

# DATA SHEET



**PBSS9110T**

100 V, 1 A

PNP low  $V_{CEsat}$  (BISS) transistor

Product specification  
Supersedes data of 2004 May 06

2004 May 13

# 100 V, 1 A PNP low $V_{CEsat}$ (BISS) transistor

## PBSS9110T

### FEATURES

- SOT23 package
- Low collector-emitter saturation voltage  $V_{CEsat}$
- High collector current capability:  $I_C$  and  $I_{CM}$
- Higher efficiency leading to less heat generation

### APPLICATIONS

- Major application segments
  - Automotive 42 V power
  - Telecom infrastructure
  - Industrial
- DC-to-DC conversion
- Peripheral drivers
  - Driver in low supply voltage applications (e.g. lamps and LEDs).
  - Inductive load driver (e.g. relays, buzzers and motors).

### DESCRIPTION

PNP low  $V_{CEsat}$  transistor in a SOT23 plastic package.  
NPN complement: PBSS8110T.

### MARKING

TYPE NUMBER	MARKING CODE <sup>(1)</sup>
PBSS9110T	*U7

### Note

- \* = p: Made in Hong Kong.  
\* = t: Made in Malaysia.  
\* = W: Made in China.

### ORDERING INFORMATION

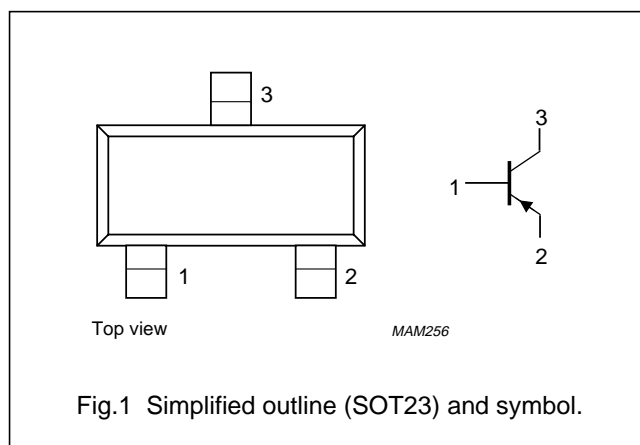
TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PBSS9110T	–	plastic surface mounted package; 3 leads	SOT23

### QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
$V_{CEO}$	collector-emitter voltage	–100	V
$I_C$	collector current (DC)	–1	A
$I_{CM}$	repetitive peak collector current	–3	A
$R_{CEsat}$	equivalent on-resistance	320	m $\Omega$

### PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



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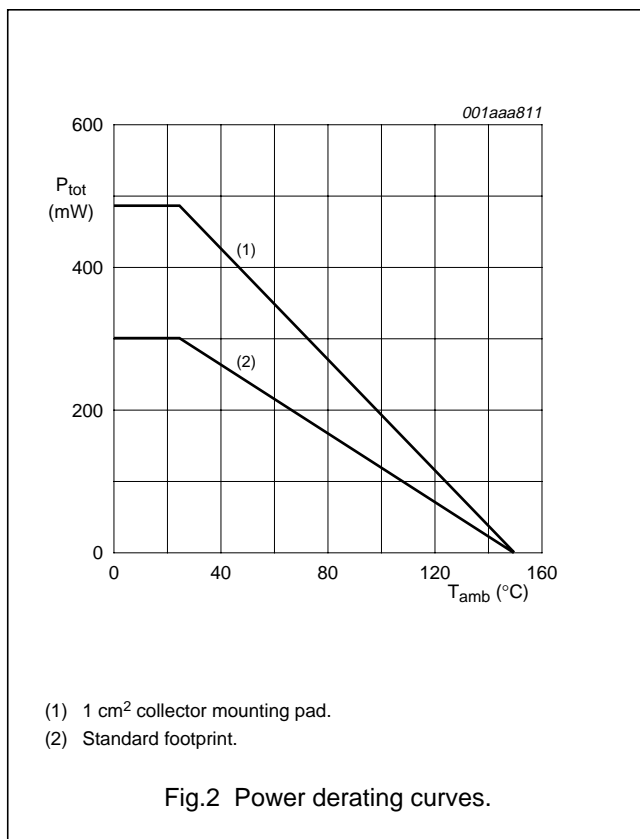
**LIMITING VALUES**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{CBO}$	collector-base voltage	open emitter	–	–120	V
$V_{CEO}$	collector-emitter voltage	open base	–	–100	V
$V_{EBO}$	emitter-base voltage	open collector	–	–5	V
$I_C$	collector current (DC)		–	–1	A
$I_{CM}$	peak collector current	limited by $T_{j(max)}$	–	–3	A
$I_B$	base current (DC)		–	–300	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ }^\circ\text{C}$ ; note 1	–	300	mW
		$T_{amb} \leq 25\text{ }^\circ\text{C}$ ; note 2	–	480	mW
$T_j$	junction temperature		–	150	$^\circ\text{C}$
$T_{amb}$	operating ambient temperature		–65	+150	$^\circ\text{C}$
$T_{stg}$	storage temperature		–65	+150	$^\circ\text{C}$

