

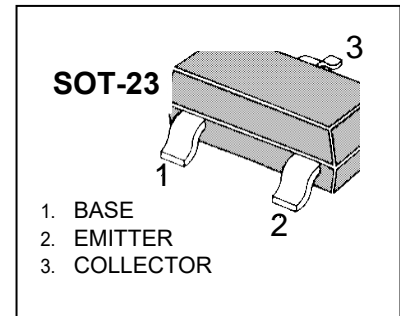
SOT-23 Plastic-Encapsulate Transistors

PBSS5240T 40 V, 2 A ,PNP,low V_{CEsat} (BISS)

FEATURES

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

MARKING: ZF



Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

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)		–	–2	A
I_{CM}	peak collector current		–	–3	A
I_{BM}	peak base current		–	–300	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25^\circ\text{C}$; note 1	–	300	mW
		$T_{amb} \leq 25^\circ\text{C}$; note 2	–	480	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	$^\circ\text{C}$

Notes

1. Device mounted on a printed-circuit board, single sided copper, tin plated, standard footprint.
2. Device mounted on a printed-circuit board, single sided copper, tin plated, mounting pad for collector 1 cm^2 .

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air; note 1	417	K/W
		in free air; note 2	260	K/W

Notes

1. Device mounted on a printed-circuit board, single sided copper, tin plated, standard footprint.
2. Device mounted on a printed-circuit board, single sided copper, tin plated, mounting pad for collector 1 cm^2 .

CHARACTERISTICS

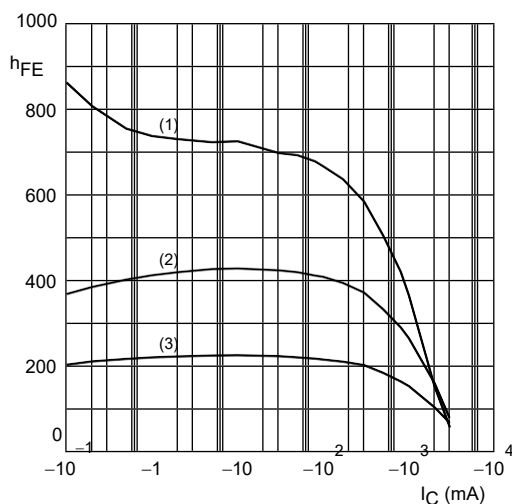
$T_{amb} = 25\text{ °C}$ unless otherwise specified.

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_{BEO}	emitter-base cut-off current	$V_{EB} = -4\text{ V}; I_C = 0$	–	–	–100	nA
h_{FE}	DC current gain	$V_{CE} = -2\text{ V}$ $I_C = -100\text{ mA}$ $I_C = -500\text{ mA}$ $I_C = -1\text{ A}$ $I_C = -2\text{ A}$	300 260 210 100	450 350 290 180	– – – –	
V_{CEsat}	collector-emitter saturation voltage	$I_C = -100\text{ mA}; I_B = -1\text{ mA}$	–	–55	–100	mV
		$I_C = -500\text{ mA}; I_B = -50\text{ mA}$	–	–70	–110	mV
		$I_C = -750\text{ mA}; I_B = -15\text{ mA}$	–	–140	–225	mV
		$I_C = -1\text{ A}; I_B = -50\text{ mA}$	–	–140	–225	mV
		$I_C = -2\text{ A}; I_B = -200\text{ mA}$	–	–240	–350	mV
R_{CEsat}	equivalent on-resistance	$I_C = -500\text{ mA}; I_B = -50\text{ mA};$ note 1	–	160	<220	$\text{m}\Omega$
V_{BEsat}	base-emitter saturation voltage	$I_C = -2\text{ A}; I_B = -200\text{ mA}$	–	–	–1.1	V
$V_{BE(on)}$	base-emitter turn-on voltage	$V_{CE} = -2\text{ V}; I_C = -100\text{ mA}$	–	–	–0.75	V
f_T	transition frequency	$I_C = -100\text{ mA}; V_{CE} = -10\text{ V};$ $f = 100\text{ MHz}$	100	200	–	MHz
C_c	collector capacitance	$V_{CB} = -10\text{ V}; I_E = I_e = 0;$ $f = 1\text{ MHz}$	–	23	28	pF

