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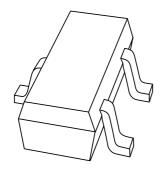
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Kind regards,

Team Nexperia

DISCRETE SEMICONDUCTORS

DATA SHEET



BC856T; BC857T series PNP general purpose transistors

Product data sheet Supersedes data of 1999 Apr 26



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

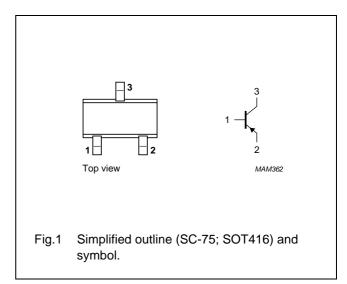
PNP transistor in an SC-75 (SOT416) plastic package. NPN complements: BC846T; BC847T series.

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			
	BC856AT; BC856BT		_	-80	V
	BC857AT; BC857BT; BC857CT		_	-50	V
V _{CEO}	collector-emitter voltage	open base			
	BC856AT; BC856BT		_	-65	V
	BC857AT; BC857BT; BC857CT		_	-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	-	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

BC856T; BC857T series

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 °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
		$V_{CB} = -30 \text{ V}; I_E = 0; T_j = 150 ^{\circ}\text{C}$	_	_	-5	μΑ
I _{EBO}	emitter cut-off current	$V_{EB} = -5 \text{ V; } I_C = 0$	_	_	-100	nA
h _{FE}	DC current gain	$V_{CE} = -5 \text{ V; } I_{C} = -2 \text{ mA}$				
	BC856AT; BC857AT		125	_	250	
	BC856BT; BC857BT		220	_	475	
	BC857CT		420	_	800	
V _{CEsat}	collector-emitter saturation	$I_C = -10 \text{ mA}; I_B = -0.5 \text{ mA}$	_	_	-200	mV
voltage	$I_C = -100 \text{ mA}; I_B = -5 \text{ mA}; \text{ note 1}$	_	_	-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	$V_{CB} = -10 \text{ V; } f = 1 \text{ MHz; } I_E = i_e = 0$	_	_	2.5	pF
C _e	emitter capacitance	$V_{EB} = -0.5 \text{ V; } f = 1 \text{ MHz; } I_C = i_c = 0$	_	10	_	pF
f _T	transition frequency	$I_C = -10 \text{ mA}; V_{CE} = -5 \text{ V};$ f = 100 MHz	100	-	-	MHz
F	noise figure	$I_C = -200 \mu A; V_{CE} = -5 V;$ $R_S = 2 k\Omega; f = 1 kHz; B = 200 Hz$	_	_	10	dB

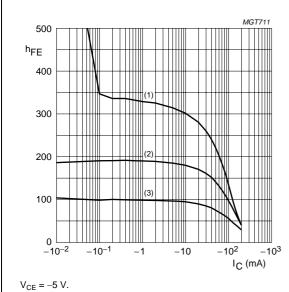
Note

1. Pulse test: $t_p \le 300~\mu s;~\delta \le 0.02.$

PNP general purpose transistors

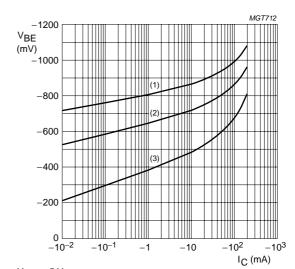
BC856T; BC857T series

GRAPHICAL INFORMATION BC857AT



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

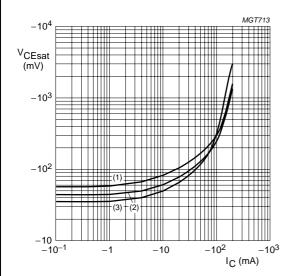
Fig.2 DC current gain; typical values.



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

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

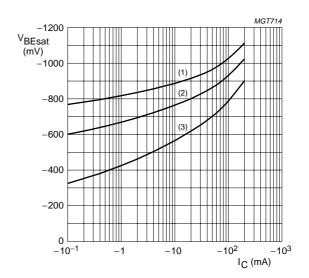
Fig.3 Base-emitter voltage as a function of collector current; typical values.



 $I_{\rm C}/I_{\rm B} = 20.$

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

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



 $I_{\rm C}/I_{\rm B} = 20$.

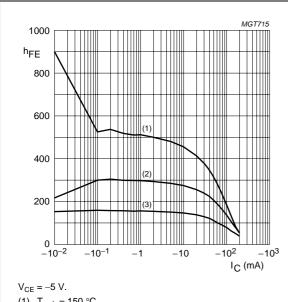
- (1) $T_{amb} = -55 \, ^{\circ}C$.
- (2) $T_{amb} = 25 \, ^{\circ}C$.
- (3) $T_{amb} = 150 \, ^{\circ}C$.

