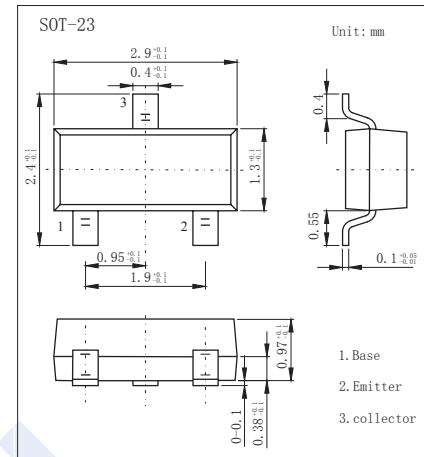
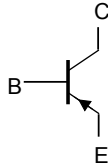


## PNP Transistors

## PBSS5160T-HF (KBSS5160T-HF)

## ■ Features

- Low collector-emitter saturation voltage  $V_{CEsat}$
- High collector current capability:  $I_C$  and  $I_{CM}$
- High efficiency, reduces heat generation
- Reduces printed-circuit board area required
- Pb-Free Package May be Available. The G-Suffix Denotes a Pb-Free Lead Finish

■ Absolute Maximum Ratings  $T_a = 25^\circ\text{C}$ 

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	$V_{CBO}$	-80	V
Collector - Emitter Voltage	$V_{CEO}$	-60	
Emitter - Base Voltage	$V_{EBO}$	-5	
Collector Current - Continuous	$I_C$	-0.9	A
		-1	
Collector Current - Pulse	$I_{CP}$	-2	
Base Current	$I_B$	-0.3	
Base Current - Pulse	$I_{BP}$	-1	
Collector Power Dissipation	$P_C$	270	mW
		400	W
		1.25	
Thermal Resistance From Junction to Ambient	$R_{\theta JA}$	465	$^\circ\text{C}/\text{W}$
		312	
		100	
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature range	$T_{stg}$	-65 to 150	

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

Note.2 : Device mounted on an FR4 printed-circuit board, single-sided copper, tin-plated and  $1\text{ cm}^2$  collector mounting pad.

Note.3 : Operated under pulsed conditions: duty cycle  $\delta \leq 20\%$ , pulse width  $t_p \leq 10\text{ ms}$ .

## PNP Transistors

## PBSS5160T-HF (KBSS5160T-HF)

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	$V_{CB0}$	$I_C = -100 \mu\text{A}$ , $I_E = 0$	-80			V
Collector- emitter breakdown voltage	$V_{CE0}$	$I_C = -1 \text{ mA}$ , $I_B = 0$	-60			
Emitter - base breakdown voltage	$V_{EB0}$	$I_E = -100 \mu\text{A}$ , $I_C = 0$	-5			
Collector-base cut-off current	$I_{CB0}$	$V_{CB} = -60 \text{ V}$ , $I_E = 0$			-100	nA
		$V_{CB} = -60 \text{ V}$ , $I_E = 0$ , $T_J = 150^\circ\text{C}$			-50	$\mu\text{A}$
Collector- emitter cut-off current	$I_{CES}$	$V_{CE} = -60 \text{ V}$ , $I_E = 0$			-100	nA
Emitter cut-off current	$I_{EBO}$	$V_{EB} = -5 \text{ V}$ , $I_C = 0$			-100	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -100 \text{ mA}$ , $I_B = -1 \text{ mA}$			-160	mV
		$I_C = -500 \text{ mA}$ , $I_B = -50 \text{ mA}$			-175	
		$I_C = -1 \text{ A}$ , $I_B = -100 \text{ mA}$ (Note.1)			-330	
Base - emitter saturation voltage	$V_{BE(sat)}$	$I_C = -1 \text{ A}$ , $I_B = -50 \text{ mA}$			-1.1	V
Base - emitter turn-on voltage	$V_{BE(on)}$	$V_{CE} = -5 \text{ V}$ , $I_C = -1 \text{ A}$			-0.9	
Equivalent on-resistance	$R_{CE(sat)}$	$I_C = -1 \text{ A}$ , $I_B = -100 \text{ mA}$ (Note.1)			330	$\text{m}\Omega$
DC current gain	$h_{FE}$	$V_{CE} = -5 \text{ V}$ , $I_C = -1 \text{ mA}$	200	350		
		$V_{CE} = -5 \text{ V}$ , $I_C = -500 \text{ mA}$	150	250		
		$V_{CE} = -5 \text{ V}$ , $I_C = -1 \text{ A}$	100	160		
Collector output capacitance	$C_{ob}$	$V_{CB} = -10 \text{ V}$ , $I_E = I_C = 0$ , $f = 1 \text{ MHz}$			15	pF
Transition frequency	$f_T$	$V_{CE} = -10 \text{ V}$ , $I_C = -50 \text{ mA}$ , $f = 100 \text{ MHz}$	150	220		MHz

