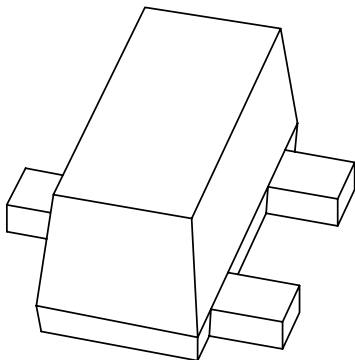# DATA SHEET

PBSS3515F

15 V low V_{CEsat} PNP transistor

Product specification

Supersedes data of 2001 Jan 26

2001 Sep 21

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15 V low V_{CEsat} PNP transistor

PBSS3515F

FEATURES

- Low collector-emitter saturation voltage
- High current capabilities
- Improved thermal behaviour due to flat leads.

APPLICATIONS

- General purpose switching and muting
- Low frequency driver circuits
- LCD backlighting
- Audio frequency general purpose amplifier applications
- Battery driven equipment (mobile phones, video cameras and hand-held devices).

DESCRIPTION

PNP low V_{CEsat} transistor in a SC-89 (SOT490) plastic package.
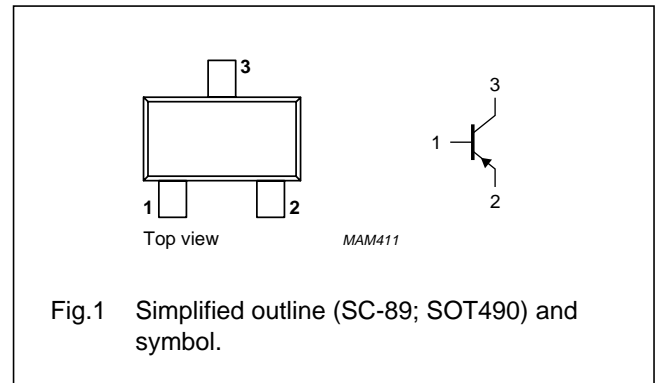NPN complement: PBSS2515F.

MARKING

TYPE NUMBER	MARKING CODE
PBSS3515F	2B

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX	UNIT
V_{CEO}	emitter-collector voltage	−15	V
I_C	collector current (DC)	−500	mA
I_{CM}	peak collector current	−1	A
R_{CEsat}	equivalent on-resistance	<500	mΩ

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector

Fig.1　Simplified outline (SC-89; SOT490) and symbol.

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	–	−15	V
V_{CEO}	collector-emitter voltage	open base	–	−15	V
V_{EBO}	emitter-base voltage	open collector	–	−6	V
I_C	collector current (DC)		–	−500	mA
I_{CM}	peak collector current		–	−1	A
I_{BM}	peak base current		–	−100	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25 °C$	–	250	mW
T_{stg}	storage temperature		−65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		−65	+150	°C

