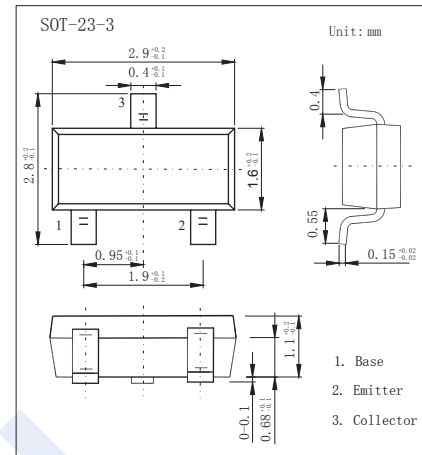
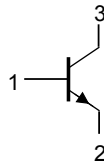


## NPN Transistors

### 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 $T_a = 25^\circ\text{C}$

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

Note.1: Operated under pulsed conditions: pulse width  $t_p \leq 100$  ms; duty cycle  $\delta \leq 0.25$ .

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  $\text{cm}^2$ .

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

## NPN Transistors

### PBSS4350T (KBSS4350T)

■ Electrical Characteristics  $T_a = 25^\circ\text{C}$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	$V_{CB0}$	$I_C = 100 \mu\text{A}$ , $I_E = 0$	50			V
Collector- emitter breakdown voltage	$V_{CE0}$	$I_C = 1 \text{ mA}$ , $I_B = 0$	50			
Emitter - base breakdown voltage	$V_{EB0}$	$I_E = 100 \mu\text{A}$ , $I_C = 0$	5			
Collector-base cut-off current	$I_{CBO}$	$V_{CB} = 50 \text{ V}$ , $I_E = 0$			0.1	uA
		$V_{CB} = 50 \text{ V}$ , $I_E = 0$ , $T_J = 150^\circ\text{C}$			50	
Emitter cut-off current	$I_{EBO}$	$V_{EB} = 5 \text{ V}$ , $I_C = 0$			0.1	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 500 \text{ mA}$ , $I_B = 50 \text{ mA}$			80	mV
		$I_C = 1 \text{ A}$ , $I_B = 50 \text{ mA}$			160	
		$I_C = 2 \text{ A}$ , $I_B = 100 \text{ mA}$ (Note.1)			280	
		$I_C = 2 \text{ A}$ , $I_B = 200 \text{ mA}$ (Note.1)			260	
		$I_C = 3 \text{ A}$ , $I_B = 300 \text{ mA}$ (Note.1)			370	
Base - emitter saturation voltage	$V_{BE(sat)}$	$I_C = 2 \text{ A}$ , $I_B = 100 \text{ mA}$ (Note.1)			1.1	V
		$I_C = 3 \text{ A}$ , $I_B = 300 \text{ mA}$ (Note.1)			1.2	
Base - emitter turn on voltage	$V_{BE(on)}$	$V_{CE} = 2 \text{ V}$ , $I_C = 1 \text{ A}$ (Note.1)			1.2	
Equivalent on-resistance	$R_{CE(sat)}$	$I_C = 2 \text{ A}$ , $I_B = 200 \text{ mA}$ (Note.1)			130	m $\Omega$
DC current gain	$h_{FE}$	$V_{CE} = 2 \text{ V}$ , $I_C = 100 \text{ mA}$	300			
		$V_{CE} = 2 \text{ V}$ , $I_C = 500 \text{ mA}$	300			
		$V_{CE} = 2 \text{ V}$ , $I_C = 1 \text{ A}$ (Note.1)	300			
		$V_{CE} = 2 \text{ V}$ , $I_C = 2 \text{ A}$ (Note.1)	200			
		$V_{CE} = 2 \text{ V}$ , $I_C = 3 \text{ A}$ (Note.1)	100			
Collector output capacitance	$C_{ob}$	$V_{CB} = 10 \text{ V}$ , $I_E = I_C = 0$ , $f = 1 \text{ MHz}$			25	pF
Transition frequency	$f_T$	$V_{CE} = 5 \text{ V}$ , $I_C = 100 \text{ mA}$ , $f = 100 \text{ MHz}$	100			MHz