**Notes**

1. Device mounted on a printed-circuit board, single-sided copper, tin-plated, standard footprint.
2. Device mounted on a printed-circuit board, single-sided copper, tin-plated and 1 cm<sup>2</sup> collector mounting pad.



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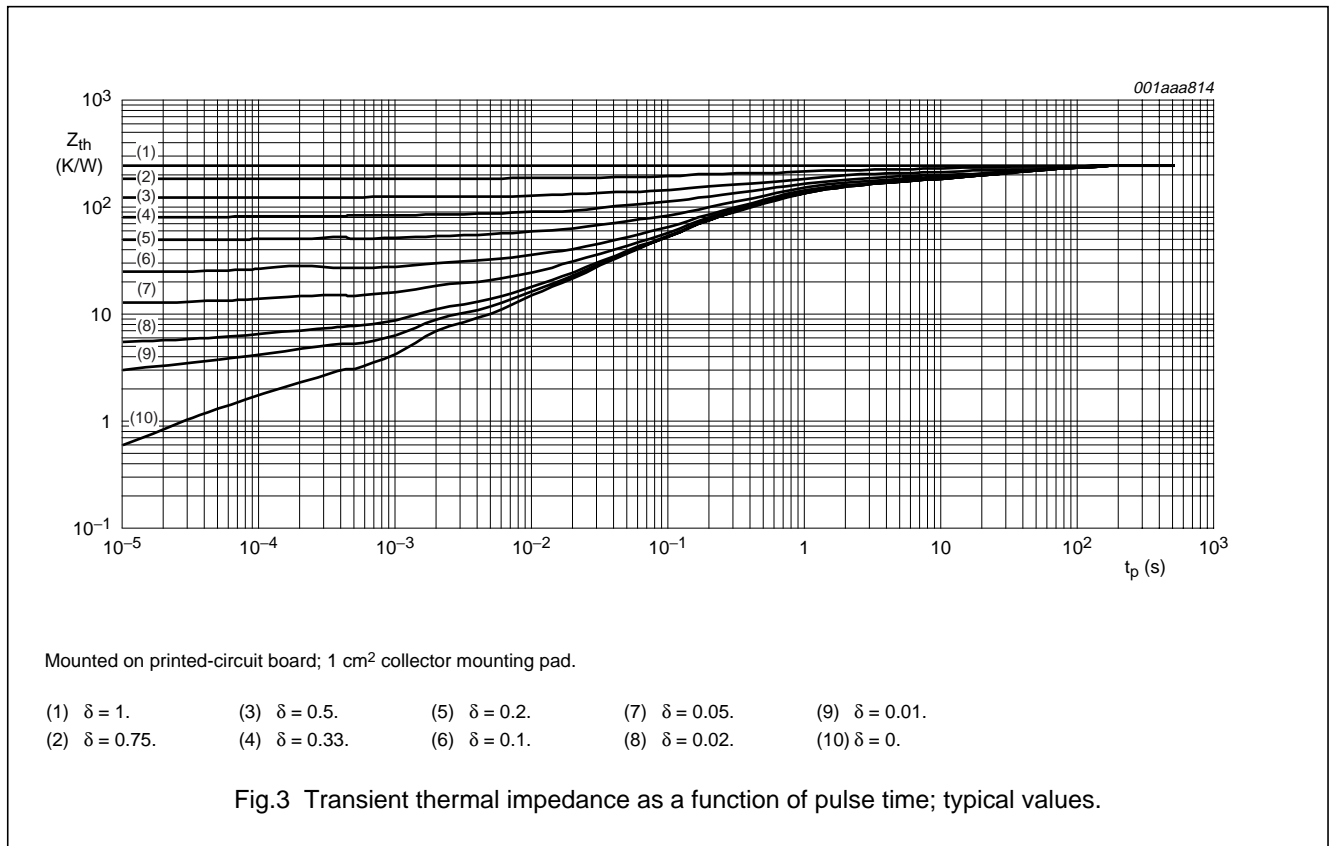
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**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air; note 1	417	K/W
		in free air; note 2	260	K/W