15 V low V_{CEsat} PNP transistor

PBSS3515F

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	in free air	500	K/W

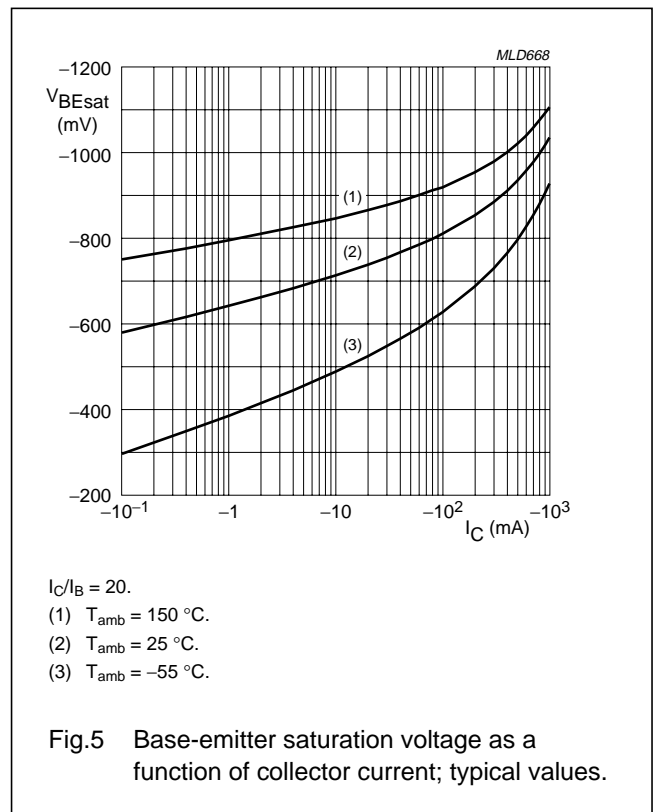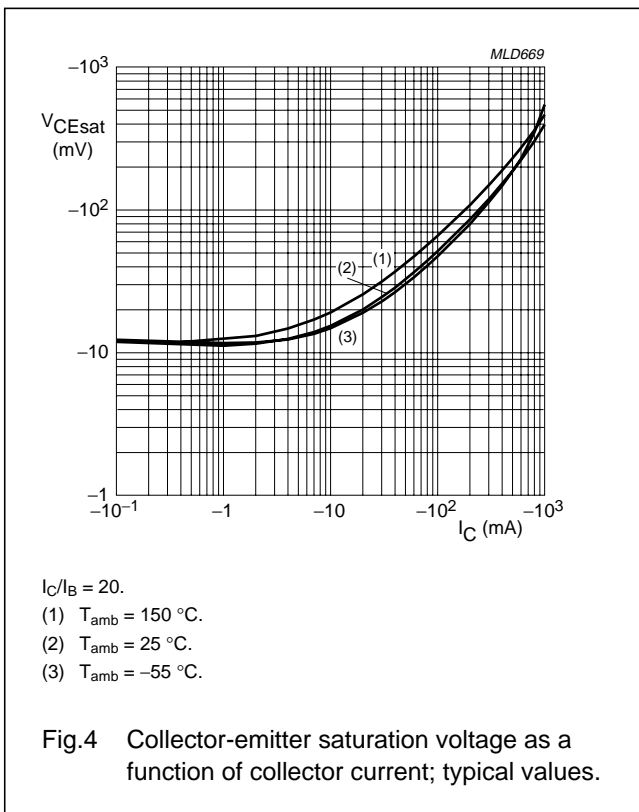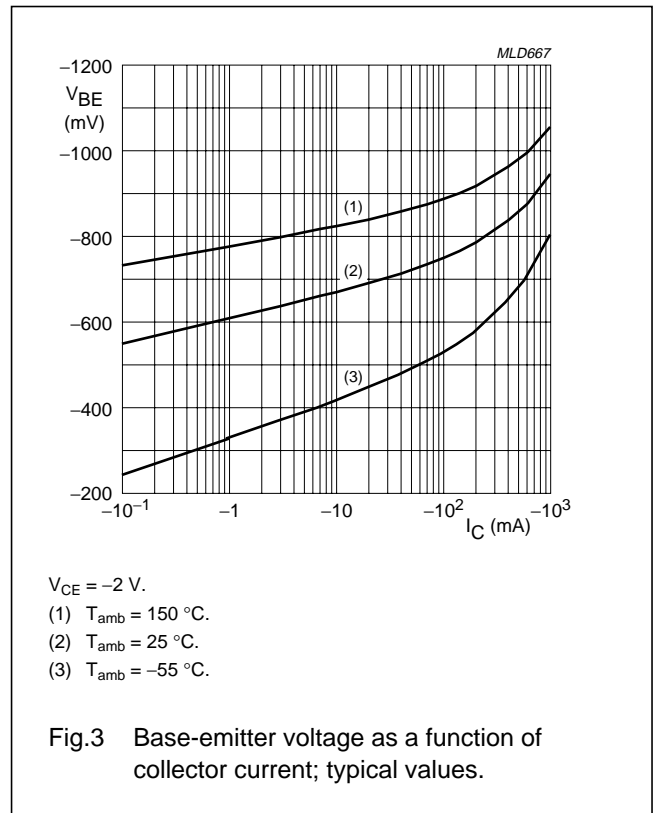**CHARACTERISTICS**

