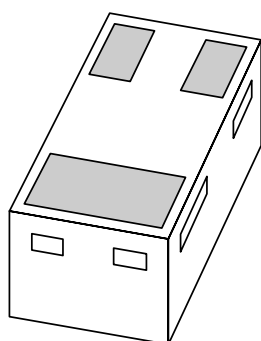


DATA SHEET



BC857M series **PNP general purpose transistors**

Product specification
Supersedes data of 2003 Jul 15

2004 Mar 10

PNP general purpose transistors

BC857M series

FEATURES

- Leadless ultra small plastic package (1 mm × 0.6 mm × 0.5 mm)
- Board space 1.3 × 0.9 mm
- Power dissipation comparable to SOT23.

APPLICATIONS

- General purpose small signal DC
- Low and medium frequency AC applications
- Mobile communications, digital (still) cameras, PDAs, PCMCIA cards.

DESCRIPTION

PNP general purpose transistor in a SOT883 leadless ultra small plastic package.
NPN complement: BC847M series.

MARKING

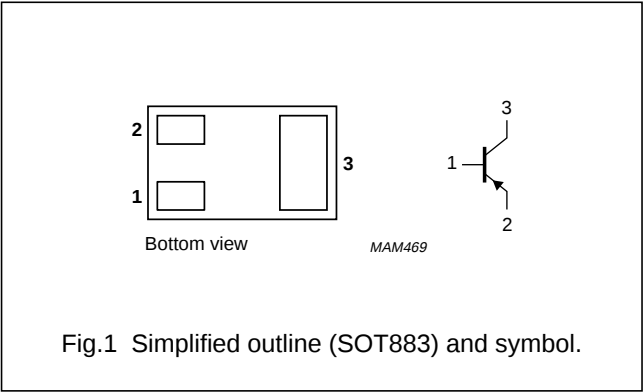
TYPE NUMBER	MARKING CODE
BC857AM	D1
BC857BM	D2
BC857CM	D3

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{CEO}	collector-emitter voltage	-45	V
I_C	collector current (DC)	-100	mA
I_{CM}	peak collector current	-200	mA

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
BC857AM	-	Leadless ultra small plastic package; 3 solder lands; body 1.0 x 0.6 x 0.5 mm	SOT883
BC857BM			
BC857CM			

PNP general purpose transistors

BC857M series

LIMITING VALUES

In accordance with the Absolute Maximum 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	$T_{amb} \leq 25\text{ °C}$			
		note 1	–	250	mW
		note 2	–	430	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C

Notes

1. Refer to SOT883 standard mounting conditions (footprint), FR4 with 60 µm copper strip line.
2. Device mounted on a FR4 printed-circuit board, single-sided copper, mounting pad for collector 1 cm².

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 2	290	K/W

Notes

1. Refer to SOT883 standard mounting conditions (footprint), FR4 with 60 µm copper strip line.
2. Device mounted on a FR4 printed-circuit board, single-sided copper, mounting pad for collector 1 cm².

PNP general purpose transistors

BC857M series

CHARACTERISTICS

$T_{amb} = 25\text{ }^{\circ}\text{C}$ 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
		$V_{CB} = -30\text{ V}; I_E = 0; T_J = 150\text{ }^{\circ}\text{C}$	–	–5	μA
I_{EBO}	emitter-base cut-off current	$V_{EB} = -5\text{ V}; I_C = 0$	–	–100	nA
h_{FE}	DC current gain BC857AM BC857BM BC857CM	$V_{CE} = -5\text{ V}; I_C = -2\text{ mA}$			
			125	250	
			220	475	
			420	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
		$I_C = -100\text{ mA}; I_B = -5\text{ mA}; \text{note 1}$	–	–400	mV
C_c	collector capacitance	$I_E = I_e = 0; V_{CB} = -10\text{ V}; f = 1\text{ MHz}$	–	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

