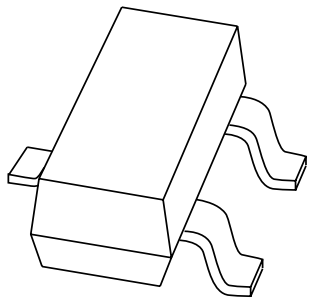


# DATA SHEET



## **BC817; BC818** NPN general purpose transistors

Product specification  
Supersedes data of September 1994  
File under Discrete Semiconductors, SC04

1997 Mar 12

# NPN general purpose transistors

# BC817; BC818

### FEATURES

- High current (max. 500 mA)
- Low voltage (max. 45 V).

### APPLICATIONS

- General purpose switching and amplification.

### DESCRIPTION

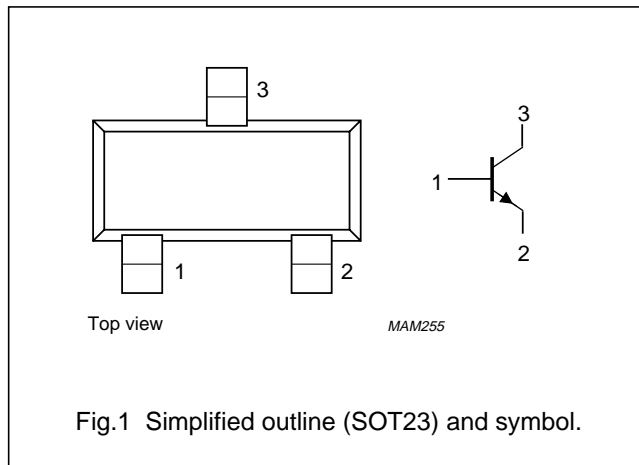
NPN transistor in a SOT23 plastic package.  
PNP complements: BC807 and BC808.

### MARKING

TYPE NUMBER	MARKING CODE	TYPE NUMBER	MARKING CODE
BC817	6Dp	BC818	6Hp
BC817-16	6Ap	BC818-16	6Ep
BC817-25	6Bp	BC818-25	6Fp
BC817-40	6Cp	BC818-40	6Gp

### PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



### QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage	open emitter	-	50	V
				30	V
V <sub>CEO</sub>	collector-emitter voltage	open base	-	45	V
				25	V
I <sub>CM</sub>	peak collector current		-	1	A
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	-	250	mW
h <sub>FE</sub>	DC current gain	I <sub>C</sub> = 100 mA; V <sub>CE</sub> = 1 V	100	600	
		I <sub>C</sub> = 500 mA; V <sub>CE</sub> = 1 V	40	-	
f <sub>T</sub>	transition frequency	I <sub>C</sub> = 10 mA; V <sub>CE</sub> = 5 V; f = 100 MHz	100	-	MHz

## NPN general purpose transistors

## BC817; BC818

**LIMITING VALUES**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage	open emitter			
	BC817		–	50	V
	BC818		–	30	V
V <sub>CEO</sub>	collector-emitter voltage	open base; I <sub>C</sub> = 10 mA			
	BC817		–	45	V
	BC818		–	25	V
V <sub>EBO</sub>	emitter-base voltage	open collector	–	5	V
I <sub>C</sub>	collector current (DC)		–	500	mA
I <sub>CM</sub>	peak collector current		–	1	A
I <sub>BM</sub>	peak base current		–	200	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C; note 1	–	250	mW
T <sub>stg</sub>	storage temperature		–65	+150	°C
T <sub>j</sub>	junction temperature		–	150	°C
T <sub>amb</sub>	operating ambient temperature		–65	+150	°C

**Note**

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

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R <sub>th j-a</sub>	thermal resistance from junction to ambient	note 1	500	K/W

