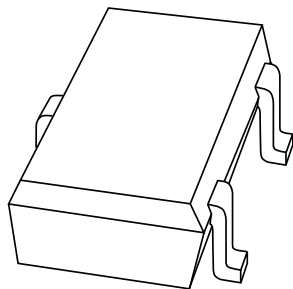


# DATA SHEET



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

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

1997 Apr 07

## PNP general purpose transistors

## BC856W; BC857W; BC858W

## FEATURES

- Low current (max. 100 mA)
- Low voltage (max. 80)
- S-mini package.

## APPLICATIONS

- General purpose switching and amplification.

## DESCRIPTION

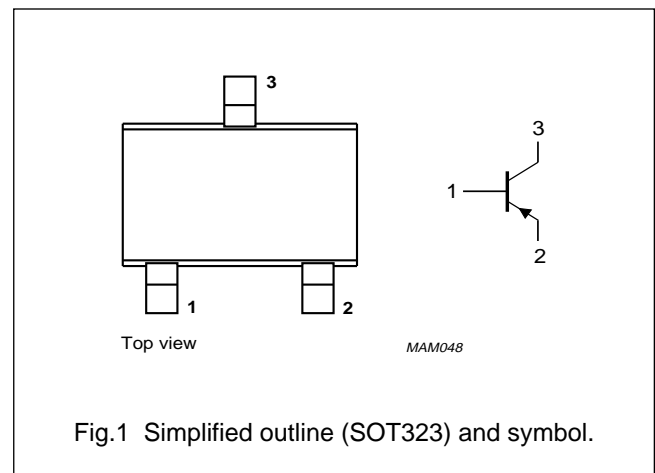
PNP transistor in a plastic SOT323 package.  
NPN complements: BC846W, BC847W and BC848W.

## MARKING

TYPE NUMBER	MARKING CODE	TYPE NUMBER	MARKING CODE
BC856W	3Dt	BC857CW	3Gt
BC856AW	3At	BC858W	3Mt
BC856BW	3Bt	BC858AW	3Jt
BC857W	3Ht	BC858BW	3Kt
BC857AW	3Et	BC858CW	3Lt
BC857BW	3Ft		

## PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



## QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{CBO}$	collector-base voltage BC856W BC857W BC858W	open emitter	–	–80 –50 –30	V V V
$V_{CEO}$	collector-emitter voltage BC856W BC857W BC858W	open base	–	–65 –45 –30	V V V
$I_{CM}$	peak collector current		–	–200	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ °C}$	–	200	mW
$h_{FE}$	DC current gain BC856W BC857W; BC858W	$I_C = -2\text{ mA}; V_{CE} = -5\text{ V}$	125 125	475 800	
$f_T$	transition frequency	$I_C = -10\text{ mA}; V_{CE} = -5\text{ V}; f = 100\text{ MHz}$	100	–	MHz

## PNP general purpose transistors

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**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			
	BC856W		–	–80	V
	BC857W		–	–50	V
	BC858W		–	–30	V
V <sub>CEO</sub>	collector-emitter voltage	open base			
	BC856W		–	–65	V
	BC857W		–	–45	V
	BC858W		–	–30	V
V <sub>EBO</sub>	emitter-base voltage	open collector	–	–5	V
I <sub>C</sub>	collector current (DC)		–	–100	mA
I <sub>CM</sub>	peak collector current		–	–200	mA
I <sub>BM</sub>	peak base current		–	–200	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C; note 1	–	200	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	625	K/W

