

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 ⁽¹⁾
PBSS9110T	*U7

Note

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

ORDERING INFORMATION

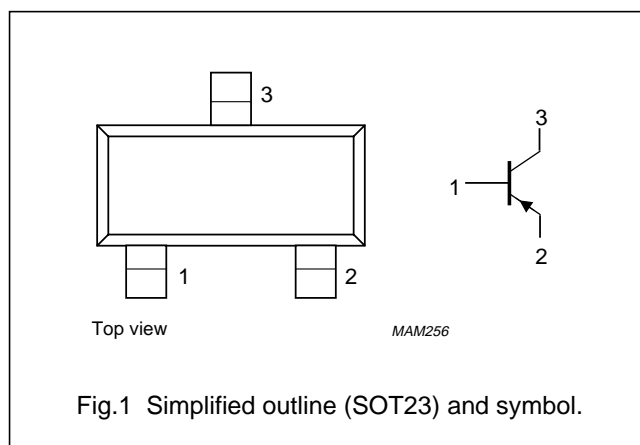
TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PBSS9110T	–	plastic surface mounted package; 3 leads	SOT23

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 Ω

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



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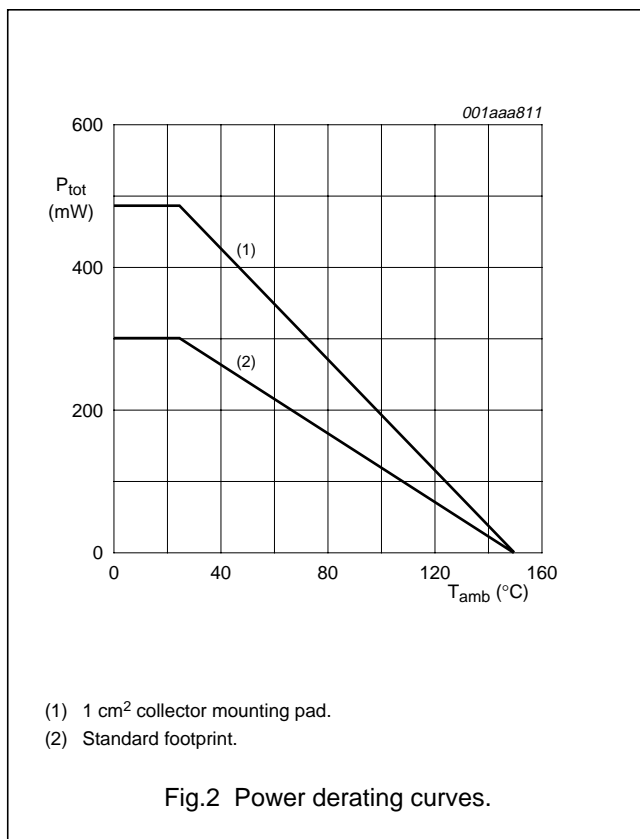
LIMITING VALUES

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 cm² collector mounting pad.