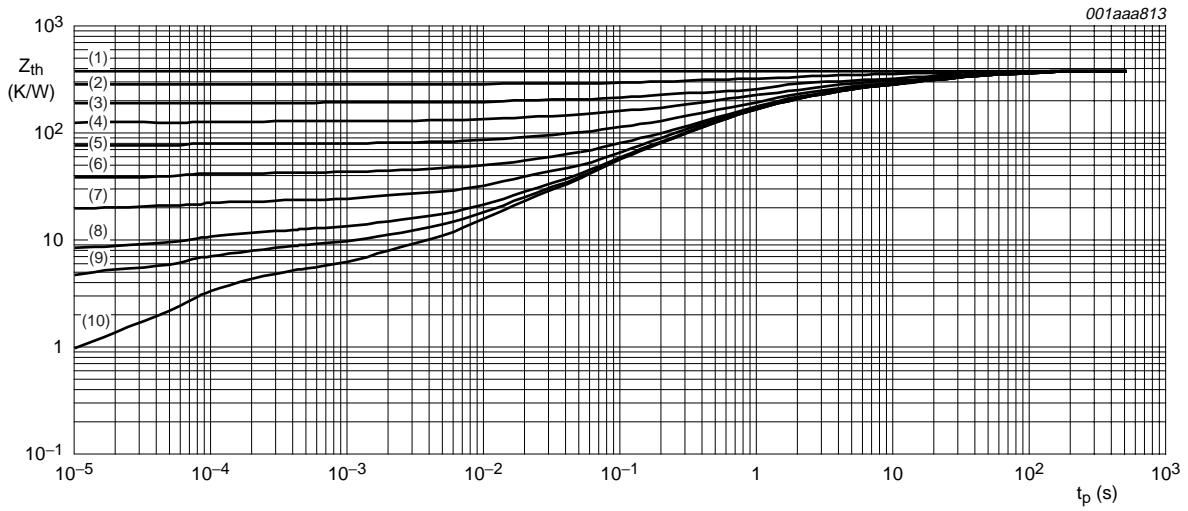
**Notes**

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Mounted on printed-circuit board; standard footprint.

- |                      |                      |                     |                      |                      |
|----------------------|----------------------|---------------------|----------------------|----------------------|
| (1) $\delta = 1.$    | (3) $\delta = 0.5.$  | (5) $\delta = 0.2.$ | (7) $\delta = 0.05.$ | (9) $\delta = 0.01.$ |
| (2) $\delta = 0.75.$ | (4) $\delta = 0.33.$ | (6) $\delta = 0.1.$ | (8) $\delta = 0.02.$ | (10) $\delta = 0.$   |

Fig.4 Transient thermal impedance as a function of pulse time; typical values.

