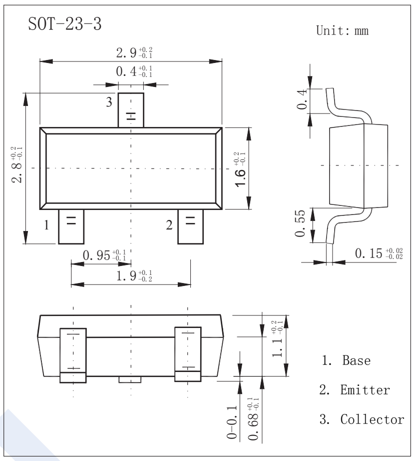
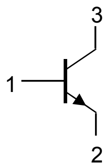
NPN Transistors

PBSS4350T (KBSS4350T)



■ Features

- High collector current capability
- High collector current gain
- Improved efficiency due to reduced heat generation.
- Low collector-emitter saturation voltage V_{CEsat} and corresponding low R_{CEsat}



■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CBO}	50	V
Collector - Emitter Voltage	V_{CEO}	50	V
Emitter - Base Voltage	V_{EBO}	5	V
Collector Current - Continuous	I_C	2	A
Repetitive Peak Collector Current (Note.1)	I_{CRP}	3	A
Collector Current - Pulse	I_{CP}	5	A
Base Current	I_B	0.5	A
Collector Power Dissipation (Note.2)	P_C	300	mW
Collector Power Dissipation (Note.3)	P_C	480	mW
Collector Power Dissipation (Note.4)	P_C	540	mW
Collector Power Dissipation (Note.1 and 2)	P_C	1.2	W
Thermal Resistance Junction to Ambient (Note.2)	$R_{\theta JA}$	417	℃/W
Thermal Resistance Junction to Ambient (Note.3)	$R_{\theta JA}$	260	℃/W
Thermal Resistance Junction to Ambient (Note.4)	$R_{\theta JA}$	230	℃/W
Thermal Resistance Junction to Ambient (Note.1 and 2)	$R_{\theta JA}$	104	℃/W
Junction Temperature	T_J	150	℃
Operating Ambient Temperature	T_{amb}	-65 to 150	℃
Storage Temperature Range	T_{stg}	-65 to 150	℃

Note.1: Operated under pulsed conditions: pulse width tp ≤ 100 ms; duty cycle δ ≤ 0.25.

Note.2: Device mounted on a printed-circuit board; single sided copper; tinplated; standard footprint.

Note.3: Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 1 cm^2.

Note.4: Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 6 cm^2.

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■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	V_{CBO}	I_C= 100 μA， I_E= 0	50			V
Collector- emitter breakdown voltage	V_{CEO}	I_C= 1 mA， I_B= 0	50			
Emitter - base breakdown voltage	V_{EBO}	I_E= 100 μ A， I_C= 0	5			
Collector-base cut-off current	I_{CBO}	V_{CB}= 50 V , I_E= 0			0.1	uA
		V_{CB}= 50 V , I_E= 0 ,T_J = 150℃			50	
Emitter cut-off current	I_{EBO}	V_{EB}= 5V , I_C=0			0.1	
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=500 mA, I_B=50mA			80	mV
		I_C=1 A, I_B=50mA			160	
		I_C=2 A, I_B=100mA (Note.1)			280	
		I_C=2 A, I_B=200mA (Note.1)			260	
		I_C=3 A, I_B=300mA (Note.1)			370	
Base - emitter saturation voltage	$V_{BE(sat)}$	I_C=2 A, I_B=100mA (Note.1)			1.1	V
		I_C=3 A, I_B=300mA (Note.1)			1.2	
Base - emitter turn on voltage	$V_{BE(on)}$	V_{CE}= 2V, I_C= 1 A (Note.1)			1.2	
Equivalent on-resistance	$R_{CE(sat)}$	I_C=2 A, I_B=200mA (Note.1)			130	mΩ
DC current gain	h_{FE}	V_{CE}= 2V, I_C= 100mA	300			
		V_{CE}= 2V, I_C= 500mA	300			
		V_{CE}= 2V, I_C= 1 A (Note.1)	300			
		V_{CE}= 2V, I_C= 2 A (Note.1)	200			
		V_{CE}= 2V, I_C= 3 A (Note.1)	100			
Collector output capacitance	C_{ob}	V_{CB}= 10V, I_E=Ie=0,f=1MHz			25	pF
Transition frequency	f_T	V_{CE}= 5V, I_C= 100mA,f=100MHz	100			MHz

Note.1: Pulse test: tp ≤ 300 us; δ ≤ 0.02.

