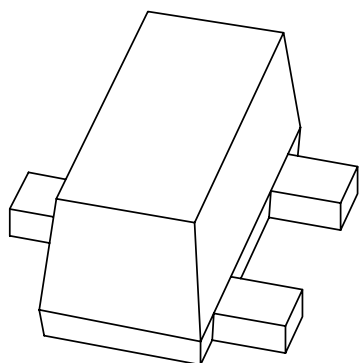


DATA SHEET



BC857F series PNP general purpose transistors

Product specification
Supersedes data of 2000 Oct 23

2000 Dec 04

PNP general purpose transistors

BC857F series

FEATURES

- Low current (max. 100 mA)
- Low voltage (max. 65 V).

APPLICATIONS

- General purpose switching and amplification especially in portable equipment.

DESCRIPTION

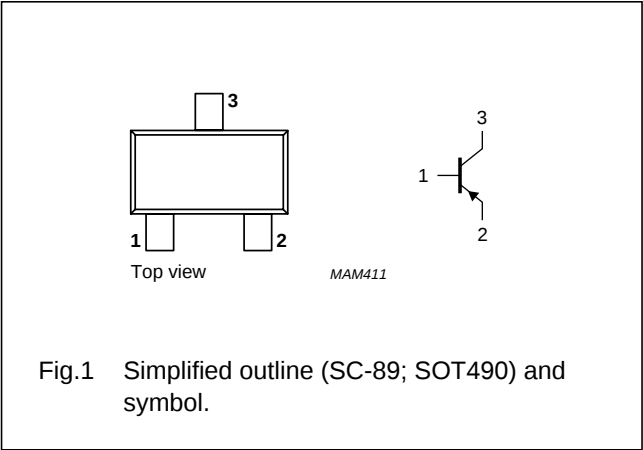
PNP transistor in a SC-89 (SOT490) plastic package.
NPN complement: BC847F series.

MARKING

TYPE NUMBER	MARKING CODE
BC857AF	3E
BC857BF	3F
BC857CF	3G

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
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)		–	–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 a FR4 printed-circuit board.

PNP general purpose transistors

BC857F 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 a FR4 printed-circuit board.

CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	$V_{CB} = -30\text{ V}$; $I_E = 0$	–	–15	nA
		$V_{CB} = -30\text{ V}$; $I_E = 0$; $T_j = 150\text{ °C}$	–	–5	μA
I_{EBO}	emitter cut-off current	$V_{EB} = -5\text{ V}$; $I_C = 0$	–	–100	nA
h_{FE}	DC current gain BC857AF BC857BF BC857CF	$I_C = -2\text{ mA}$; $V_{CE} = -5\text{ V}$	125 220 420	250 475 800	
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
V_{CEsat}	collector-emitter saturation voltage	$I_C = -10\text{ mA}$; $I_B = -0.5\text{ mA}$	–	–200	mV
		$I_C = -100\text{ mA}$; $I_B = -5\text{ mA}$; note 1	–	–400	mV
C_c	collector capacitance	$V_{CB} = -10\text{ V}$; $I_E = I_e = 0$; $f = 1\text{ MHz}$	–	2.5	pF
f_T	transition frequency	$V_{CE} = -5\text{ V}$; $I_C = -10\text{ mA}$; $f = 100\text{ MHz}$	100	–	MHz
F	noise figure	$I_C = -200\text{ }\mu\text{A}$; $V_{CE} = -5\text{ V}$; $R_s = 2\text{ k}\Omega$; $f = 1\text{ kHz}$; $B = 200\text{ Hz}$	–	10	dB