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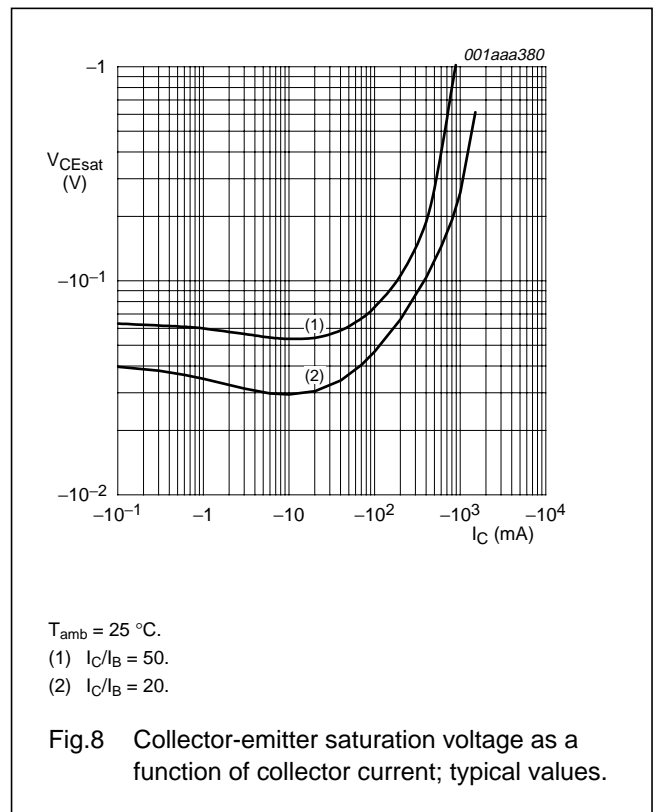
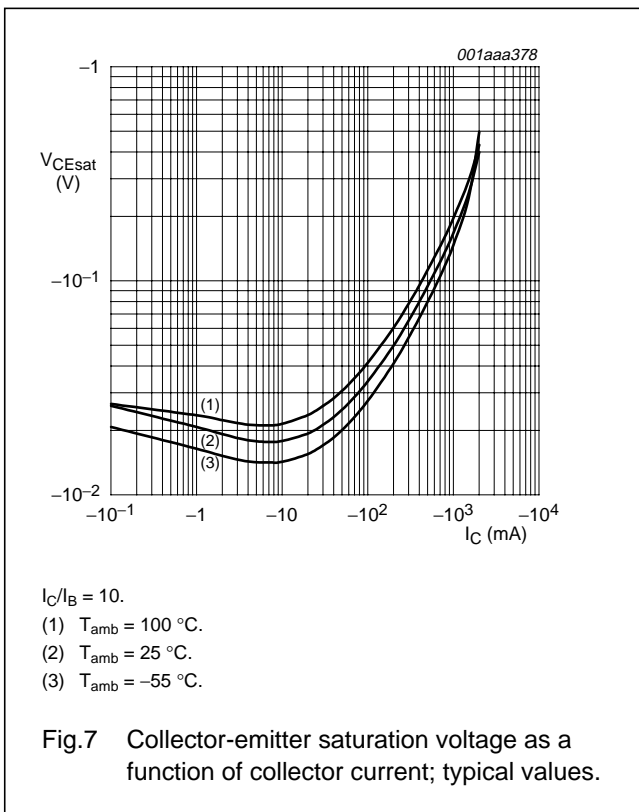
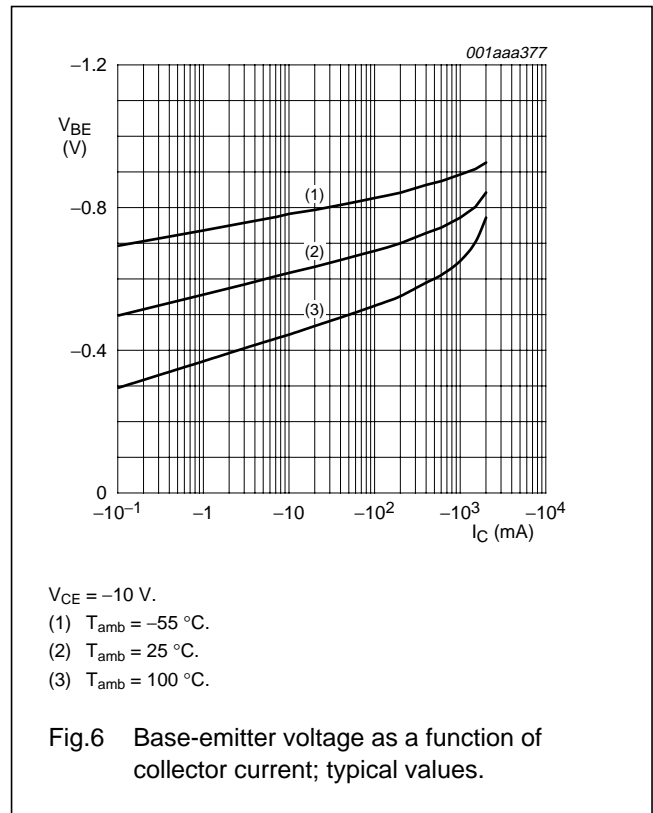
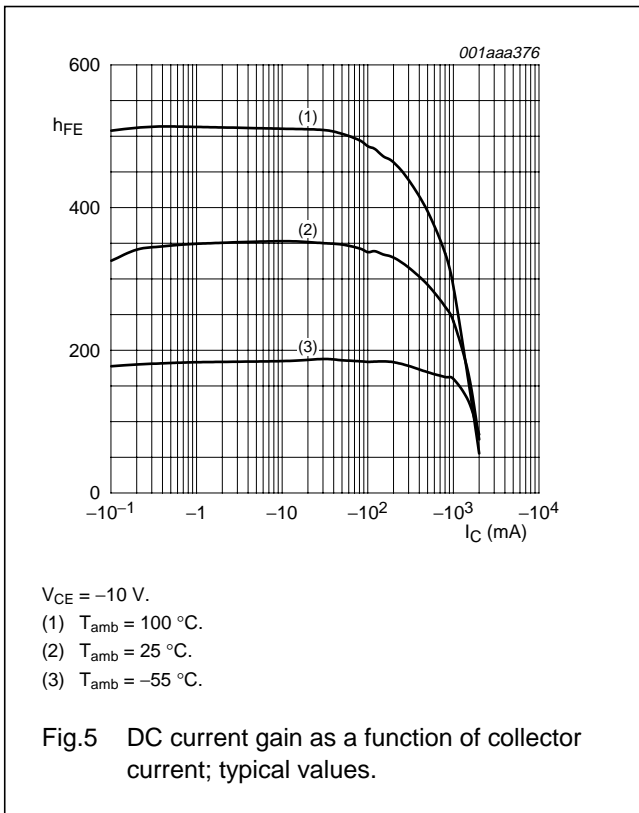
**CHARACTERISTICS** $T_j = 25\text{ °C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CBO}$	collector-base cut-off current	$V_{CB} = -80\text{ V}; I_E = 0\text{ A}$	–	–	–100	nA
		$V_{CB} = -80\text{ V}; I_E = 0\text{ A}; T_j = 150\text{ °C}$	–	–	–50	$\mu\text{A}$
$I_{CES}$	collector-emitter cut-off current	$V_{CE} = -80\text{ V}; V_{BE} = 0\text{ A}$	–	–	–100	nA
$I_{EBO}$	emitter-base cut-off current	$V_{EB} = -4\text{ V}; I_C = 0\text{ A}$	–	–	–100	nA
$h_{FE}$	DC current gain	$V_{CE} = -5\text{ V}; I_C = -1\text{ mA}$	150	–	–	
		$V_{CE} = -5\text{ V}; I_C = -250\text{ mA}$	150	–	–	