**Note**

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

NPN general purpose transistors

BC817; BC818

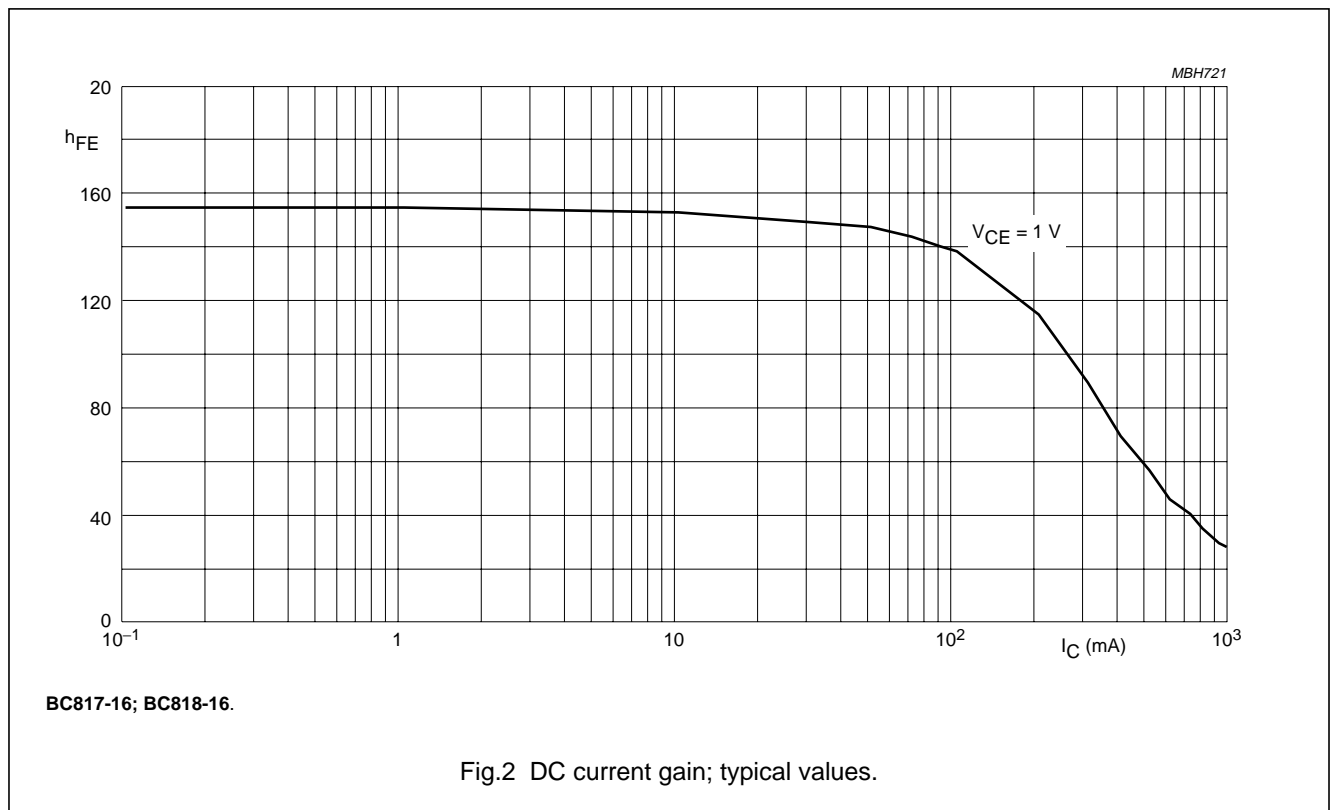
**CHARACTERISTICS**

$T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CBO}$	collector cut-off current	$I_E = 0; V_{CB} = 20\text{ V}$	–	–	100	nA
		$I_E = 0; V_{CB} = 20\text{ V}; T_j = 150\text{ }^\circ\text{C}$	–	–	5	$\mu\text{A}$
$I_{EBO}$	emitter cut-off current	$I_C = 0; V_{EB} = 5\text{ V}$	–	–	100	nA
$h_{FE}$	DC current gain BC817; BC818 BC817-16; BC818-16 BC817-25; BC818-25 BC817-40; BC818-40	$I_C = 100\text{ mA}; V_{CE} = 1\text{ V};$ note 1; see Figs 2, 3 and 4	100	–	600	
			100	–	250	
			160	–	400	
			250	–	600	
$h_{FE}$	DC current gain	$I_C = 500\text{ mA}; V_{CE} = 1\text{ V};$ note 1	40	–	–	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 500\text{ mA}; I_B = 50\text{ mA};$ note 1	–	–	700	mV
$V_{BE}$	base-emitter voltage	$I_C = 500\text{ mA}; V_{CE} = 1\text{ V};$ note 2	–	–	1.2	V
$C_c$	collector capacitance	$I_E = i_e = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz};$	–	5	–	pF
$f_T$	transition frequency	$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz};$	100	–	–	MHz