Note

1. Device mounted on a printed-circuit board, single sided copper, tin plated, standard footprint.

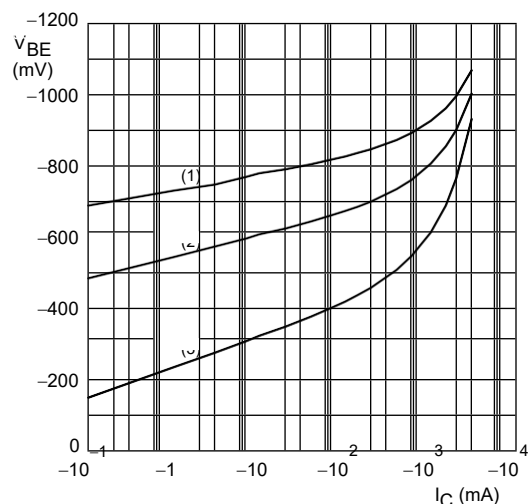
Typical Characteristics



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

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

Fig.1 DC current gain as a function of collector current; typical values.

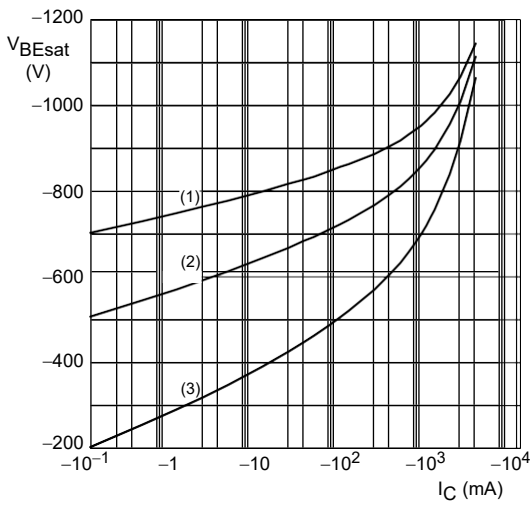


$V_{CE} = -2\text{ V}.$

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

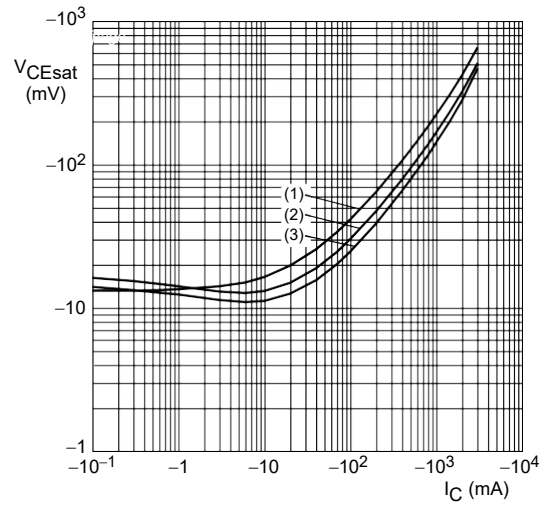
Fig.2 Base-emitter voltage as a function of collector current; typical values.

Typical Characteristics



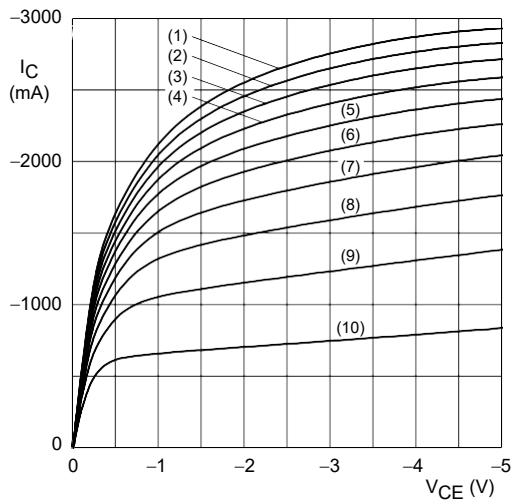
$I_C/I_B = 20$.
 (1) $T_{amb} = -55^\circ C$.
 (2) $T_{amb} = 25^\circ C$.
 (3) $T_{amb} = 150^\circ C$.

