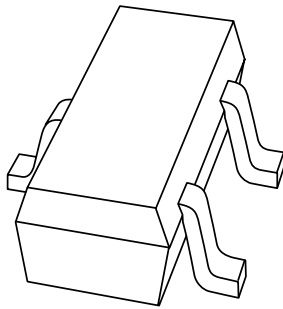


DATA SHEET



BC856T; BC857T series PNP general purpose transistors

Product data sheet
Supersedes data of 1999 Apr 26

2000 Nov 15

PNP general purpose transistors

BC856T; BC857T series

FEATURES

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

APPLICATIONS

- General purpose switching and amplification, especially in portable equipment.

DESCRIPTION

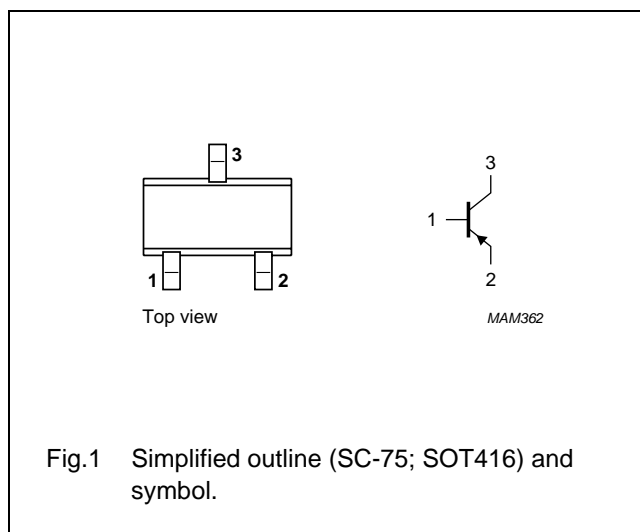
PNP transistor in an SC-75 (SOT416) plastic package.
NPN complements: BC846T; BC847T series.

MARKING

TYPE NUMBER	MARKING CODE
BC856AT	3A
BC856BT	3B
BC857AT	3E
BC857BT	3F
BC857CT	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	—	—80	V
	BC856AT; BC856BT		—	—50	V
	BC857AT; BC857BT; BC857CT				
V_{CEO}	collector-emitter voltage	open base	—	—65	V
	BC856AT; BC856BT		—	—45	V
	BC857AT; BC857BT; BC857CT				
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	$T_{amb} \leq 25\text{ °C}$; note 1	—	150	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 an FR4 printed-circuit board.

PNP general purpose transistors

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THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	in free air; note 1	833	K/W

Note

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

CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	$V_{CB} = -30\text{ V}; I_E = 0$	—	—	–15	nA
		$V_{CB} = -30\text{ V}; I_E = 0; T_j = 150\text{ }^{\circ}\text{C}$	—	—	–5	μA
I_{EBO}	emitter cut-off current	$V_{EB} = -5\text{ V}; I_C = 0$	—	—	–100	nA
h_{FE}	DC current gain BC856AT; BC857AT BC856BT; BC857BT BC857CT	$V_{CE} = -5\text{ V}; I_C = -2\text{ mA}$				
			125	—	250	
			220	—	475	
			420	—	800	
V_{CEsat}	collector-emitter saturation voltage	$I_C = -10\text{ mA}; I_B = -0.5\text{ mA}$	—	—	–200	mV
		$I_C = -100\text{ mA}; I_B = -5\text{ mA}; \text{note 1}$	—	—	–400	mV
V_{BE}	base-emitter voltage	$I_C = -2\text{ mA}; V_{CE} = -5\text{ V}$	–580	—	–700	mV
		$I_C = -10\text{ mA}; V_{CE} = -5\text{ V}$	—	—	–770	mV
C_c	collector capacitance	$V_{CB} = -10\text{ V}; f = 1\text{ MHz}; I_E = I_C = 0$	—	—	2.5	pF
C_e	emitter capacitance	$V_{EB} = -0.5\text{ V}; f = 1\text{ MHz}; I_C = I_E = 0$	—	10	—	pF
f_T	transition frequency	$I_C = -10\text{ mA}; V_{CE} = -5\text{ V}; f = 100\text{ MHz}$	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