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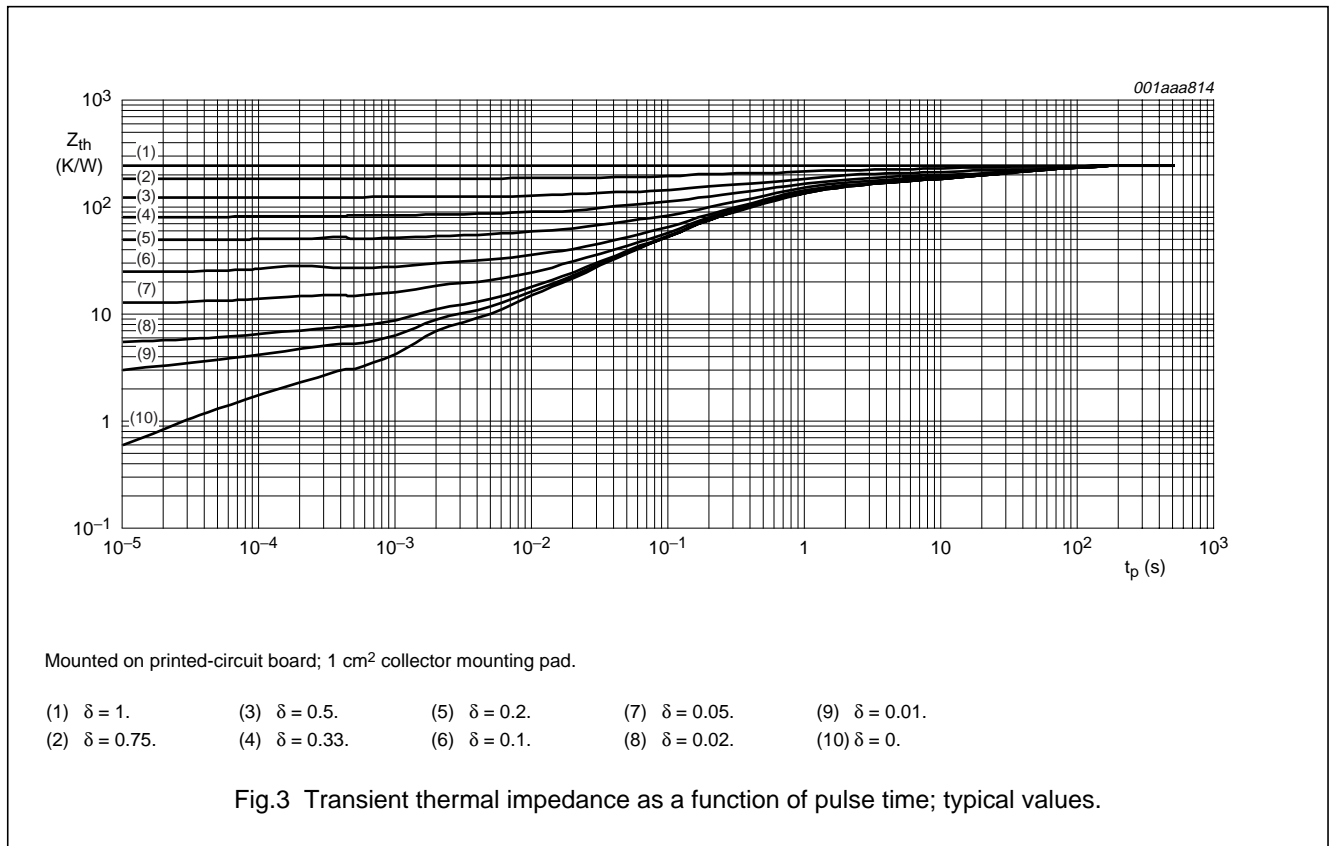
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THERMAL CHARACTERISTICS

