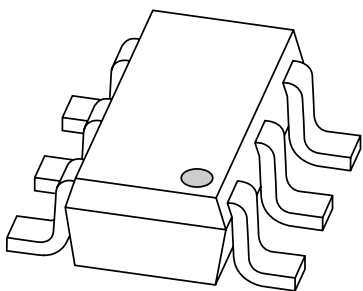


DATA SHEET



BC817DS

**NPN general purpose double
transistor**

Product specification
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

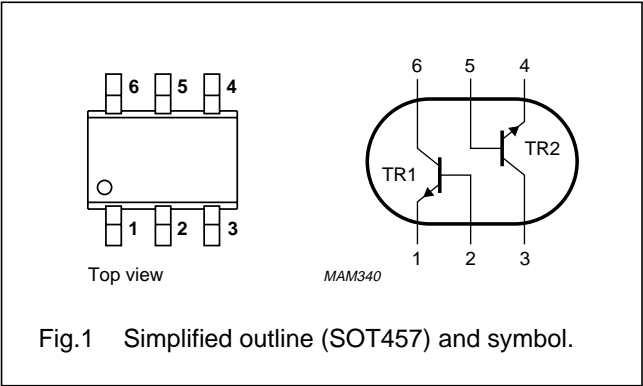


Fig.1 Simplified outline (SOT457) and symbol.

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	$T_{amb} \leq 25\text{ }^{\circ}\text{C}$; 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	$^{\circ}\text{C}$
Per device					
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 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.

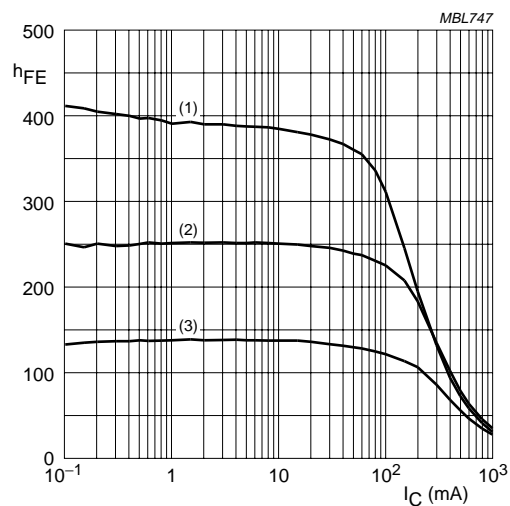
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Per transistor						
I_{CBO}	collector-base cut-off current	$V_{CB} = 20\text{ V}; I_E = 0$	–	–	100	nA
		$V_{CB} = 20\text{ V}; I_E = 0; T_j = 150\text{ °C}$	–	–	5	μA
I_{EBO}	emitter-base cut-off current	$V_{EB} = 5\text{ V}; I_C = 0$	–	–	100	nA
h_{FE}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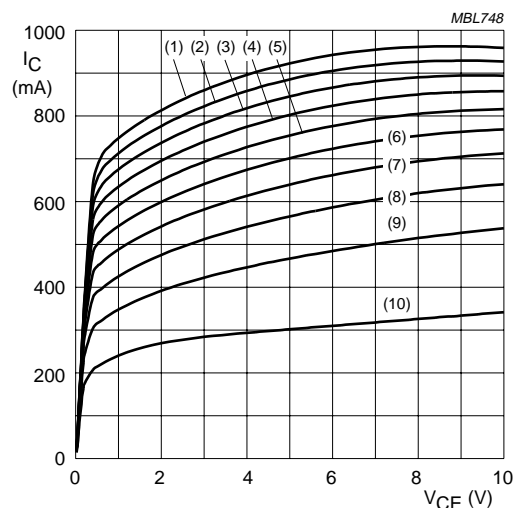
$V_{CE} = 1\text{ V}$.

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

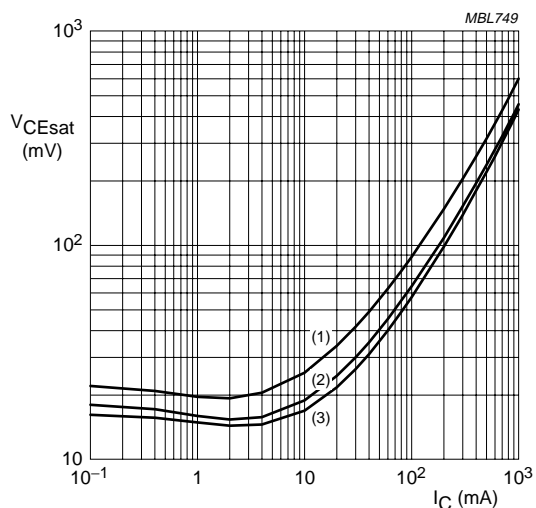
(7) $I_B = 6\text{ mA}$.

(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.