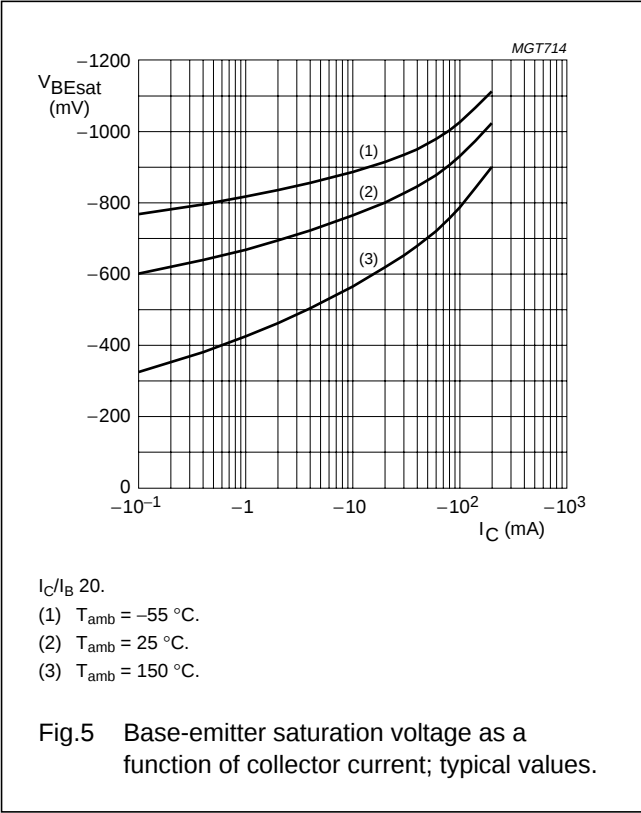
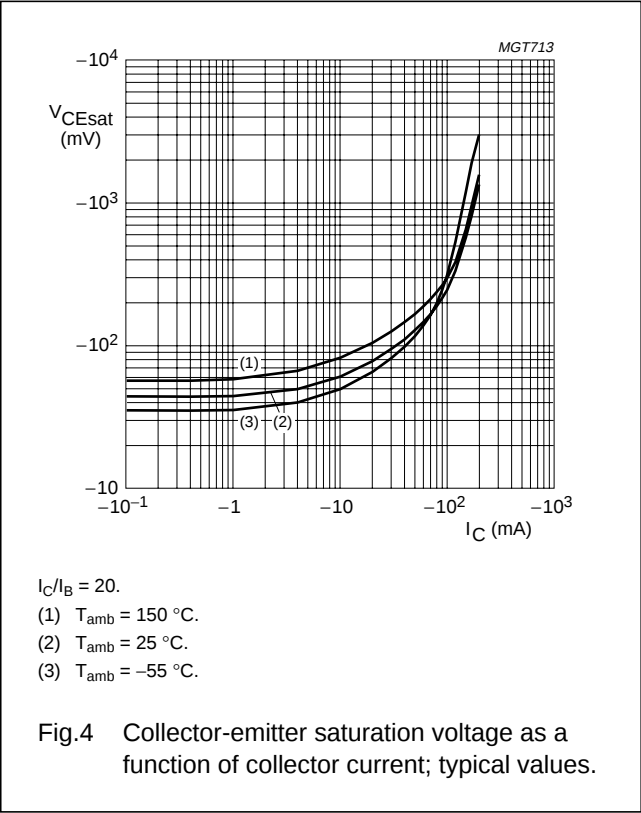
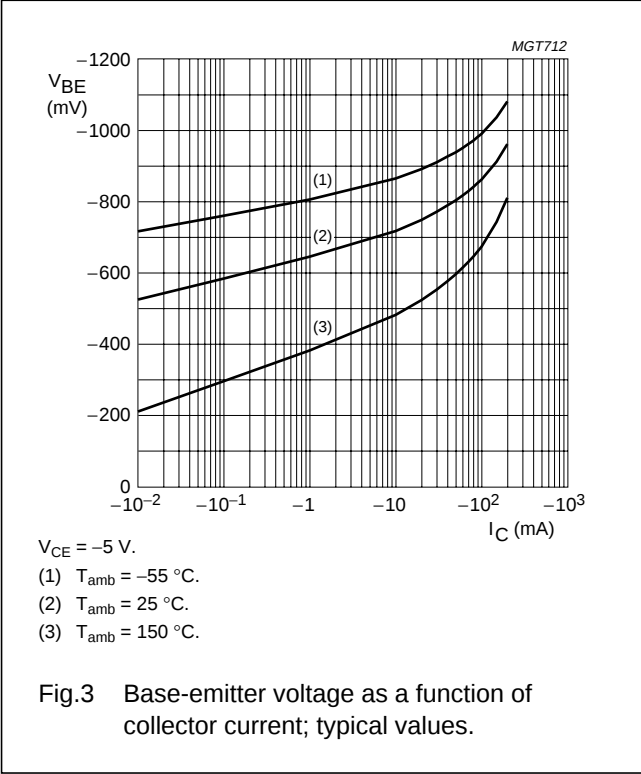
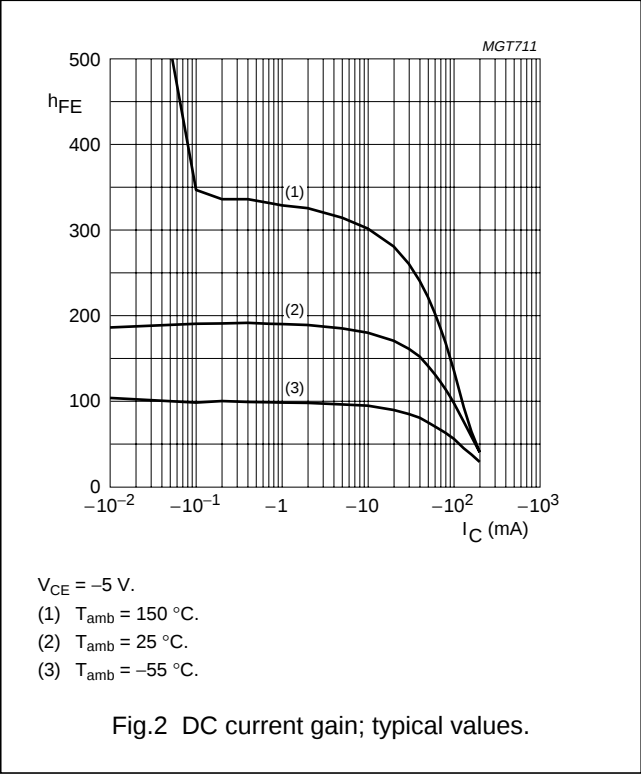
Note

