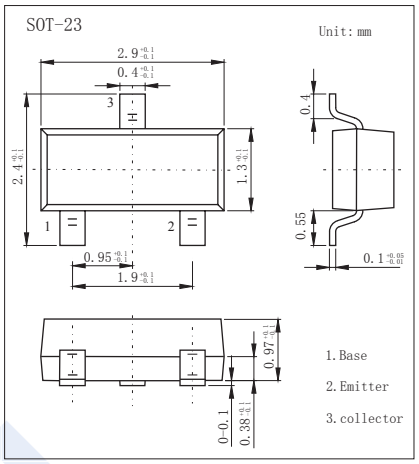
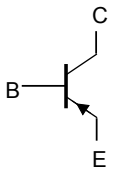
PNP Transistors

PBSS5160T (KBSS5160T)



■ 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



■ Absolute Maximum Ratings Ta = 25℃

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	Note.1	I_C	-0.9	A
	Note.2		-1	
Collector Current - Pulse		I_{CP}	-2	
Base Current		I_B	-0.3	
Base Current - Pulse		I_{BP}	-1	
Collector Power Dissipation	Note.1	P_C	270	mW
	Note.2		400	
	Note.3		1.25	W
Tthermal Resistance From Junction to Ambient	Note.1	$R_{\theta JA}$	465	℃/W
	Note.2		312	
	Note.3		100	
Junction Temperature		T_J	150	℃
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 cm^2 collector mounting pad.

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

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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	-80			V
Collector- emitter breakdown voltage	V_{CEO}	I_C= -1 mA, I_B=0	-60			
Emitter - base breakdown voltage	V_{EBO}	I_E= -100 uA, I_C=0	-5			
Collector-base cut-off current	I_{CBO}	V_{CB}= -60 V , I_E=0			-100	nA
		V_{CB}= -60 V , I_E=0 , T_J=150℃			-50	uA
Collector- emittercut-off current	I_{CES}	V_{CE}= -60 V , I_E=0			-100	nA
Emitter cut-off current	I_{EBO}	V_{EB}= -5V , I_C=0			-100	
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=-100 mA, I_B=-1mA			-160	mV
		I_C=-500 mA, I_B=-50mA			-175	
		I_C=-1 A, I_B=-100mA (Note.1)			-330	
Base - emitter saturation voltage	$V_{BE(sat)}$	I_C=-1 A, I_B=-50mA			-1.1	V
Base - emitter turn-on voltage	$V_{BE(on)}$	V_{CE}= -5V, I_C= -1A			-0.9	
Equivalent on-resistance	$R_{CE(sat)}$	I_C=-1 A, I_B=-100mA (Note.1)			330	mΩ
DC current gain	h_{FE}	V_{CE}= -5V, I_C= -1mA	200	350		
		V_{CE}= -5V, I_C= -500mA	150	250		
		V_{CE}= -5V, I_C= -1A	100	160		
Collector output capacitance	C_{ob}	V_{CB}= -10V, I_E=i_e=0,f=1MHz			15	pF
Transition frequency	f_T	V_{CE}= -10V, I_C= -50mA,f=100MHz	150	220		MHz

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

■ Marking

Marking	U6*

■ Typical Characterisitics

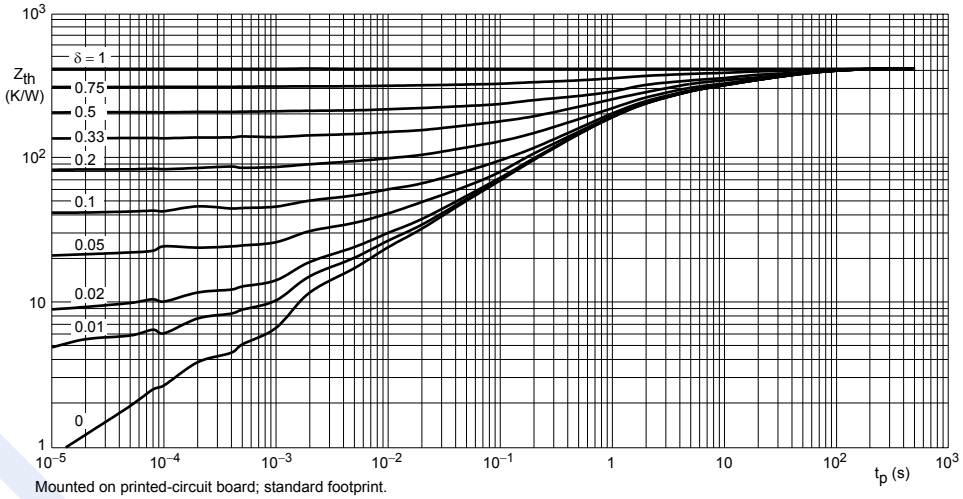

Fig.1 Transient thermal impedance as a function of pulse time; typical values.