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

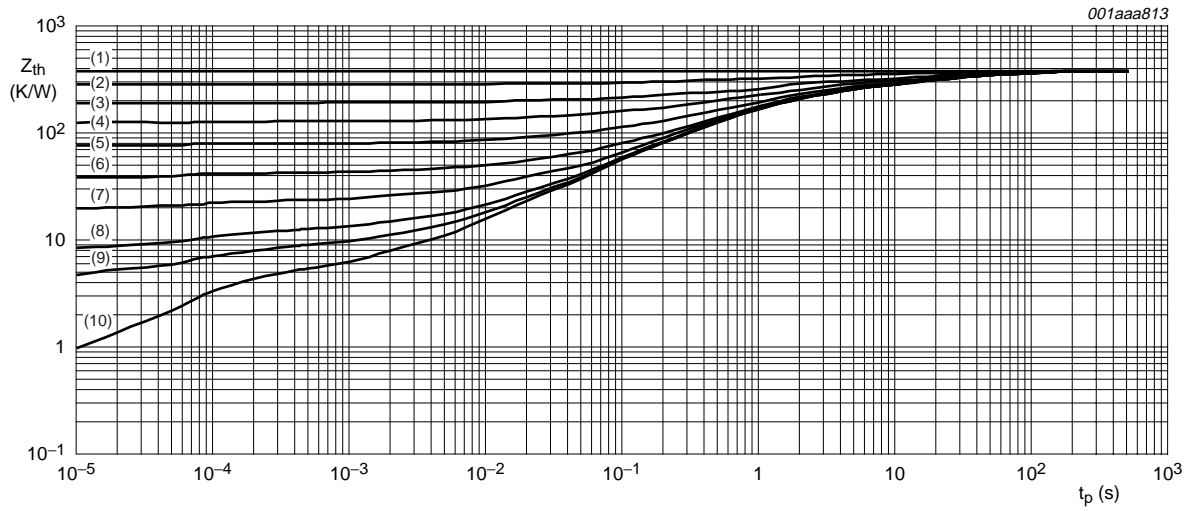
Notes

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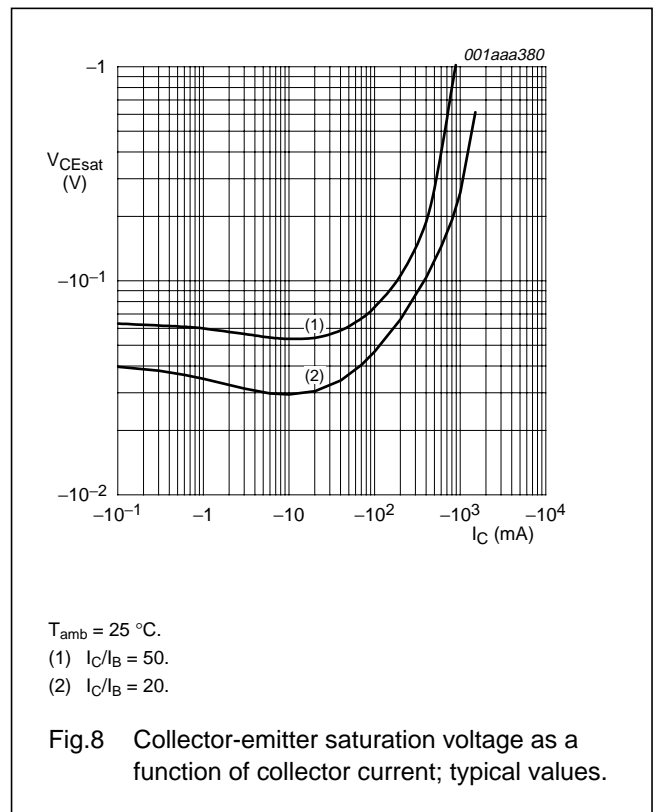
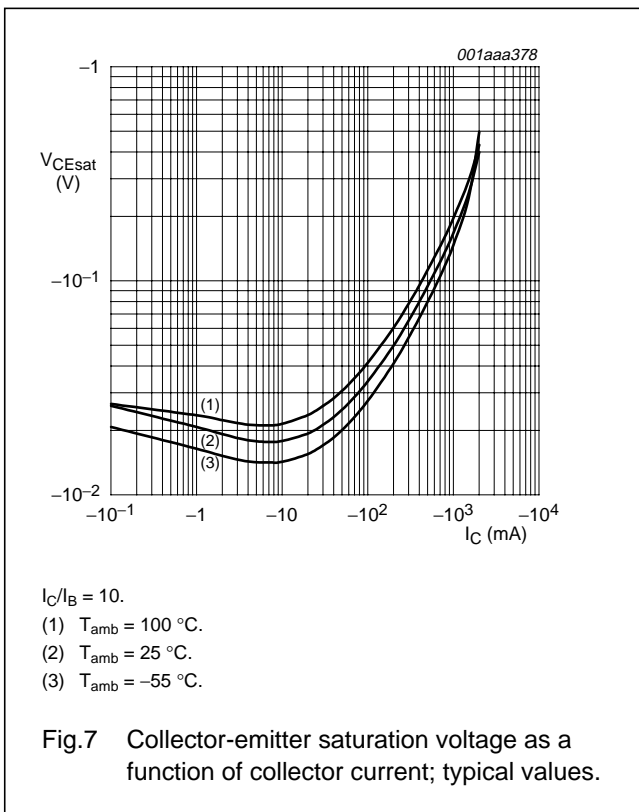
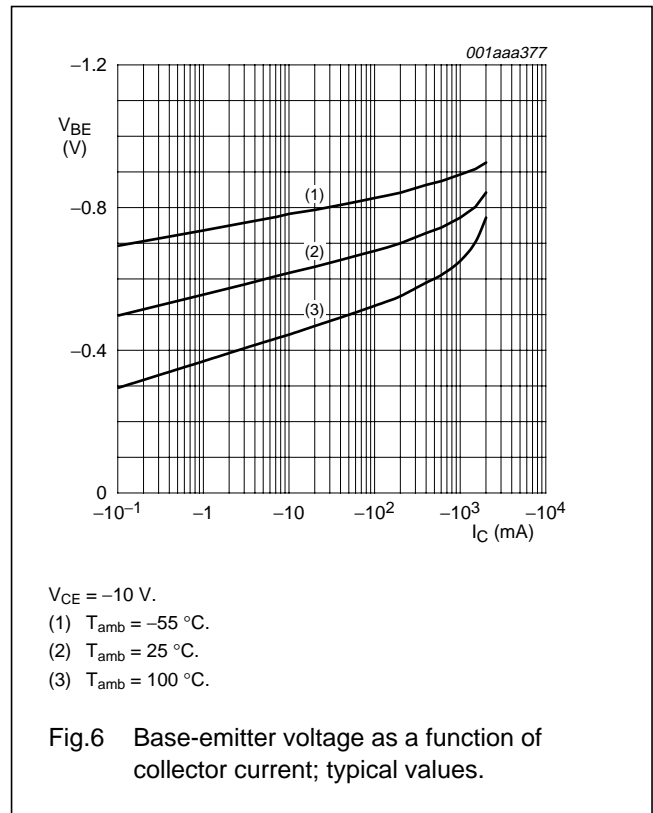