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

PNP general purpose transistors

BC857F series

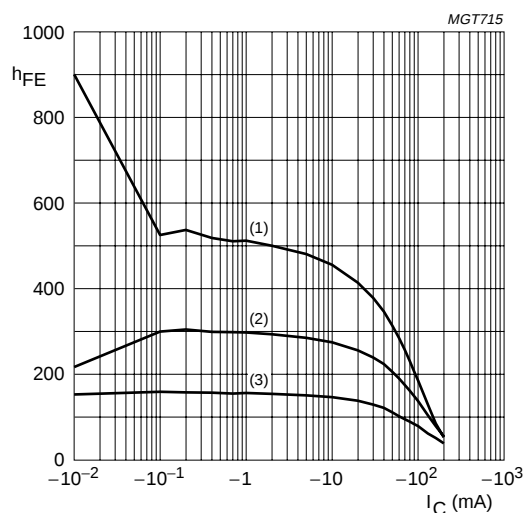
GRAPHICAL INFORMATION BC857AF



PNP general purpose transistors

BC857F series

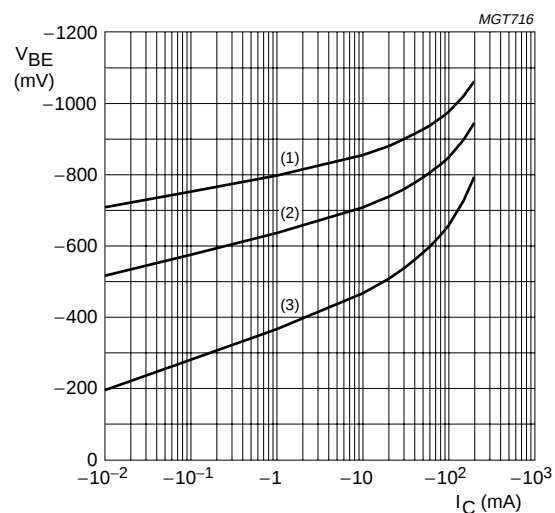
GRAPHICAL INFORMATION BC857BF



$V_{CE} = -5 \text{ V}$.