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



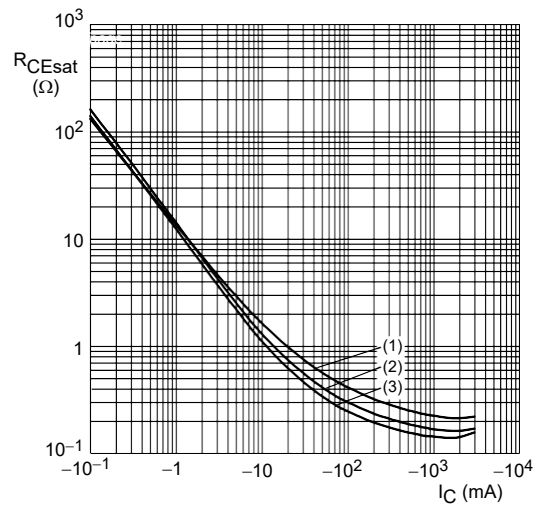
$I_C/I_B = 20$.
 (1) $T_{amb} = 150^\circ C$.
 (2) $T_{amb} = 25^\circ C$.
 (3) $T_{amb} = -55^\circ C$.

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



(1) $I_B = -23.0$ mA. (5) $I_B = -13.8$ mA. (8) $I_B = -6.9$ mA.
 (2) $I_B = -20.7$ mA. (6) $I_B = -11.5$ mA. (9) $I_B = -4.6$ mA.
 (3) $I_B = -18.4$ mA. (7) $I_B = -9.2$ mA. (10) $I_B = -2.3$ mA.
 (4) $I_B = -16.1$ mA.

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



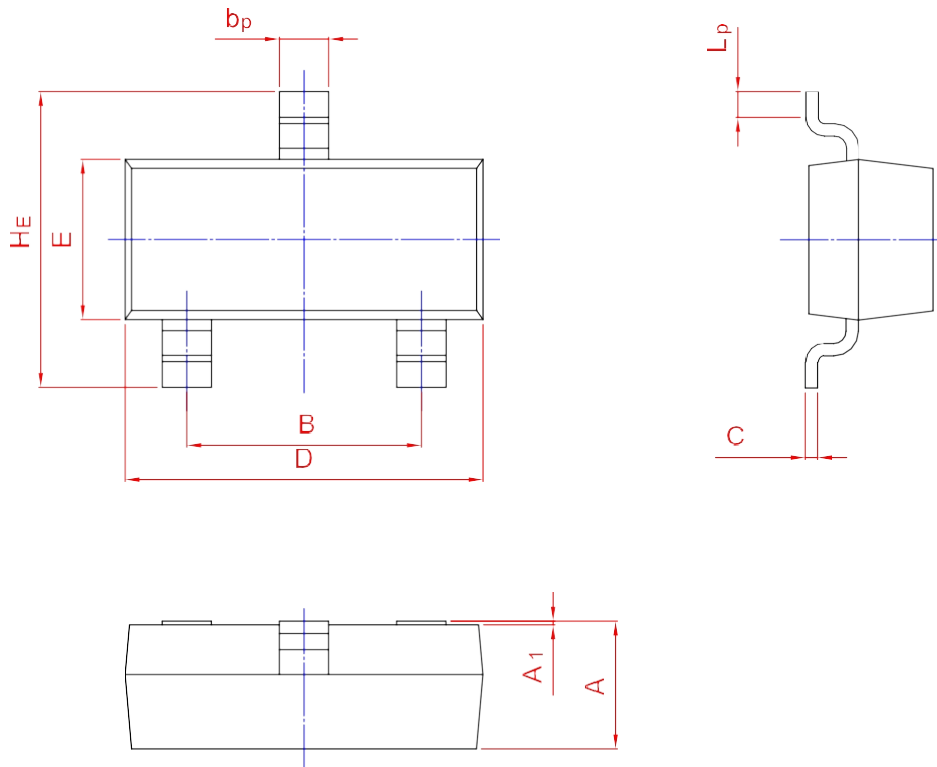
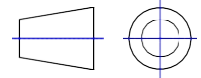
$I_C/I_B = 20$.
 (1) $T_{amb} = 150^\circ C$.
 (2) $T_{amb} = 25^\circ C$.
 (3) $T_{amb} = -55^\circ C$.

Fig.6 Equivalent on-resistance as a function of collector current; typical values.

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



UNIT	A	B	b _p	C	D	E	H _E	A ₁	L _p
mm	1.40	2.04	0.50	0.19	3.10	1.65	3.00	0.100	0.50
	0.95	1.78	0.35	0.08	2.70	1.20	2.20	0.013	0.20