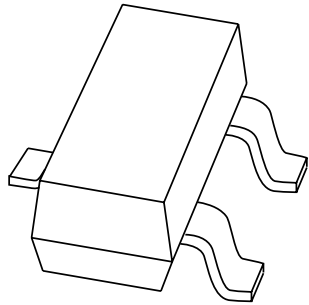


# DATA SHEET



**PBSS8110T**

100 V, 1 A

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

Product specification  
Supersedes data of 2003 Jul 28

2003 Dec 22

**100 V, 1 A  
NPN low  $V_{CEsat}$  (BISS) transistor**

**PBSS8110T**

**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
- Reduced printed-circuit board requirements.

**APPLICATIONS**

- Major application segments
  - Automotive 42 V power
  - Telecom infrastructure
  - Industrial
- Power management
  - DC/DC converters
  - Supply line switching
  - Battery charger
  - LCD backlighting.
- Peripheral drivers
  - Driver in low supply voltage applications (e.g. lamps and LEDs).
  - Inductive load driver (e.g. relays, buzzers and motors).

**DESCRIPTION**

NPN low  $V_{CEsat}$  transistor in a SOT23 plastic package.  
PNP complement: PBSS9110T.

**MARKING**

TYPE NUMBER	MARKING CODE <sup>(1)</sup>
PBSS8110T	*U8

**Note**

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

**ORDERING INFORMATION**

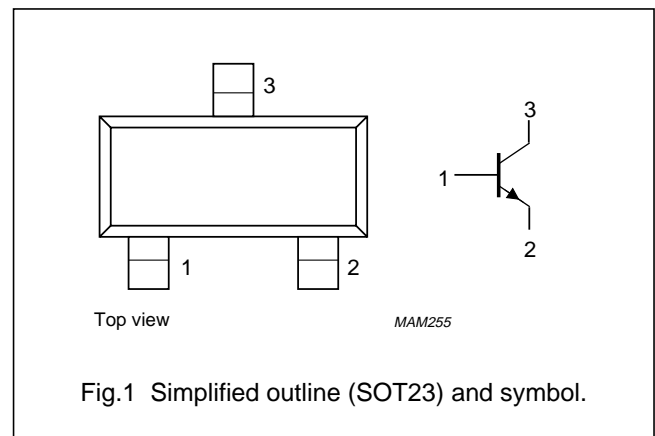
TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PBSS8110T	–	plastic surface mounted package; 3 leads	SOT23

**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	200	m $\Omega$

**PINNING**

PIN	DESCRIPTION
1	base
2	emitter
3	collector



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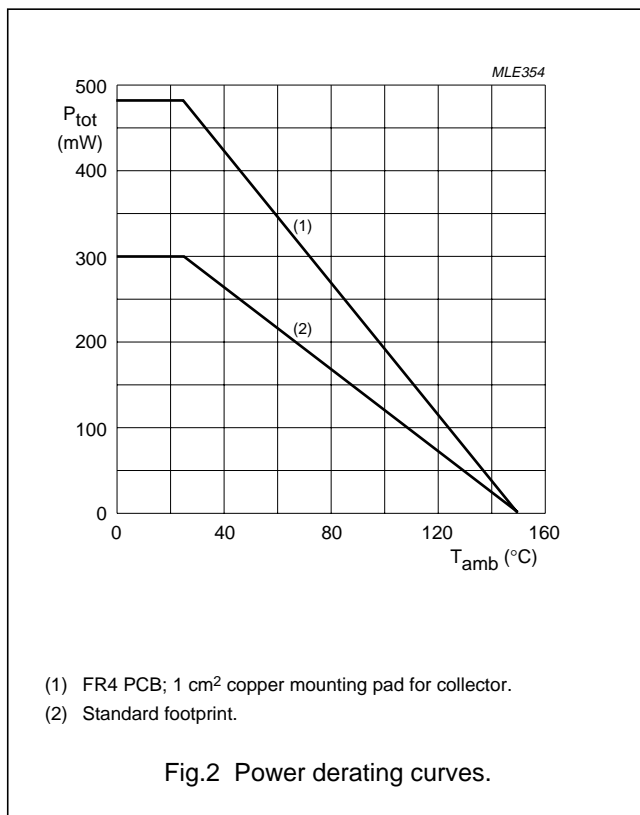
**LIMITING VALUES**

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	$T_{amb} \leq 25\text{ °C}$ ; note 1	–	300	mW
		$T_{amb} \leq 25\text{ °C}$ ; note 2	–	480	mW
$T_j$	junction temperature		–	150	°C
$T_{amb}$	operating ambient temperature		–65	+150	°C
$T_{stg}$	storage temperature		–65	+150	°C

