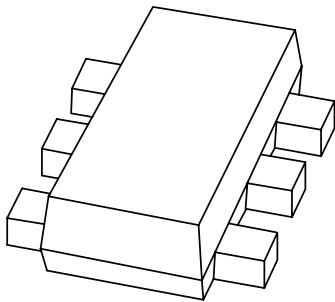


DATA SHEET



PBSS5240V

40 V low V_{CEsat} PNP transistor

Product specification

2003 Jan 30

40 V low V_{CEsat} PNP transistor

PBSS5240V

FEATURES

- Low collector-emitter saturation voltage V_{CEsat}
- High collector current capability I_C and I_{CM}
- High collector current gain (h_{FE}) at high I_C
- High efficiency leading to reduced heat generation
- Reduced printed-circuit board area requirements.

APPLICATIONS

- Power management:
 - DC-DC converter
 - Supply line switching
 - Battery charger
 - LCD back lighting.
- Peripheral driver:
 - Driver in low supply voltage applications (e.g. lamps, LEDs)
 - Inductive load drivers (e.g. relay, buzzers and motors).

DESCRIPTION

PNP transistor providing low V_{CEsat} and high current capability in a SOT666 plastic package.
NPN complement: PBSS4240V.

MARKING

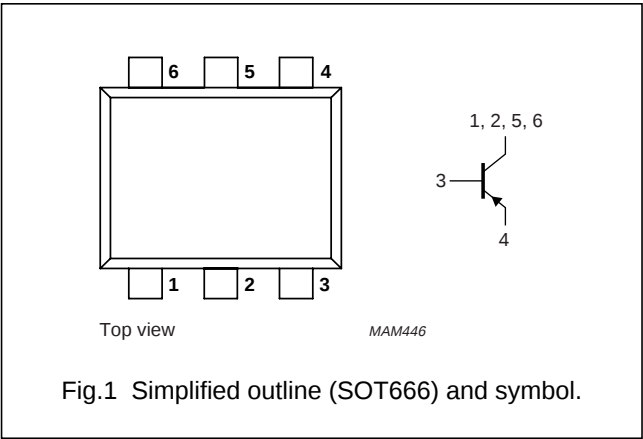
TYPE NUMBER	MARKING CODE
PBSS5240V	52

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{CEO}	collector-emitter voltage	−40	V
I_C	collector current (DC)	−1.8	A
I_{CRP}	peak collector current	−2	A
R_{CEsat}	equivalent on-resistance	<250	mΩ

PINNING

PIN	DESCRIPTION
1	collector
2	collector
3	base
4	emitter
5	collector
6	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	–	–40	V
V_{CEO}	collector-emitter voltage	open base	–	–40	V
V_{EBO}	emitter-base voltage	open collector	–	–5	V
I_C	collector current (DC)	note 1	–	–1.8	A
I_{CRP}	peak repetitive collector current	note 2	–	–2	A
I_{CM}	peak collector current		–	–3	A
I_B	base current (DC)		–	–300	mA
I_{BM}	peak base current		–	–1	A
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$; note 3	–	300	mW
		$T_{amb} \leq 25\text{ °C}$; note 4	–	500	mW
		$T_{amb} \leq 25\text{ °C}$; note 1	–	900	mW
		$T_{amb} \leq 25\text{ °C}$; notes 2 and 3	–	1.2	W
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C

Notes

1. Device mounted on a ceramic circuit board, Al_2O_3 , standard footprint.
2. Operated under pulsed conditions: duty cycle $\delta \leq 20\%$, pulse width $t_p \leq 30\text{ ms}$.
3. Device mounted on a printed-circuit board, single-sided copper, tinplated, standard footprint.
4. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1 cm^2 .

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	410	K/W
		note 2	215	K/W
		note 3	140	K/W
		notes 1 and 4	110	K/W

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^2 .
3. Device mounted on a ceramic circuit board, Al_2O_3 , standard footprint.
4. Operated under pulsed conditions: duty cycle $\delta \leq 20\%$, pulse width $t_p \leq 30\text{ ms}$.

Soldering

The only recommended soldering method is reflow soldering.

