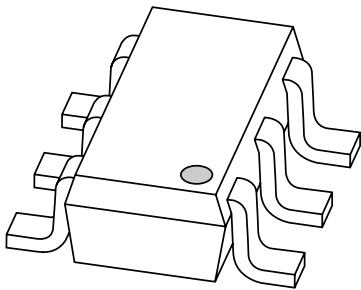


DATA SHEET



BC817DS

NPN general purpose double transistor

Product data sheet
Supersedes data of 2002 Aug 09

2002 Nov 22

NPN general purpose double transistor

BC817DS

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

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

MARKING

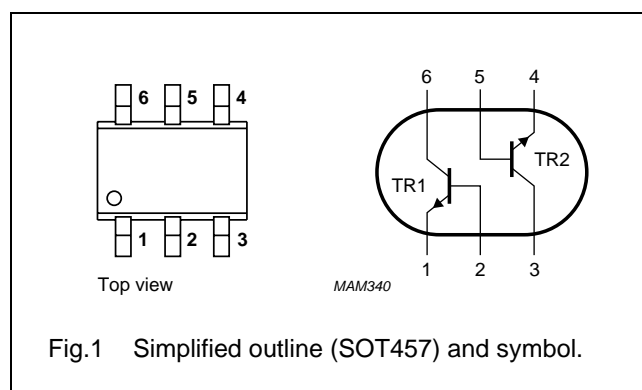
TYPE NUMBER	MARKING CODE
BC817DS	N3

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
Per transistor unless otherwise specified					
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	$T_{amb} \leq 25\text{ °C}$; note 1	–	370	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C
Per device					
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$; note 1	–	600	mW

Note

1. Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 1 cm².

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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 cm².

CHARACTERISTICS

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

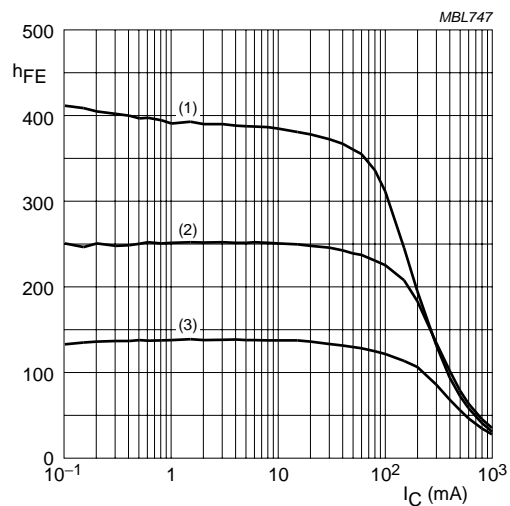
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Per transistor						
I_{CBO}	collector-base cut-off current	$V_{CB} = 20\text{ V}; I_E = 0$	–	–	100	nA
		$V_{CB} = 20\text{ V}; I_E = 0; T_j = 150\text{ °C}$	–	–	5	μA
I_{EBO}	emitter-base cut-off current	$V_{EB} = 5\text{ V}; I_C = 0$	–	–	100	nA
h_{FE}	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	$V_{CB} = 10\text{ V}; I_E = I_e = 0; f = 1\text{ MHz}$	–	5	–	pF
f_T	transition frequency	$V_{CE} = 5\text{ V}; I_C = 10\text{ mA}; f = 100\text{ MHz}$	100	–	–	MHz

Notes

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

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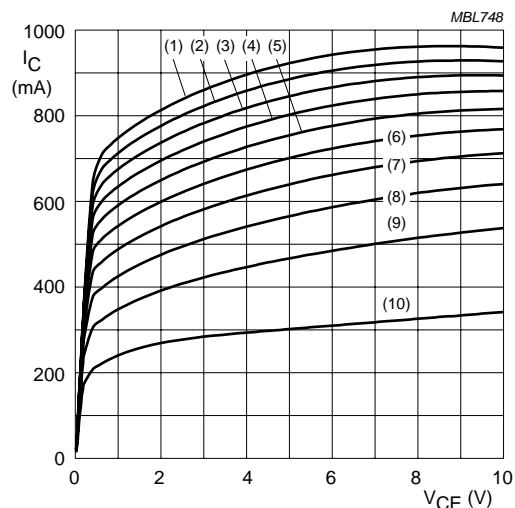
$V_{CE} = 1\text{ V}$.

(1) $T_{amb} = 150^\circ\text{C}$.

(2) $T_{amb} = 25^\circ\text{C}$.

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

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



(1) $I_B = 15\text{ mA}$.

(2) $I_B = 13.5\text{ mA}$.

(3) $I_B = 12\text{ mA}$.

(4) $I_B = 10.5\text{ mA}$.

(5) $I_B = 9\text{ mA}$.

(6) $I_B = 7.5\text{ mA}$.

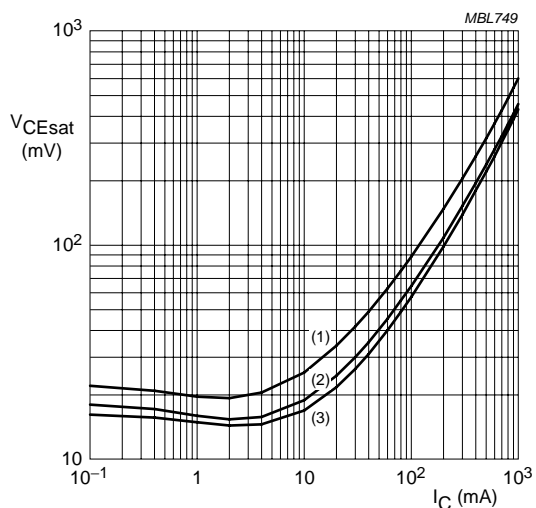
(7) $I_B = 6\text{ mA}$.