**Note**

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

## PNP general purpose transistors

## BC856W; BC857W; BC858W

**CHARACTERISTICS**

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

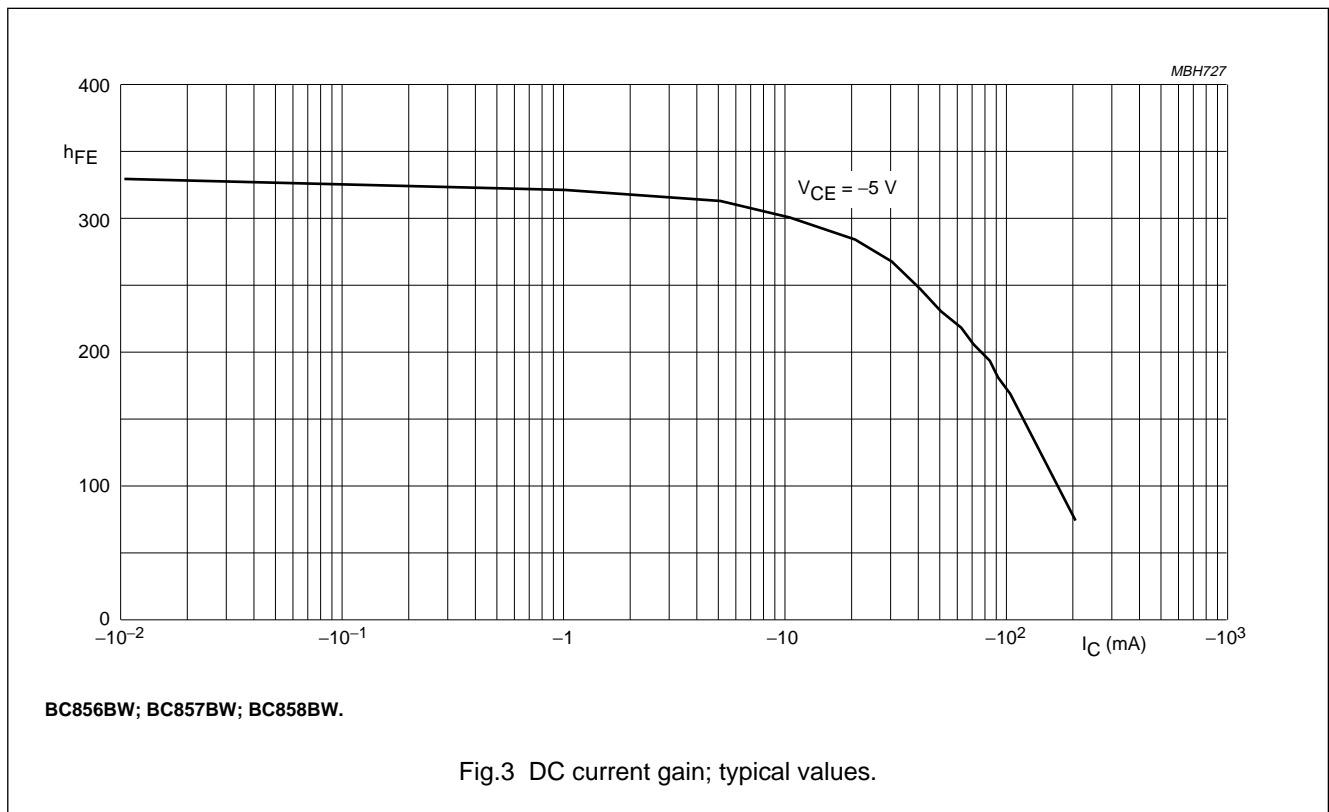
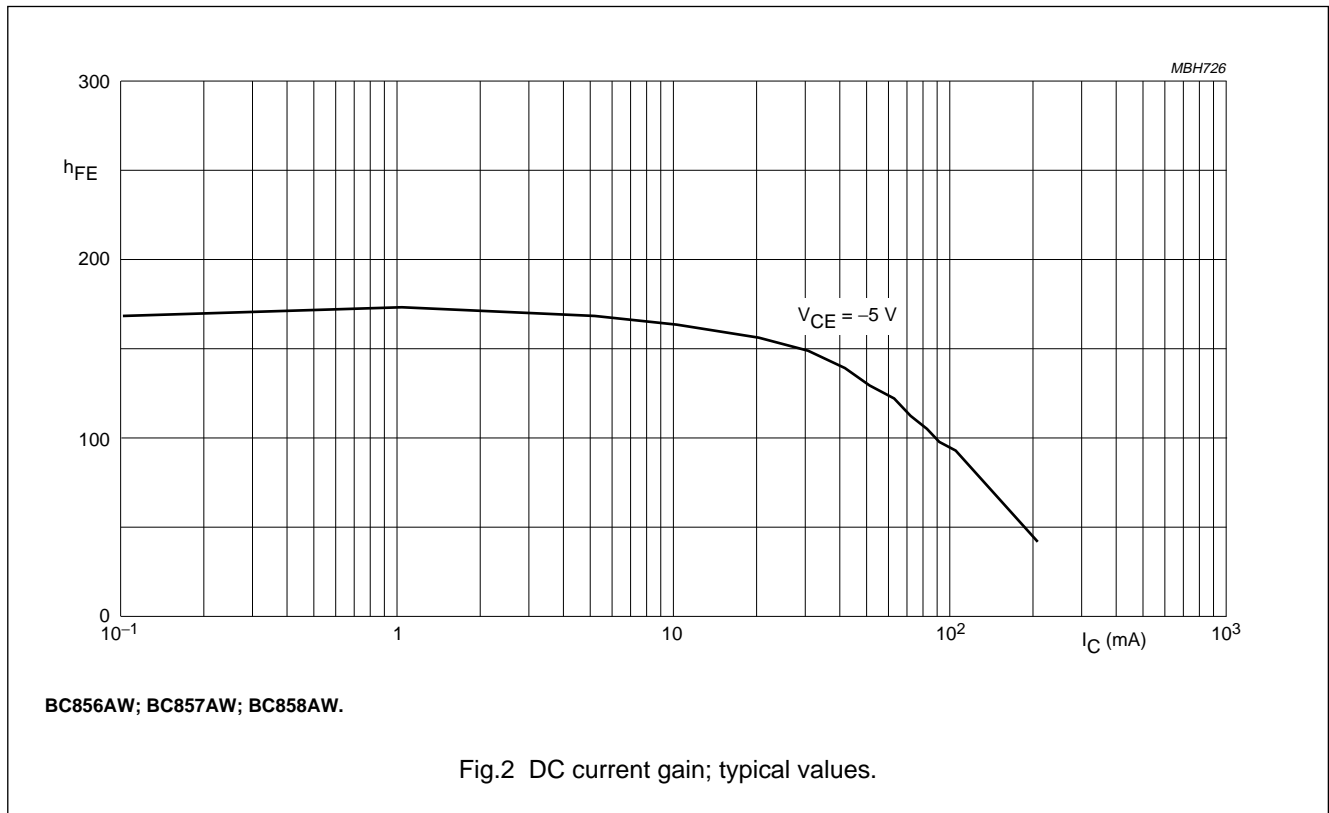
SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT		
$I_{CBO}$	collector cut-off current	$I_E = 0; V_{CB} = -30\text{ V}$	–	–15	nA		
		$I_E = 0; V_{CB} = -30\text{ V}; T_j = 150\text{ °C}$	–	–4	$\mu\text{A}$		
$I_{EBO}$	emitter cut-off current	$I_C = 0; V_{EB} = -5\text{ V}$	–	–100	nA		
$h_{FE}$	DC current gain	$I_C = -2\text{ mA}; V_{CE} = -5\text{ V};$ see Figs 2, 3 and 4					
	BC856W					125	475
	BC857W; BC858W					125	800
	BC856AW; BC857AW; BC858AW					125	250
	BC856BW; BC857BW; BC858BW					220	475
BC857CW; BC858CW	420	800					
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = -10\text{ mA}; I_B = -0.5\text{ mA}$	–	–300	mV		
		$I_C = -100\text{ mA}; I_B = -5\text{ mA};$ note 1	–	–650	mV		
$V_{BEsat}$	base-emitter saturation voltage	$I_C = -100\text{ mA}; I_B = -5\text{ mA};$ note 1	–	–950	mV		
$V_{BE}$	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		
$C_c$	collector capacitance	$I_E = I_e = 0; V_{CB} = -10\text{ V}; f = 1\text{ MHz}$	–	5	pF		
$C_e$	emitter capacitance	$I_C = I_c = 0; V_{EB} = -0.5\text{ V}; f = 1\text{ MHz}$	–	12	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:  $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02$ .