		$V_{CE} = -5\text{ V}; I_C = -500\text{ mA}$ ; note 1	150	–	450	
		$V_{CE} = -5\text{ V}; I_C = -1\text{ A}$ ; note 1	125	–	–	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = -250\text{ mA}; I_B = -25\text{ mA}$	–	–	–120	mV
		$I_C = -500\text{ mA}; I_B = -50\text{ mA}$	–	–	–180	mV
		$I_C = -1\text{ A}; I_B = -100\text{ mA}$ ; note 1	–	–	–320	mV
$R_{CEsat}$	equivalent on-resistance	$I_C = -1\text{ A}; I_B = -100\text{ mA}$ ; note 1	–	170	320	$\text{m}\Omega$
$V_{BEsat}$	base-emitter saturation voltage	$I_C = -1\text{ A}; I_B = -100\text{ mA}$	–	–	–1.1	V
$V_{BEon}$	base-emitter turn-on voltage	$V_{CE} = -5\text{ V}; I_C = -1\text{ A}$	–	–	–1	V
$f_T$	transition frequency	$V_{CE} = -10\text{ V}; I_C = -50\text{ mA}$ ; $f = 100\text{ MHz}$	100	–	–	MHz
$C_c$	collector capacitance	$V_{CB} = -10\text{ V}; I_E = I_e = 0\text{ A}$ ; $f = 1\text{ MHz}$	–	–	17	pF