(8) $I_B = 4.5\text{ mA}$.

(9) $I_B = 3\text{ mA}$.

(10) $I_B = 1.5\text{ mA}$.

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



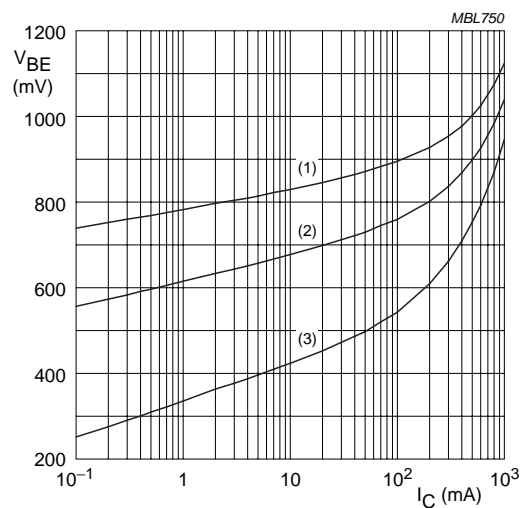
$I_C/I_B = 10$.

(1) $T_{amb} = 150^\circ\text{C}$.

(2) $T_{amb} = 25^\circ\text{C}$.

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

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



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

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

(2) $T_{amb} = 25^\circ\text{C}$.

(3) $T_{amb} = 150^\circ\text{C}$.

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

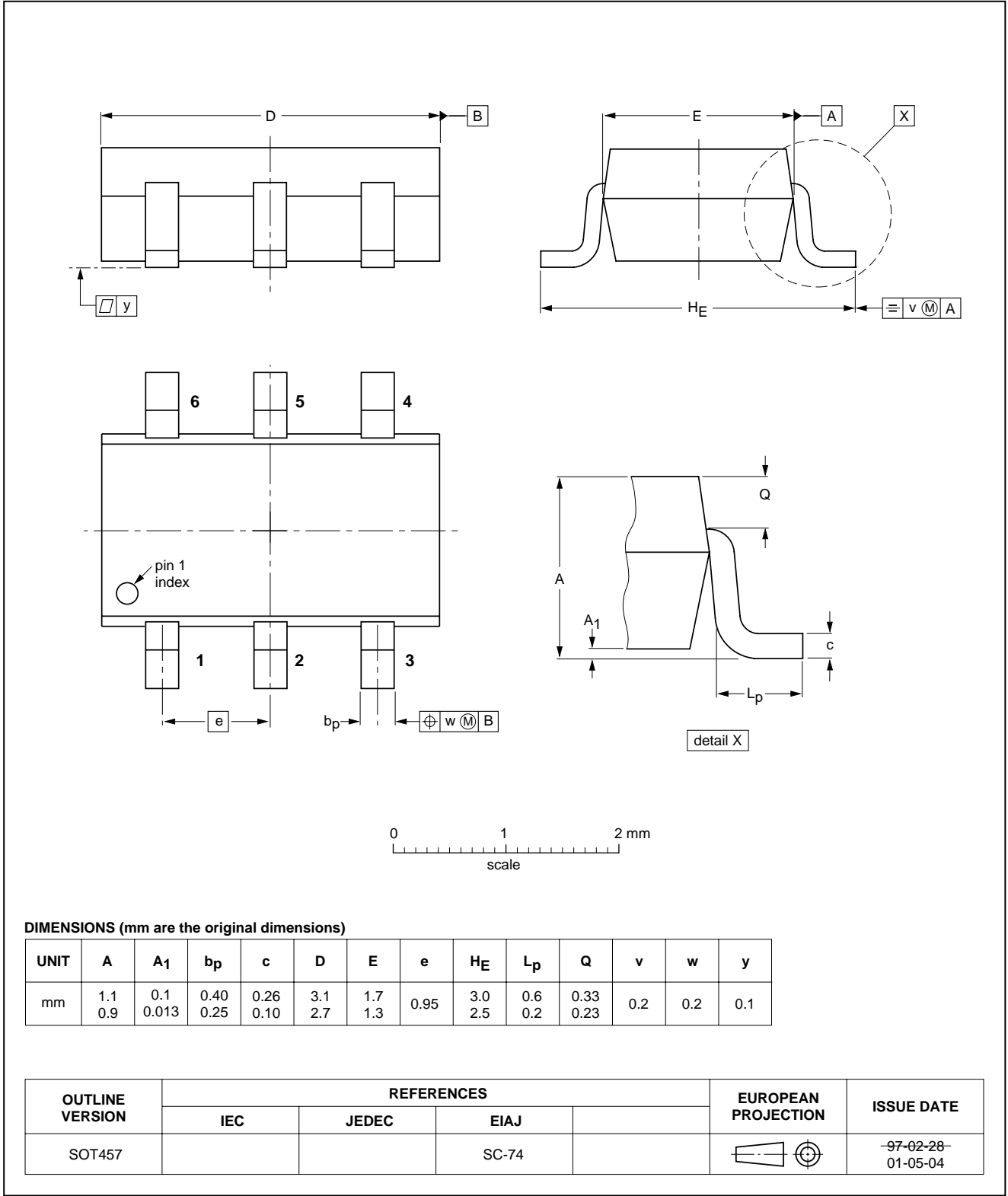
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PACKAGE OUTLINE

Plastic surface mounted package; 6 leads

SOT457



NPN general purpose double transistor

BC817DS

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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