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CHARACTERISTICS

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

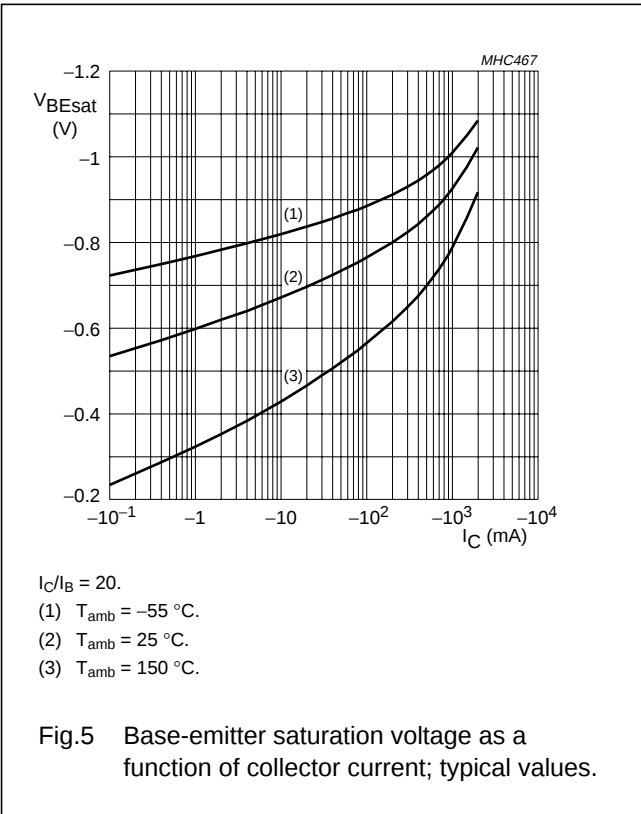
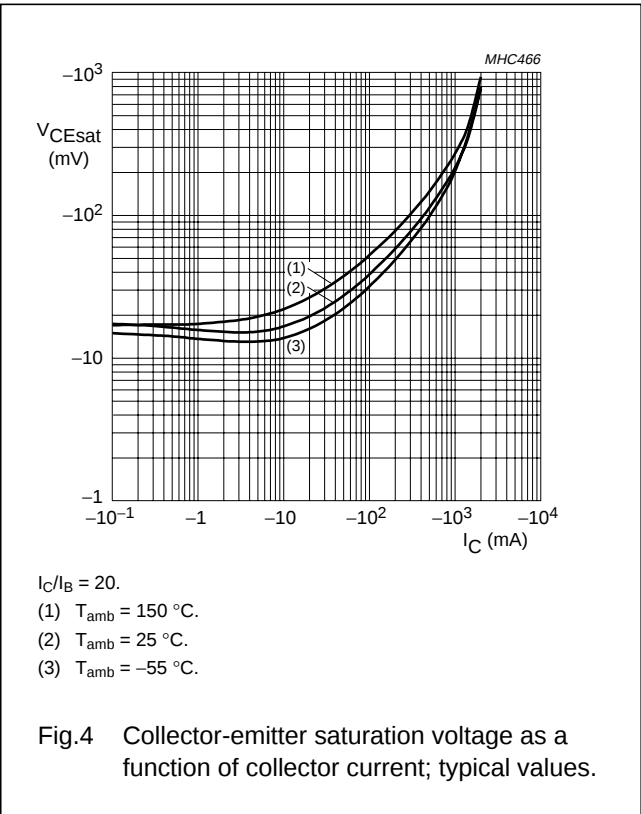
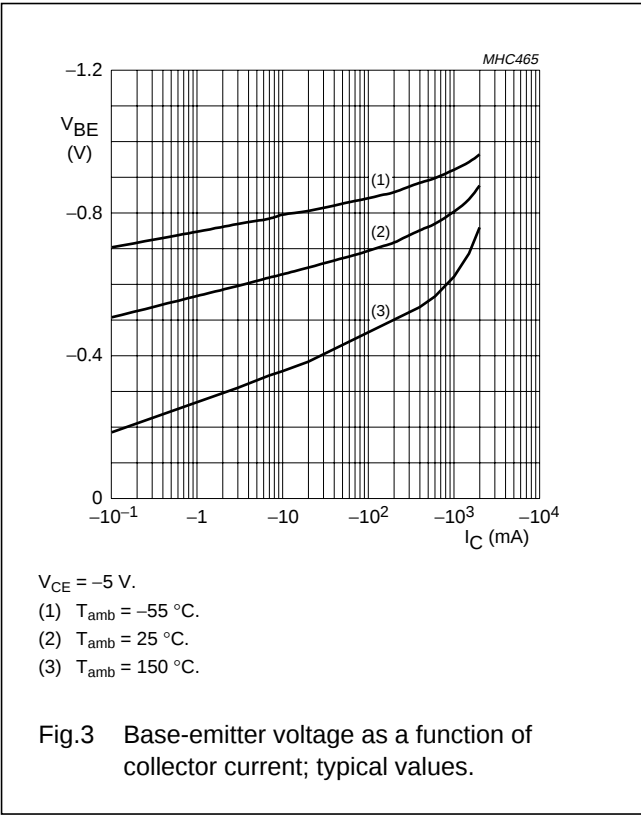
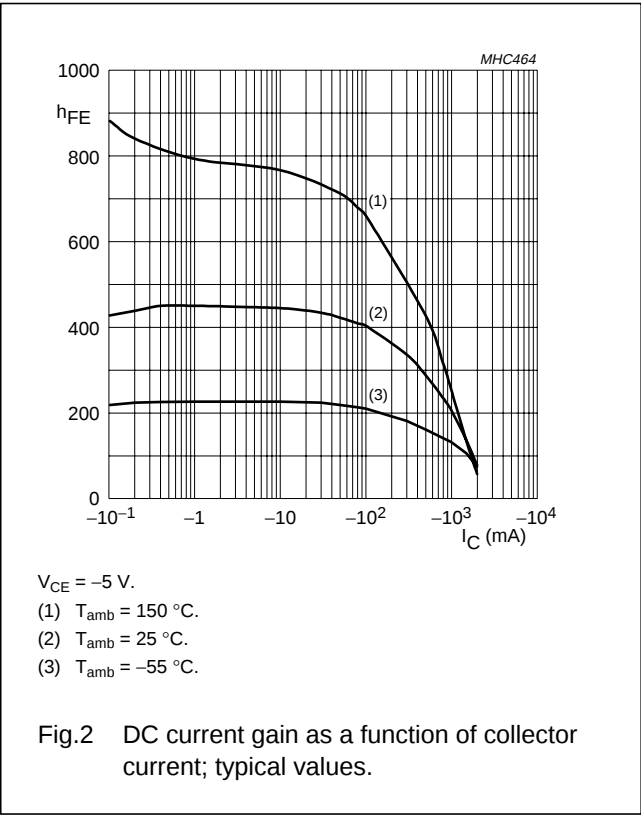
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	$V_{CB} = -40\text{ V}; I_E = 0$	–	–	–100	nA
		$V_{CB} = -40\text{ V}; I_E = 0; T_{amb} = 150\text{ }^{\circ}\text{C}$	–	–	–50	μA
I_{CEO}	collector-emitter cut-off current	$V_{CE} = -30\text{ V}; I_B = 0$	–	–	–100	nA
I_{EBO}	emitter-base cut-off current	$V_{EB} = -5\text{ V}; I_C = 0$	–	–	–100	nA
h_{FE}	DC current gain	$V_{CE} = -5\text{ V}; I_C = -1\text{ mA}$	300	–	–	
		$V_{CE} = -5\text{ V}; I_C = -100\text{ mA}$	300	–	800	
		$V_{CE} = -5\text{ V}; I_C = -500\text{ mA}$	250	–	–	
		$V_{CE} = -5\text{ V}; I_C = -1\text{ A}$	160	–	–	
