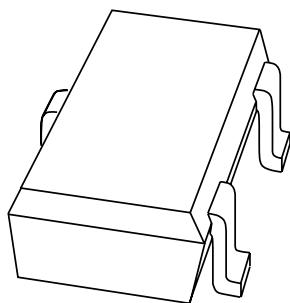


DATA SHEET



BC856W; BC857W; BC858W PNP general purpose transistors

Product specification
Supersedes data of 1999 Apr 12

2002 Feb 04

PNP general purpose transistors**BC856W; BC857W; BC858W****FEATURES**

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

APPLICATIONS

- General purpose switching and amplification.

DESCRIPTION

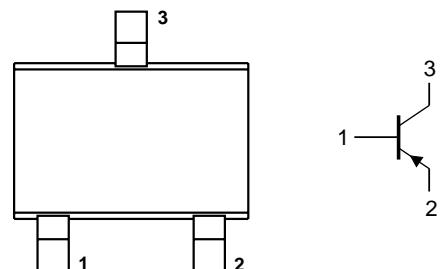
PNP transistor in a SOT323 plastic package.
NPN complements: BC846W, BC847W and BC848W.

MARKING

TYPE NUMBER	MARKING CODE ⁽¹⁾
BC856W	3D*
BC856AW	3A*
BC856BW	3B*
BC857W	3H*
BC857AW	3E*
BC857BW	3F*
BC857CW	3G*
BC858W	3M*

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



Top view MAM048

Fig.1 Simplified outline (SOT323; SC70) and symbol.

Note

1. * = -: made in Hong Kong.
* = t: made in Malaysia.

PNP general purpose transistors

BC856W; BC857W; BC858W

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage BC856W BC857W BC858W	open emitter	–	–80	V
V_{CEO}	collector-emitter voltage BC856W BC857W BC858W	open base	–	–65	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		–	–200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25^\circ\text{C}$; note 1	–	200	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C

Note

1. Refer to SOT323 standard mounting conditions.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	in free air; note 1	625	K/W

Note

1. Refer to SOT323 standard mounting conditions.

PNP general purpose transistors

BC856W; BC857W; BC858W

CHARACTERISTICS

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

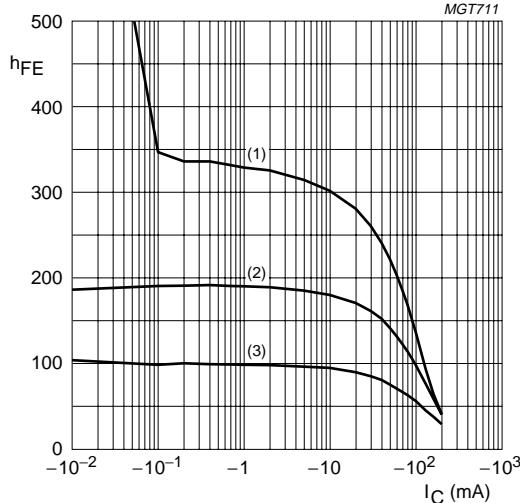
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	$V_{CB} = -30\text{ V}; I_E = 0$	—	—1	—15	nA
		$V_{CB} = -30\text{ V}; I_E = 0; T_j = 150^\circ\text{C}$	—	—	—4	μA
I_{EBO}	emitter-base cut-off current	$V_{EB} = -5\text{ V}; I_C = 0$	—	—	—100	nA
h_{FE}	DC current gain BC856W	$I_C = -2\text{ mA}; V_{CE} = -5\text{ V}$	125	—	475	
	BC857W; BC858W		125	—	800	
	BC856AW; BC857AW		125	—	250	
	BC856BW; BC857BW		220	—	475	
	BC857CW		420	—	800	
V_{CEsat}	collector-emitter saturation voltage	$I_C = -10\text{ mA}; I_B = -0.5\text{ mA}$	—	—75	—300	mV
		$I_C = -100\text{ mA}; I_B = -5\text{ mA};$ note 1	—	—250	—600	mV
V_{BEsat}	base-emitter saturation voltage	$I_C = -10\text{ mA}; I_B = -0.5\text{ mA}$	—	—700	—	mV
		$I_C = -100\text{ mA}; I_B = -5\text{ mA};$ note 1	—	—850	—	mV
V_{BE}	base-emitter voltage	$I_C = -2\text{ mA}; V_{CE} = -5\text{ V}$	—600	—650	—750	mV
		$I_C = -10\text{ mA}; V_{CE} = -5\text{ V}$	—	—	—820	mV
C_c	collector capacitance	$V_{CB} = -10\text{ V}; I_E = I_e = 0; f = 1\text{ MHz}$	—	—	3	pF
C_e	emitter capacitance	$V_{EB} = -0.5\text{ V}; I_C = I_c = 0; f = 1\text{ MHz}$	—	—	12	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. Pulse test: $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02$.