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

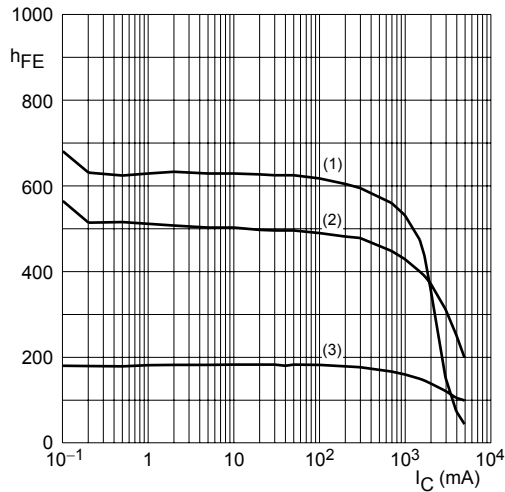
■ Marking

Marking	ZC*
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## NPN Transistors

### PBSS4350T (KBSS4350T)

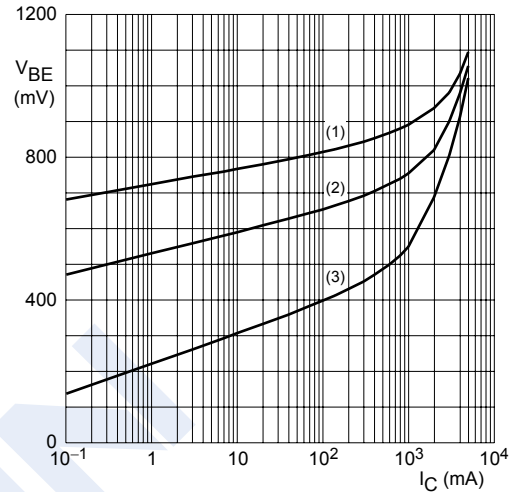
#### ■ Typical Characteristics



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

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

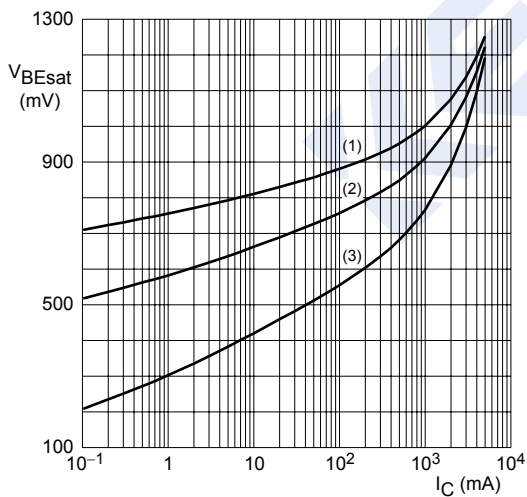
Fig.1 DC current gain as a function of collector current; typical values.



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

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

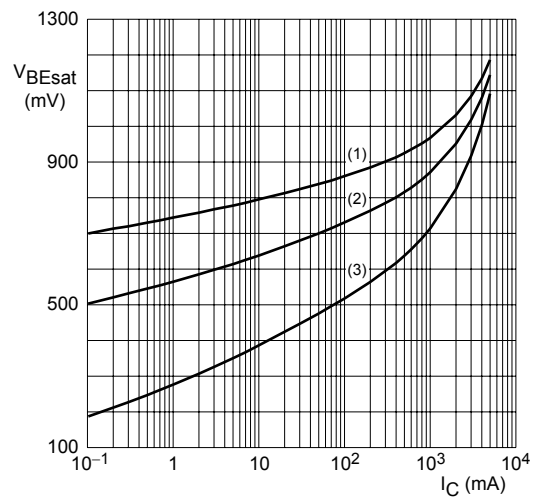
Fig.2 Base-emitter voltage as a function of collector current; typical values.



$I_C/I_B = 10$ .

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

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



$I_C/I_B = 20$ .

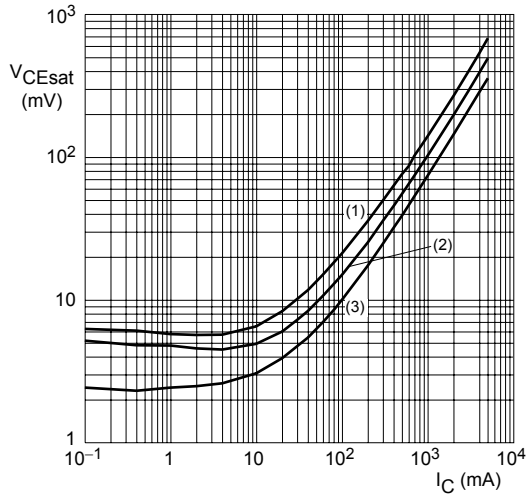
(1)  $T_{amb} = -55\text{ }^{\circ}\text{C}$ . (2)  $T_{amb} = 25\text{ }^{\circ}\text{C}$ . (3)  $T_{amb} = 150\text{ }^{\circ}\text{C}$ .