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

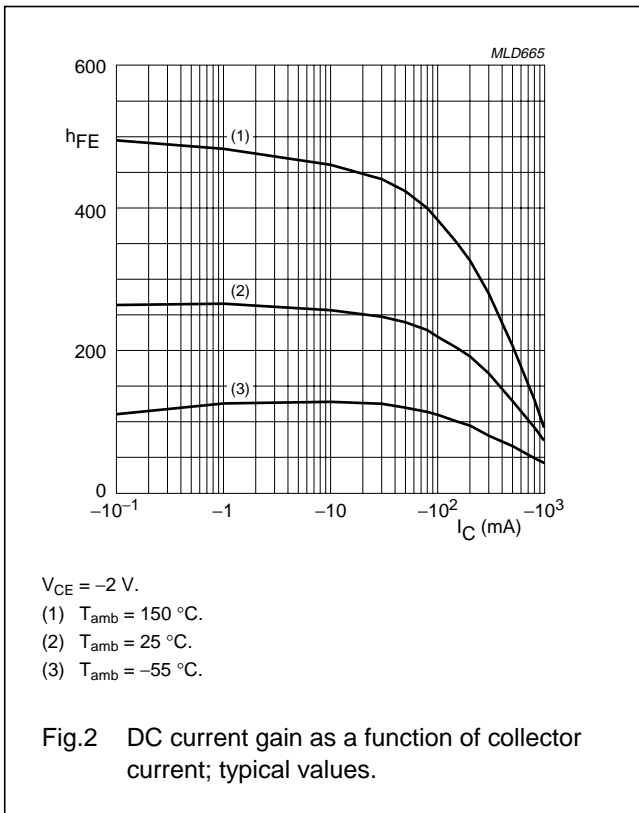| SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	$V_{CB} = -15$ V; $I_E = 0$	–	–	−100	nA
		$V_{CB} = -15$ V; $I_E = 0$; $T_j = 150\ °C$	–	–	−50	µA
I_{EBO}	emitter-base cut-off current	$V_{EB} = -5$ V; $I_C = 0$	–	–	−100	nA
h_{FE}	DC current gain	$V_{CE} = -2$ V; $I_C = -10$ mA	200	–	–	
		$V_{CE} = -2$ V; $I_C = -100$ mA; note 1	150	–	–	
		$V_{CE} = -2$ V; $I_C = -500$ mA; note 1	90	–	–	
V_{CEsat}	collector-emitter saturation voltage	$I_C = -10$ mA; $I_B = -0.5$ mA	–	–	−25	mV
		$I_C = -200$ mA; $I_B = -10$ mA	–	–	−150	mV
		$I_C = -500$ mA; $I_B = -50$ mA; note 1	–	–	−250	mV
R_{CEsat}	equivalent on-resistance	$I_C = -500$ mA; $I_B = -50$ mA; note 1	–	300	<500	mΩ
V_{BEsat}	base-emitter saturation voltage	$I_C = -500$ mA; $I_B = -50$ mA; note 1	–	–	−1.1	V
V_{BE}	base-emitter turn-on voltage	$V_{CE} = -2$ V; $I_C = -100$ mA; note 1	–	–	−0.9	V
f_T	transition frequency	$I_C = -100$ mA; $V_{CE} = -5$ V; f = 100 MHz	100	280	–	MHz
C_c	collector capacitance	$V_{CB} = -10$ V; $I_E = I_e = 0$; f = 1 MHz	–	–	10	pF

Note

1. Pulse test: $t_p \le 300$ µs; $\delta \le 0.02$.

15 V low V_{CEsat} PNP transistor

$V_{CE} = -2$ V.
(1) $T_{amb} = 150$ °C.
(2) $T_{amb} = 25$ °C.
(3) $T_{amb} = -55$ °C.

Fig.2   DC current gain as a function of collector current; typical values.

$V_{CE} = -2$ V.
(1) $T_{amb} = 150$ °C.
(2) $T_{amb} = 25$ °C.
(3) $T_{amb} = -55$ °C.

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

$I_C/I_B = 20$.
(1) $T_{amb} = 150$ °C.
(2) $T_{amb} = 25$ °C.
(3) $T_{amb} = -55$ °C.

Fig.4   Collector-emitter saturation voltage as a function of collector current; typical values.

$I_C/I_B = 20$.
(1) $T_{amb} = 150$ °C.
(2) $T_{amb} = 25$ °C.
(3) $T_{amb} = -55$ °C.

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

15 V low V_{CEsat} PNP transistor

$T_{amb} = 25\ °C$.

(1)	$I_B = -7$ mA.	(5)	$I_B = -4.2$ mA.	(9)	$I_B = -1.4$ mA.
(2)	$I_B = -6.3$ mA.	(6)	$I_B = -3.5$ mA.	(10)	$I_B = -0.7$ mA.
(3)	$I_B = -5.6$ mA.	(7)	$I_B = -2.8$ mA.		
(4)	$I_B = -4.9$ mA.	(8)	$I_B = -2.1$ mA.		

Fig.6   Collector current as a function of
collector-emitter voltage; typical values.

$I_C/I_B = 20$.

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

Fig.7   Collector-emitter equivalent on-resistance
as a function of collector current; typical
values.