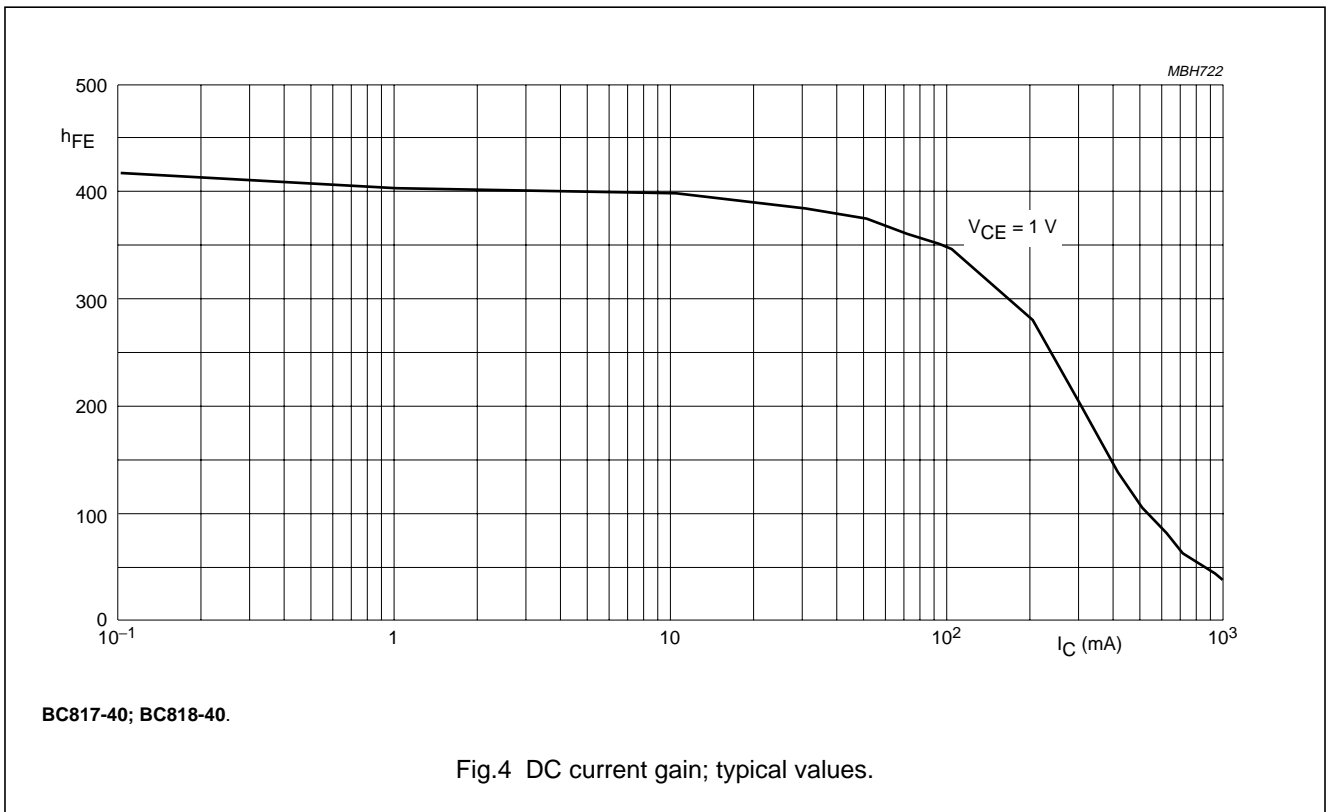
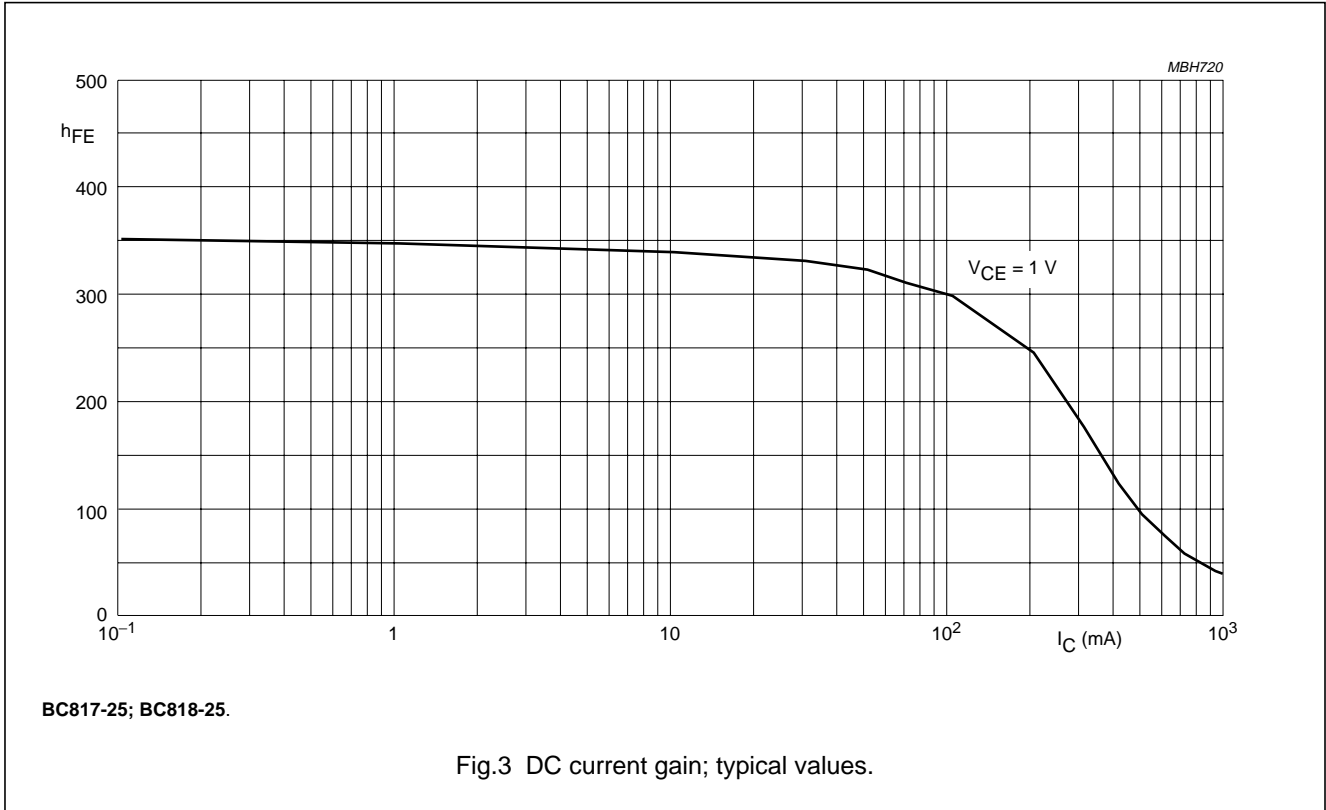
**Notes**

