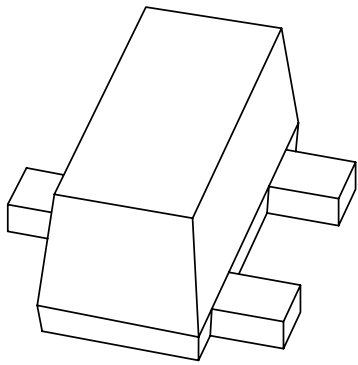


DATA SHEET



PBSS2540F 40 V low V_{CEsat} NPN transistor

Product specification

2001 Oct 31

40 V low V_{CEsat} NPN transistor

PBSS2540F

FEATURES

- Low collector-emitter saturation voltage
- High current capability
- Improved thermal behaviour due to flat leads
- Enhanced performance over SOT23 general purpose transistors.

APPLICATIONS

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

DESCRIPTION

NPN low V_{CEsat} transistor in a SC-89 (SOT490) plastic package.
PNP complement: PBSS3540F.

MARKING

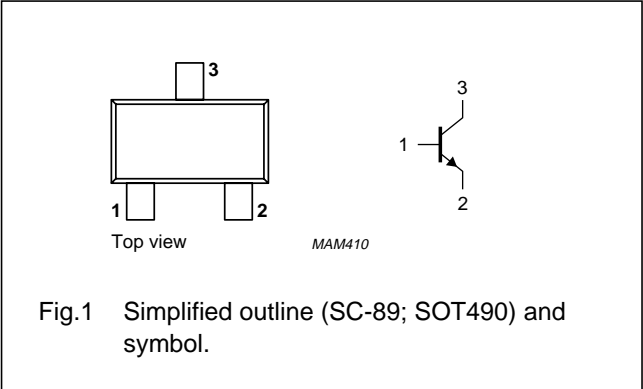
TYPE NUMBER	MARKING CODE
PBSS2540F	2C

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{CEO}	collector-emitter voltage	40	V
I_C	collector current (DC)	500	mA
I_{CM}	peak collector current	1	A
R_{CEsat}	equivalent on-resistance	<500	m Ω

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



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	–	40	V
V_{CEO}	collector-emitter voltage	open base	–	40	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	$T_{amb} \leq 25\text{ }^{\circ}\text{C}$	–	250	mW
T_{stg}	storage temperature		–65	+150	$^{\circ}\text{C}$
T_j	junction temperature		–	150	$^{\circ}\text{C}$
T_{amb}	operating ambient temperature		–65	+150	$^{\circ}\text{C}$

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THERMAL CHARACTERISTICS

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

CHARACTERISTICS

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

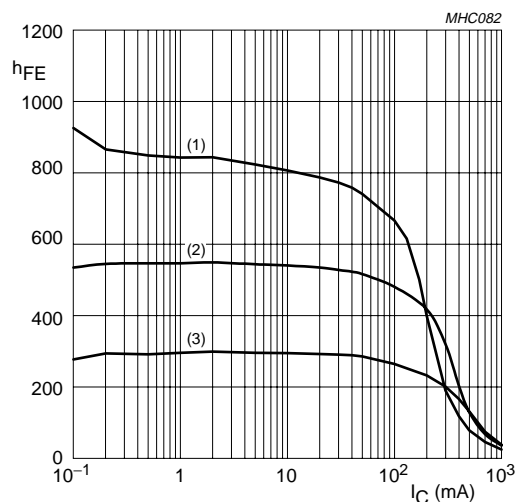
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	$V_{CB} = 30\text{ V}; I_E = 0$	–	–	100	nA
		$V_{CB} = 30\text{ V}; I_E = 0; T_j = 150\text{ °C}$	–	–	50	μA
I_{EBO}	emitter-base cut-off current	$V_{EB} = 5\text{ V}; I_C = 0$	–	–	100	nA
h_{FE}	DC current gain	$V_{CE} = 2\text{ V}; I_C = 10\text{ mA}$	200	–	–	
		$V_{CE} = 2\text{ V}; I_C = 100\text{ mA}; \text{note 1}$	100	–	–	
		$V_{CE} = 2\text{ V}; I_C = 500\text{ mA}; \text{note 1}$	50	–	–	
V_{CEsat}	collector-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$	–	–	50	mV
		$I_C = 100\text{ mA}; I_B = 5\text{ mA}$	–	–	100	mV
		$I_C = 200\text{ mA}; I_B = 10\text{ mA}$	–	–	200	mV
		$I_C = 500\text{ mA}; I_B = 50\text{ mA}; \text{note 1}$	–	–	250	mV
R_{CEsat}	equivalent on-resistance	$I_C = 500\text{ mA}; I_B = 50\text{ mA}; \text{note 1}$	–	380	<500	$\text{m}\Omega$
V_{BEsat}	base-emitter saturation voltage	$I_C = 500\text{ mA}; I_B = 50\text{ mA}; \text{note 1}$	–	–	1.2	V
V_{BEon}	base-emitter turn-on voltage	$V_{CE} = 2\text{ V}; I_C = 100\text{ mA}; \text{note 1}$	–	–	1.1	V
f_T	transition frequency	$I_C = 100\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$	250	450	–	MHz
C_c	collector capacitance	$V_{CB} = 10\text{ V}; I_E = I_C = 0; f = 1\text{ MHz}$	–	–	6	pF