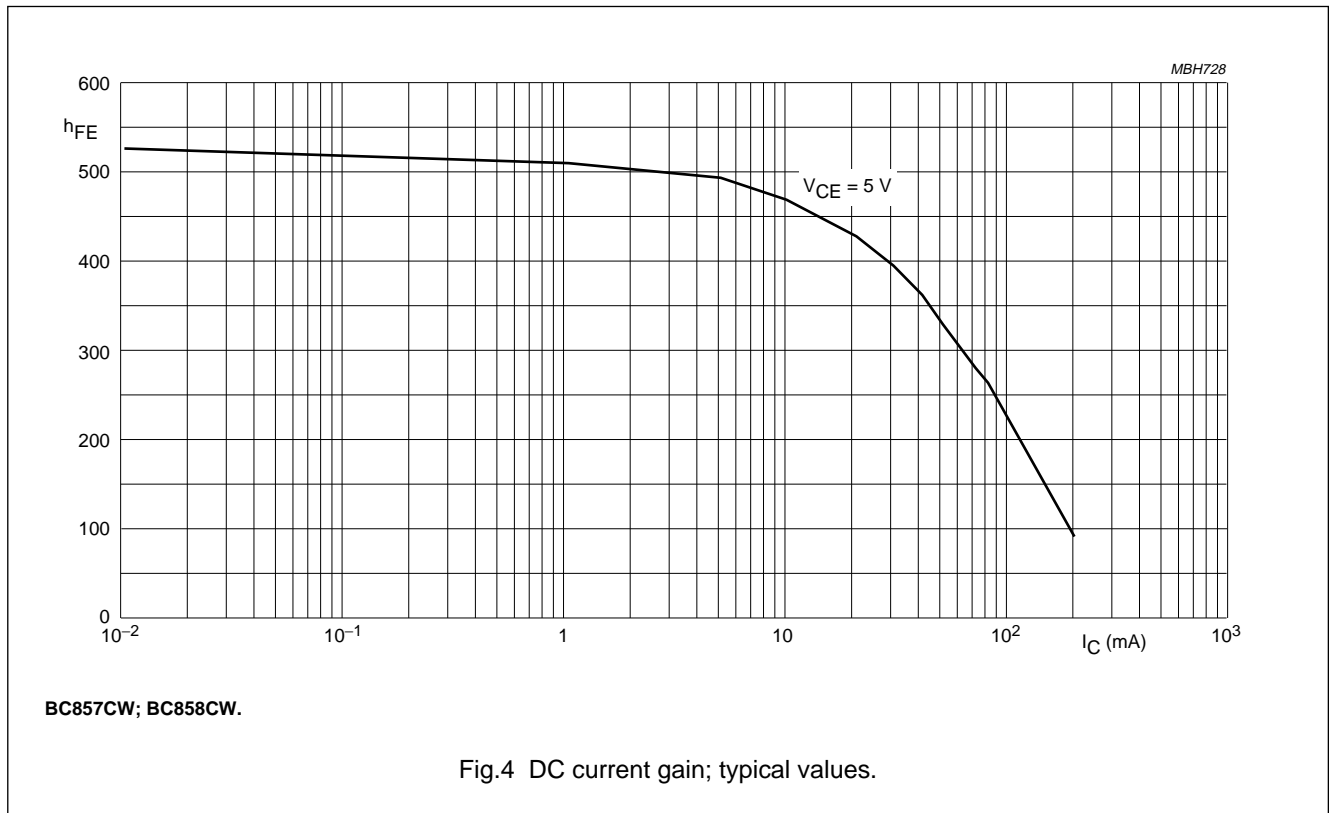
PNP general purpose transistors

BC856W; BC857W; BC858W



PNP general purpose transistors

BC856W; BC857W; BC858W



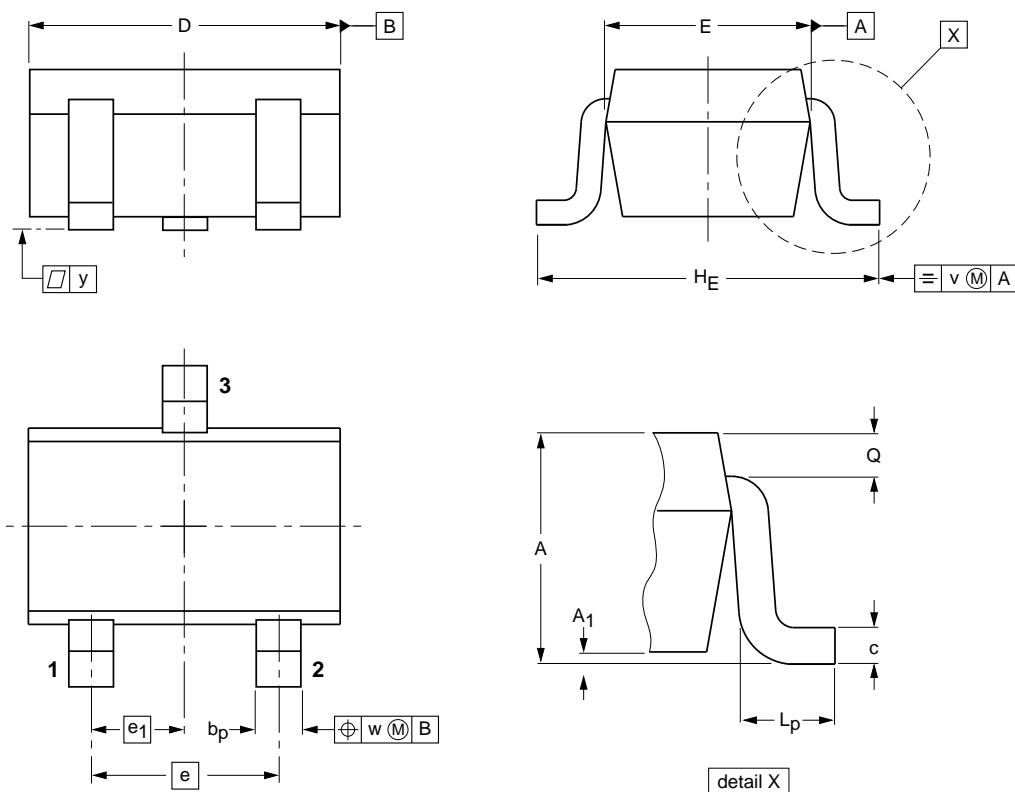
PNP general purpose transistors

BC856W; BC857W; BC858W

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT323



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 0.8	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			
SOT323			SC-70			97-02-28