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

## ■ Marking

Marking	U6* <sub>F</sub>
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## ■ Typical Characteristics

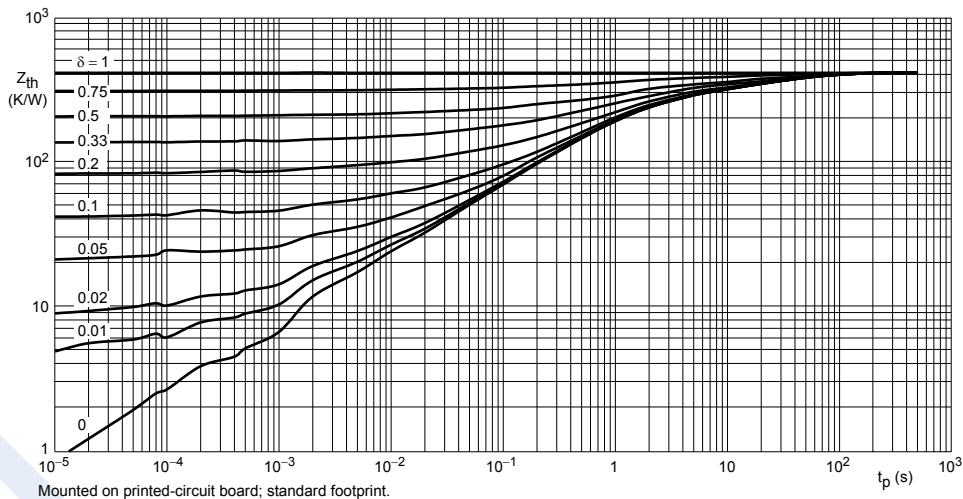


Fig.1 Transient thermal impedance as a function of pulse time; typical values.

### PNP Transistors

### PBSS5160T-HF (KBSS5160T-HF)

■ Typical Characteristics

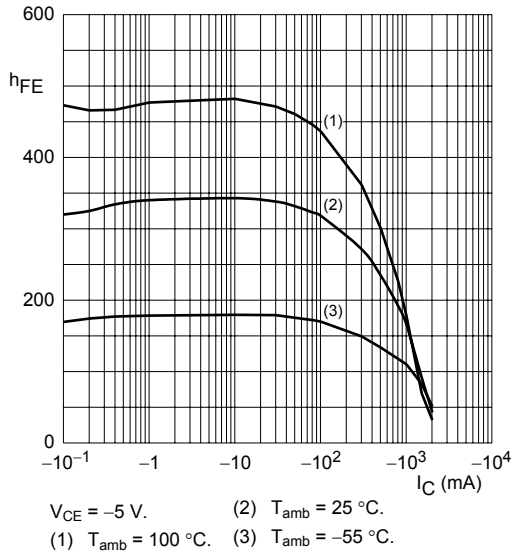


Fig.2 DC current gain as a function of collector current; typical values.

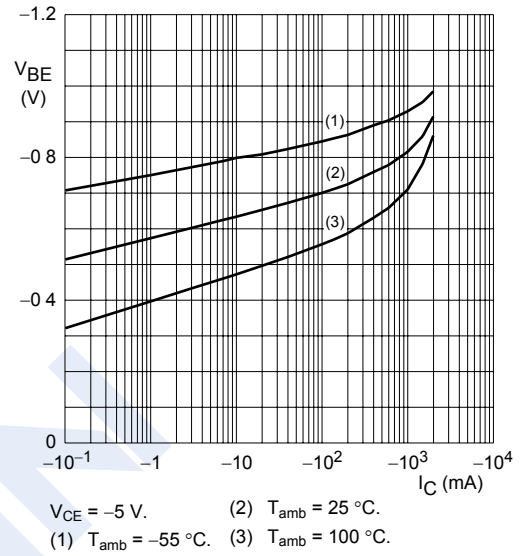


Fig.3 Base-emitter voltage as a function of collector current; typical values.