■ Marking

Marking	ZC*

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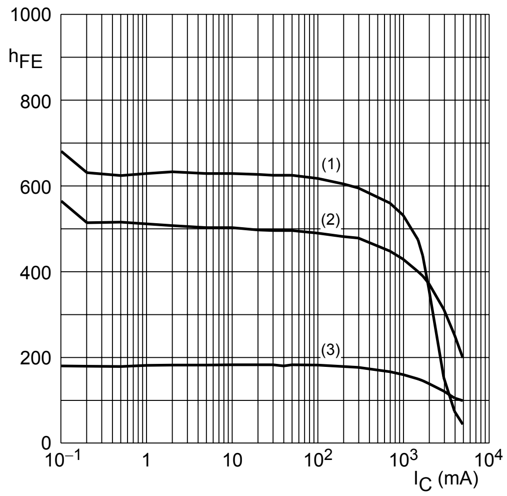
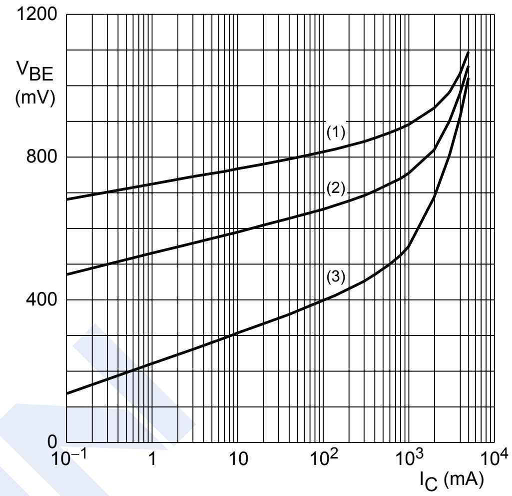
■ Typical Characterisitics



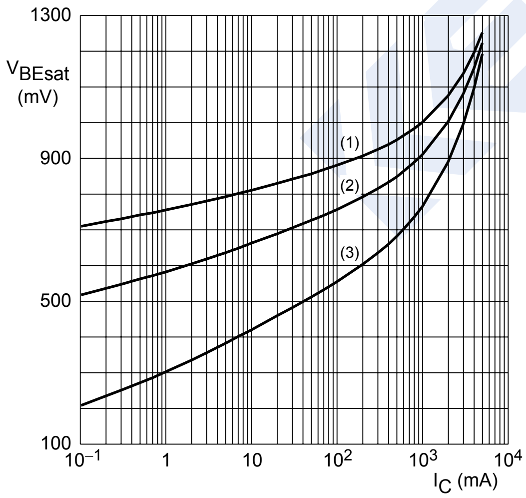
V_{CE} = 2 V.
(1) T_{amb} = 150 °C. (2) T_{amb} = 25 °C. (3) T_{amb} = –55 °C.

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



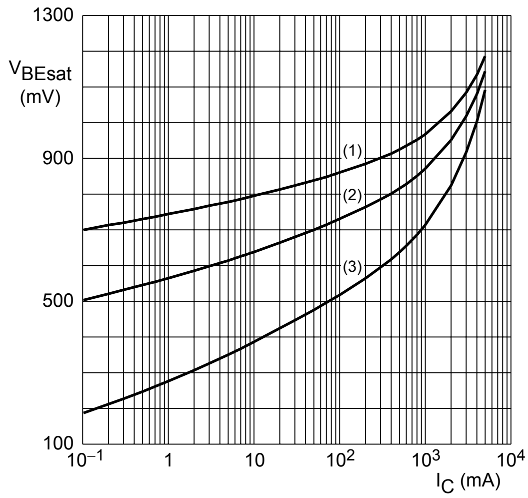
V_{CE} = 2 V.
(1) T_{amb} = –55 °C. (2) T_{amb} = 25 °C. (3) T_{amb} = 150 °C.

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



I_C/I_B = 10.
(1) T_{amb} = –55 °C. (2) T_{amb} = 25 °C. (3) T_{amb} = 150 °C.

Fig.3 Base-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} = 150 °C.