Note

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

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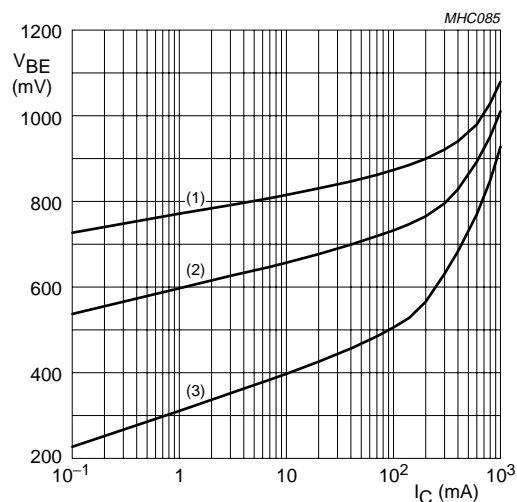
PBSS2540F



$V_{CE} = 2 \text{ V.}$

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

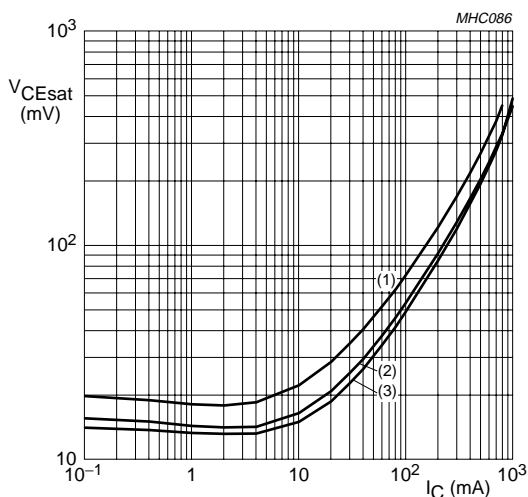
Fig.2 DC current gain as a function of collector current; typical values.



$V_{CE} = 2 \text{ V.}$

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

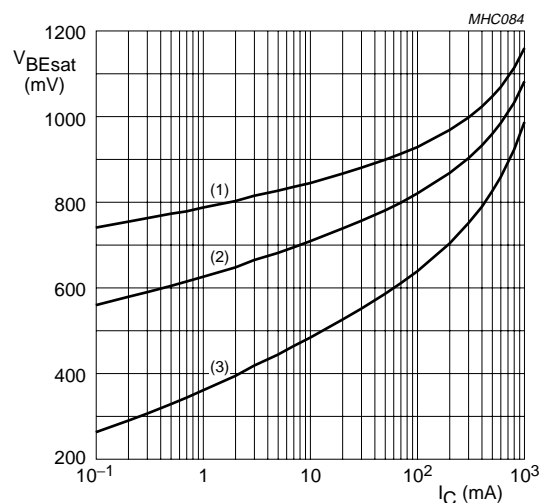
Fig.3 Base-emitter voltage as a function of collector current; typical values.



$I_C/I_B = 20.$

- (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.