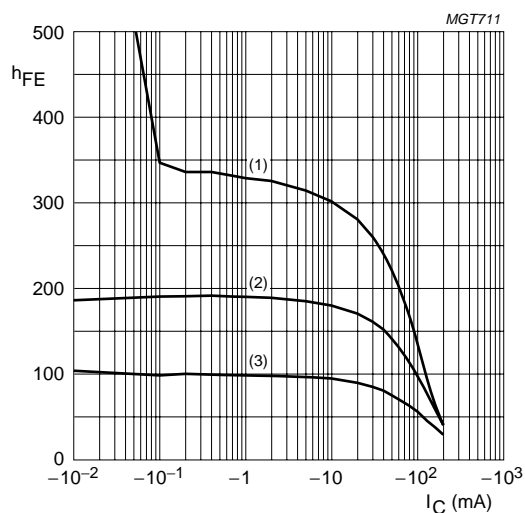
Note

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

PNP general purpose transistors

BC856T; BC857T series

GRAPHICAL INFORMATION BC857AT



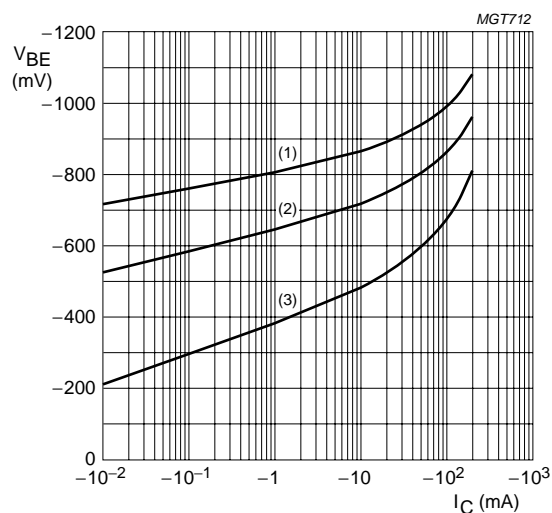
$V_{CE} = -5 \text{ V.}$

(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.2 DC current gain; typical values.



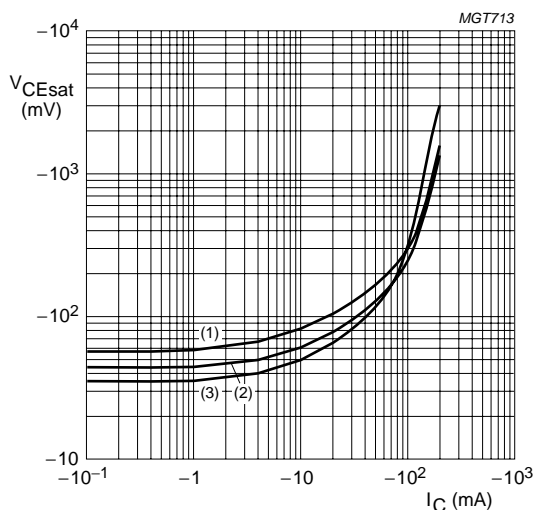
$V_{CE} = -5 \text{ V.}$

(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.3 Base-emitter voltage as a function of collector current; typical values.