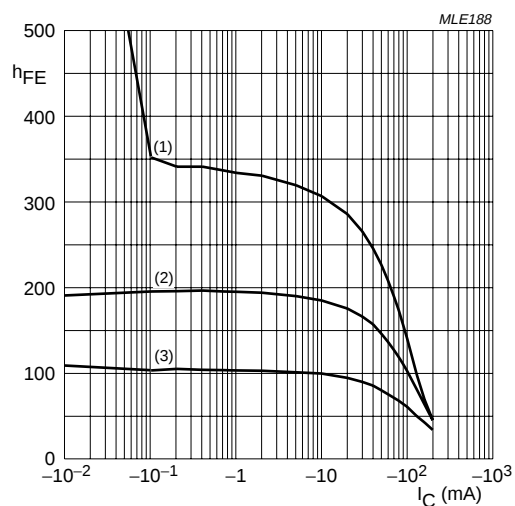
Note

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

PNP general purpose transistors

BC857M series

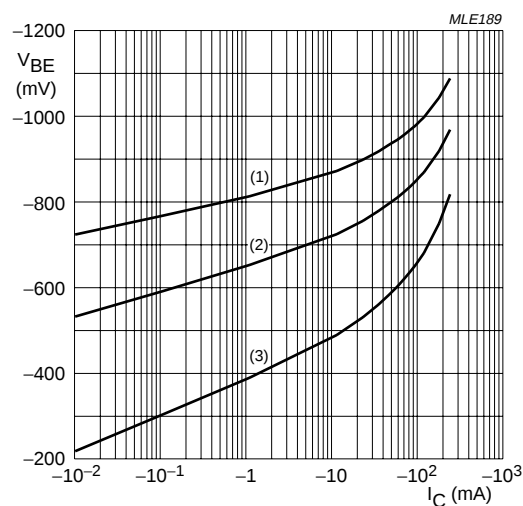
GRAPHICAL INFORMATION BC857AM



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

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

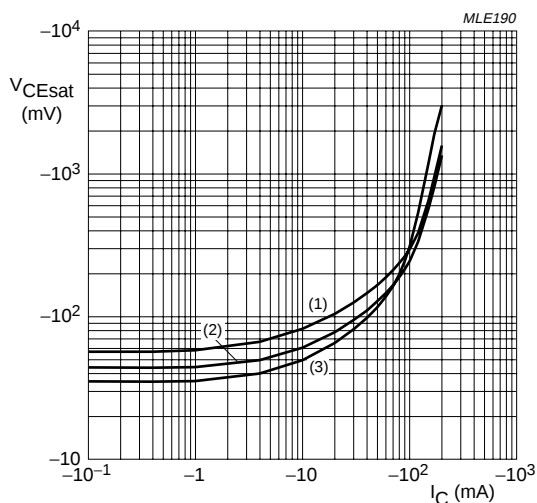
Fig.2 DC current gain; typical values.



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

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

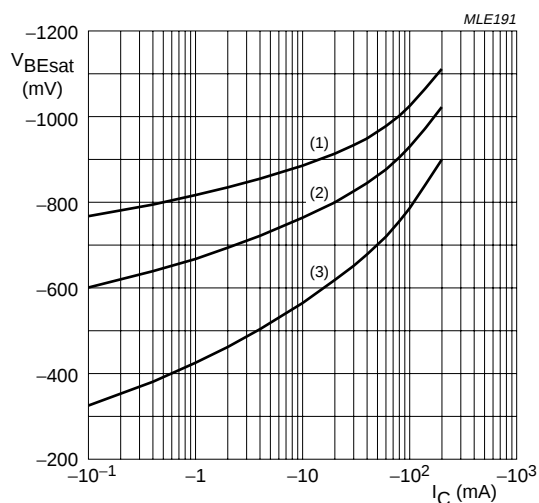
Fig.3 Base-emitter voltage as a function of collector current; typical values.



$I_C/I_B = 20.$

- (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.