PNP general purpose transistors

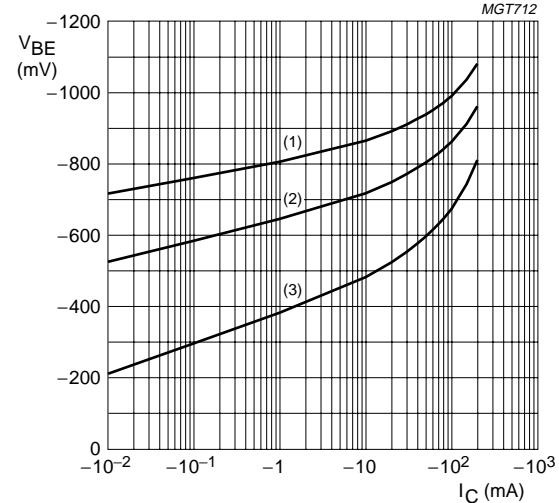
BC856W; BC857W; BC858W



BC857AW; $V_{CE} = -5$ V.

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

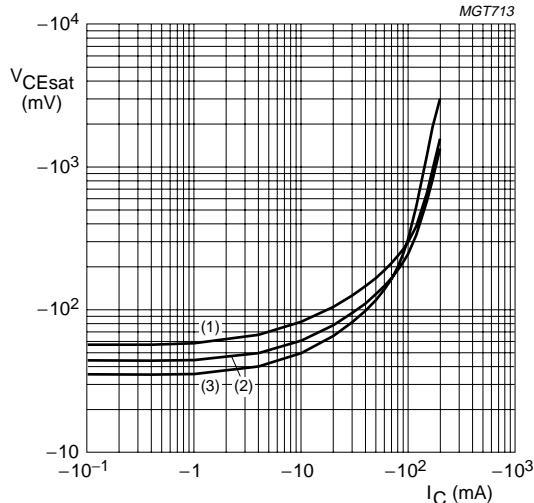
Fig.2 DC current gain as a function of collector current; typical values.



BC857AW; $V_{CE} = -5$ V.

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

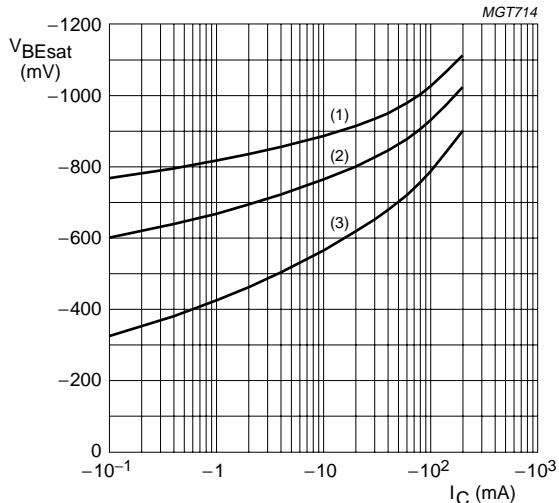
Fig.3 Base-emitter voltage as a function of collector current; typical values.



BC857AW; $I_C/I_B = 20$.

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

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



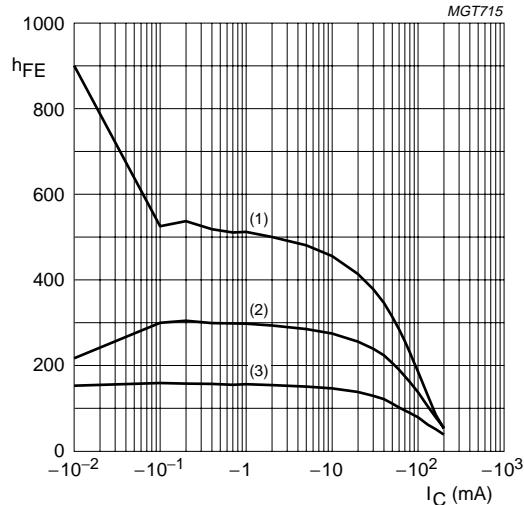
BC857AW; $I_C/I_B = 20$.

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

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

PNP general purpose transistors

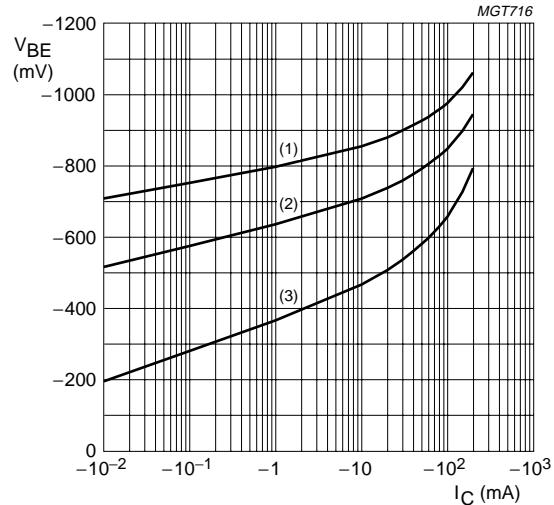
BC856W; BC857W; BC858W



BC857BW; $V_{CE} = -5$ V.