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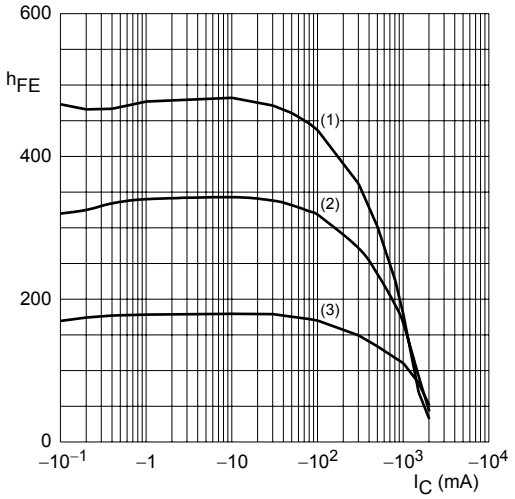
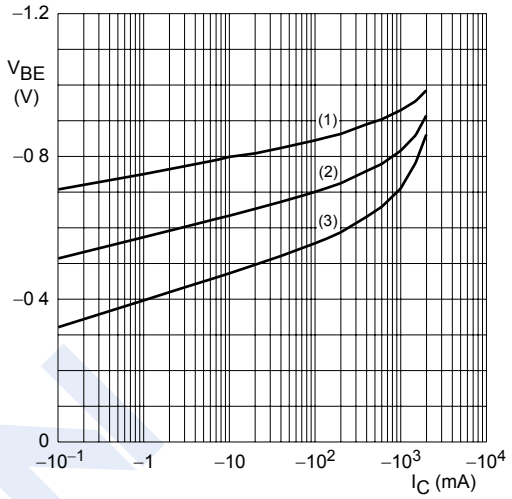
■ Typical Characterisitics



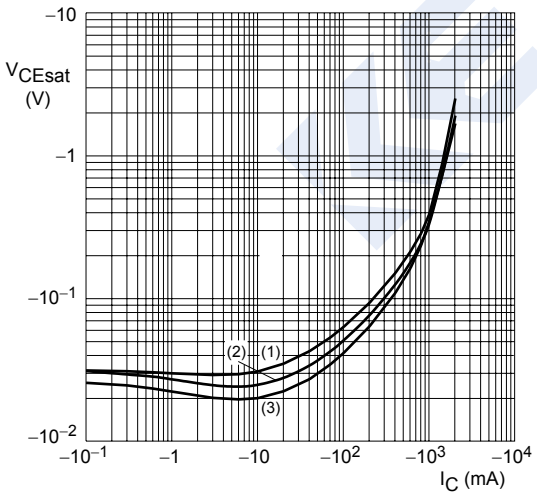
V_{CE} = −5 V. (2) T_{amb} = 25 °C.
(1) T_{amb} = 100 °C. (3) T_{amb} = −55 °C.

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



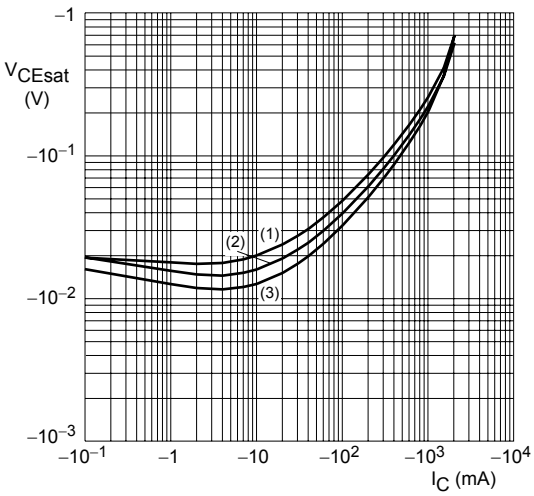
V_{CE} = −5 V. (2) T_{amb} = 25 °C.
(1) T_{amb} = −55 °C. (3) T_{amb} = 100 °C.