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



# NPN general purpose transistors

# BC817; BC818



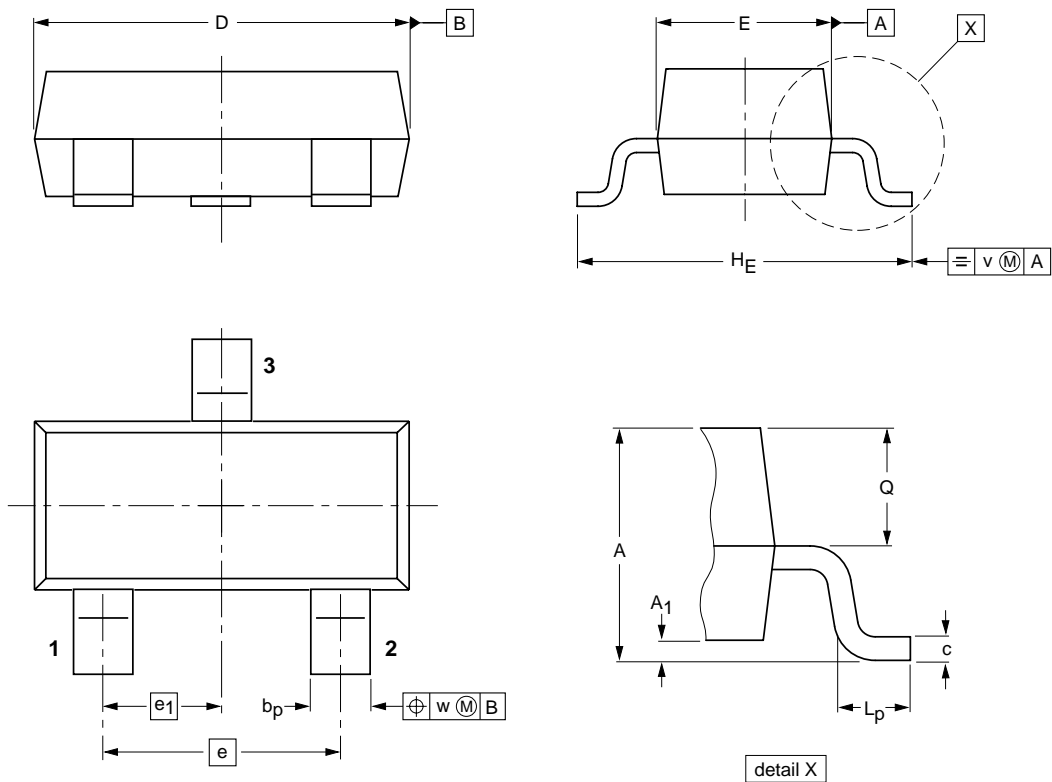
NPN general purpose transistors

BC817; BC818

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A <sub>1</sub> max.	b <sub>p</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT23						97-02-28

## NPN general purpose transistors

BC817; BC818

**DEFINITIONS**

<b>Data Sheet Status</b>	
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.
<b>Limiting values</b>	
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.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	

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Printed in The Netherlands

117047/00/02/pp8

Date of release: 1997 Mar 12

Document order number: 9397 750 01954

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