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

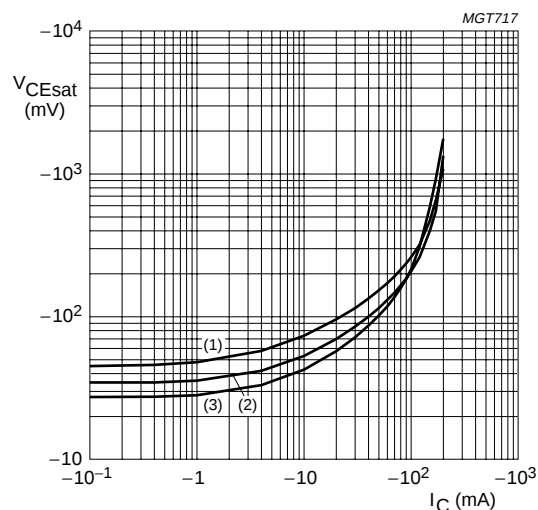
Fig.6 DC current gain; typical values.



$V_{CE} = -5 \text{ V}$.

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

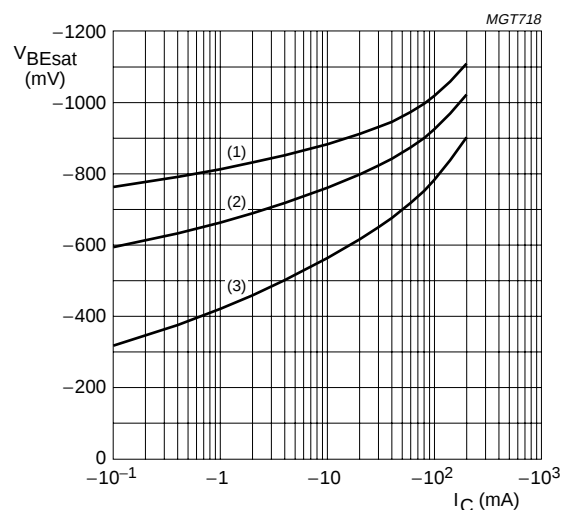
Fig.7 Base-emitter voltage as a function of collector current; typical values.



$I_C/I_B = 20$.

- (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.8 Collector-emitter saturation voltage as a function of collector current; typical values.



$I_C/I_B = 20$.