15 V low V_{CEsat} PNP transistor   PBSS3515F

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads   **SOT490**

DIMENSIONS (mm are the original dimensions)

UNIT	A	b_p	c	D	E	e	e_1	H_E	L_p	v	w
mm	0.8 0.6	0.33 0.23	0.2 0.1	1.7 1.5	0.95 0.75	1.0	0.5	1.7 1.5	0.5 0.3	0.1	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT490			SC-89			98-10-23
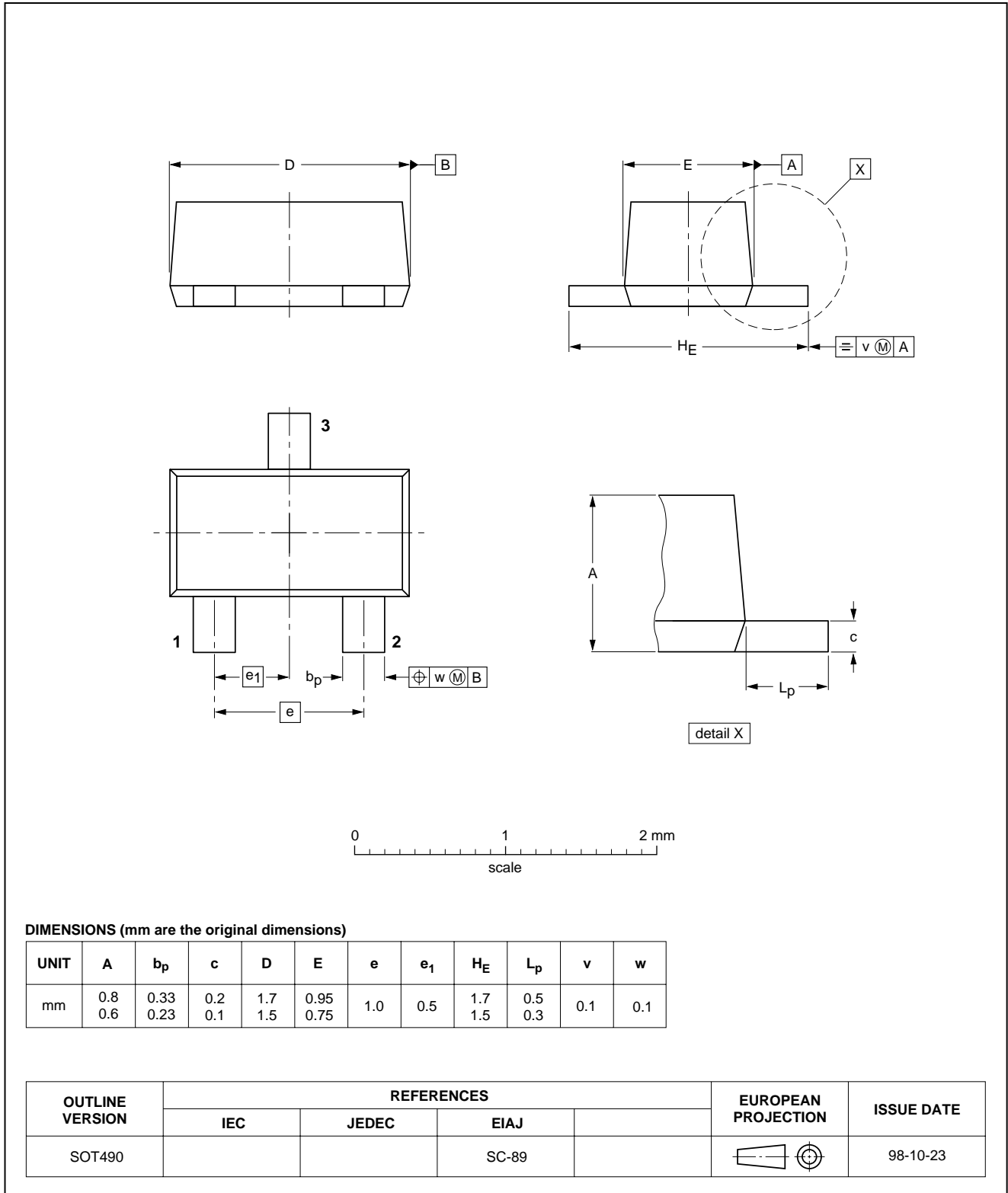
15 V low V_{CEsat} PNP transistor   PBSS3515F

DATA SHEET STATUS

DATA SHEET STATUS[1]	PRODUCT STATUS[2]	DEFINITIONS
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