		$V_{CE} = -5\text{ V}; I_C = -2\text{ A}; \text{note 1}$	50	–	–	
V_{CEsat}	collector-emitter saturation voltage	$I_C = -100\text{ mA}; I_B = -1\text{ mA}$	–	–80	–120	mV
		$I_C = -500\text{ mA}; I_B = -50\text{ mA}$	–	–100	–145	mV
		$I_C = -1\text{ A}; I_B = -100\text{ mA}; \text{note 1}$	–	–180	–250	mV
		$I_C = -2\text{ A}; I_B = -200\text{ mA}$	–	–370	–530	mV
R_{CEsat}	equivalent on-resistance	$I_C = -1\text{ A}; I_B = -100\text{ mA}; \text{note 1}$	–	180	<250	$\text{m}\Omega$
V_{BEsat}	base-emitter saturation voltage	$I_C = -1\text{ A}; I_B = -100\text{ mA}$	–	–	–1.1	V
V_{BEon}	base-emitter turn-on voltage	$V_{CE} = -5\text{ V}; I_C = -1\text{ A}$	–	–	–1	V
f_T	transition frequency	$I_C = -50\text{ mA}; V_{CE} = -10\text{ V}; f = 100\text{ MHz}$	150	–	–	MHz
C_c	collector capacitance	$V_{CB} = -10\text{ V}; I_E = I_e = 0; f = 1\text{ MHz}$	–	–	12	pF

