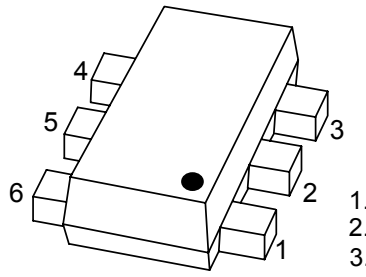
PNP Transistors

PBSS5240V (KBSS5240V)

SOT523-6(SOT666)

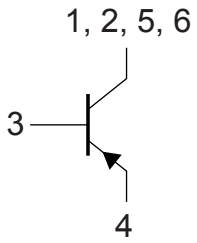


1.collector
2.collector
3.base
4.emitter
5.collector
6.collector

Top view

■ Features

- Low collector-emitter saturation voltage V_{CEsat}
- High collector current capability I_C and I_{CM}
- High collector current gain (h_{FE}) at high I_C
- High efficiency leading to reduced heat generation
- Reduced printed-circuit board area requirements.



■ 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}	-5	
Collector Current - Continuous (Note.1)	I_C	-1.8	A
Peak Collector Current	I_{CM}	-3	
Peak Repetitive Collector Current (Note.2)	I_{CRP}	-2	
Base Current (DC)	I_B	-300	mA
Peak Base Current	I_{BM}	-1	A
Collector Power Dissipation Ta ≤ 25℃ (Note.3)	P_C	300	mW
Ta ≤ 25℃ (Note.4)		500	
Ta ≤ 25℃ (Note.1)		900	
Ta ≤ 25℃ (Note.2 and 3)		1.2	W
thermal resistance from junction to ambient (Note.3)	$R_{th\ j\text{-}a}$	410	K/W
(Note.4)		215	
(Note.1)		140	
(Note.1 and 3)		110	
Junction Temperature	T_J	150	℃
Storage Temperature range	T_{stg}	-65 to 150	

Note.1: Device mounted on a ceramic circuit board, Al_2O_3, standard footprint.

Note.2: Operated under pulsed conditions: duty cycle δ ≤ 20%, pulse width tp ≤ 30 ms.

Note.3: Device mounted on a printed-circuit board, single-sided copper, tinplated, standard footprint.

Note.4: Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1 cm2.

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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= -100 μ A, I_C=0	-5			
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
Collector- Emitter cut-off current	I_{CEO}	V_{CE}= -30 V , I_B=0			-100	nA
Emitter cut-off current	I_{EBO}	V_{EB}= -5V , I_C=0			-100	nA
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=-100 mA, I_B=-1mA		-80	-120	mV
		I_C=-500mA, I_B=-50mA		-100	-145	
		I_C=-1A, I_B=-100mA (Note.1)		-180	-250	
		I_C=-2A, I_B=-200mA		-370	-530	
Equivalent on-resistance	$R_{CE(sat)}$	I_C=-1A, I_B=-100mA (Note.1)		180	＜250	mΩ
Base - emitter saturation voltage	$V_{BE(sat)}$	I_C= -1A, I_B=- 100mA			-1.1	V
Base - emitter turn-on voltage	$V_{BE(on)}$	V_{CE}= -5V, I_C= -1A			-1	
DC current gain	$h_{FE(1)}$	V_{CE}= -5V, I_C= -1mA	300			
	$h_{FE(2)}$	V_{CE}=- 5V, I_C= -100mA	300		800	
	$h_{FE(3)}$	V_{CE}=- 5V, I_C= -500mA	250			
	$h_{FE(4)}$	V_{CE}=- 5V, I_C= -1A	160			
	$h_{FE(5)}$	V_{CE}=- 5V, I_C= -2A (Note.1)	50			
Collector capacitance	C_C	V_{CB}= -10V, I_E=I_e=0 ,f=1MHz			12	pF
Transition frequency	f_T	V_{CE}= -10V, I_C= -50mA,f=100MHz	150			MHz