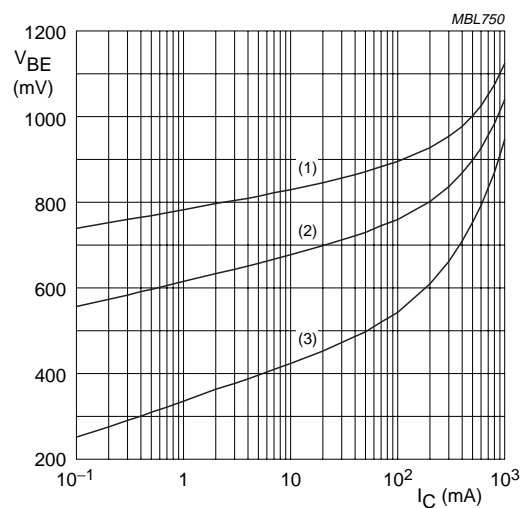
$I_C/I_B = 10$.

(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.

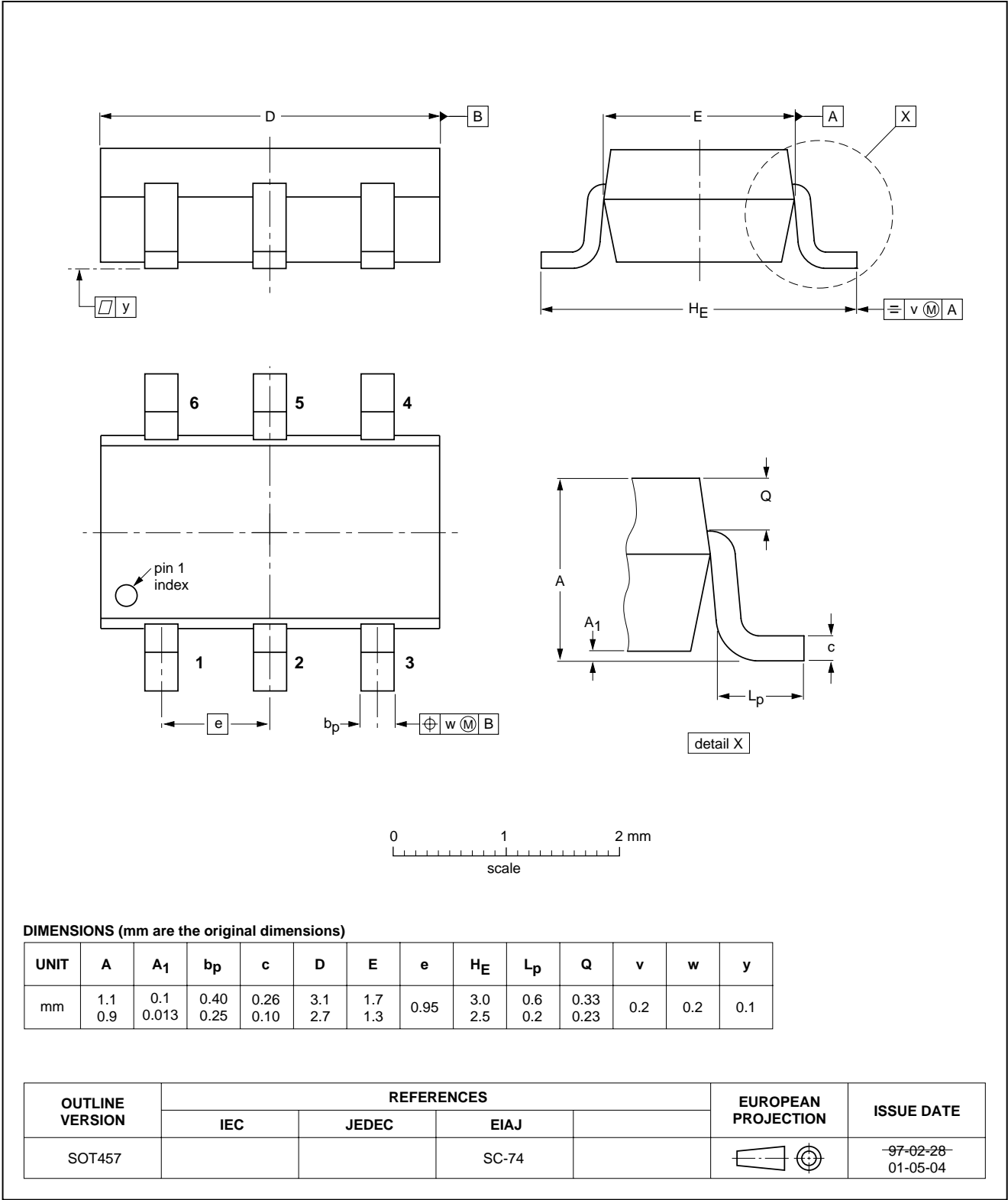
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PACKAGE OUTLINE

Plastic surface mounted package; 6 leads

SOT457



NPN general purpose double transistor

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DATA SHEET STATUS

LEVEL	DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾⁽³⁾	DEFINITION
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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NOTES

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