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

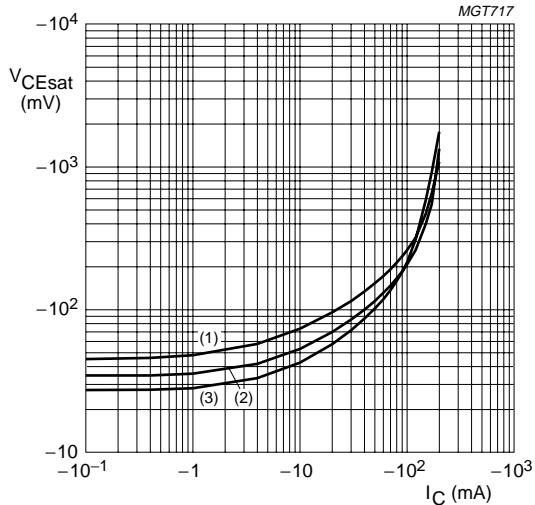
Fig.6 DC current gain as a function of collector current; typical values.



BC857BW; $V_{CE} = -5$ V.

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

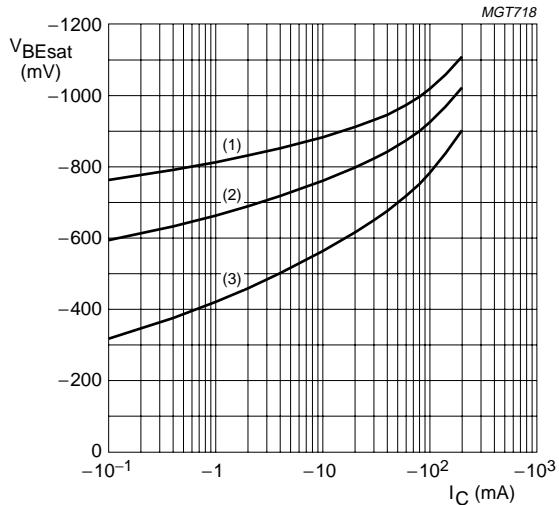
Fig.7 Base-emitter voltage as a function of collector current; typical values.



BC857BW; $I_C/I_B = 20$.

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

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



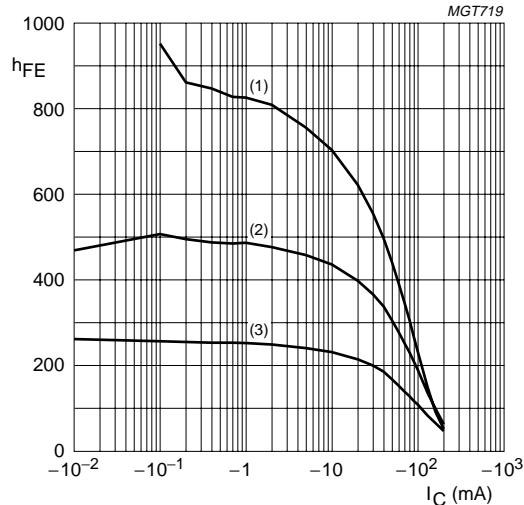
BC857BW; $I_C/I_B = 20$.

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

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

PNP general purpose transistors

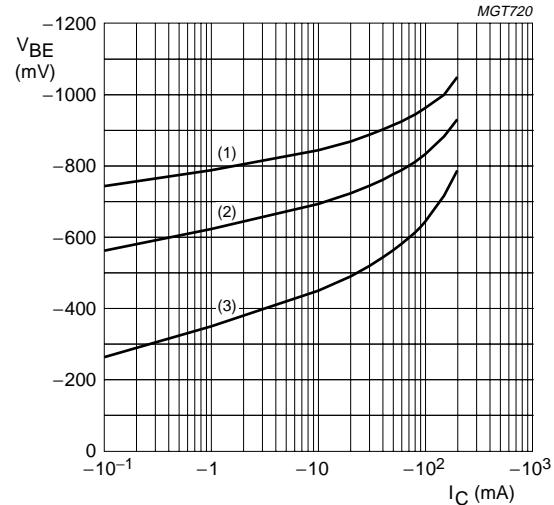
BC856W; BC857W; BC858W



BC857CW; $V_{CE} = -5$ V.