**Notes**

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



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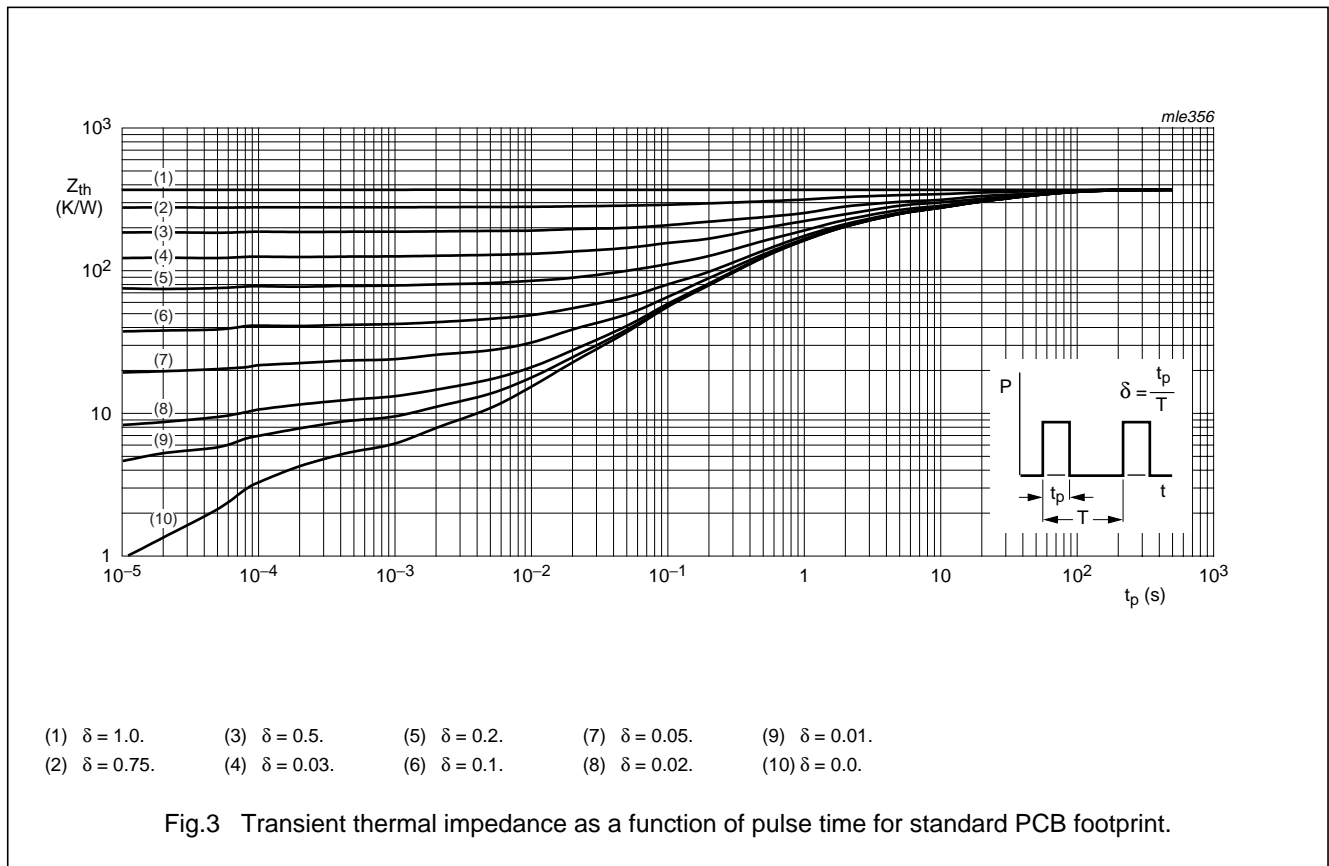
PBSS8110T

