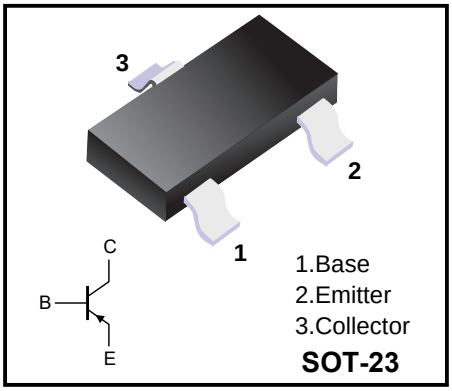
PNP Silicon Epitaxial Planar Transistor



Marking Code	
PBSS5350T	ZD

FEATURES

- Low collector-emitter saturation voltage V_{CEsat}
- High collector current capability: I_C and I_{CM}
- Higher efficiency leading to less heat generation
- Reduced printed-circuit board requirements.
- Case: SOT-23

APPLICATIONS

- Power management
  - —DC/DC converters
  - —Supply line switching
  - —Battery charger
  - —LCD backlighting.

Limiting Values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Parameters	Conditions	Symbol	Value	Unit
collector-base voltage	open emitter	V_{CBO}	–50	V
collector-emitter voltage	open base	V_{CEO}	–50	V
emitter-base voltage	open collector	V_{EBO}	–5	V
collector current (DC)	note 4	I_C	–3	A
peak collector current	limited by $T_{j(max)}$	I_{CM}	–5	A
base current (DC)		I_B	–0.5	A
total power dissipation	$T_{amb} \leq 25$ °C	P_{tot}		
	note 1		300	mW
	note 2		480	mW
	note 3		540	mW
	note 4		600	mW
storage temperature		T_{STG}	–65+150	°C
junction temperature		T_J	150	°C
ambient temperature		T_{amb}	–65 +150	°C

Notes

1.Device mounted on a FR4 printed-circuit board; single-sided copper; tin-plated; standard footprint.

2.Device mounted on a FR4 printed-circuit board; single-sided copper; tin-plated; mounting pad for collector 1 cm^2.

3.Device mounted on a FR4 printed-circuit board; single-sided copper; tin-plated; mounting pad for collector 6 cm^2.

4.Device mounted on a ceramic printed-circuit board 7 cm^2, single-sided copper, tin-plated.

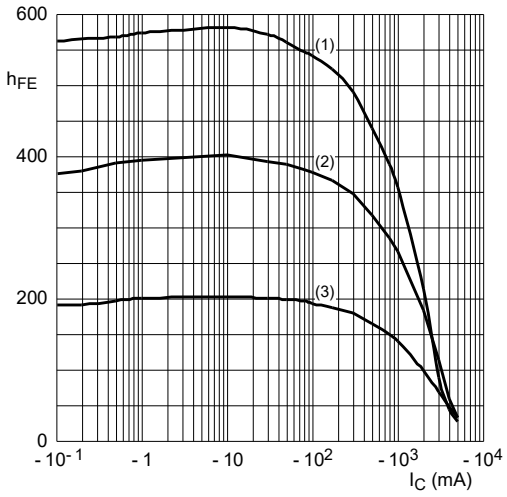
Characteristics

Tamb = 25 °C unless otherwise specified.