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

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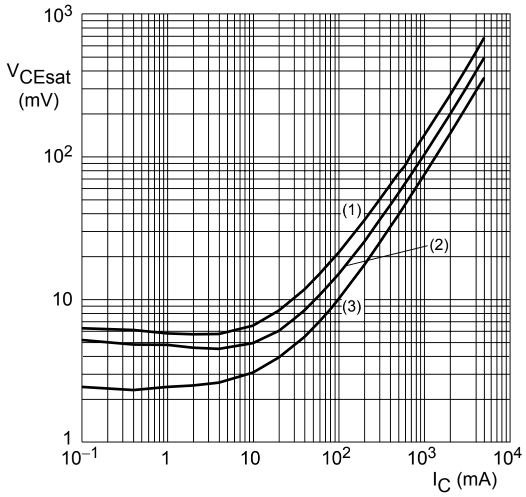
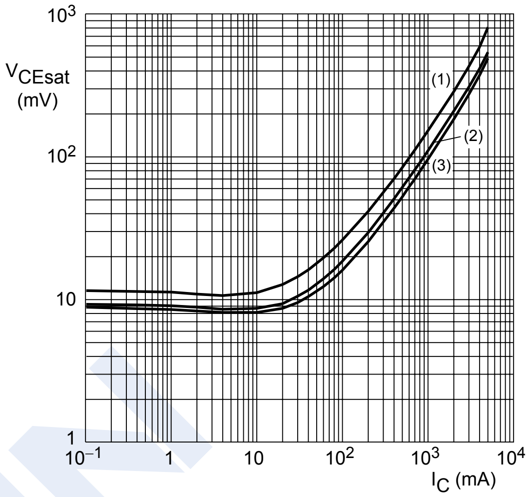
■ Typical Characterisitics



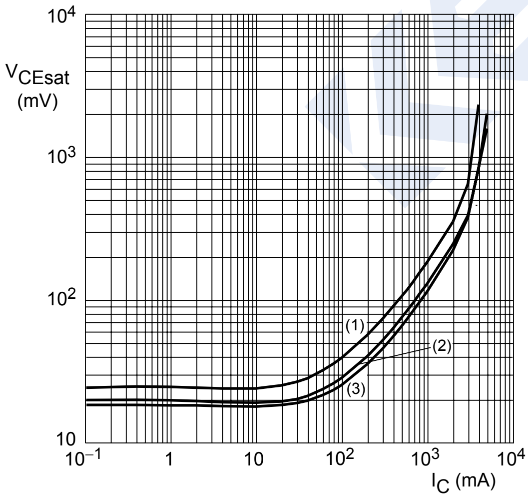
I_C/I_B = 10.
(1) T_{amb} = 150 °C. (2) T_{amb} = 25 °C. (3) T_{amb} = –55 °C.

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



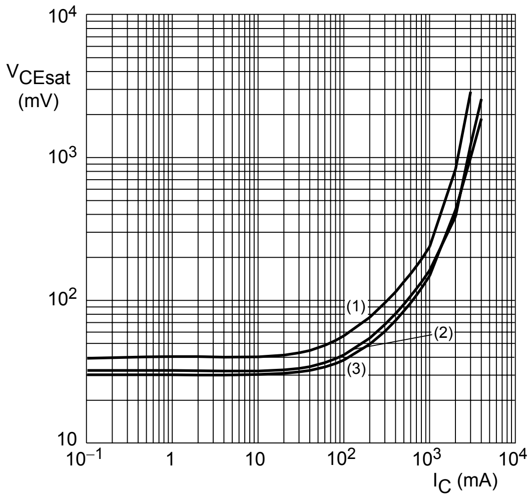
I_C/I_B = 20.
(1) T_{amb} = 150 °C. (2) T_{amb} = 25 °C. (3) T_{amb} = –55 °C.

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



I_C/I_B = 50.
(1) T_{amb} = 150 °C. (2) T_{amb} = 25 °C. (3) T_{amb} = –55 °C.

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



I_C/I_B = 100.
(1) T_{amb} = 150 °C. (2) T_{amb} = 25 °C. (3) T_{amb} = –55 °C.

Fig.8 Collector-emitter saturation voltage as a function of collector current; typical values.

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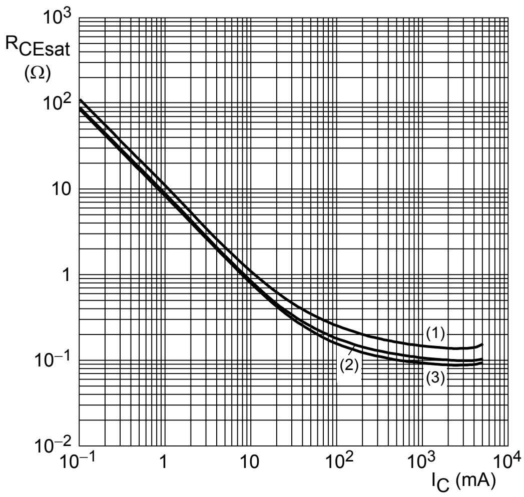
■ Typical Characterisitics



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

Fig.10 Equivalent on-resistance as a function of collector current; typical values.