**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

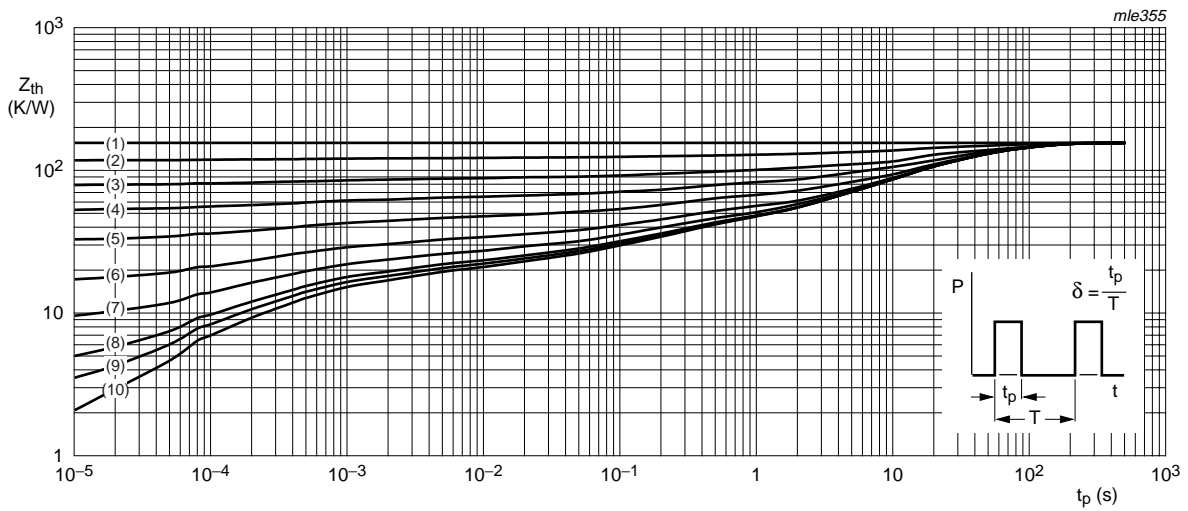
**Notes**

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



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- |                      |                      |                     |                      |                      |
|----------------------|----------------------|---------------------|----------------------|----------------------|
| (1) $\delta = 1.0.$  | (3) $\delta = 0.5.$  | (5) $\delta = 0.2.$ | (7) $\delta = 0.05.$ | (9) $\delta = 0.01.$ |
| (2) $\delta = 0.75.$ | (4) $\delta = 0.03.$ | (6) $\delta = 0.1.$ | (8) $\delta = 0.02.$ | (10) $\delta = 0.0.$ |

Fig.4 Transient thermal impedance as a function of pulse time for collector 1 cm<sup>2</sup> copper mounting pad.