Parameter	Test Condition	Symbol	Min	Typ	Max	Unit
collector-base cut-off current	V_{CB} = –50 V; I_E = 0 A	I_{CBO}	–	–	–100	nA
	V_{CB} = –50 V; I_E = 0 A; T_j = 150 °C		–	–	–50	µA
collector-emitter cut-off current	V_{CE} = –50 V; V_{BE} = 0 V	I_{CES}	–	–	–100	nA
emitter-base cut-off current	V_{EB} = –5 V; I_C = 0 A	I_{EBO}	–	–	–100	nA
DC current gain	V_{CE} = –2 V	h_{FE}				
	I_C = –0.1 A		200	–	–	
	I_C = –0.5 A		200	–	–	
	I_C = –1 A; note 1		200	–	–	
	I_C = –2 A; note 1		130	–	–	
	I_C = –3 A; note 1		80	–	–	
collector-emitter saturation voltage	I_C = –0.5 A; I_B = –50 mA	V_{CEsat}	–	–	–90	mV
	I_C = –1 A; I_B = –50 mA		–	–	–180	mV
	I_C = –2 A; I_B = –100 mA		–	–	–320	mV
	I_C = –2 A; I_B = –200 mA; note 1		–	–	–270	mV
	I_C = –3 A; I_B = –300 mA; note 1		–	–	–390	mV
equivalent on-resistance	I_C = –2 A; I_B = –200 mA; note 1	R_{CEsat}	–	–	135	mΩ
base-emitter saturation voltage	I_C = –2 A; I_B = –100 mA	V_{BEsat}	–	–	–1.1	V
	I_C = –3 A; I_B = –300 mA; note 1		–	–	–1.2	V
base-emitter turn-on voltage	V_{CE} = –2 V; I_C = –1 A	V_{BEon}	–	–	–1.2	V
transition frequency	I_C = –100 mA; V_{CE} –5V; f = 100 MHz	f_T	100	–	–	MHz
collector capacitance	V_{CB} = –10 V; I_E = i_e = 0 A; f = 1 MHz	C_c	–	–	35	pF

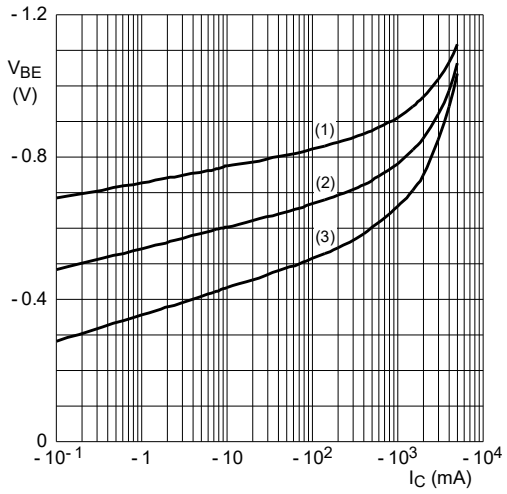
Note 1.Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.

Electrical Characteristic Curve



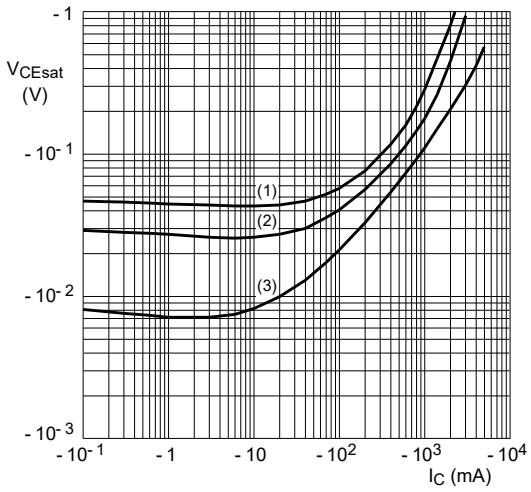
V_{CE} = −2 V
(1) T_{amb} = 100 °C
(2) T_{amb} = 25 °C
(3) T_{amb} = −55 °C

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



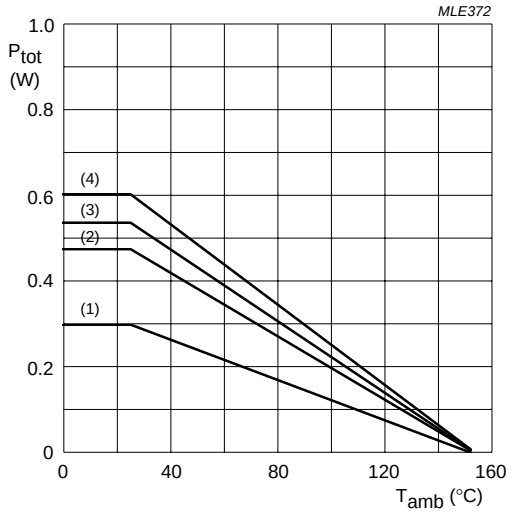
V_{CE} = −2 V
(1) T_{amb} = −55 °C
(2) T_{amb} = 25 °C
(3) T_{amb} = 100 °C

Fig.2 Base-emitter 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.3 Collector-emitter saturation voltage as a function of collector current; typical values.



