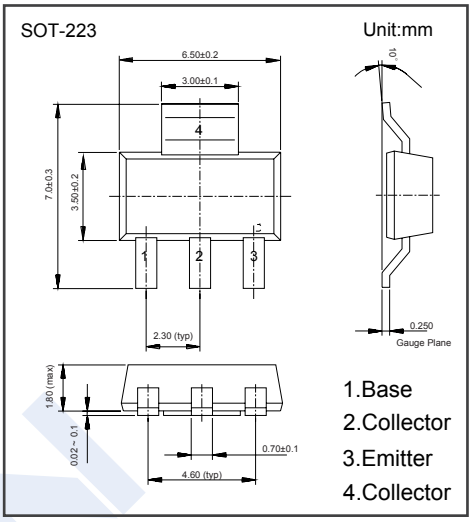
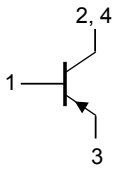
PNP Transistors

PBSS5540Z (KBSS5540Z)



■ Features

- Low collector-emitter saturation voltage
- High current capability
- Improved device reliability due to reduced heat generation.



■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CBO}	-40	V
Collector - Emitter Voltage	V_{CEO}	-40	
Emitter - Base Voltage	V_{EBO}	-6	
Collector Current - Continuous	I_C	-5	A
Peak Collector Current	I_{CM}	-10	
Peak Base Current	I_{BM}	-2	
Collector Power Dissipation (Note.1)	P_C	1.35	W
(Note.2)		2	
thermal resistance from junction to ambient (Note.3)	$R_{th\ j\text{-}a}$	92	K/W
Junction Temperature	T_J	150	℃
Storage Temperature range	T_{stg}	-65 to 150	

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

Note.2:Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 6 cm^2 .
For other mounting conditions, see “Thermal considerations for SOT223 in the General Part of associated HandBook"

Note.3:Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1 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	-40			V
Collector- emitter breakdown voltage	V_{CEO}	I_C= -1 mA， I_B=0	-40			
Emitter - base breakdown voltage	V_{EBO}	I_E= -100μA， I_C=0	-6			
Collector-base cut-off current	I_{CBO}	V_{CB}= -30 V , I_E=0			-100	nA
		V_{CB}= -30 V , I_E=0; Tj=150℃			-50	uA
Emitter cut-off current	I_{EBO}	V_{EB}= -5V , I_C=0			-100	nA
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=-500 mA, I_B=-5 mA		-80	-120	mV
		I_C=-1A, I_B=-10mA		-120	-170	
		I_C=-2A, I_B=-200mA		-110	-160	
		I_C=-5A, I_B=-500mA		-250	-375	
Equivalent on-resistance	$R_{CE(sat)}$	I_C=-2A, I_B=-500mA (Note.1)		＜55	＜80	mΩ
Base - emitter saturation voltage	$V_{BE(sat)}$	I_C= -5A, I_B=- 500mA			-1.3	V
Base - emitter turn-on voltage	$V_{BE(on)}$	V_{CE}= -2V, I_C= -2A		-0.8	-1.25	
DC current gain	$h_{FE(1)}$	V_{CE}= -2V, I_C= -500mA	250	350		
	$h_{FE(2)}$	V_{CE}=- 2V, I_C= -1A (Note.1)	200	300		
	$h_{FE(3)}$	V_{CE}=- 2V, I_C= -2A (Note.1)	150	250		
	$h_{FE(4)}$	V_{CE}=- 2V, I_C= -5A (Note.1)	50	150		
Collector capacitance	C_C	V_{CB}= -10V, I_E=I_e=0 ,f=1MHz		90	105	pF
Transition frequency	f_T	V_{CE}= -10V, I_C= -100mA,f=100MHz	60	120		MHz

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

■ Marking

Marking	PB5540

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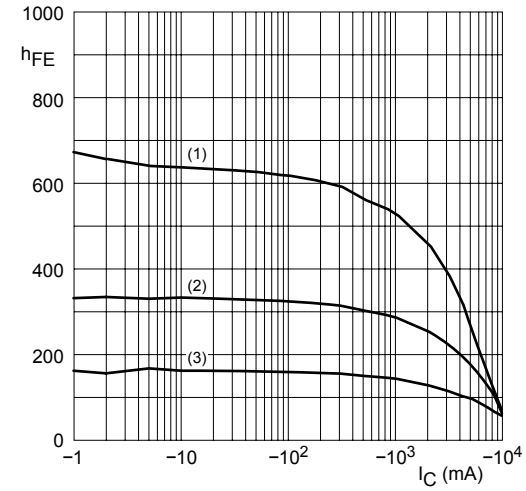
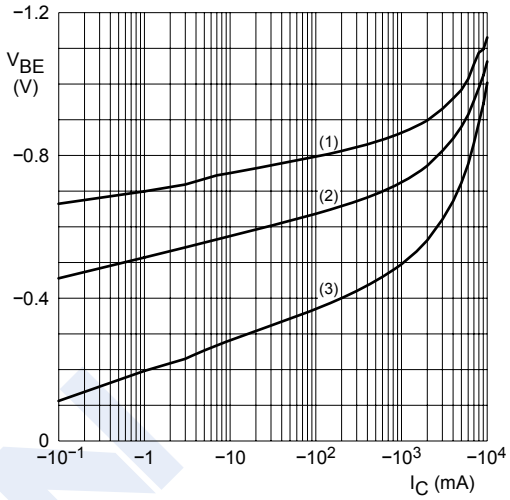
■ Typical Characterisitics