Note

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

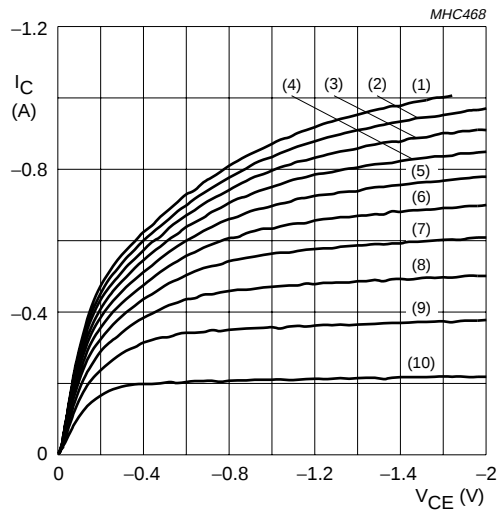
40 V low V_{CEsat} PNP transistor

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40 V low V_{CEsat} PNP transistor

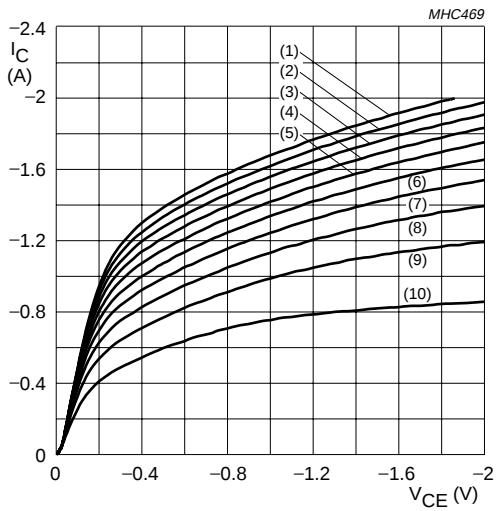
PBSS5240V



$T_{amb} = 25\text{ }^{\circ}\text{C}.$

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

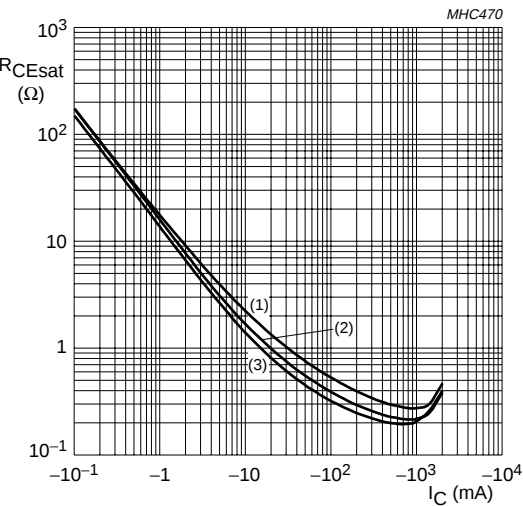
Fig.6 Collector current as a function of collector-emitter voltage; typical values.