$I_C/I_B = 20.$

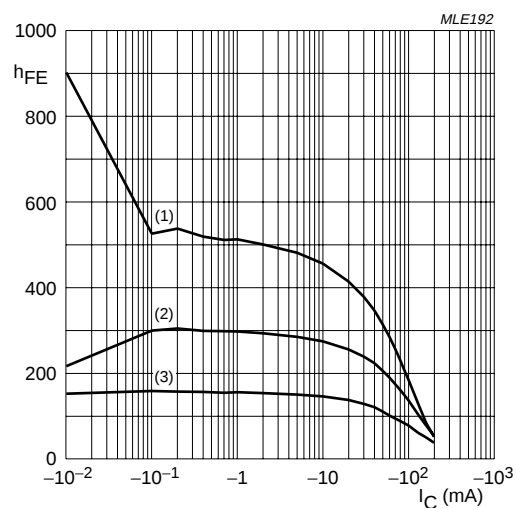
- (1) $T_{amb} = -55 \text{ }^{\circ}\text{C.}$
- (2) $T_{amb} = 25 \text{ }^{\circ}\text{C.}$
- (3) $T_{amb} = 150 \text{ }^{\circ}\text{C.}$

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

PNP general purpose transistors

BC857M series

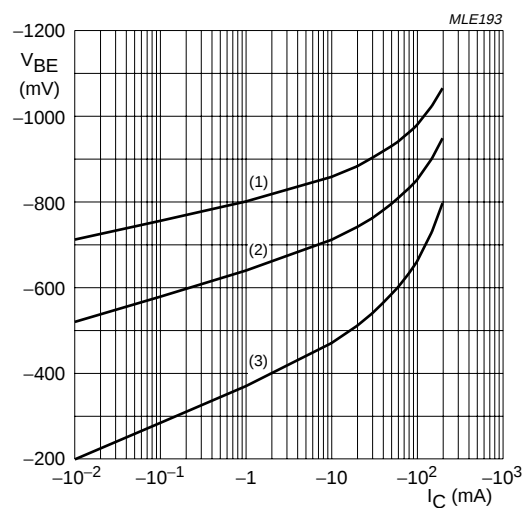
GRAPHICAL INFORMATION BC857BM



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

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

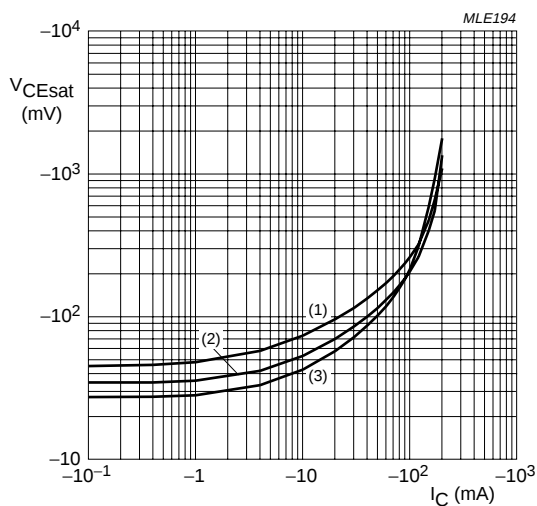
Fig.6 DC current gain; typical values.



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

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

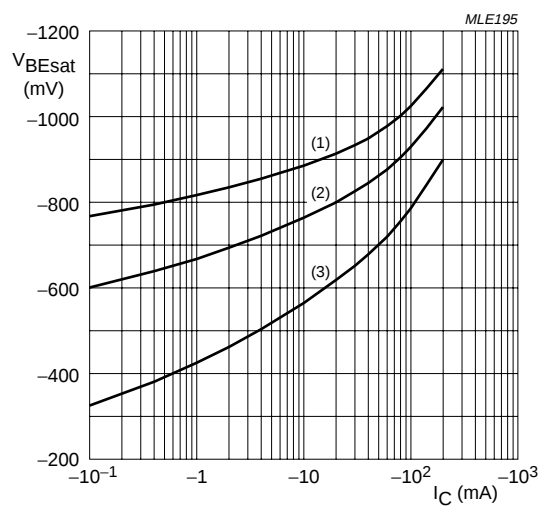
Fig.7 Base-emitter voltage as a function of collector current; typical values.



$I_C/I_B = 20.$

- (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.



