sup>.

## PNP general purpose double transistor

BC807DS

## THERMAL CHARACTERISTICS

| SYMBOL        | PARAMETER                                   | CONDITIONS | VALUE | UNIT |
|---------------|---------------------------------------------|------------|-------|------|
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | note 1     | 208   | K/W  |

## Note

1. Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 1 cm<sup>2</sup>.

## CHARACTERISTICS

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

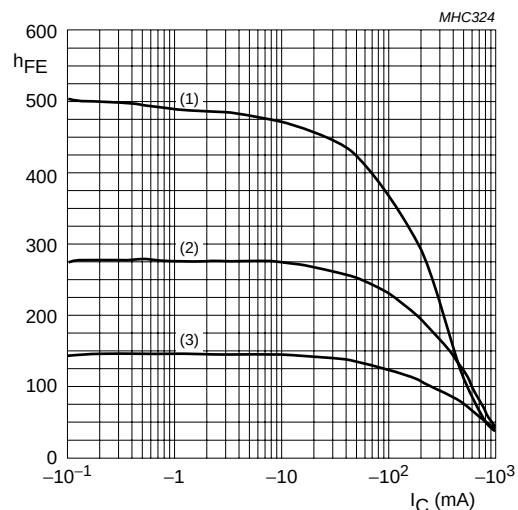
| SYMBOL                | PARAMETER                            | CONDITIONS                                                         | MIN. | TYP. | MAX. | UNIT |
|-----------------------|--------------------------------------|--------------------------------------------------------------------|------|------|------|------|
| <b>Per transistor</b> |                                      |                                                                    |      |      |      |      |
| $I_{CBO}$             | collector-base cut-off current       | $V_{CB} = -20\text{ V}; I_E = 0$                                   | –    | –    | –100 | nA   |
|                       |                                      | $V_{CB} = -20\text{ V}; I_E = 0; T_j = 150\text{ °C}$              | –    | –    | –5   | μA   |
| $I_{EBO}$             | emitter-base cut-off current         | $V_{EB} = -5\text{ V}; I_C = 0$                                    | –    | –    | –100 | nA   |
| $h_{FE}$              | DC current gain                      | $V_{CE} = -1\text{ V}; I_C = -100\text{ mA}; \text{note 1}$        | 160  | –    | 400  |      |
|                       |                                      | $V_{CE} = -1\text{ V}; I_C = -500\text{ mA}; \text{note 1}$        | 40   | –    | –    |      |
| $V_{CEsat}$           | collector-emitter saturation voltage | $I_C = -500\text{ mA}; I_B = -50\text{ mA}; \text{note 1}$         | –    | –    | –700 | mV   |
| $V_{BE}$              | base-emitter voltage                 | $V_{CE} = -1\text{ V}; I_C = -500\text{ mA}; \text{notes 1 and 2}$ | –    | –    | –1.2 | V    |
| $C_c$                 | collector capacitance                | $V_{CB} = -10\text{ V}; I_E = I_e = 0; f = 1\text{ MHz}$           | –    | 9    | –    | pF   |
| $f_T$                 | transition frequency                 | $V_{CE} = -5\text{ V}; I_C = -10\text{ mA}; f = 100\text{ MHz}$    | 80   | –    | –    | MHz  |

## Notes

1. Pulse test:  $t_p \leq 300\text{ μs}$ ;  $\delta \leq 0.02$ .
2.  $V_{BE}$  decreases by approximately  $-2\text{ mV/K}$  with increasing temperature.