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

## NPN Transistors

### PBSS4350T (KBSS4350T)

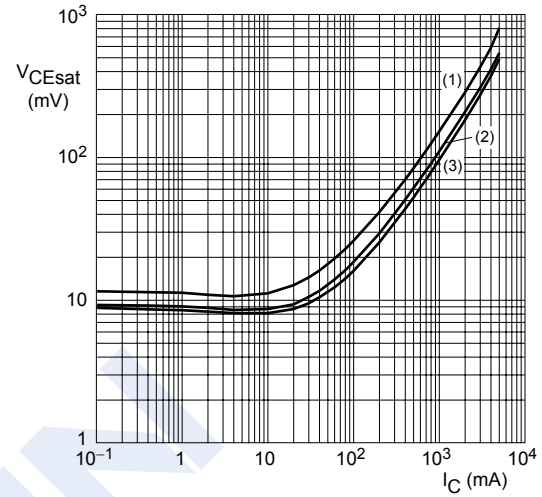
#### ■ Typical Characteristics



$I_C/I_B = 10$ .

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

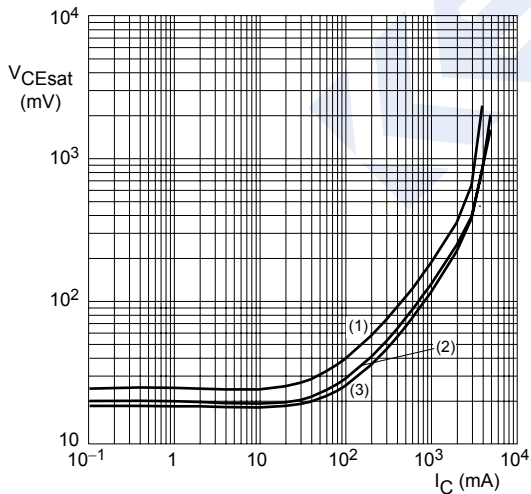
Fig.5 Collector-emitter saturation voltage as a function of collector current; typical values.



$I_C/I_B = 20$ .

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

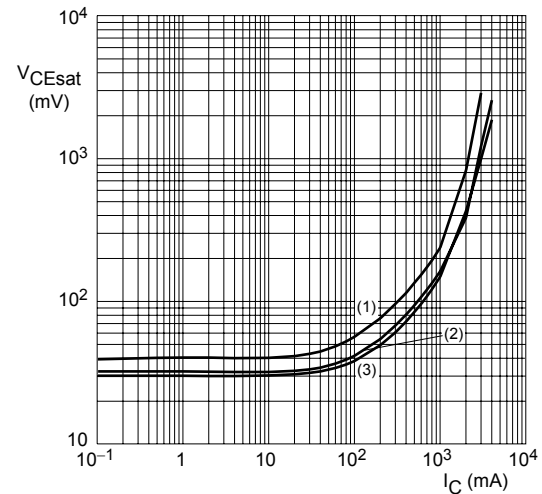
Fig.6 Collector-emitter saturation voltage as a function of collector current; typical values.



$I_C/I_B = 50$ .

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

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



$I_C/I_B = 100$ .

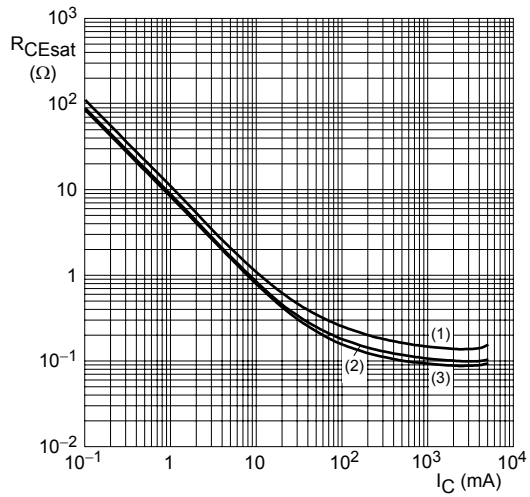
(1)  $T_{amb} = 150^\circ\text{C}$ . (2)  $T_{amb} = 25^\circ\text{C}$ . (3)  $T_{amb} = -55^\circ\text{C}$ .

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

## NPN Transistors

### PBSS4350T (KBSS4350T)

#### ■ Typical Characteristics



$I_C/I_B = 20$ .

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

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