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

PNP general purpose transistors

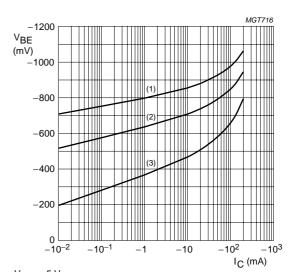
BC856T; BC857T series

GRAPHICAL INFORMATION BC857BT



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

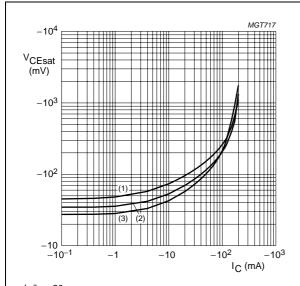
Fig.6 DC current gain; typical values.



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

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

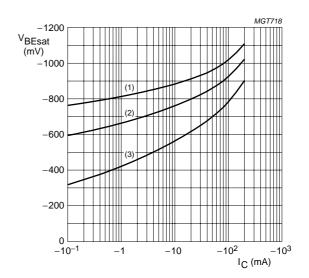
Fig.7 Base-emitter voltage as a function of collector current; typical values.



 $I_{\rm C}/I_{\rm B} = 20.$

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

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



 $I_{\rm C}/I_{\rm B} = 20$.

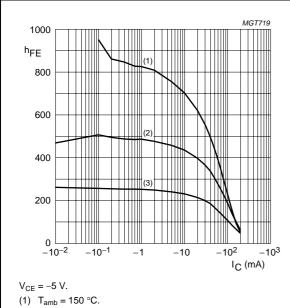
- (1) $T_{amb} = -55 \, ^{\circ}C$.
- (2) $T_{amb} = 25 \, ^{\circ}C$.
- (3) $T_{amb} = 150 \, ^{\circ}C$.

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

PNP general purpose transistors

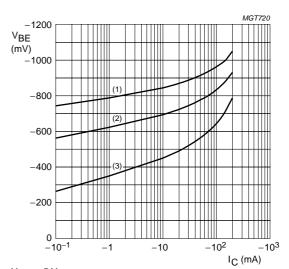
BC856T; BC857T series

GRAPHICAL INFORMATION BC857CT



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

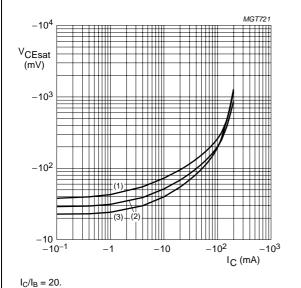
Fig.10 DC current gain; typical values.



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

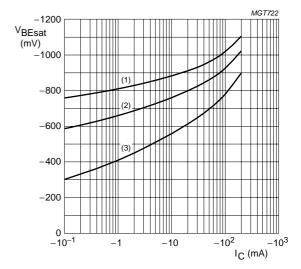
- (1) $T_{amb} = -55 \, ^{\circ}C$
- (2) T_{amb} = 25 °C.
- (3) T_{amb} = 150 °C.

Fig.11 Base-emitter voltage as a function of collector current; typical values.



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

Fig.12 Collector-emitter saturation voltage as a function of collector current; typical values.



 $I_{\rm C}/I_{\rm B} = 20$.

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

Fig.13 Base-emitter saturation voltage as a function of collector current; typical values.

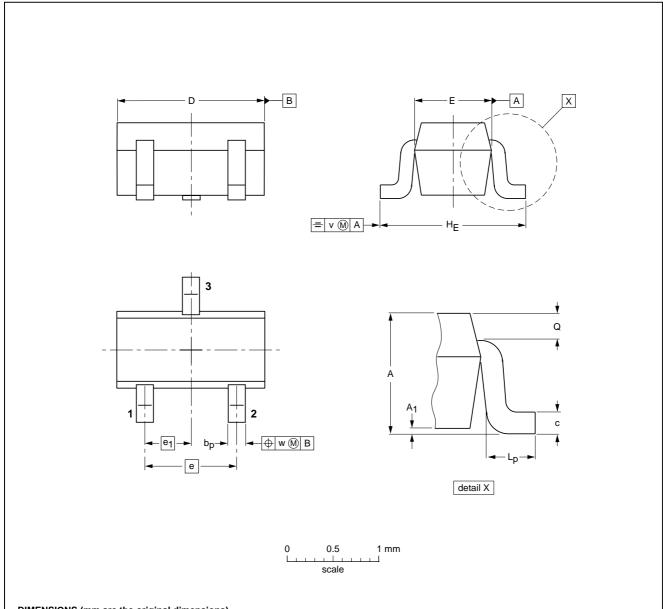
PNP general purpose transistors

BC856T; BC857T series

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT416



DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁ max	bp	С	D	Е	e	e ₁	HE	Lp	Q	v	w
mm	0.95 0.60	0.1	0.30 0.15	0.25 0.10	1.8 1.4	0.9 0.7	1	0.5	1.75 1.45	0.45 0.15	0.23 0.13	0.2	0.2

OUTLINE		REFER	EUROPEAN	ISSUE DATE		
VERSION	IEC	JEDEC	EIAJ		PROJECTION	ISSUE DATE
SOT416			SC-75			97-02-28

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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NXP Semiconductors

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