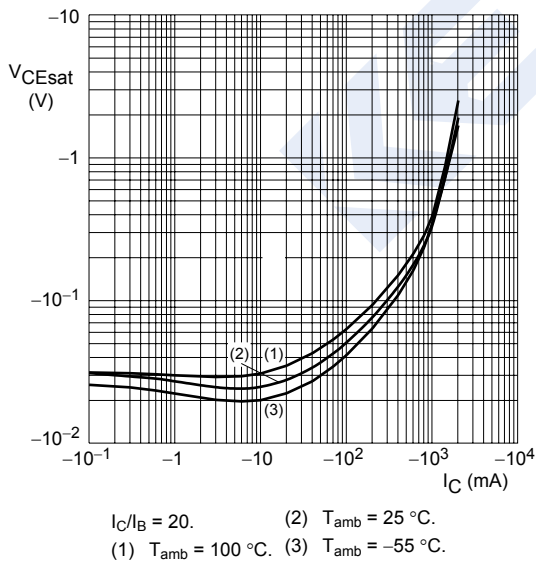


Fig.4 Collector-emitter saturation voltage as a function of collector current; typical values.

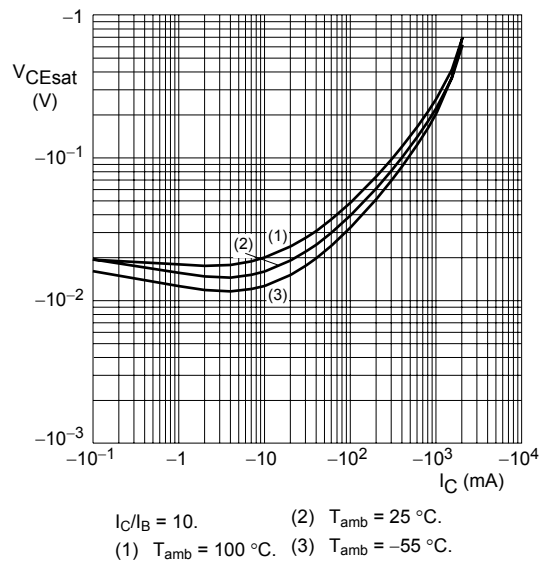
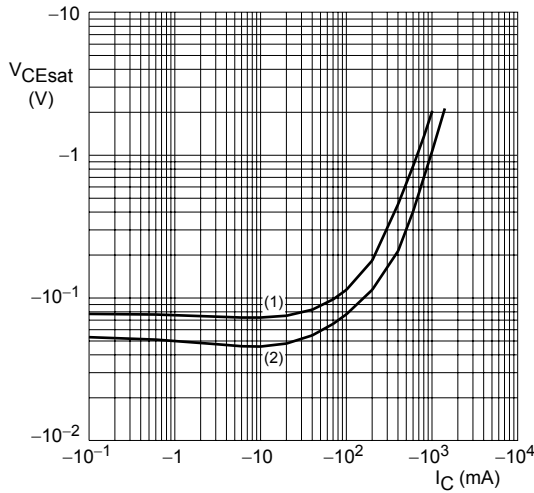


Fig.5 Collector-emitter saturation voltage as a function of collector current; typical values.

### PNP Transistors

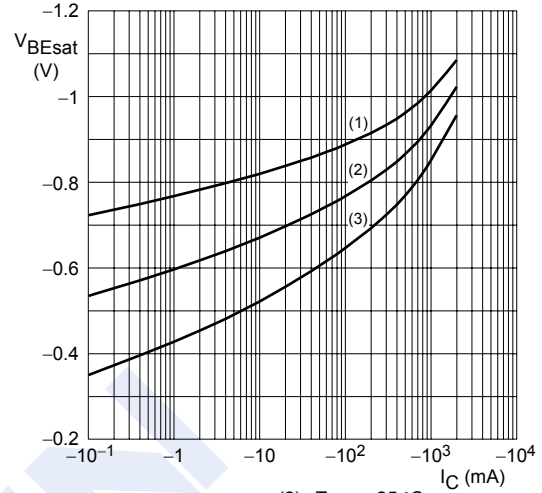
### PBSS5160T-HF (KBSS5160T-HF)

