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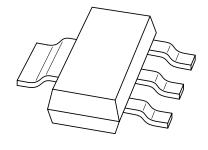
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Kind regards,

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DATA SHEET



PBSS4540Z40 V low V_{CEsat} NPN transistor

Product data sheet Supersedes data of 2001 Jul 24 2001 Nov 14



40 V low V_{CEsat} NPN transistor

PBSS4540Z

FEATURES

- Low collector-emitter saturation voltage
- High current capabilities
- Improved device reliability due to reduced heat generation.

APPLICATIONS

- Supply line switching circuits
- · Battery management applications
- DC/DC converter applications
- · Strobe flash units
- Heavy duty battery powered equipment (motor and lamp drivers)
- MOSFET driver applications.

DESCRIPTION

NPN low V_{CEsat} transistor in a SOT223 plastic package. PNP complement: PBSS5540Z.

MARKING

TYPE NUMBER	MARKING CODE	
PBSS4540Z	PB4540	

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX	UNIT
V _{CEO}	emitter-collector voltage	40	V
I _C	collector current (DC)	5	Α
I _{CM}	peak collector current	10	Α
R _{CEsat}	equivalent on-resistance	<71	mΩ

PINNING

PIN	DESCRIPTION
1	base
2	collector
3	emitter
4	collector

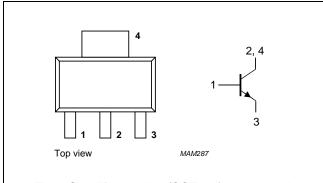


Fig.1 Simplified outline (SOT223) and symbol.

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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	_	40	V
V_{CEO}	collector-emitter voltage	open base	-	40	٧
V _{EBO}	emitter-base voltage	open collector	_	6	V
I _C	collector current (DC)		-	5	Α
I _{CM}	peak collector current		-	10	Α
I _{BM}	peak base current		_	2	А
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C; notes 1 and 3	-	1.35	W
		T _{amb} ≤ 25 °C; notes 2 and 3	-	2	W
T _{stg}	storage temperature		-65	+150	°C
Tj	junction temperature		_	150	°C
T _{amb}	operating ambient temperature		-65	+150	°C

Notes

- 1. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1 cm².
- 2. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 6 cm².
- 3. For other mounting conditions, see "Thermal considerations for SOT223 in the General Part of associated Handbook".

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R _{th j-a}	thermal resistance from junction to	note 1	92	K/W
	ambient	note 2	62.5	K/W

Notes

- 1. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1 cm².
- 2. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 6 cm².

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CHARACTERISTICS

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

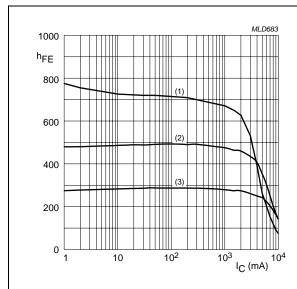
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I _{CBO}	collector-base cut-off current	V _{CB} = 30 V; I _E = 0	_	_	100	nA
		V _{CB} = 30 V; I _E = 0; T _j = 150 °C	_	_	50	μΑ
I _{EBO}	emitter-base cut-off current	V _{EB} = 5 V; I _C = 0	_	_	100	nA
h _{FE}	DC current gain	$V_{CE} = 2 \text{ V; } I_{C} = 500 \text{ mA}$	300	500	-	
		V _{CE} = 2 V; I _C = 1 A; note 1	300	500	-	
		V _{CE} = 2 V; I _C = 2 A; note 1	250	450	-	
		$V_{CE} = 2 \text{ V}; I_{C} = 5 \text{ A}; \text{ note 1}$	100	300	-	
V _{CEsat}	collector-emitter saturation voltage	$I_C = 500 \text{ mA}; I_B = 5 \text{ mA}$	_	50	90	mV
		I _C = 1 A; I _B = 10 mA	-	75	120	mV
		I _C = 2 A; I _B = 200 mA	-	90	150	mV
		I _C = 5 A; I _B = 500 mA	_	210	355	mV
R _{CEsat}	equivalent on-resistance	$I_C = 5 \text{ A}$; $I_B = 500 \text{ mA}$; note 1	-	42	71	mΩ
V _{BEsat}	base-emitter saturation voltage	$I_C = 5 \text{ A}; I_B = 500 \text{ mA}$	_	1.1	1.3	V
V_{BEon}	base-emitter turn-on voltage	V _{CE} = 2 V; I _C =2 A	-	0.8	1.1	V
f _T	transition frequency	I _C = 100 mA; V _{CE} = 10 V; f = 100 MHz	70	130	_	MHz
C _c	collector capacitance	$V_{CB} = 10 \text{ V}; I_E = I_e = 0;$ f = 1 MHz	_	60	75	pF

Note

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

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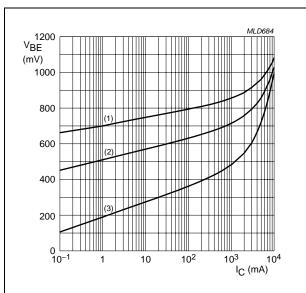
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 $V_{CE} = 2 V$.