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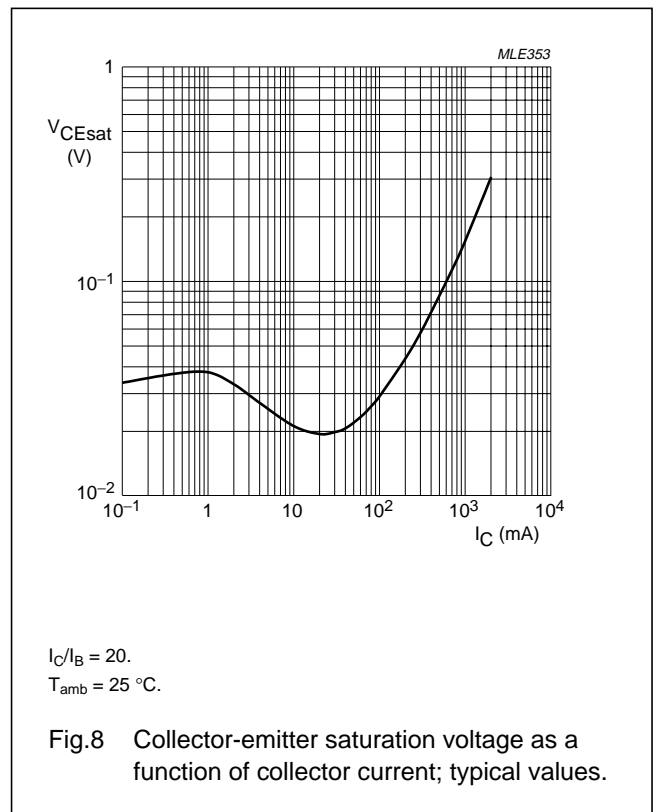
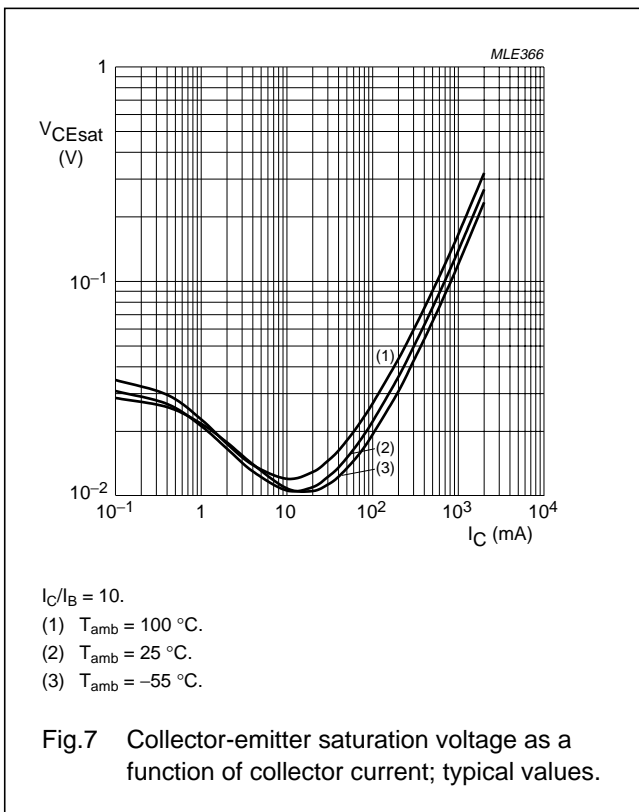
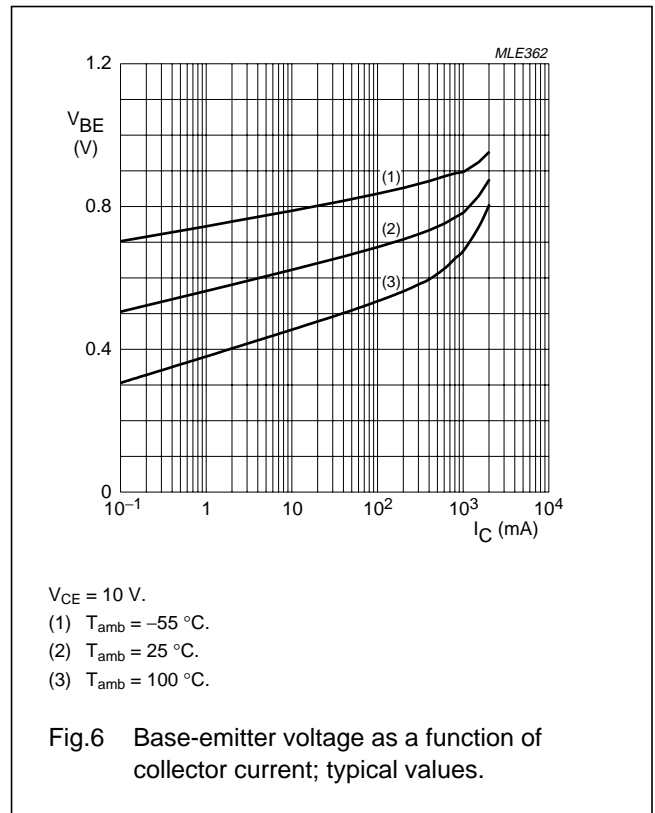
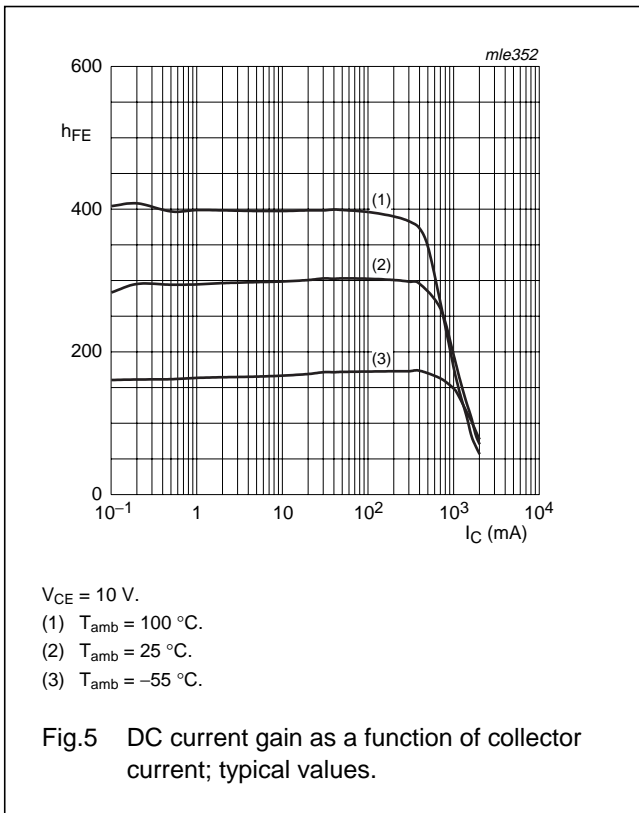
**CHARACTERISTICS** $T_j = 25\text{ °C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CBO}$	collector-base cut-off current	$V_{CB} = 80\text{ V}; I_E = 0$	–	–	100	nA
		$V_{CB} = 80\text{ V}; I_E = 0; T_j = 150\text{ °C}$	–	–	50	$\mu\text{A}$
$I_{CES}$	collector-emitter cut-off current	$V_{CE} = 80\text{ V}; V_{BE} = 0$	–	–	100	nA
$I_{EBO}$	emitter-base cut-off current	$V_{EB} = 4\text{ V}; I_C = 0$	–	–	100	nA
$h_{FE}$	DC current gain	$V_{CE} = 10\text{ V}; I_C = 1\text{ mA}$	150	–	–	
		$V_{CE} = 10\text{ V}; I_C = 250\text{ mA}$	150	–	500	
		$V_{CE} = 10\text{ V}; I_C = 500\text{ mA};$ note 1	100	–	–	
		$V_{CE} = 10\text{ V}; I_C = 1\text{ A};$ note 1	80	–	–	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 100\text{ mA}; I_B = 10\text{ mA}$	–	–	40	mV
		$I_C = 500\text{ mA}; I_B = 50\text{ mA}$	–	–	120	mV
		$I_C = 1\text{ A}; I_B = 100\text{ mA};$ note 1	–	–	200	mV
$R_{CEsat}$	equivalent on-resistance	$I_C = 1\text{ A}; I_B = 100\text{ mA};$ note 1	–	165	200	$\text{m}\Omega$
$V_{BEsat}$	base-emitter saturation voltage	$I_C = 1\text{ A}; I_B = 100\text{ mA}$	–	–	1.05	V
$V_{BEon}$	base-emitter turn-on voltage	$V_{CE} = 10\text{ V}; I_C = 1\text{ A}$	–	–	0.9	V
$f_T$	transition frequency	$I_C = 50\text{ mA}; V_{CE} = 10\text{ V};$ $f = 100\text{ MHz}$	100	–	–	MHz
$C_c$	collector capacitance	$V_{CB} = 10\text{ V}; I_E = I_e = 0; f = 1\text{ MHz}$	–	–	7.5	pF