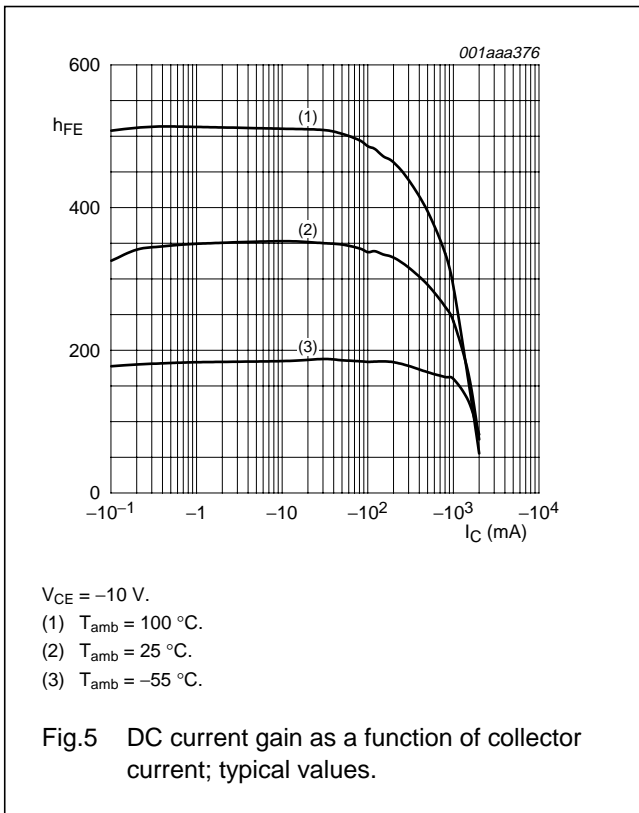
CHARACTERISTICS $T_j = 25\text{ °C}$ unless otherwise specified.

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	μA
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

Note1. Pulse test: $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$.