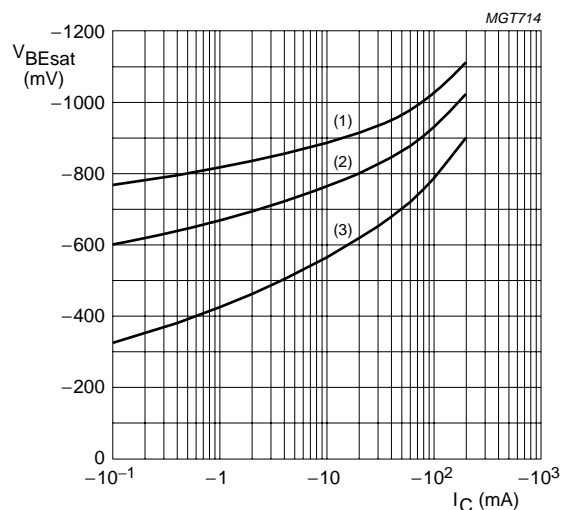
$I_C/I_B = 20.$

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

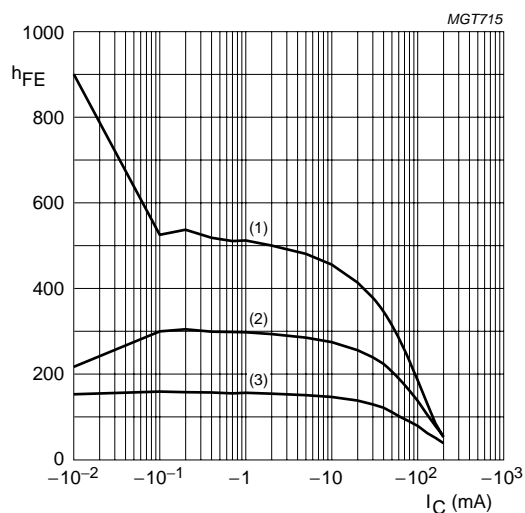
(3) $T_{amb} = 150 \text{ }^{\circ}\text{C.}$

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

PNP general purpose transistors

BC856T; BC857T series

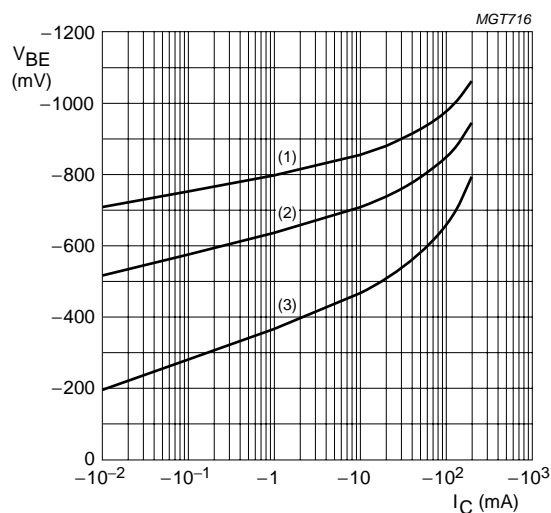
GRAPHICAL INFORMATION BC857BT



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

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

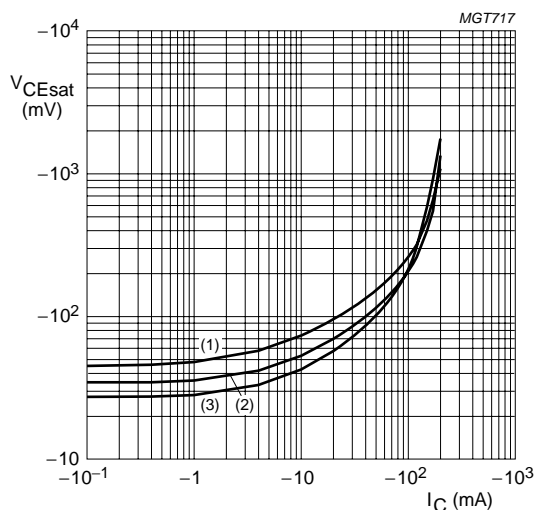
Fig.6 DC current gain; typical values.



