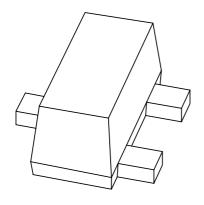
DISCRETE SEMICONDUCTORS

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	٧
I _C collector current (DC)		500	mA
I _{CM} peak collector current		1	Α
R _{CEsat} equivalent on-resistance		<500	mΩ

PINNING

PIN	DESCRIPTION	
1	base	
2	emitter	
3	collector	

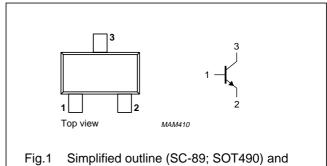


Fig.1 Simplified outline (SC-89; SOT490) and symbol.

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	_	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	Α
I _{BM}	peak base current		_	100	mA
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C	_	250	mW
T _{stg}	storage temperature		-65	+150	°C
Tj	junction temperature		_	150	°C
T _{amb}	operating ambient temperature		-65	+150	°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 °C unless otherwise specified.

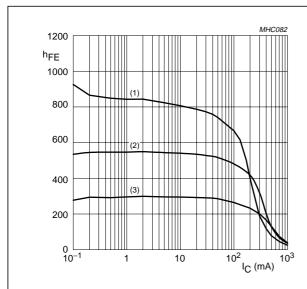
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I _{CBO}	collector-base cut-off current	V _{CB} = 30 V; I _E = 0	_	_	100	nA
		V _{CB} = 30 V; I _E = 0; T _j = 150 °C	_	_	50	μΑ
I _{EBO}	emitter-base cut-off current	V _{EB} = 5 V; I _C = 0	_	_	100	nA
h _{FE}	DC current gain	V _{CE} = 2 V; I _C = 10 mA	200	_	_	
		V _{CE} = 2 V; I _C = 100 mA; note 1	100	_	_	
		V _{CE} = 2 V; I _C = 500 mA; note 1	50	_	_	
V _{CEsat}	collector-emitter saturation	I _C = 10 mA; I _B = 0.5 mA	_	_	50	mV
	voltage	I _C = 100 mA; I _B = 5 mA	_	_	100	mV
		I _C = 200 mA; I _B = 10 mA	_	_	200	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	_	380	<500	mΩ
V _{BEsat}	base-emitter saturation voltage	I _C = 500 mA; I _B = 50 mA; note 1	_	_	1.2	V
V _{BEon}	base-emitter turn-on voltage	V _{CE} = 2 V; I _C = 100 mA; note 1	_	_	1.1	V
f _T	transition frequency	I _C = 100 mA; V _{CE} = 5 V; f = 100 MHz	250	450	_	MHz
C _c	collector capacitance	$V_{CB} = 10 \text{ V}; I_E = I_e = 0; f = 1 \text{ MHz}$	_	_	6	pF

Note

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

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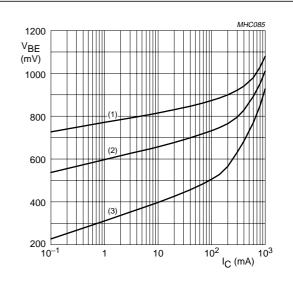
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 $V_{CE} = 2 V$.

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

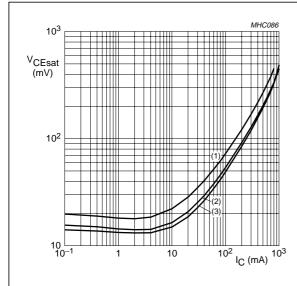
Fig.2 DC current gain as a function of collector current; typical values.



 $V_{CE} = 2 V.$

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

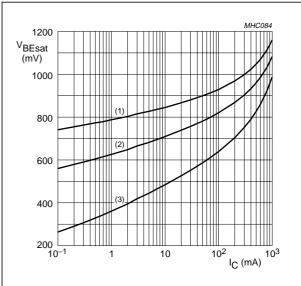
Fig.3 Base-emitter voltage as a function of collector current; typical values.



 $I_{\rm C}/I_{\rm B} = 20.$

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

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



 $I_{\rm C}/I_{\rm B} = 20.$

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

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

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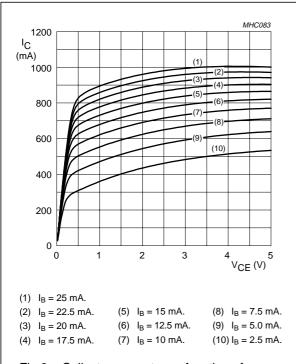
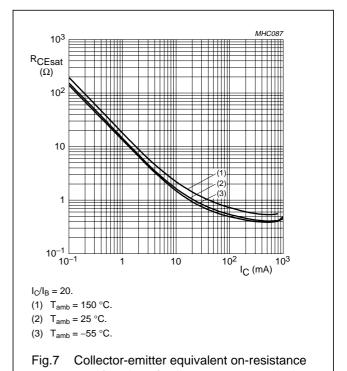


Fig.6 Collector current as a function of collector-emitter voltage; typical values.



as a function of collector current; typical values.

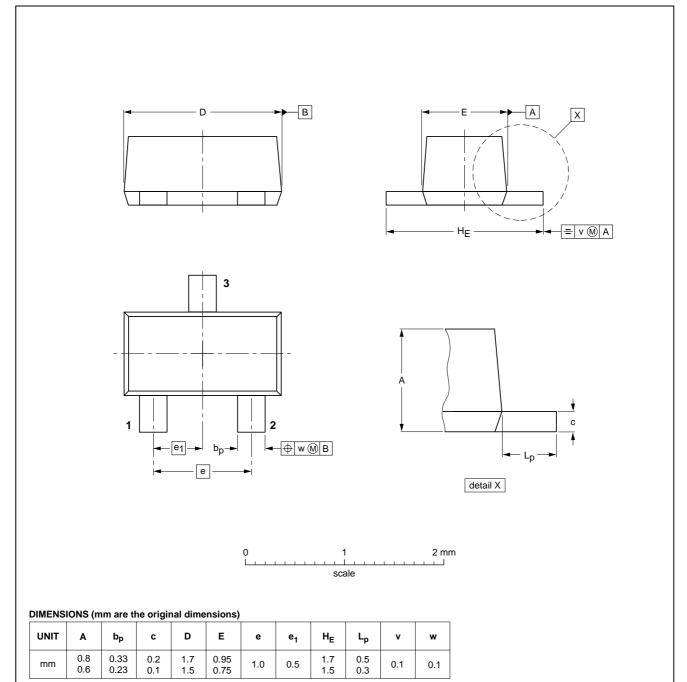
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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT490



OUTLINE		REFERENCES			EUROPEAN	ISSUE DATE
VERSION	IEC	JEDEC	EIAJ		PROJECTION	ISSUE DATE
SOT490			SC-89			98-10-23

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