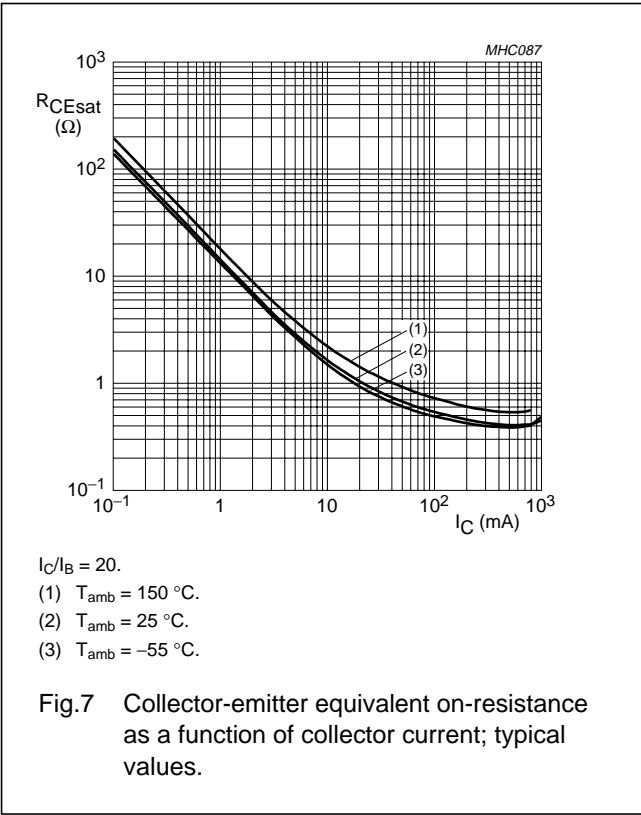
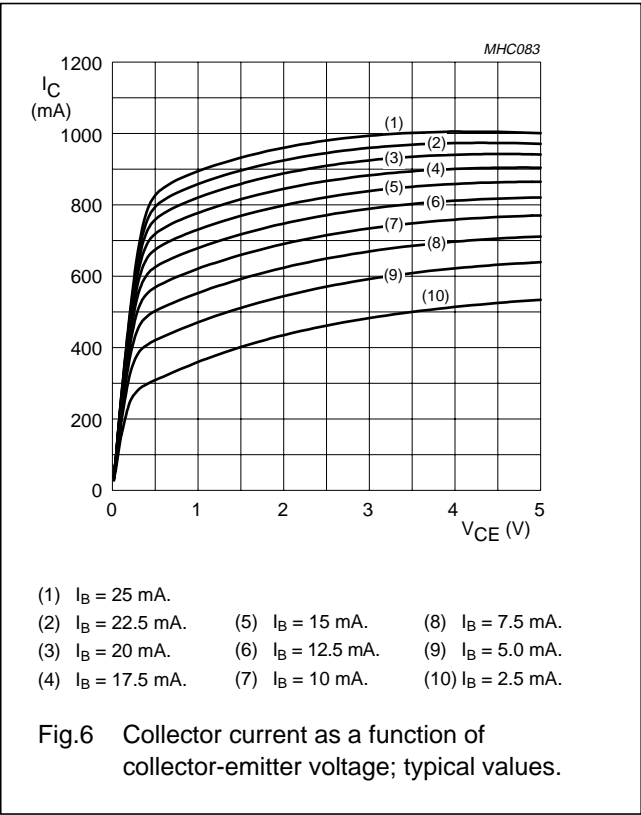
$I_C/I_B = 20.$

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

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

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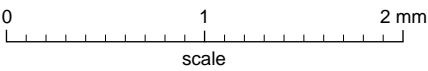
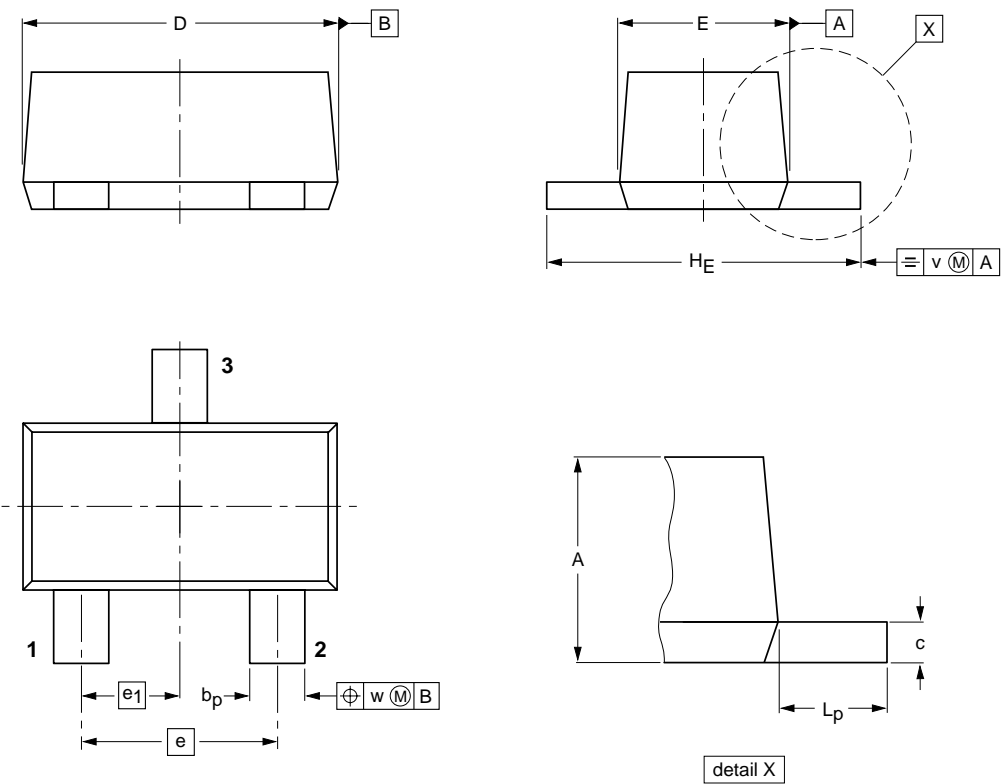
40 V low V_{CEsat} NPN transistor

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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

40 V low V_{CEsat} NPN transistor

PBSS2540F

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