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

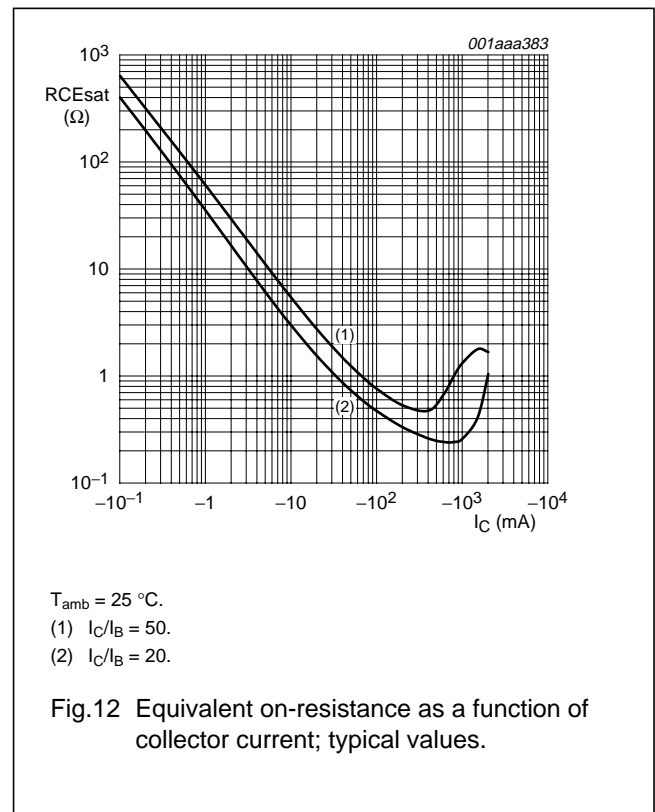
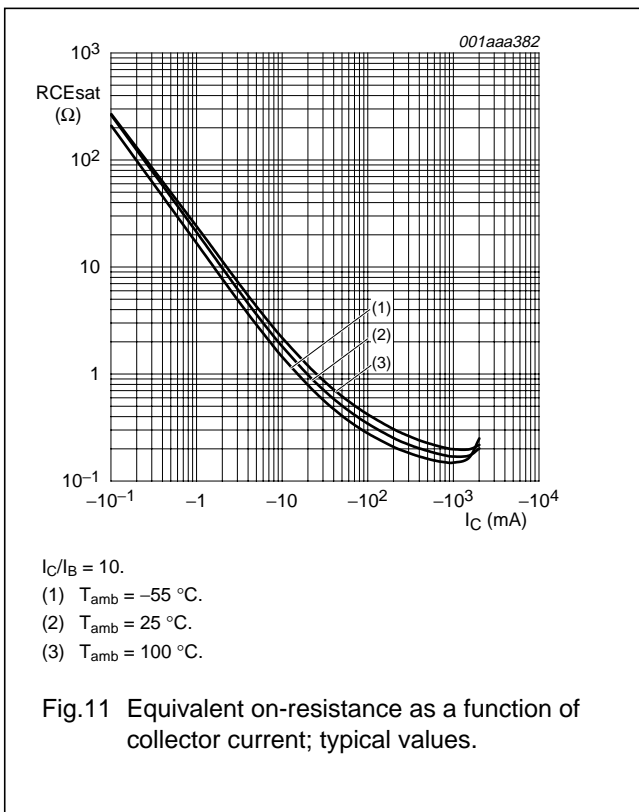
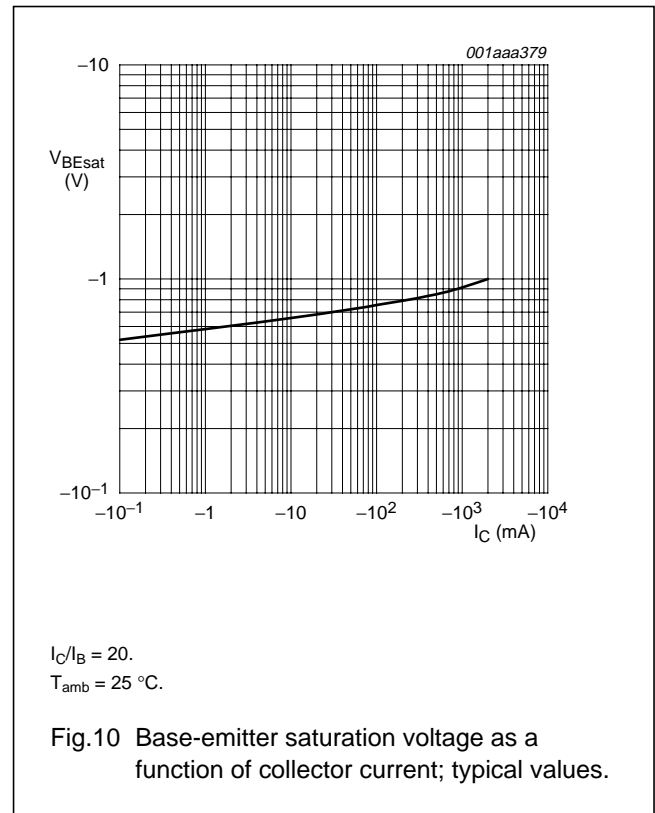
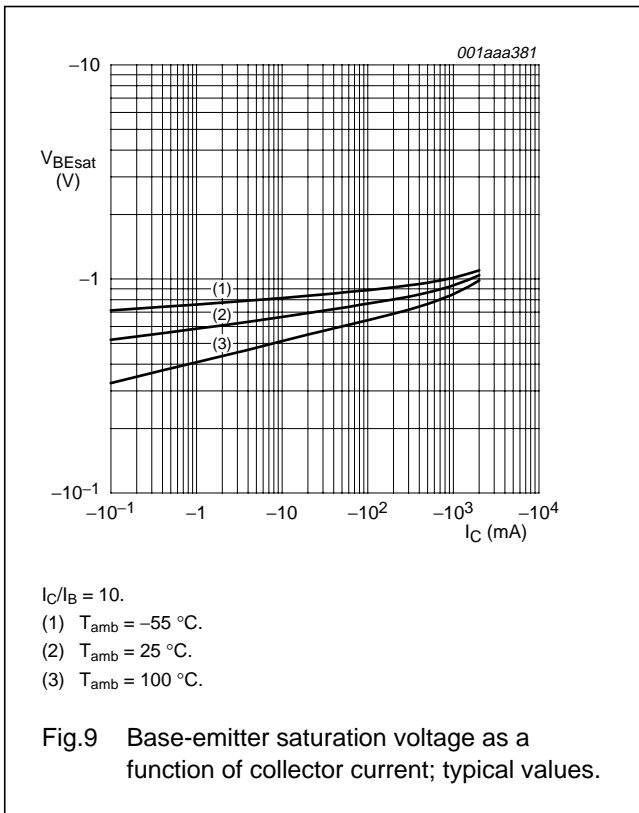