## PNP general purpose double transistor

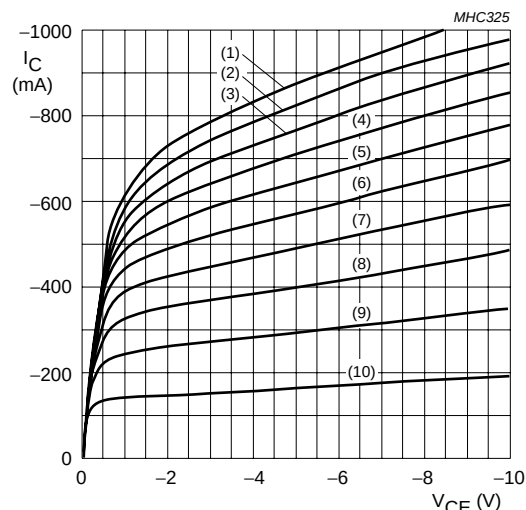
## BC807DS



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

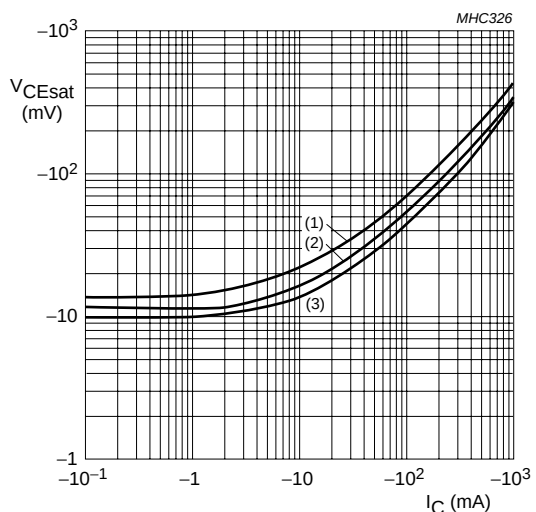
- (1)  $T_{amb} = 150 \text{ }^{\circ}\text{C.}$   
 (2)  $T_{amb} = 25 \text{ }^{\circ}\text{C.}$   
 (3)  $T_{amb} = -55 \text{ }^{\circ}\text{C.}$

Fig.2 DC current gain as a function of collector current; typical values.



- (1)  $I_B = -7 \text{ mA.}$  (5)  $I_B = -4.2 \text{ mA.}$  (9)  $I_B = -1.4 \text{ mA.}$   
 (2)  $I_B = -6.3 \text{ mA.}$  (6)  $I_B = -3.5 \text{ mA.}$  (10)  $I_B = -0.7 \text{ mA.}$   
 (3)  $I_B = -5.6 \text{ mA.}$  (7)  $I_B = -2.8 \text{ mA.}$   
 (4)  $I_B = -4.9 \text{ mA.}$  (8)  $I_B = -2.1 \text{ mA.}$

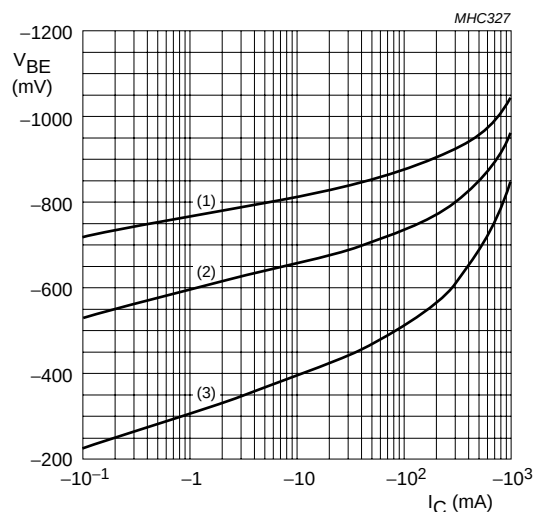
Fig.3 Collector current as a function of collector-emitter voltage; typical values.



$I_C/I_B = 10.$

- (1)  $T_{amb} = 150 \text{ }^{\circ}\text{C.}$   
 (2)  $T_{amb} = 25 \text{ }^{\circ}\text{C.}$   
 (3)  $T_{amb} = -55 \text{ }^{\circ}\text{C.}$

Fig.4 Collector-emitter saturation voltage as a function of collector current; typical values.



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

- (1)  $T_{amb} = -55 \text{ }^{\circ}\text{C.}$   
 (2)  $T_{amb} = 25 \text{ }^{\circ}\text{C.}$   
 (3)  $T_{amb} = 150 \text{ }^{\circ}\text{C.}$

Fig.5 Base-emitter voltage as a function of collector current; typical values.

