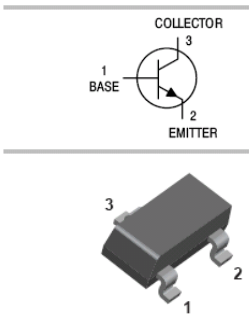
NPN Low VCEsat Transistor **PBSS4160T**

FEATURES

- Low collector-emitter saturation voltage VCEsat
- High collector current capability IC and ICM
- High efficiency, reduces heat generation
- Reduces printed-circuit board area required

Lead-free



SOT-23

APPLICATIONS

- Major application segments
- Power management
- Peripheral driver

ORDERING INFORMATION

Type No.	Marking	Package Code
PBSS4160T	U5	SOT-23

MAXIMUM RATING @ Ta=25℃ unless otherwise specified

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	80	V
V_{CEO}	Collector-Emitter Voltage	60	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current -Continuous	0.9（note 1） 1（note 2）	A
I_{CM}	peak collector current (t = 1 ms or limited by $T_{j(max)}$))	2	A
I_B	base current (DC)	300	mA
I_{BM}	peak base current (tp ≤ 300 ms; δ ≤ 0.02)	1	A
P_C	Collector Dissipation T_{amb} ≤ 25 °C; note 1 T_{amb} ≤ 25 °C; note 2 T_{amb} ≤ 25 °C; notes 1 and 3	270 400 1.25	mW mW W
T_{stg}, T_{amb}	Storage and operating ambient temperature	-65 to +150	℃
T_j	Junction temperature	150	℃

Notes

1. Device mounted on an FR4 printed-circuit board, single-sided copper, tin-plated, standard

footprint.

2. Device mounted on an FR4 printed-circuit board, single-sided copper, tin-plated, 1 cm2 collector mounting pad.

3. Operated under pulsed conditions: duty cycle $\delta \leq 20\%$, pulse width tp ≤ 10 ms.

ELECTRICAL CHARACTERISTICS @ Ta=25℃ unless otherwise specified

Parameter	**Symbol**	**Test conditions**	**MIN**	**TYP**	**MAX**	**UNIT**
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=100μA,I_E=0	80			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=10mA,I_B=0	60			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=100μA,I_C=0	5			V
Collector cut-off current	I_{CBO}	V_{CB}=60V,I_E=0			0.1	μA
collector-emitter cut-off current	I_{CES}	V_{CE}=60V,I_E=0			0.1	μA
Emitter cut-off current	I_{EBO}	V_{EB}=5V,I_C=0			0.1	μA
DC current gain	h_{FE}	V_{CE}=5V,I_C=500mA	200	350		
		V_{CE}=5V,I_C=1A	100	150		
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=500mA, I_B= 50mA I_C=1A, I_B= 100mA I_C=100mA, I_B= 1mA		0.11 0.2 0.09	0.14 0.25 0.11	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C=1A, I_B= 50mA		0.95	1.1	V
Base-emitter voltage	$V_{BE(on)}$	I_C=1A,V_{CE}=5V		0.82	0.9	V
Transition frequency	f_T	V_{CE}=10V, I_C= 50mA f=100MHz	150	220		MHz
Collector output capacitance	C_{ob}	V_{CB}=10V,f=1MHz		5.5	10	pF

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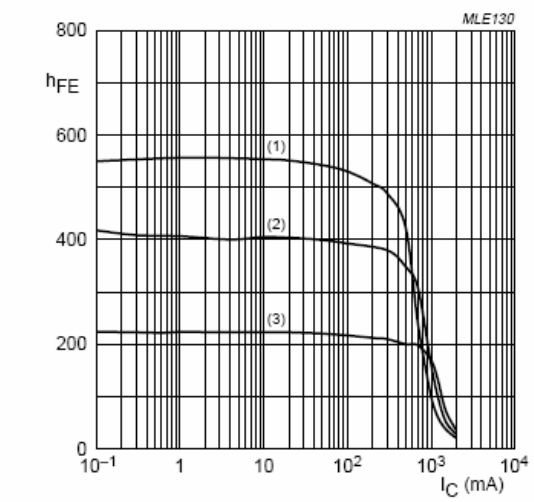
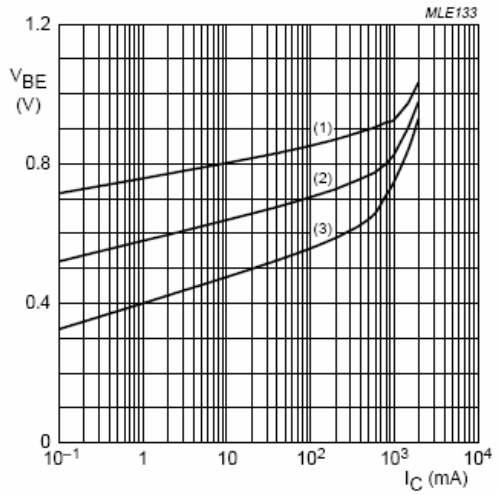
TYPICAL CHARACTERISTICS @ Ta=25℃ unless otherwise specified