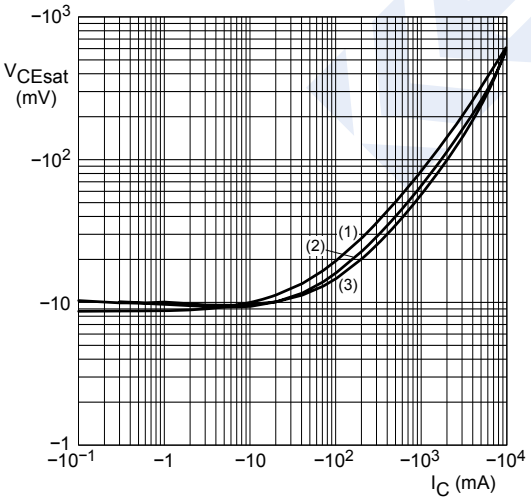
V_{CE} = −2 V.
(1) T_{amb} = 150 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = −55 °C.

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



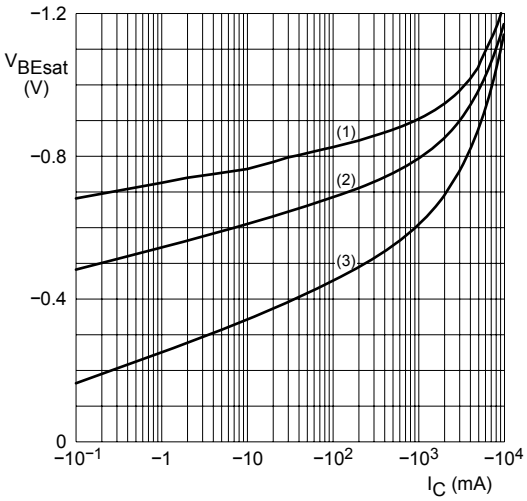
V_{CE} = −2 V.
(1) T_{amb} = 150 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = −55 °C.

Fig.2 Base-emitter 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.3 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.4 Base-emitter saturation voltage as a function of collector current; typical values.

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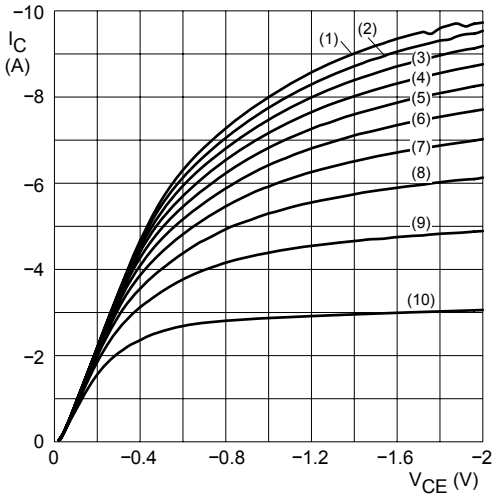
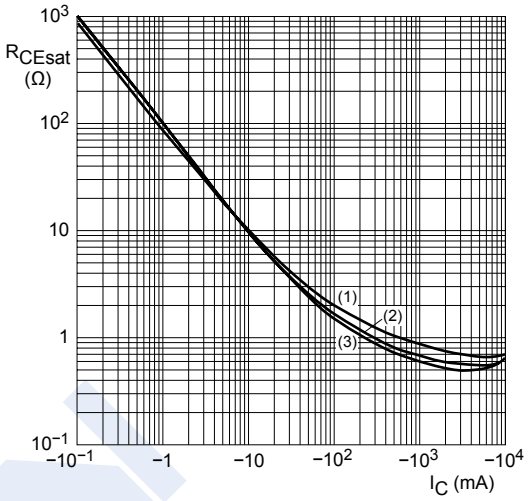
■ Typical Characterisitics



T_{amb} = 25 °C.

(1) I_B = −150 mA.
(2) I_B = −135 mA.
(3) I_B = −120 mA.
(4) I_B = −105 mA.
(5) I_B = −90 mA.
(6) I_B = −75 mA.
(7) I_B = −60 mA.
(8) I_B = −45 mA.
(9) I_B = −30 mA.
(10) I_B = −15 mA.

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