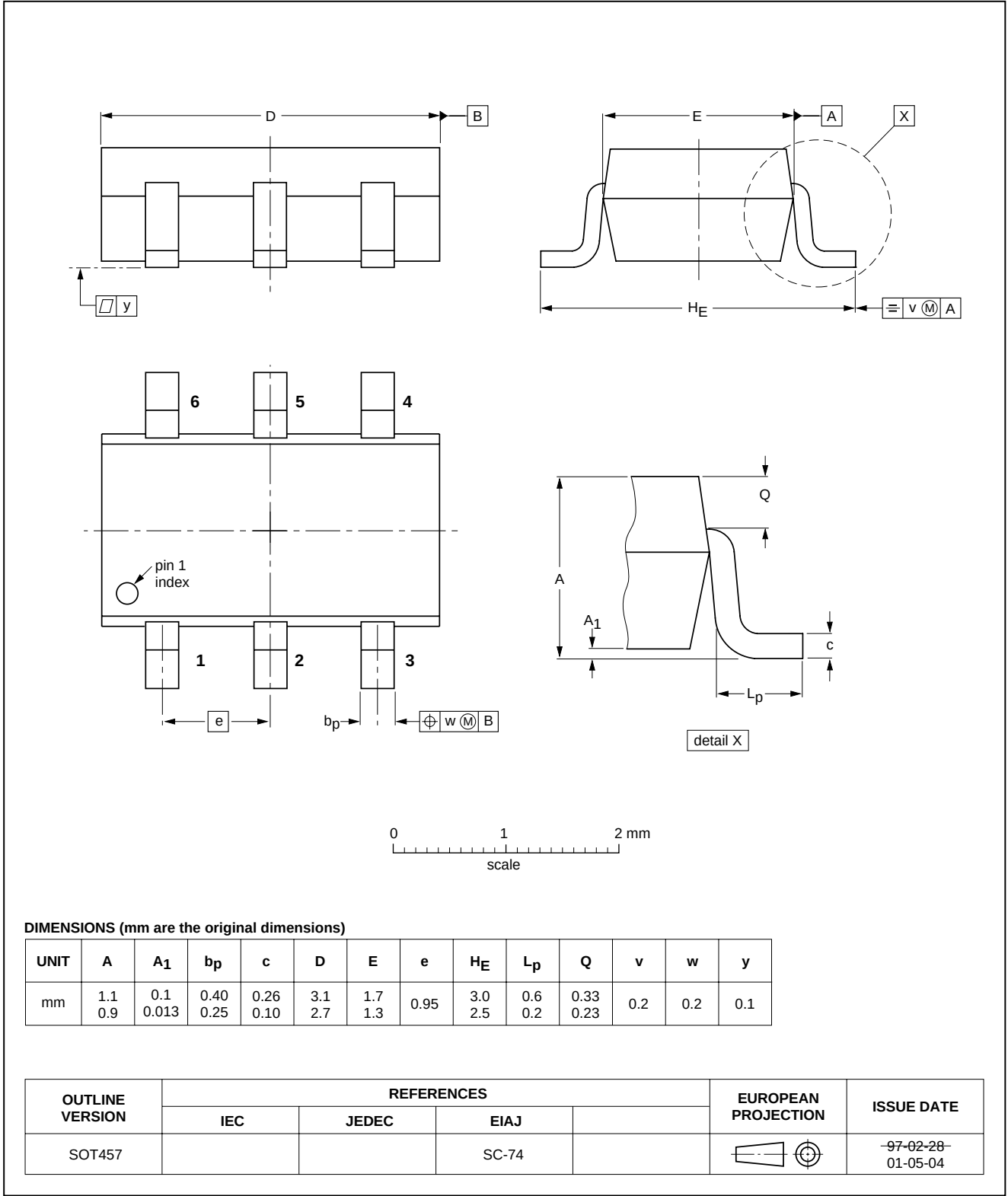
PNP general purpose double transistor

BC807DS

PACKAGE OUTLINE

Plastic surface mounted package; 6 leads

SOT457



## PNP general purpose double transistor

BC807DS

## DATA SHEET STATUS

| DOCUMENT STATUS <sup>(1)</sup> | PRODUCT STATUS <sup>(2)</sup> | 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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