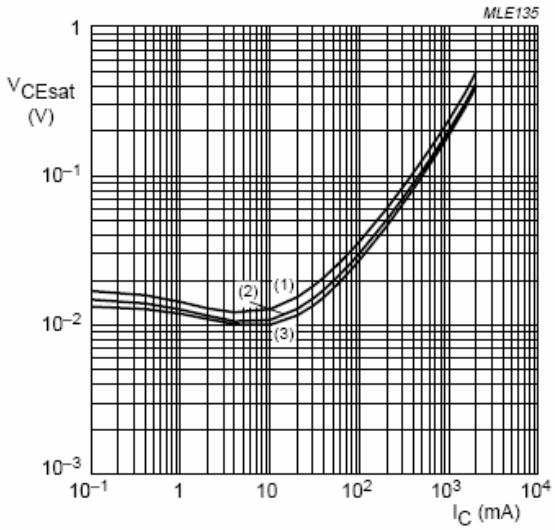
V_{CE} = 5 V.
(1) T_{amb} = 100 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = –55 °C.

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



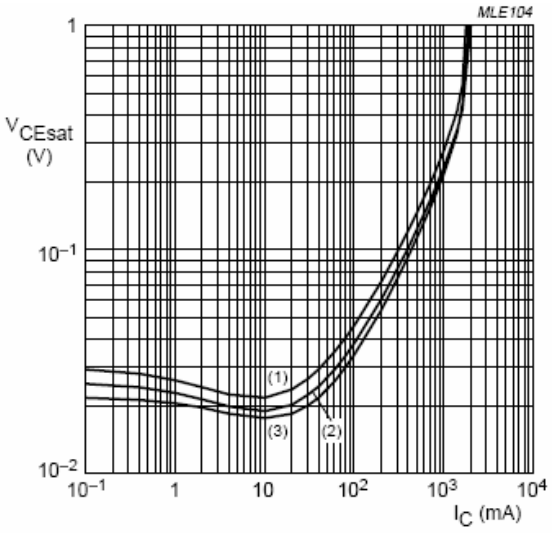
V_{CE} = 5 V.
(1) T_{amb} = –55 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = 100 °C.

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



I_C/I_B = 10.
(1) T_{amb} = 100 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = –55 °C.

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



I_C/I_B = 20.
(1) T_{amb} = 100 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = –55 °C.

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

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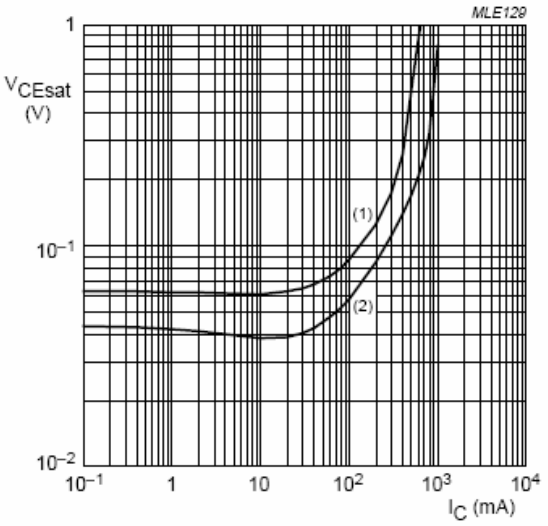
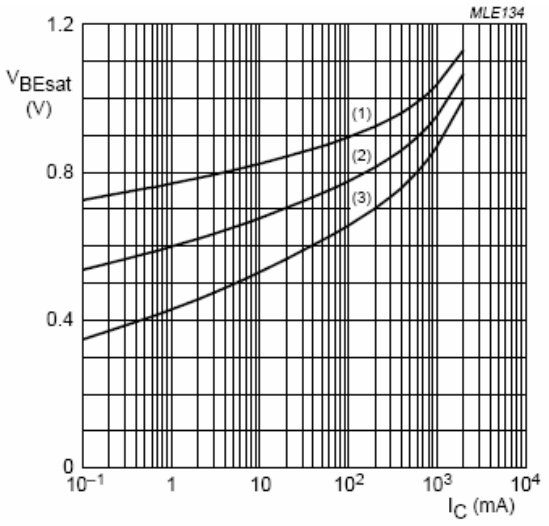


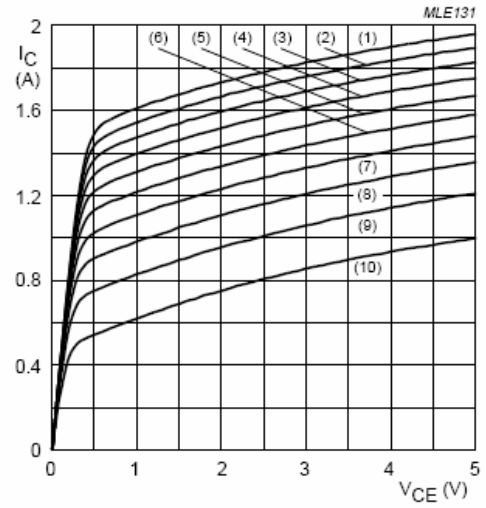
T_{amb} = 25 °C.
(1) I_C/I_B = 100.
(2) I_C/I_B = 50.