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



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

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



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

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

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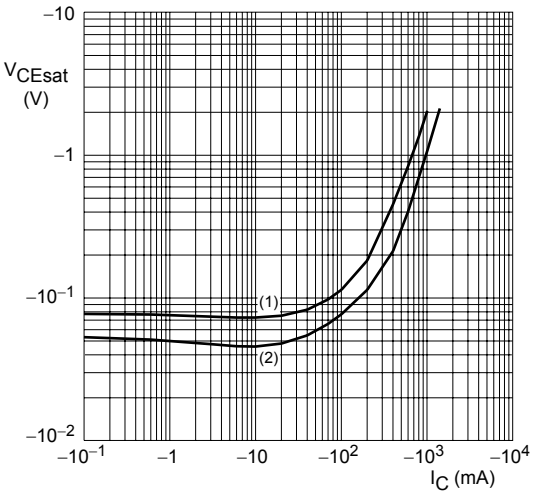
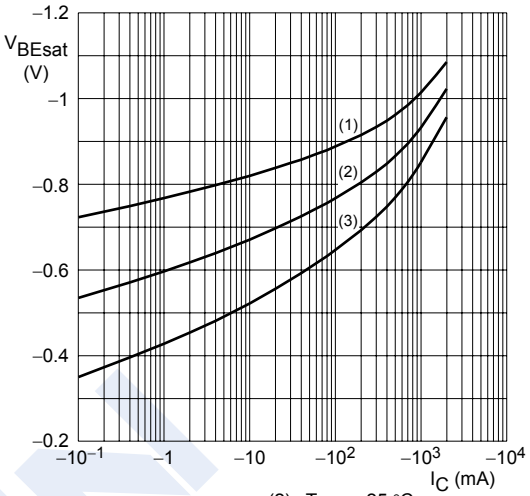
■ Typical Characterisitics



T_{amb} = 25 °C.

(1) I_C/I_B = 100. (2) I_C/I_B = 50.

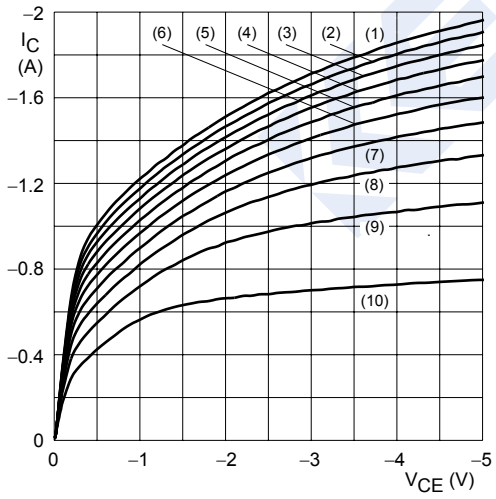
Fig.6 Collector-emitter saturation voltage as a function of collector current; typical values.



I_C/I_B = 20.

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

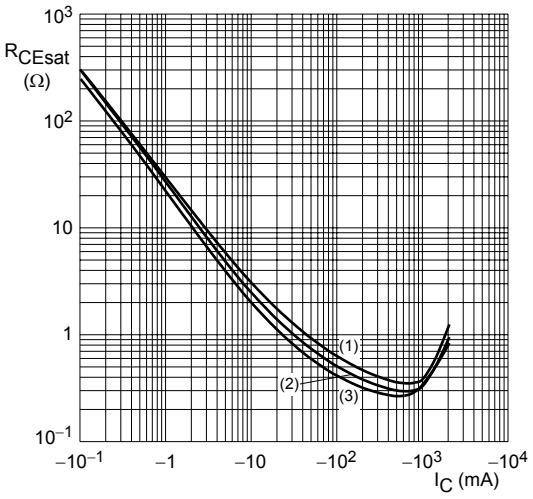
Fig.7 Base-emitter saturation voltage as a function of collector current; typical values.



T_{amb} = 25 °C.

(1) I_B = −40 mA.
(2) I_B = −36 mA.
(3) I_B = −32 mA.
(4) I_B = −28 mA.
(5) I_B = −24 mA.
(6) I_B = −20 mA.
(7) I_B = −16 mA.
(8) I_B = −12 mA.
(9) I_B = −8 mA.
(10) I_B = −4 mA.

Fig.8 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.9 Equivalent on-resistance as a function of collector current; typical values.

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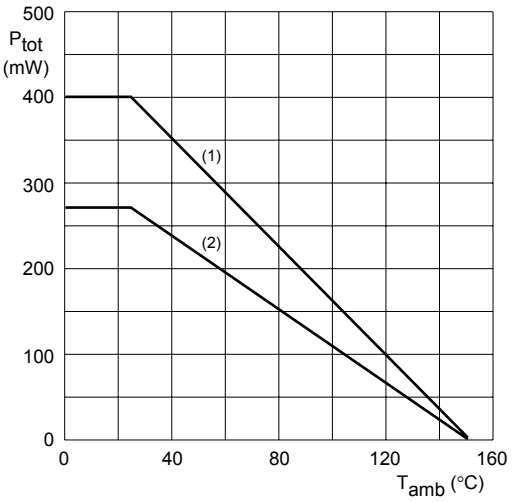
■ Typical Characterisitics



(1) Device mounted with 1 cm^2 collector tab.
(2) Device mounted on standard footprint.

Fig.10 Power derating curves.