

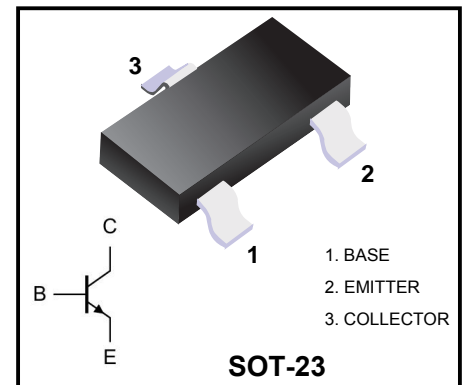
NPN Silicon Epitaxial Planar Transistor

FEATURES

- ◆ Case: SOT-23
- ◆ 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.

APPLICATIONS

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



Marking Code	
PBSS4350T	S43

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)		I_C	2	A
peak collector current	limited by $T_{j(max)}$	I_{CM}	5	A
base current (DC)		I_B	0.5	A
total power dissipation	$T_{amb} \leq 25\text{ }^\circ\text{C}$	P_{tot}	300	mW
	note 1			
	note 2			
	note 3			
storage temperature		T_{stg}	-65-+150	$^\circ\text{C}$
junction temperature		T_j	150	$^\circ\text{C}$
ambient temperature		T_{amb}	-65-+150	$^\circ\text{C}$

Notes

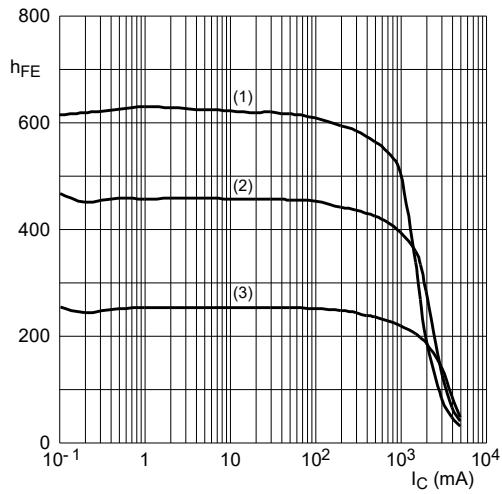
1. Device mounted on a FR4 printed-circuit board; single-sided copper; tin-plated; standard footprint.
2. Device mounted on a FR4 printed-circuit board; single-sided copper; tin-plated; mounting pad for collector 1 cm².
3. Device mounted on a FR4 printed-circuit board; single-sided copper; tin-plated; mounting pad for collector 6 cm².
4. Device mounted on a ceramic printed-circuit board 7 cm², single-sided copper, tin-plated.

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

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
collector-base cut-off current	$V_{CB} = 50\text{ V}; I_E = 0\text{ A}$	I_{CBO}			100	nA
	$V_{CB} = 50\text{ V}; I_E = 0\text{ A}; T_j = 150^{\circ}\text{C}$				50	μA
collector-emitter cut-off current	$V_{CE} = 50\text{ V}; V_{BE} = 0\text{ V}$	I_{CES}			100	nA
emitter-base cut-off current	$V_{EB} = 5\text{ V}; I_C = 0\text{ A}$	I_{EBO}			100	nA
DC current gain	$V_{CE} = 2\text{ V}$	h_{FE}				
	$I_C = 0.1\text{ A}$		300			
	$I_C = 0.5\text{ A}$		300			
	$I_C = 1\text{ A}; \text{note 1}$		300		700	
	$I_C = 2\text{ A}; \text{note 1}$		200			
	$I_C = 3\text{ A}; \text{note 1}$		100			
collector-emitter saturation voltage	$I_C = 0.5\text{ A}; I_B = 50\text{ mA}$	V_{CEsat}			80	mV
	$I_C = 1\text{ A}; I_B = 50\text{ mA}$				160	mV
	$I_C = 2\text{ A}; I_B = 100\text{ mA}$				280	mV
	$I_C = 2\text{ A}; I_B = 200\text{ mA}; \text{note 1}$				260	mV
	$I_C = 3\text{ A}; I_B = 300\text{ mA}; \text{note 1}$				370	mV
equivalent on-resistance	$I_C = 2\text{ A}; I_B = 200\text{ mA}; \text{note 1}$	R_{CEsat}			130	m Ω
base-emitter saturation voltage	$I_C = 2\text{ A}; I_B = 100\text{ mA}$	V_{BEsat}			1.1	V
	$I_C = 3\text{ A}; I_B = 300\text{ mA}; \text{note 1}$				1.2	V
base-emitter turn-on voltage	$V_{CE} = 2\text{ V}; I_C = 1\text{ A}$	V_{BEon}			1.1	V
transition frequency	$I_C = 100\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$	f_T	100			MHz
collector capacitance	$V_{CB} = 10\text{ V}; I_E = I_e = 0\text{ A}; f = 1\text{ MHz}$	C_c			30	pF