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

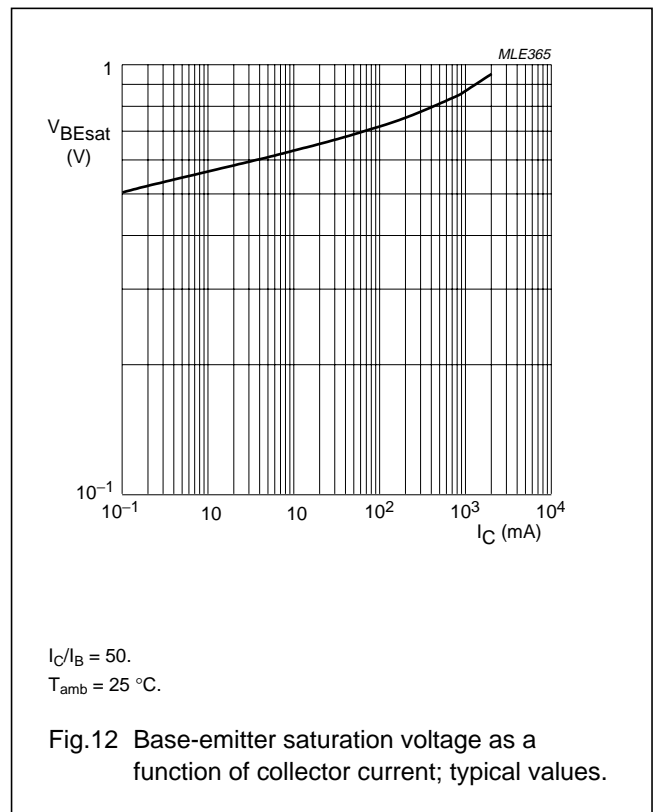
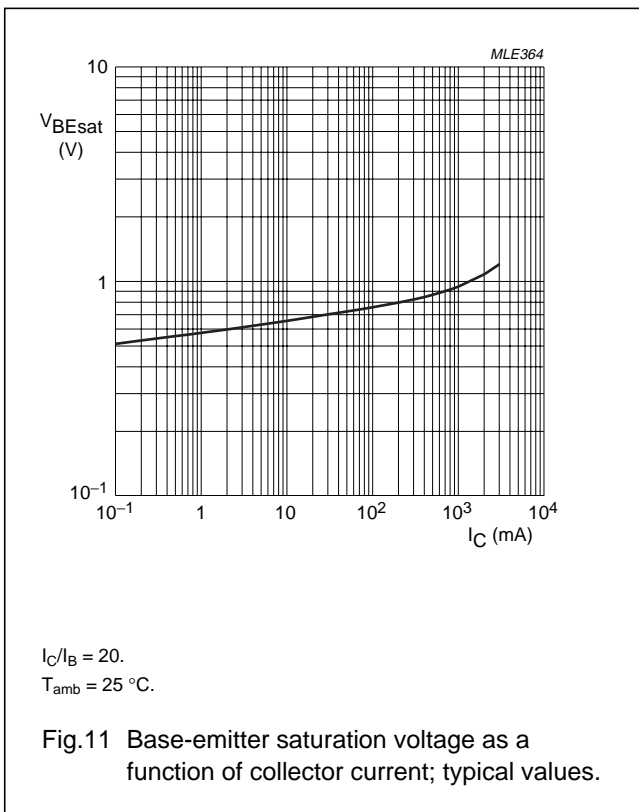
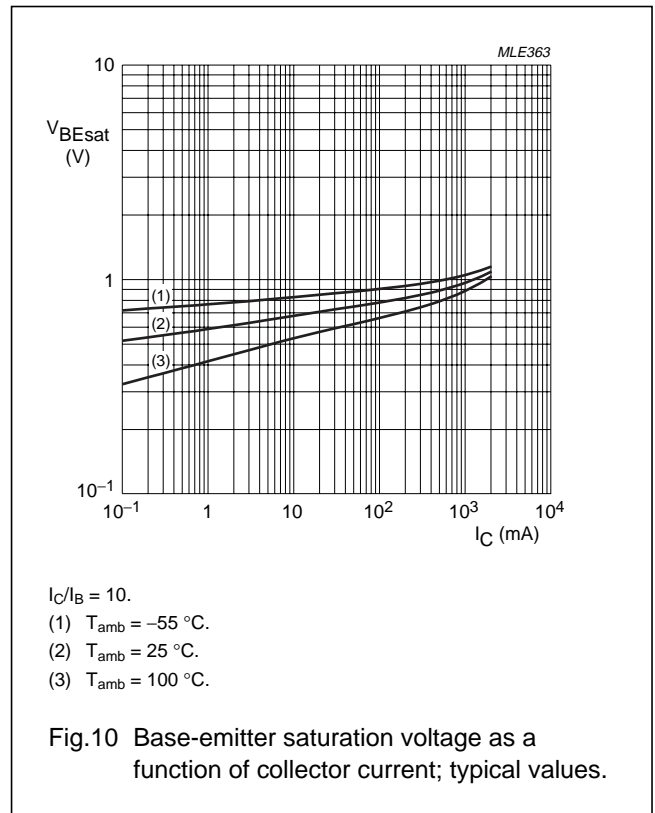
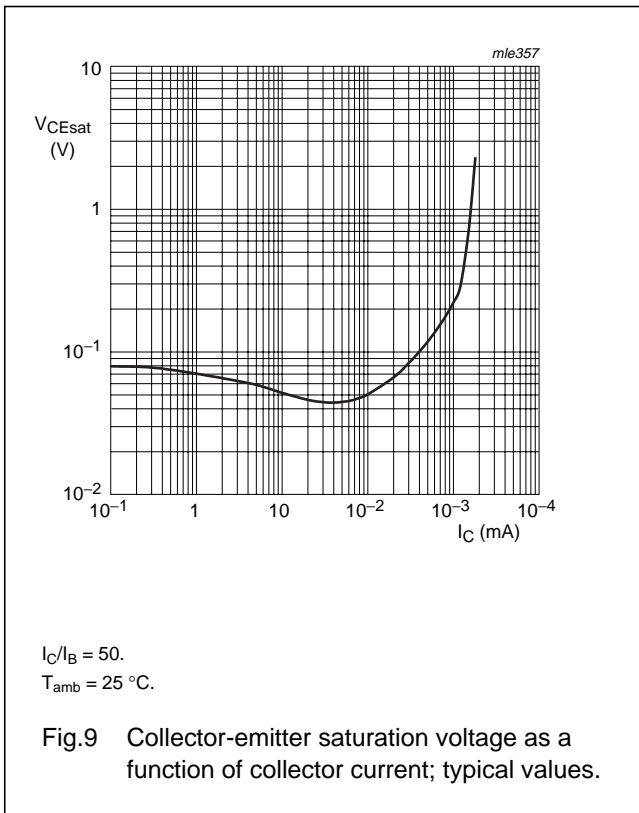
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