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

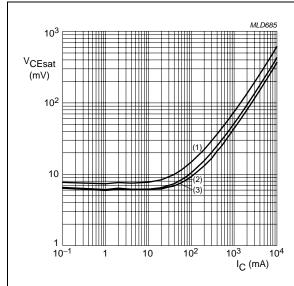
Fig.2 DC current gain as a function of collector current; typical values.



 $V_{CE} = 2 V$.

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

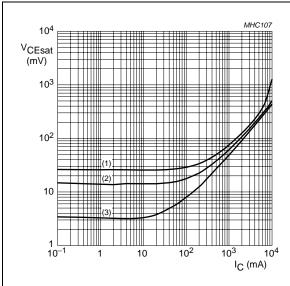
Fig.3 Base-emitter voltage as a function of collector current; typical values.



 $I_C/I_B = 20$.

- (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.



 T_{amb} = 25 °C.

- (1) $I_C/I_B = 100$.
- (2) $I_C/I_B = 50$.
- (3) $I_C/I_B = 10$.

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

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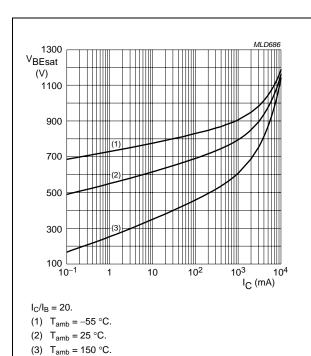
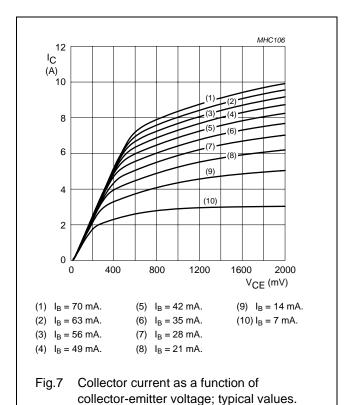
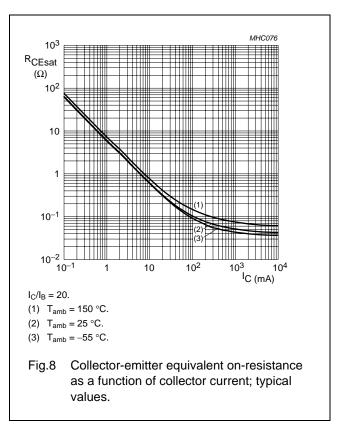


Fig.6 Base-emitter saturation voltage as a function of collector current; typical values.





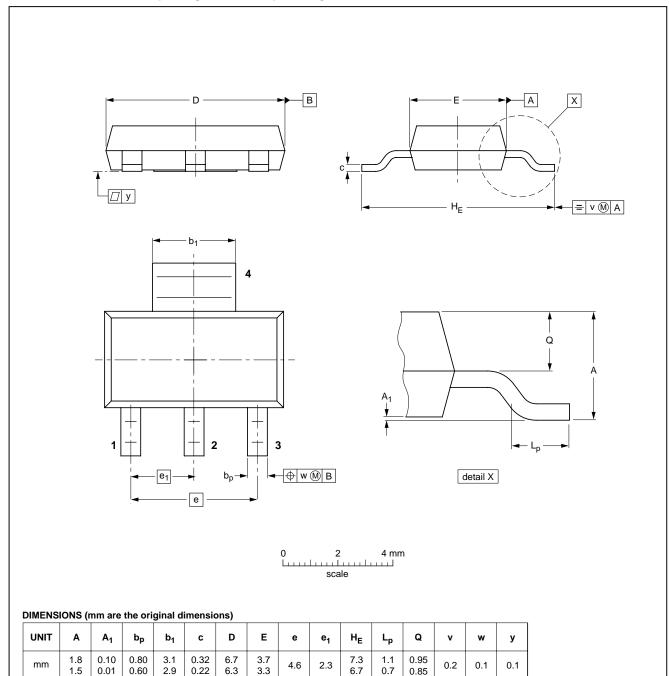
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PACKAGE OUTLINE

Plastic surface mounted package; collector pad for good heat transfer; 4 leads

SOT223



OUTLINE	REFERENCES		EUROPEAN	ISSUE DATE		
VERSION	IEC	JEDEC	EIAJ		PROJECTION	ISSUE DATE
SOT223			SC-73		$ \ \ \bigoplus $	97-02-28 99-09-13

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DATA SHEET STATUS

DOCUMENT STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

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NXP Semiconductors

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Printed in The Netherlands 613514/03/pp9 Date of release: 2001 Nov 14 Document order number: 9397 750 08736