$I_C/I_B = 20.$

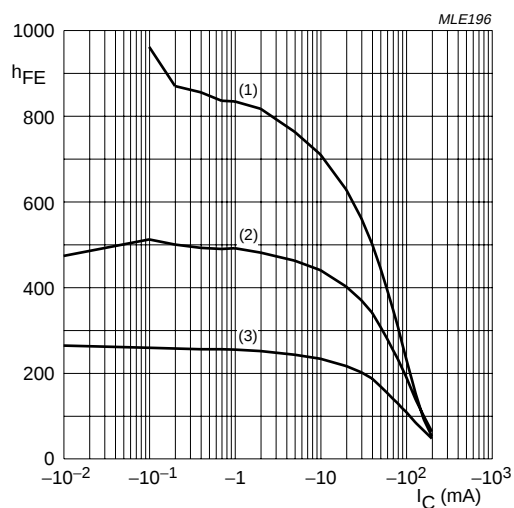
- (1) $T_{amb} = -55 \text{ }^{\circ}\text{C.}$
- (2) $T_{amb} = 25 \text{ }^{\circ}\text{C.}$
- (3) $T_{amb} = 150 \text{ }^{\circ}\text{C.}$

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

PNP general purpose transistors

BC857M series

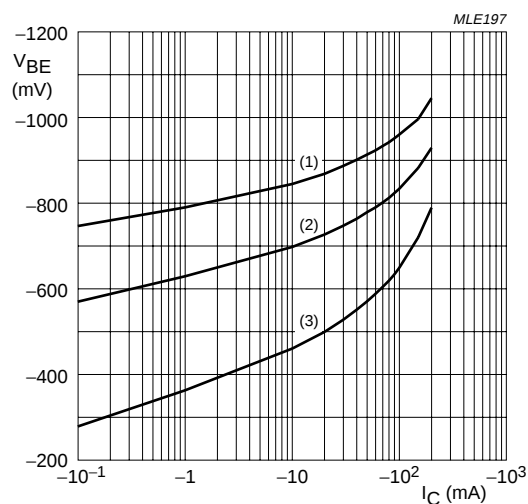
GRAPHICAL INFORMATION BC857CM



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

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

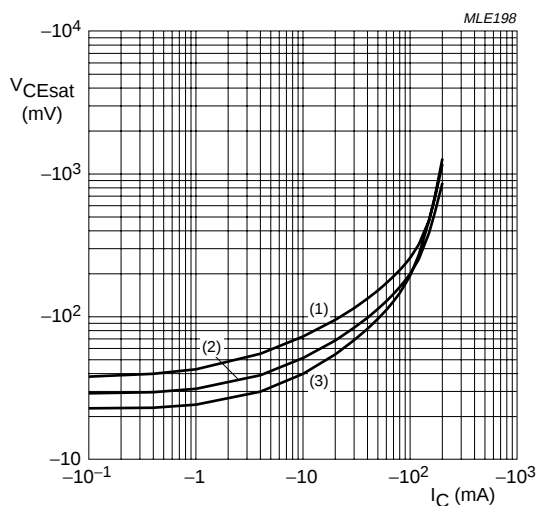
Fig.10 DC current gain; typical values.



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

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

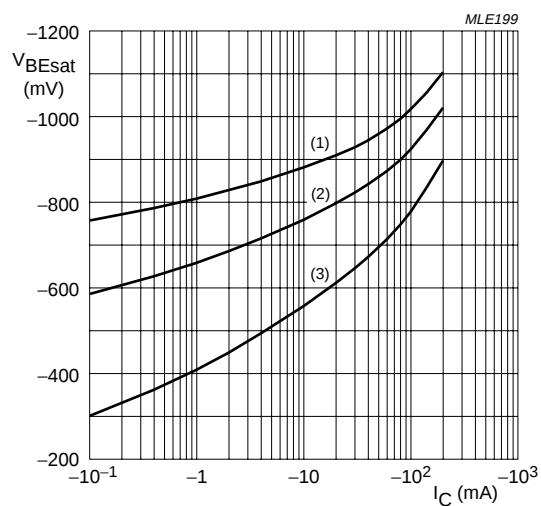
Fig.11 Base-emitter voltage as a function of collector current; typical values.



$I_C/I_B = 20.$

- (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.12 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.13 Base-emitter saturation voltage as a function of collector current; typical values.