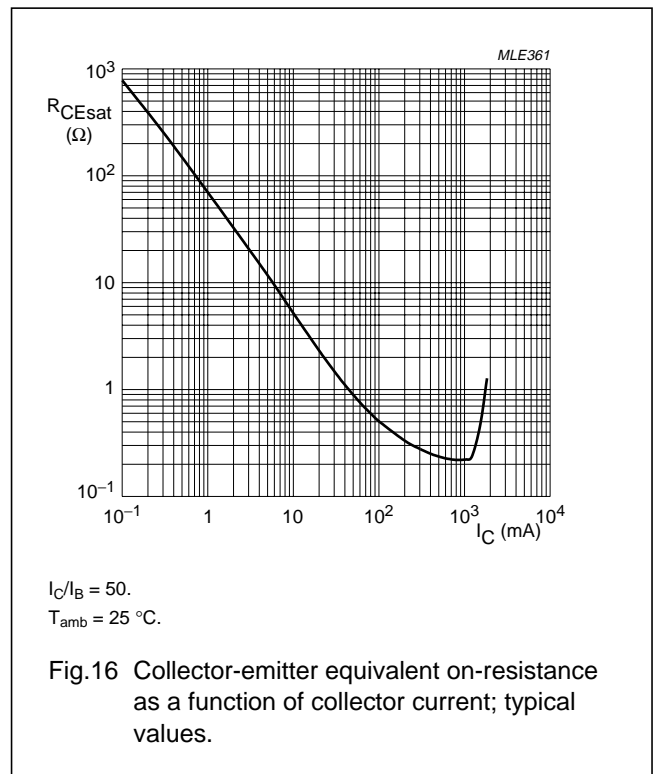
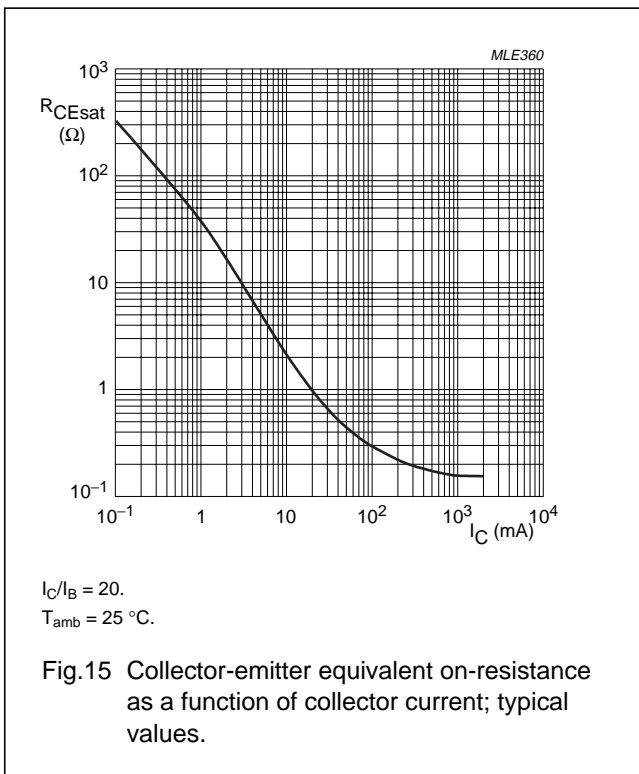
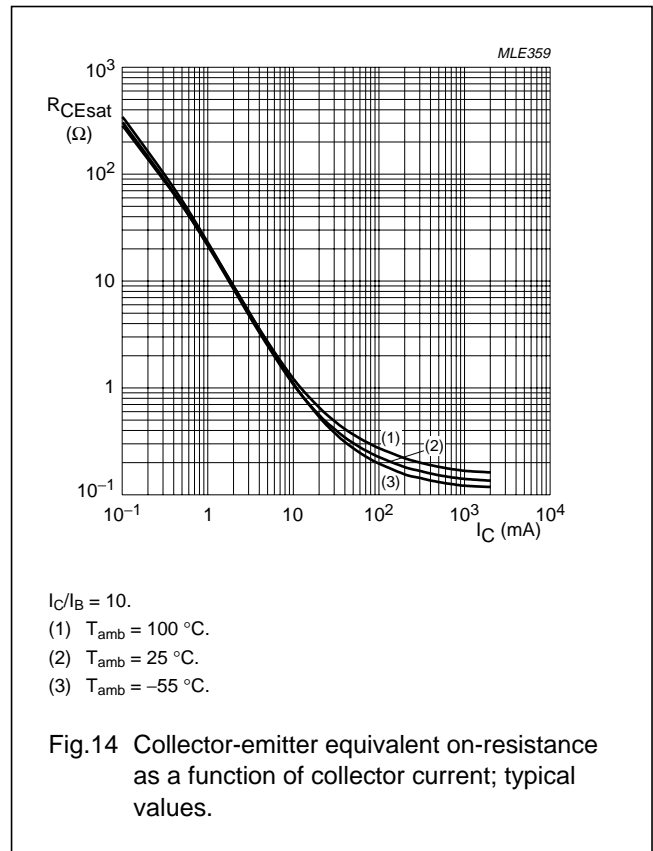
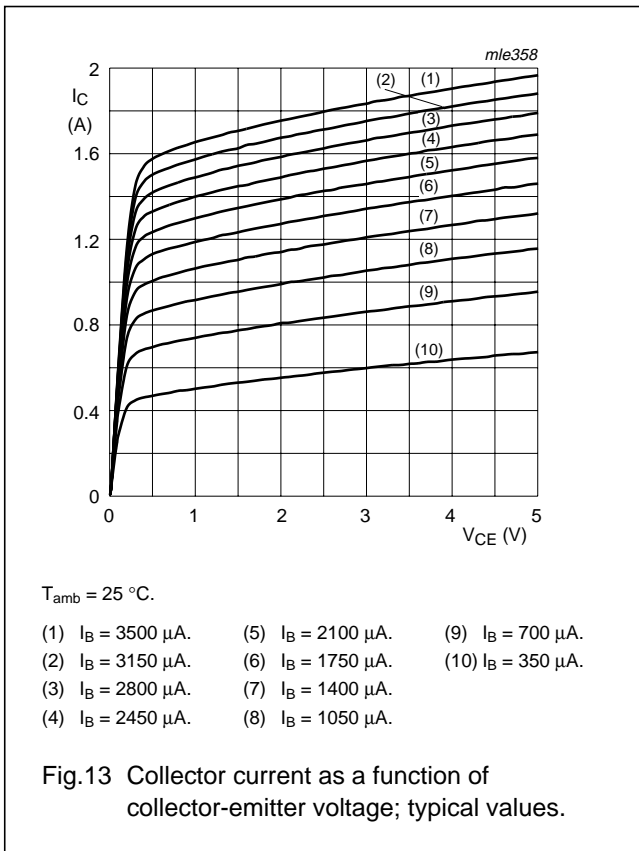
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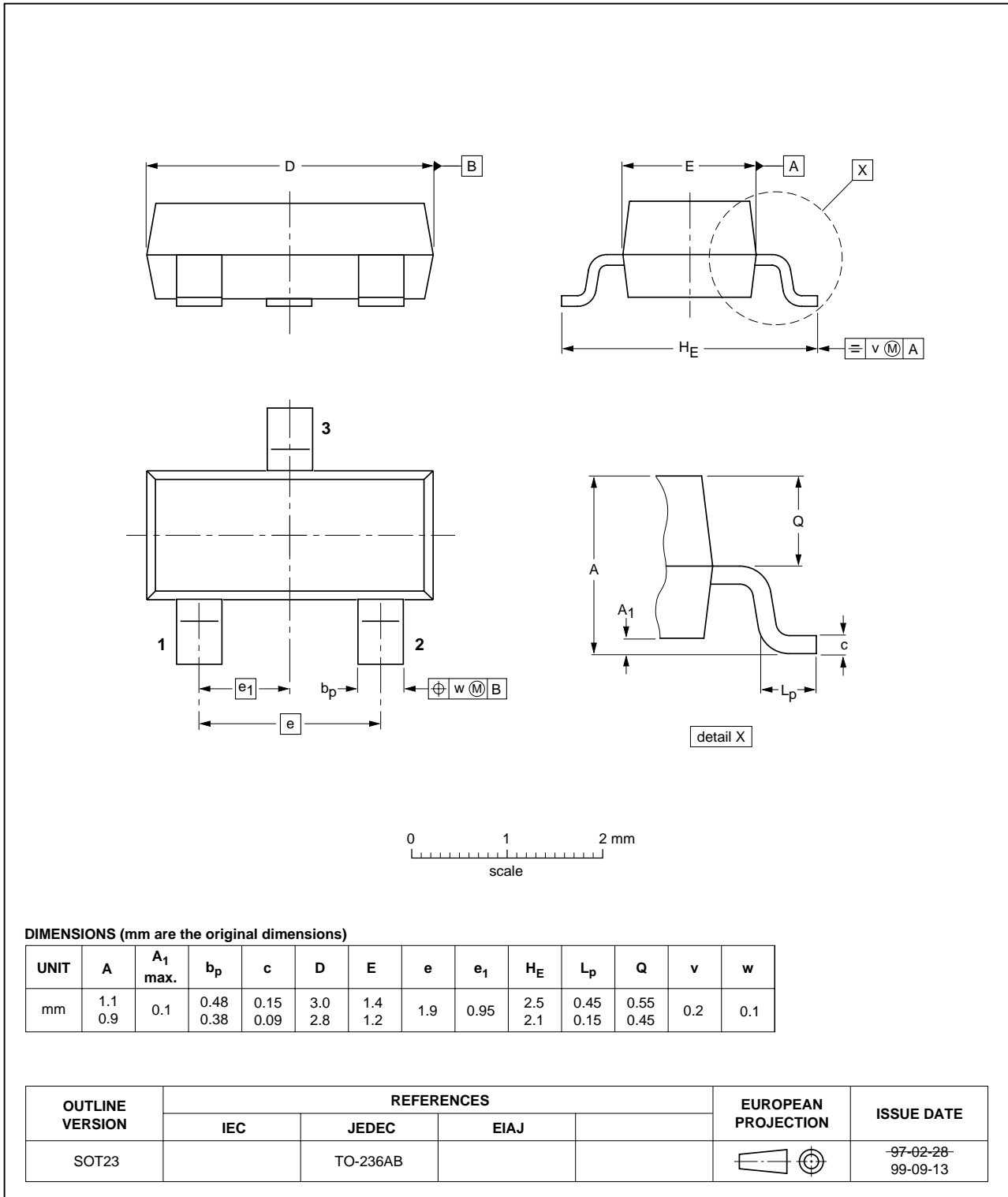
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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



100 V, 1 A  
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PBSS8110T

## DATA SHEET STATUS

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