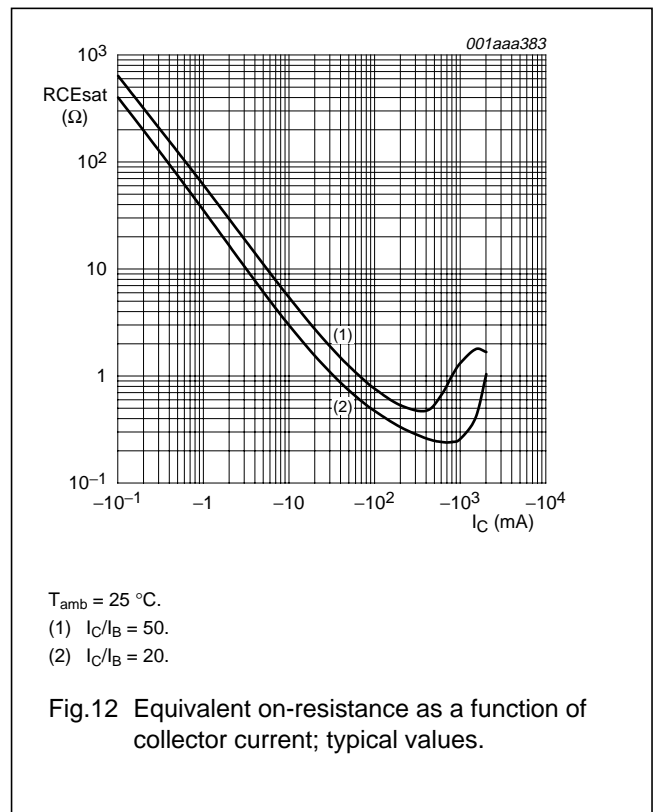
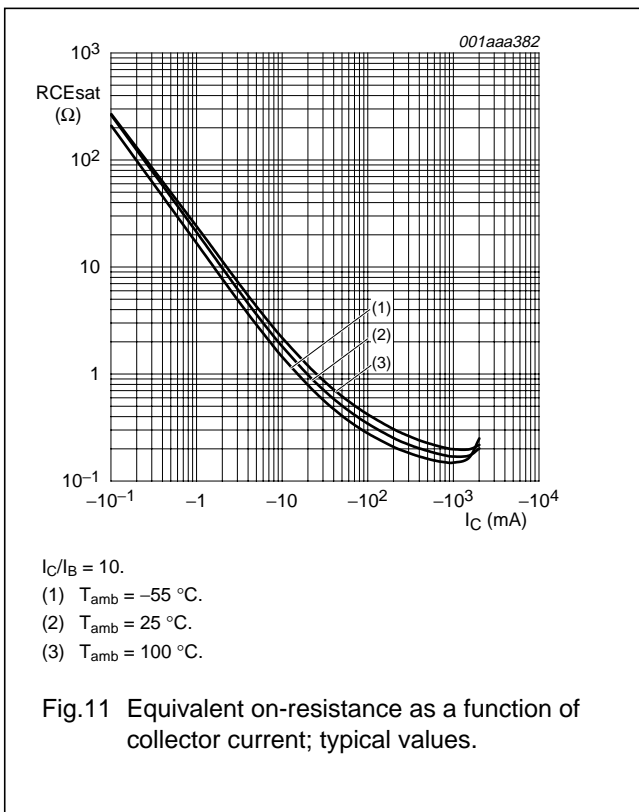
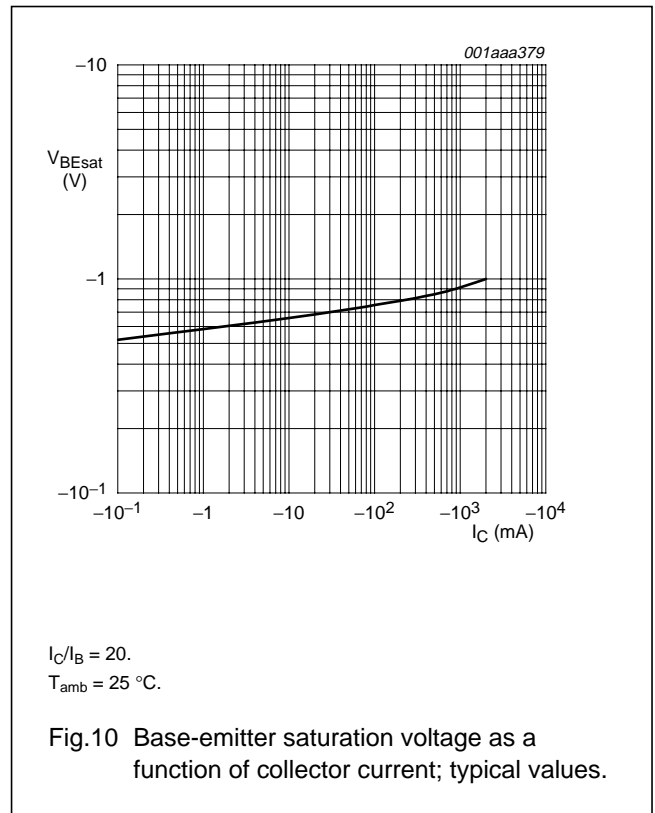
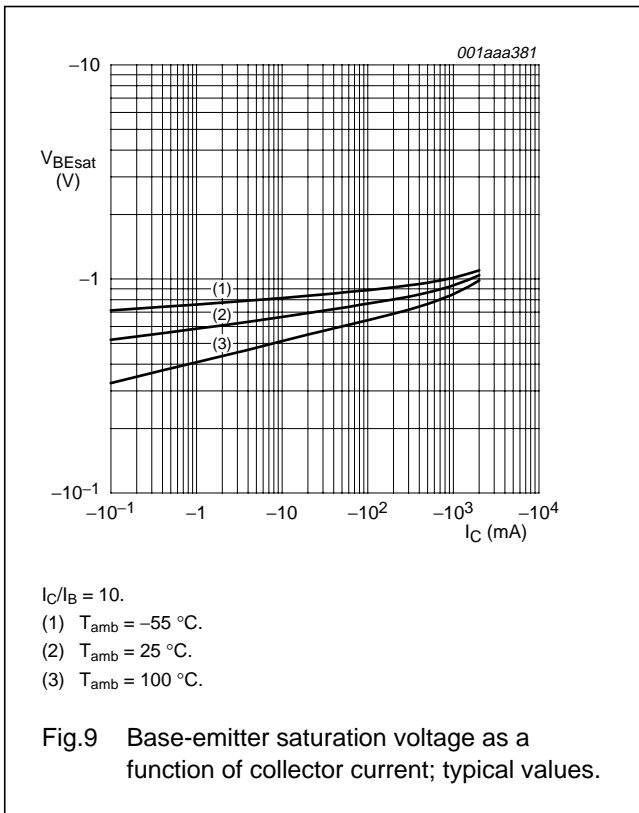
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