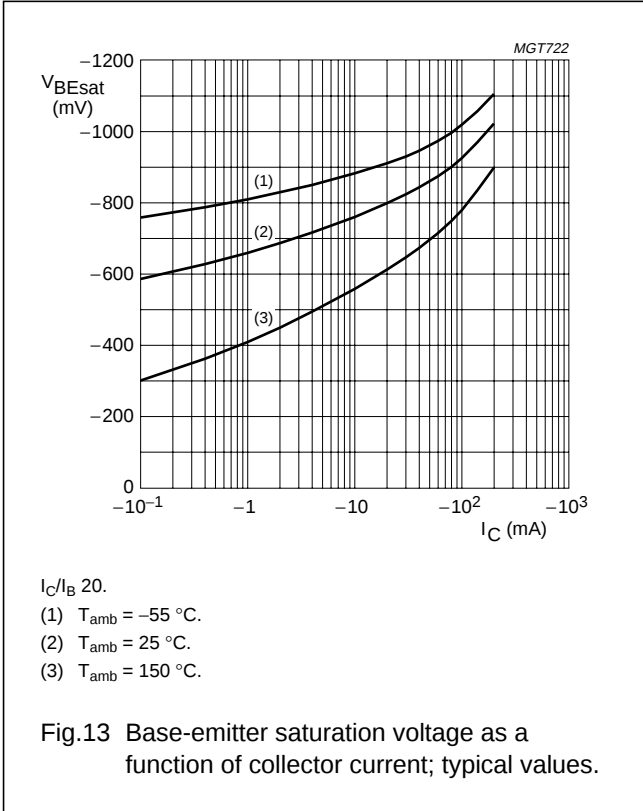
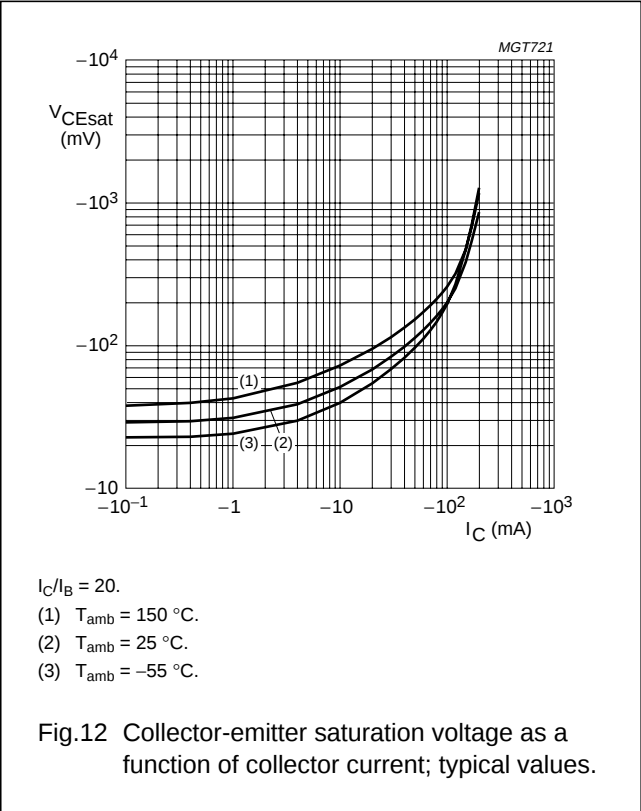
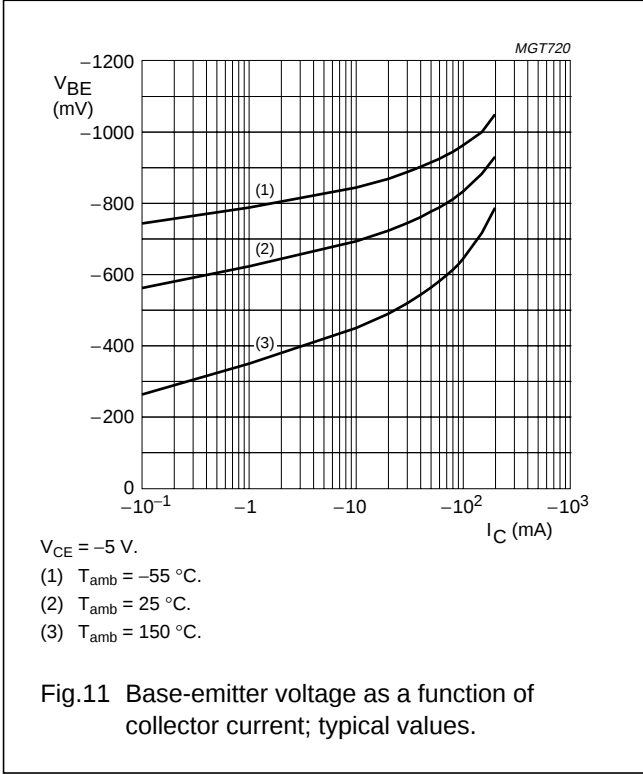
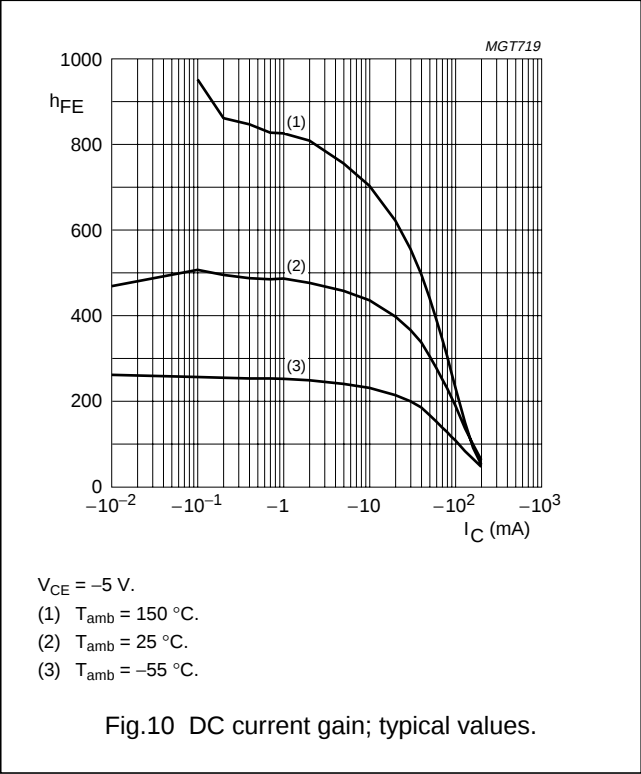
- (1) $T_{amb} = -55 \text{ }^{\circ}\text{C}$.
- (2) $T_{amb} = 25 \text{ }^{\circ}\text{C}$.
- (3) $T_{amb} = 150 \text{ }^{\circ}\text{C}$.