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

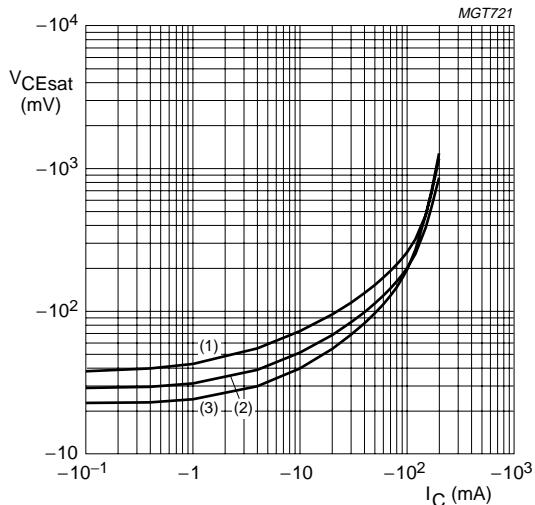
Fig.10 DC current gain as a function of collector current; typical values.



BC857CW; $V_{CE} = -5$ V.

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

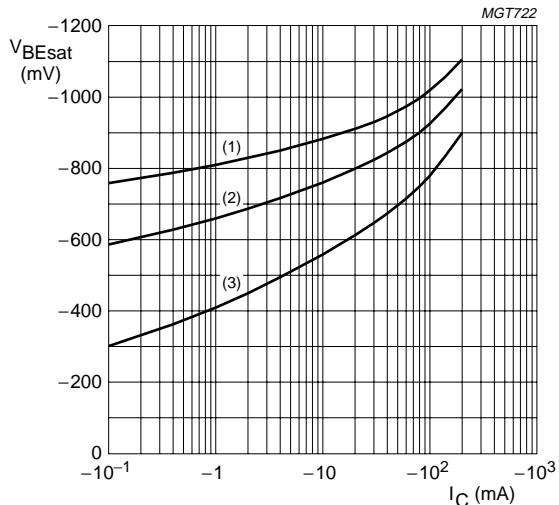
Fig.11 Base-emitter voltage as a function of collector current; typical values.



BC857CW; $I_C/I_B = 20$.

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

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



BC857CW; $I_C/I_B = 20$.

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

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

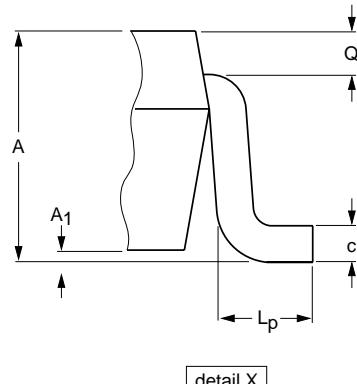
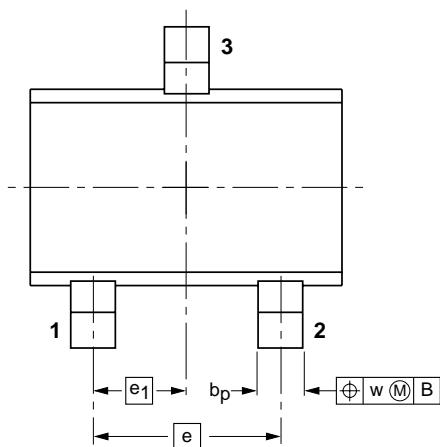
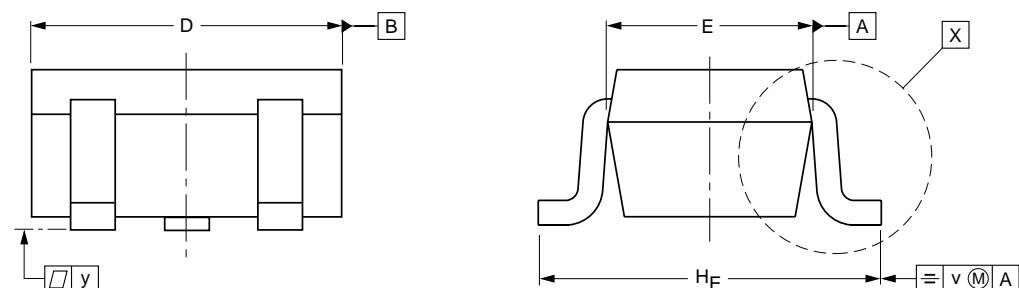
PNP general purpose transistors

BC856W; BC857W; BC858W

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT323



0 1 2 mm
scale

DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.1 0.8	0.1	0.4 0.3	0.25 0.10	2.2 1.8	1.35 1.15	1.3	0.65	2.2 2.0	0.45 0.15	0.23 0.13	0.2	0.2

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ	SC-70		
SOT323						97-02-28

PNP general purpose transistors

BC856W; BC857W; BC858W

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BC856W; BC857W; BC858W

NOTES

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NOTES

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