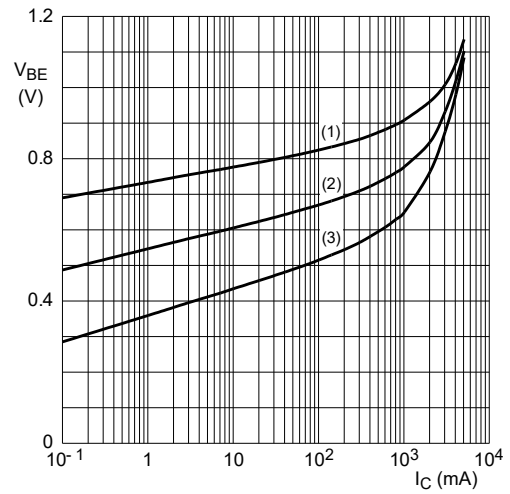
Note
1. Pulse test: $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02.$

Typical Characteristics



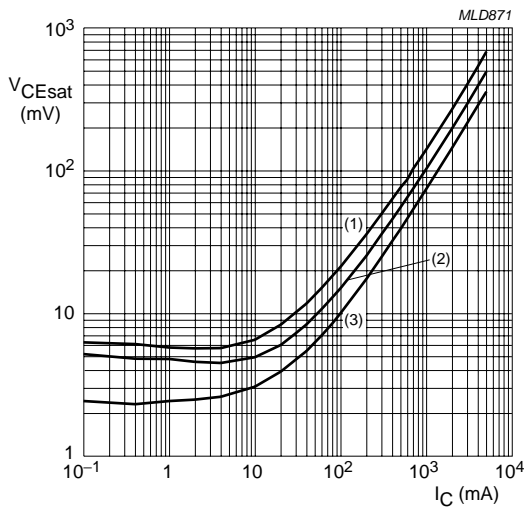
$V_{CE} = 2\text{ V}$
 (1) $T_{amb} = 100\text{ }^{\circ}\text{C}$
 (2) $T_{amb} = 25\text{ }^{\circ}\text{C}$
 (3) $T_{amb} = -55\text{ }^{\circ}\text{C}$

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



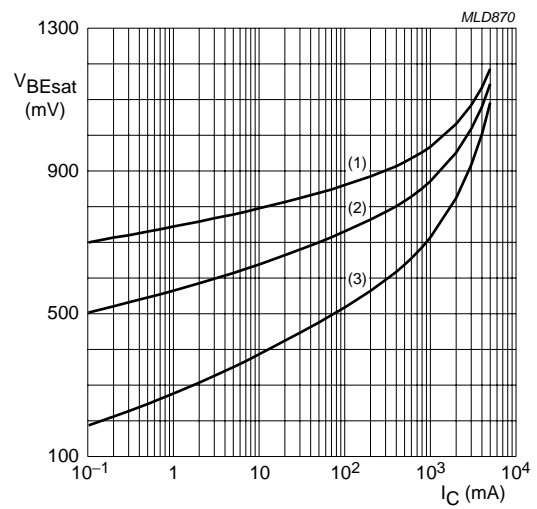
$V_{CE} = 2\text{ V}$
 (1) $T_{amb} = -55\text{ }^{\circ}\text{C}$
 (2) $T_{amb} = 25\text{ }^{\circ}\text{C}$
 (3) $T_{amb} = 100\text{ }^{\circ}\text{C}$

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



$I_C/I_B = 10.$
 (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.3 Collector-emitter saturation voltage as a function of collector current; typical values.



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

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

Ordering information

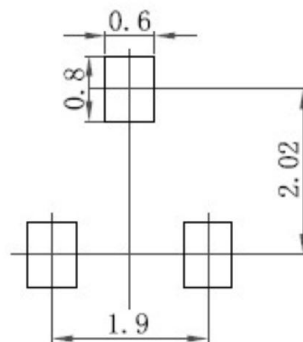
Package	Packing Description	Base Quantity	Packing Quantity
SOT-23	Tape/Reel,7"reel	3000pcs/Reel	24000PCS/Box 120000PCS/Carton

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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