$T_{amb} = 25\text{ }^{\circ}\text{C}.$

- | | | |
|----------------------------|----------------------------|----------------------------|
| (1) $I_B = -50\text{ mA}.$ | (5) $I_B = -30\text{ mA}.$ | (9) $I_B = -10\text{ mA}.$ |
| (2) $I_B = -45\text{ mA}.$ | (6) $I_B = -25\text{ mA}.$ | (10) $I_B = -5\text{ mA}.$ |
| (3) $I_B = -40\text{ mA}.$ | (7) $I_B = -20\text{ mA}.$ | |
| (4) $I_B = -35\text{ mA}.$ | (8) $I_B = -15\text{ mA}.$ | |

Fig.7 Collector current as a function of collector-emitter voltage; 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.8 Collector-emitter equivalent on-resistance as a function of collector current; typical values.

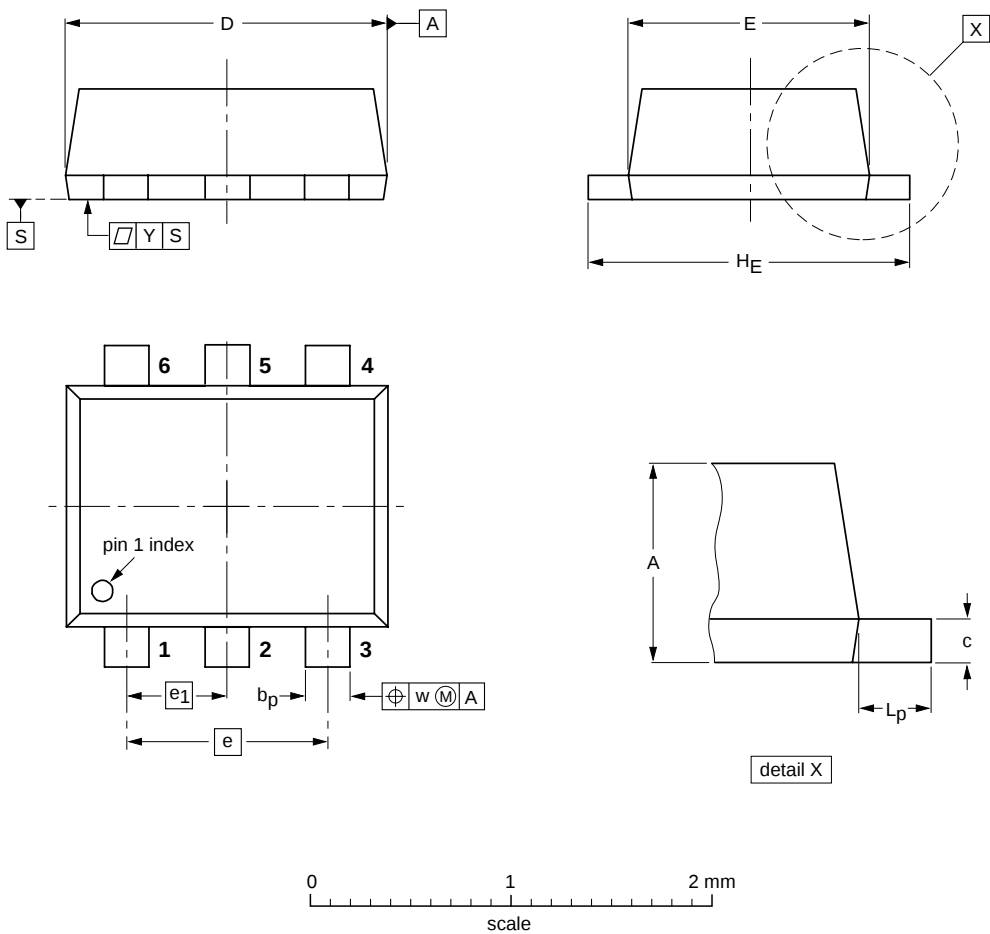
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PACKAGE OUTLINE

Plastic surface mounted package; 6 leads

SOT666



DIMENSIONS (mm are the original dimensions)

UNIT	A	b _p	c	D	E	e	e ₁	H _E	L _p	w	y
mm	0.6 0.5	0.27 0.17	0.18 0.08	1.7 1.5	1.3 1.1	1.0	0.5	1.7 1.5	0.3 0.1	0.1	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT666						01-01-04 01-08-27

40 V low V_{CEsat} PNP transistor

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DATA SHEET STATUS

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NOTES

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NOTES

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NOTES

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