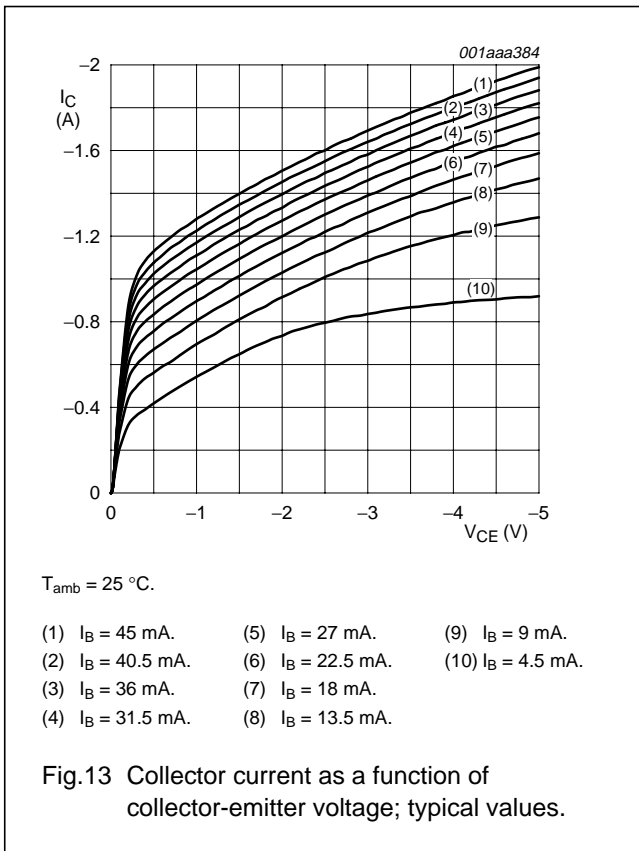
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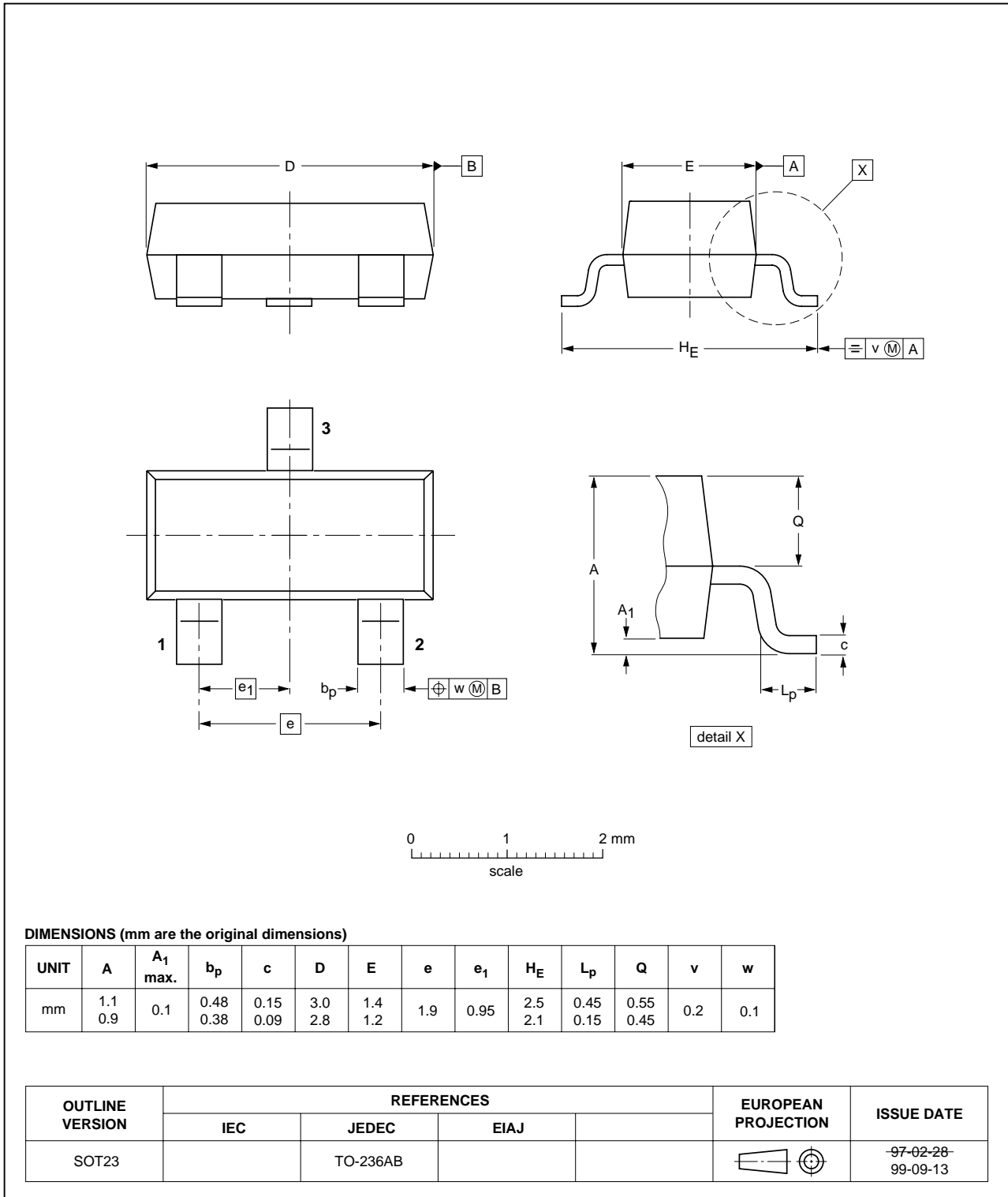
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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



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DATA SHEET STATUS

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