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

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

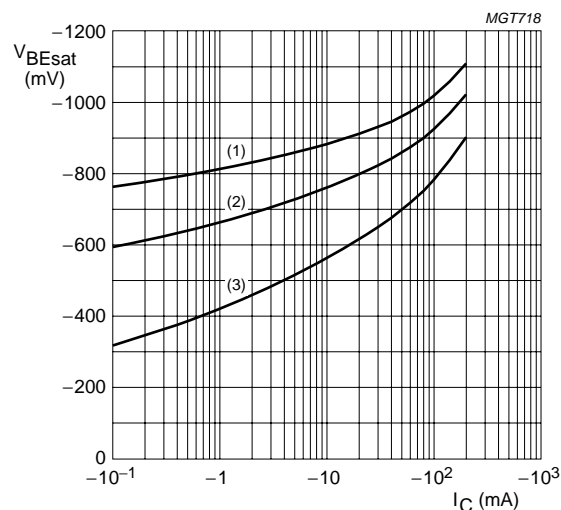
Fig.7 Base-emitter voltage as a function of collector current; typical values.



$I_C/I_B = 20.$

- (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.



$I_C/I_B = 20.$

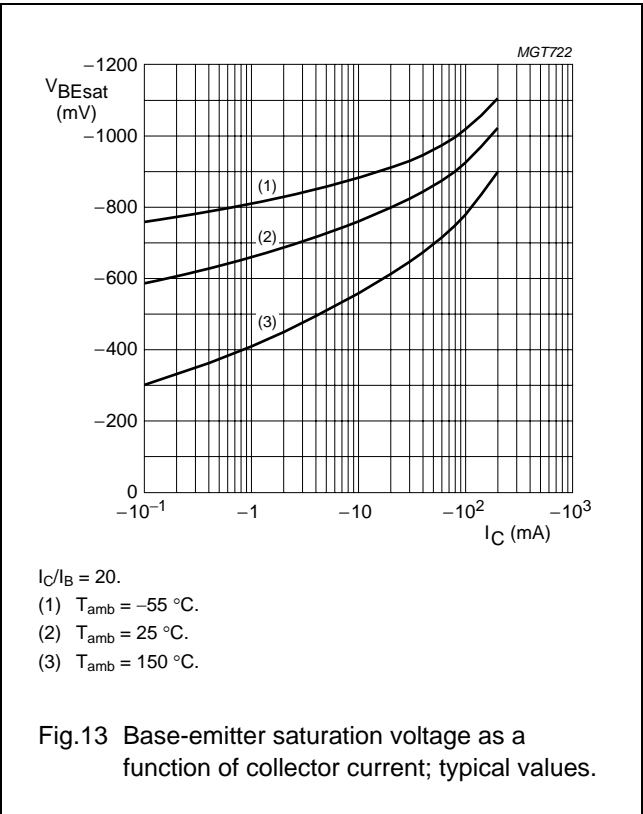
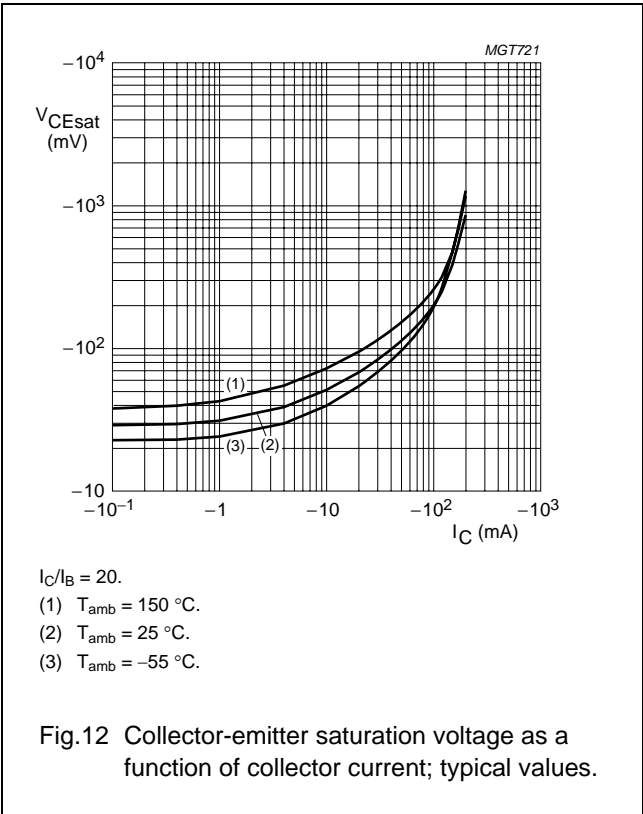
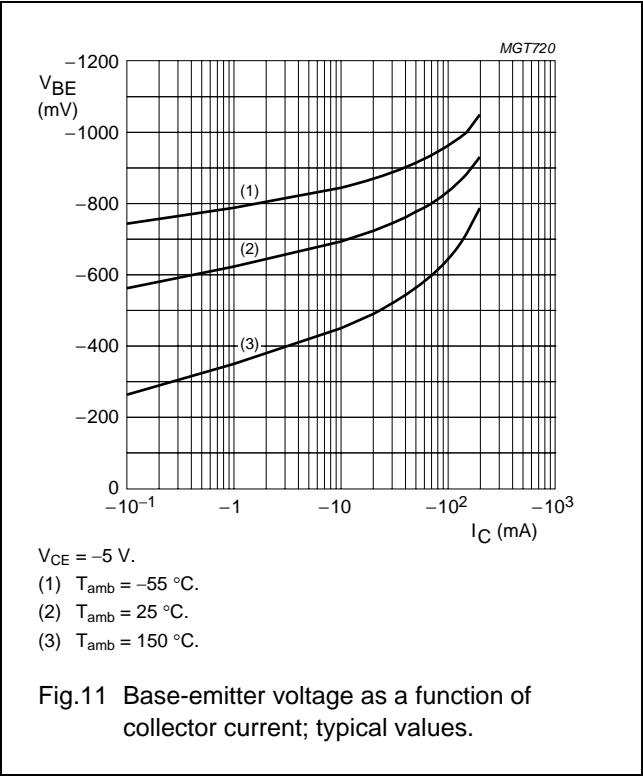
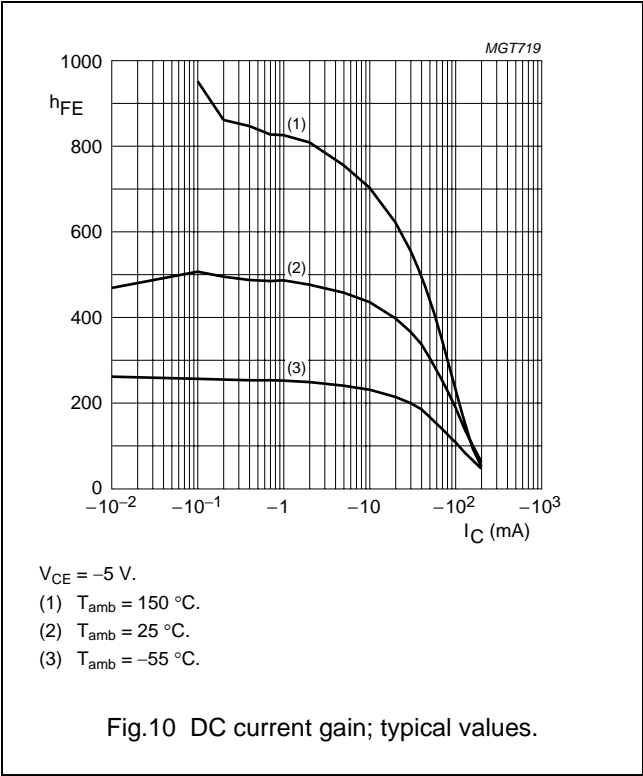
- (1) $T_{amb} = -55 \text{ }^{\circ}\text{C.}$
- (2) $T_{amb} = 25 \text{ }^{\circ}\text{C.}$
- (3) $T_{amb} = 150 \text{ }^{\circ}\text{C.}$