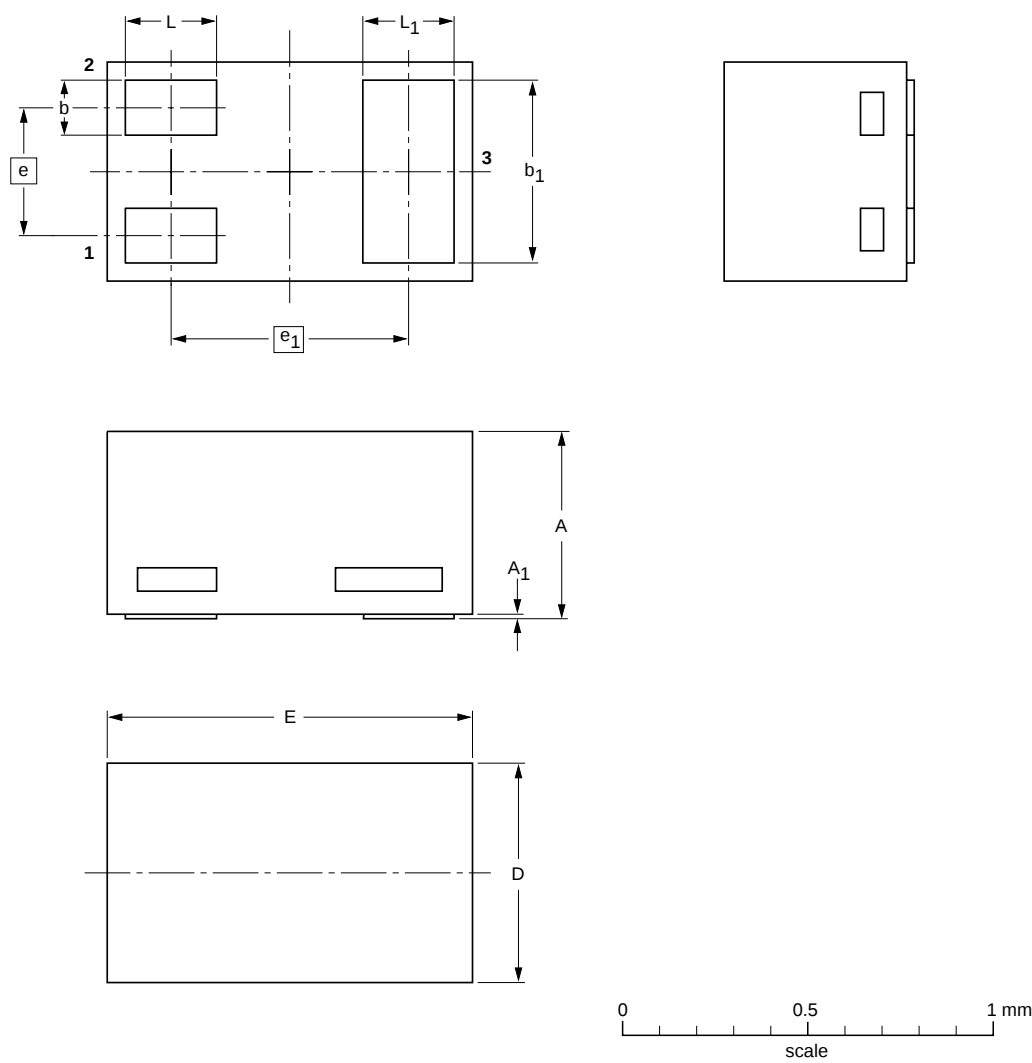
PNP general purpose transistors

BC857M series

PACKAGE OUTLINE

Leadless ultra small plastic package; 3 solder lands; body 1.0 x 0.6 x 0.5 mm

SOT883



DIMENSIONS (mm are the original dimensions)

UNIT	A ⁽¹⁾	A ₁ max.	b	b ₁	D	E	e	e ₁	L	L ₁
mm	0.50 0.46	0.03	0.20 0.12	0.55 0.47	0.62 0.55	1.02 0.95	0.35	0.65	0.30 0.22	0.30 0.22

Note
1. Including plating thickness

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT883			SC-101			03-02-05 03-04-03

PNP general purpose transistors

BC857M series

DATA SHEET STATUS

LEVEL	DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾⁽³⁾	DEFINITION
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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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