(1) Ceramic PCB; 7 cm^2 mounting pad for collector.
(2) FR4 PCB; 6 cm^2 copper mounting pad for collector.
(3) FR4 PCB; 1 cm^2 copper mounting pad for collector.
(4) Standard footprint.

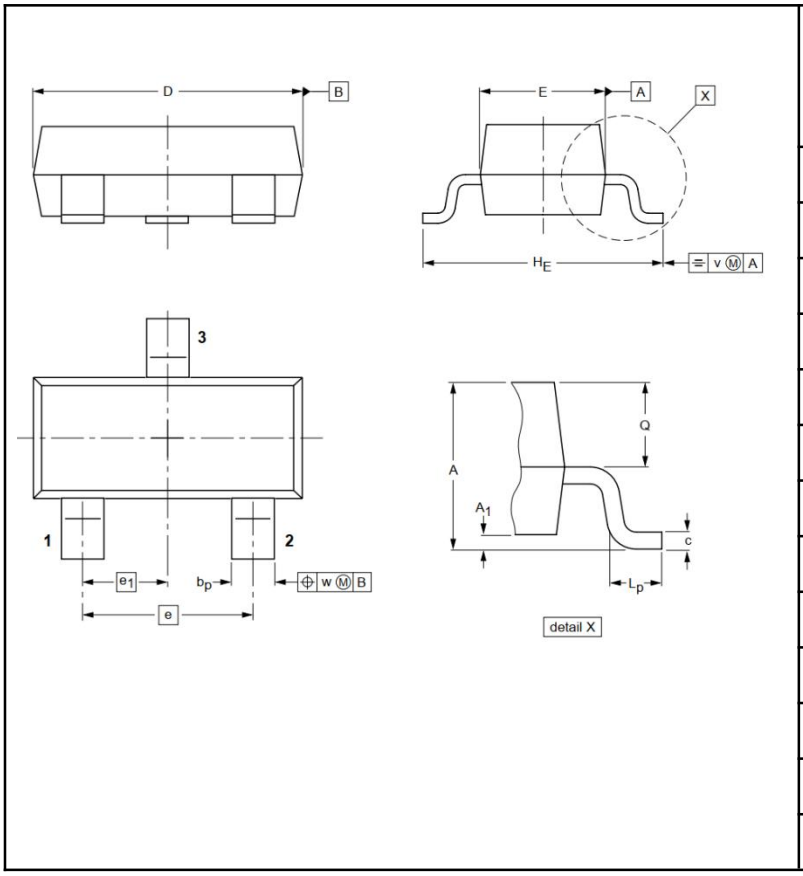
Fig.4 Power derating curves.

Ordering information

Package	Packing Description	Base Quantity	Packing Quantity
SOT-23	Tape/Reel,7"reel	3000pcs/Reel	24000PCS/Box 120000PCS/Carton

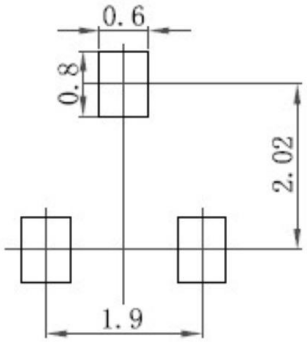
Package Dimensions

SOT-23



Dim.	Millimeter (mm)		mil	
	Min.	Max.	Min.	Max.
A	0.9	1.15	35	45
A1	0.1		3.9	
bp	0.38	0.48	15	19
C	0.09	0.15	3.54	5.9
D	2.8	3.0	110	118
E	1.2	1.4	47	55
e	1.9		75	
e1	0.95		37	
HE	2.1	2.55	83	100
Lp	0.15	0.45	5.9	18
Q	0.45	0.55	18	22
v	0.2		7.9	
W	0.1		4	

The recommended mounting pad size



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