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



I_C/I_B = 20.
(1) T_{amb} = –55 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = 100 °C.

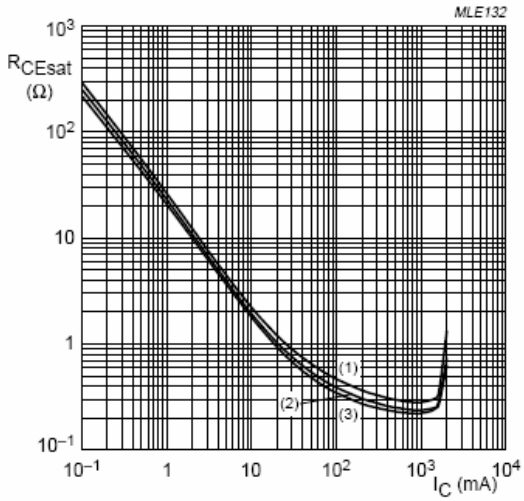
Fig. 6 Base-emitter saturation voltage as a function of collector current; typical values.



T_{amb} = 25 °C.

(1) I_B = 60 mA.
(2) I_B = 54 mA.
(3) I_B = 48 mA.
(4) I_B = 42 mA.
(5) I_B = 36 mA.
(6) I_B = 30 mA.
(7) I_B = 24 mA.
(8) I_B = 18 mA.
(9) I_B = 12 mA.
(10) I_B = 6 mA.

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



I_C/I_B = 20.

(1) T_{amb} = 100 °C. (2) T_{amb} = 25 °C. (3) T_{amb} = –55 °C.

Fig. 8 Equivalent on-resistance as a function of collector current; typical values.

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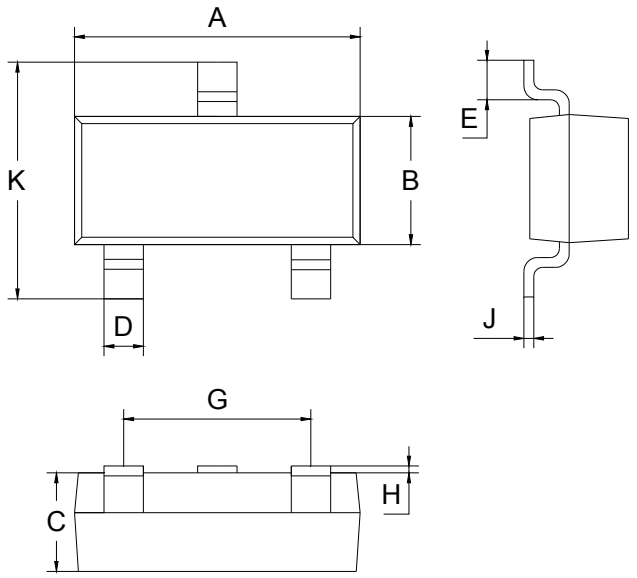
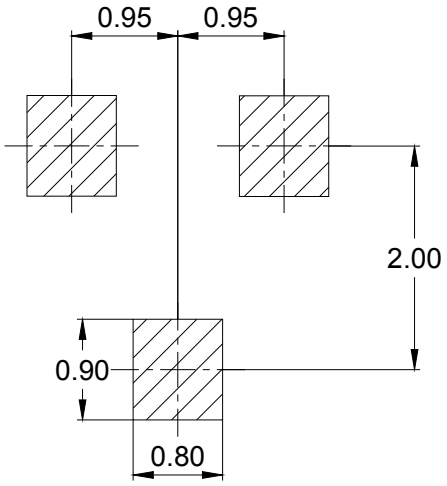
PACKAGE OUTLINE

Plastic surface mounted package SOT-23



SOT-23		
Dim	Min	Max
A	2.70	3.10
B	1.10	1.50
C	1.0 Typical	
D	0.4 Typical	
E	0.35	0.48
G	1.80	2.00
H	0.02	0.1
J	0.1 Typical	
K	2.20	2.60
All Dimensions in mm		

SOLDERING FOOTPRINT



Unit : mm

PACKAGE INFORMATION

Device	Package	Shipping
PBSS4160T	SOT-23	3000/Tape&Reel