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

PNP general purpose transistors

BC856T; BC857T series

GRAPHICAL INFORMATION BC857CT



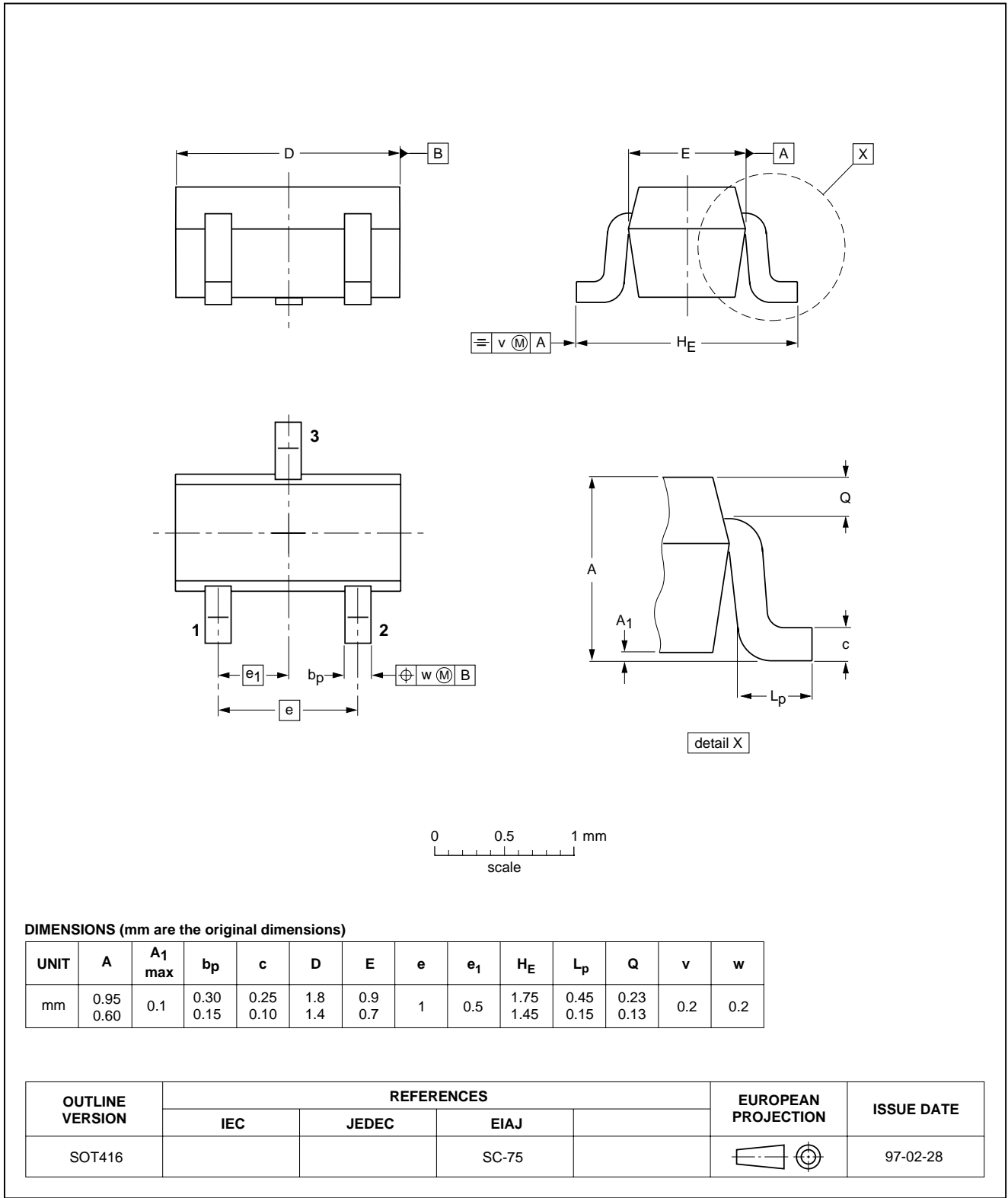
PNP general purpose transistors

BC856T; BC857T series

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT416



PNP general purpose transistors

BC856T; BC857T series

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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