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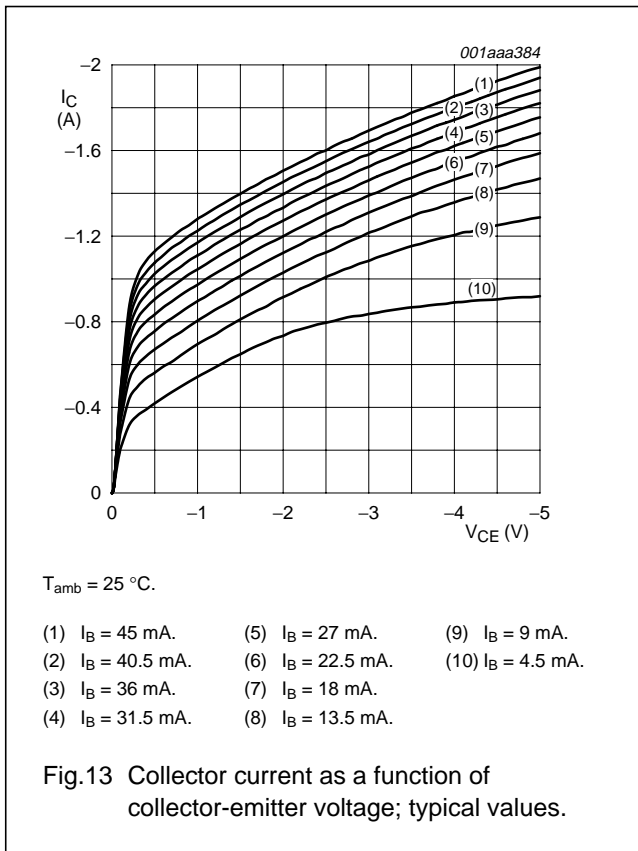
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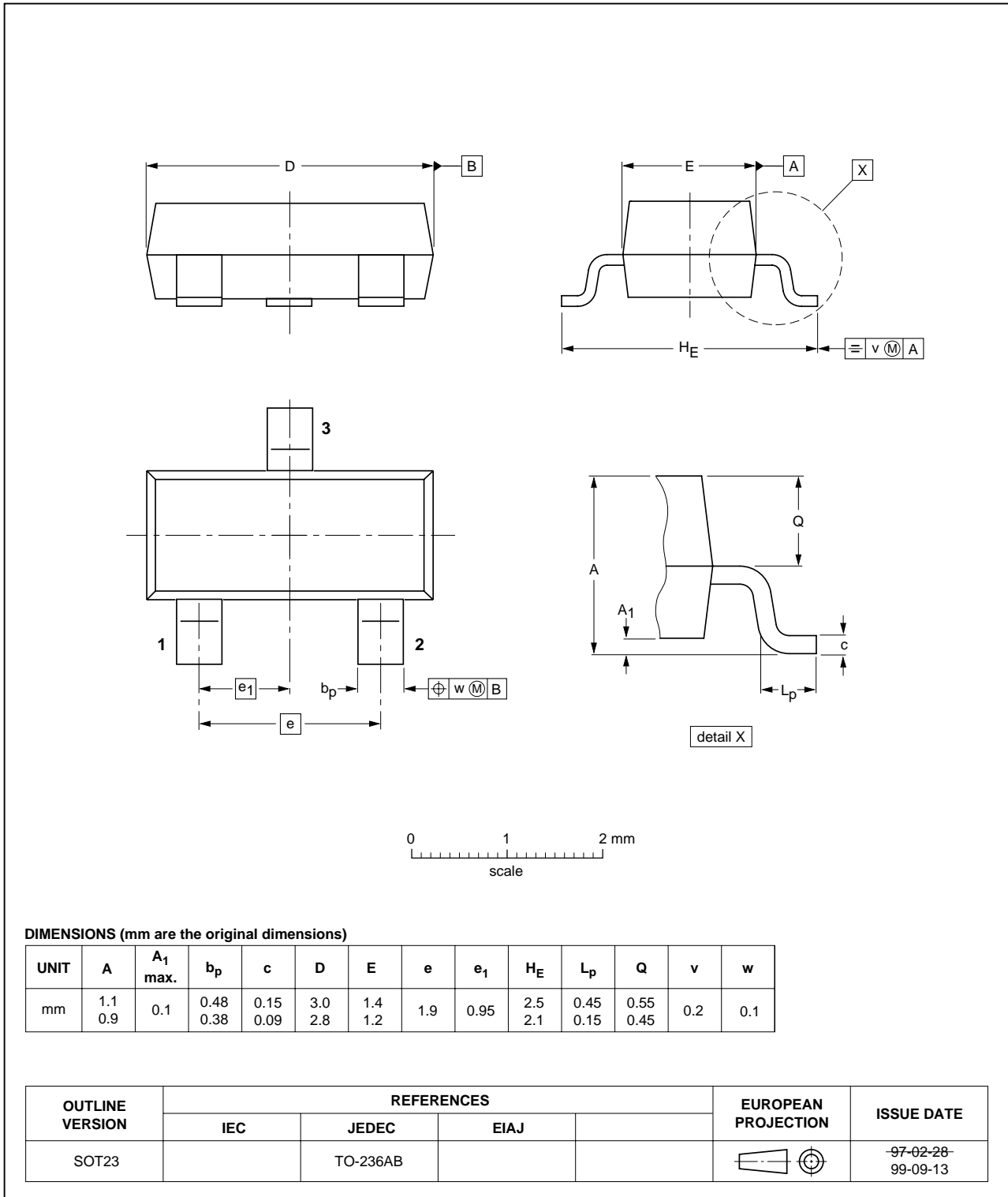
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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



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## DATA SHEET STATUS

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