■ Typical Characteristics



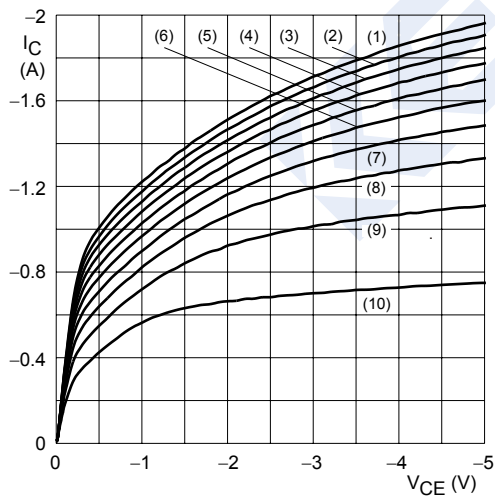
$T_{amb} = 25\text{ }^{\circ}\text{C}$ .  
 (1)  $I_C/I_B = 100$ . (2)  $I_C/I_B = 50$ .

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



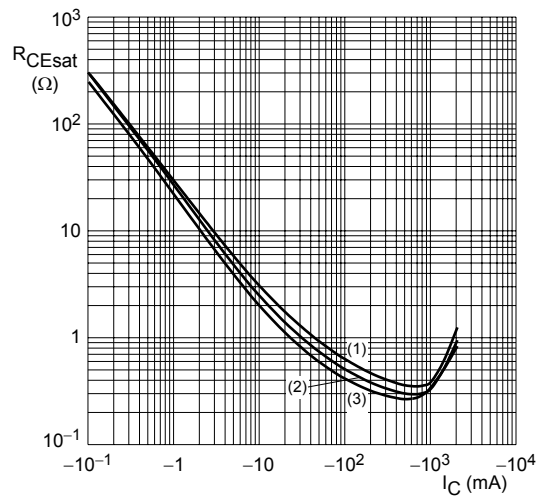
$I_C/I_B = 20$ .  
 (1)  $T_{amb} = -55\text{ }^{\circ}\text{C}$ . (2)  $T_{amb} = 25\text{ }^{\circ}\text{C}$ . (3)  $T_{amb} = 100\text{ }^{\circ}\text{C}$ .

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



$T_{amb} = 25\text{ }^{\circ}\text{C}$ .  
 (1)  $I_B = -40\text{ mA}$ . (5)  $I_B = -24\text{ mA}$ . (9)  $I_B = -8\text{ mA}$ .  
 (2)  $I_B = -36\text{ mA}$ . (6)  $I_B = -20\text{ mA}$ . (10)  $I_B = -4\text{ mA}$ .  
 (3)  $I_B = -32\text{ mA}$ . (7)  $I_B = -16\text{ mA}$ .  
 (4)  $I_B = -28\text{ mA}$ . (8)  $I_B = -12\text{ mA}$ .

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



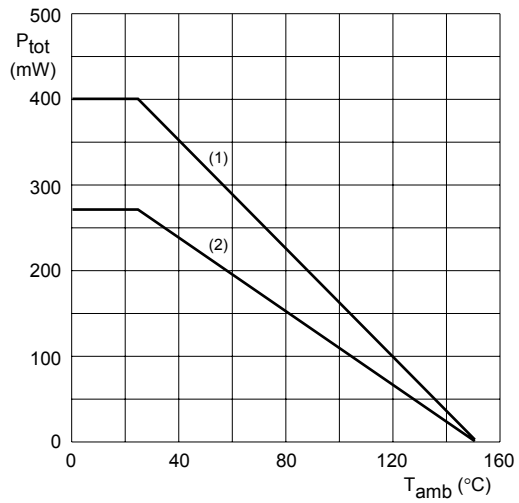
$I_C/I_B = 20$ .  
 (1)  $T_{amb} = 100\text{ }^{\circ}\text{C}$ . (2)  $T_{amb} = 25\text{ }^{\circ}\text{C}$ . (3)  $T_{amb} = -55\text{ }^{\circ}\text{C}$ .

Fig.9 Equivalent on-resistance as a function of collector current; typical values.

## PNP Transistors

## PBSS5160T-HF (KBSS5160T-HF)

## ■ Typical Characteristics



- (1) Device mounted with 1 cm<sup>2</sup> collector tab.
- (2) Device mounted on standard footprint.

Fig.10 Power derating curves.