Fig.9 Base-emitter saturation voltage as a function of collector current; typical values.

PNP general purpose transistors

BC857F series

GRAPHICAL INFORMATION BC857CF



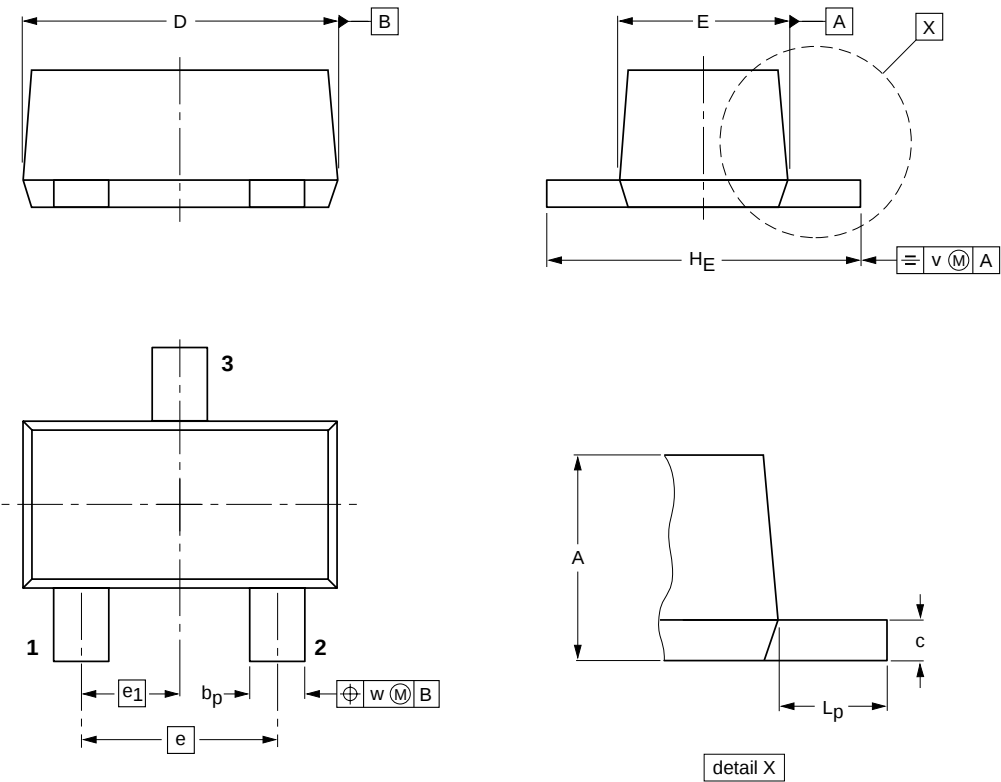
PNP general purpose transistors

BC857F 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

BC857F series

DATA SHEET STATUS

DATA SHEET STATUS	PRODUCT STATUS	DEFINITIONS ⁽¹⁾
Objective specification	Development	This data sheet contains the design target or goal specifications for product development. Specification may change in any manner without notice.
Preliminary specification	Qualification	This data sheet contains preliminary data, and supplementary data will be published at a later date. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.
Product specification	Production	This data sheet contains final specifications. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.

Note

1. Please consult the most recently issued data sheet before initiating or completing a design.

DEFINITIONS

Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). 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.

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NOTES

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