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

■ Marking

Marking	52

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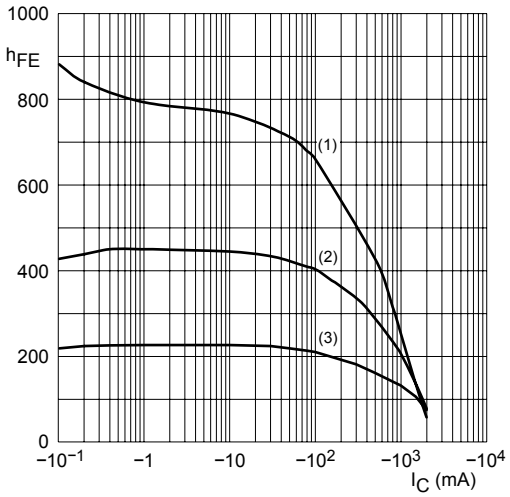
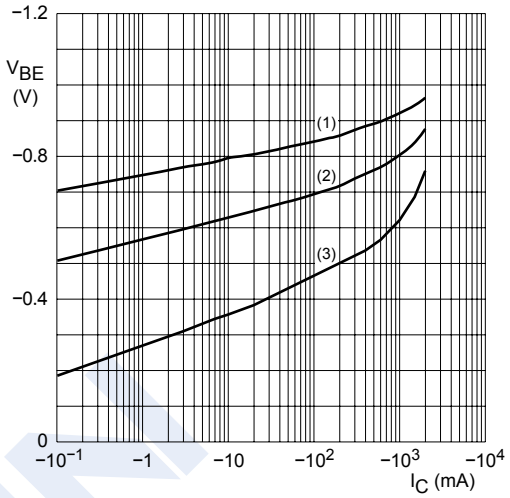
■ Typical Characterisitics



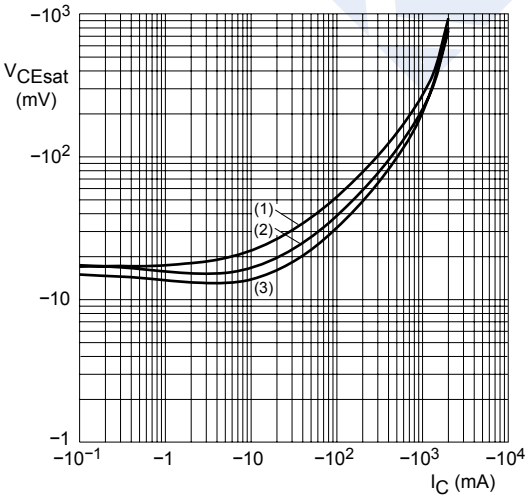
V_{CE} = −5 V.
(1) T_{amb} = 150 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = −55 °C.

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



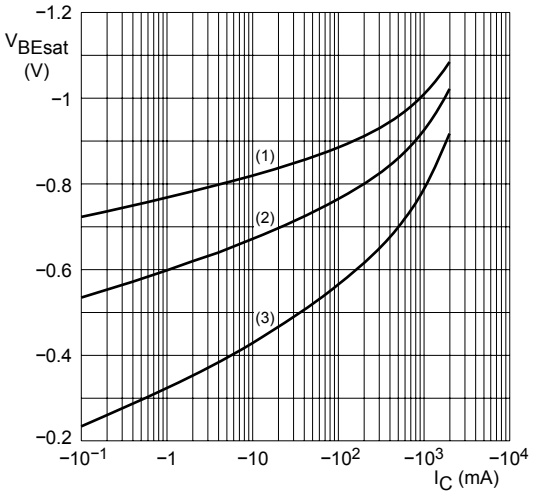
V_{CE} = −5 V.
(1) T_{amb} = −55 °C.
(2) T_{amb} = 25 °C.
(3) T_{amb} = 150 °C.

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



I_C/I_B = 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} = −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.

PNP Transistors

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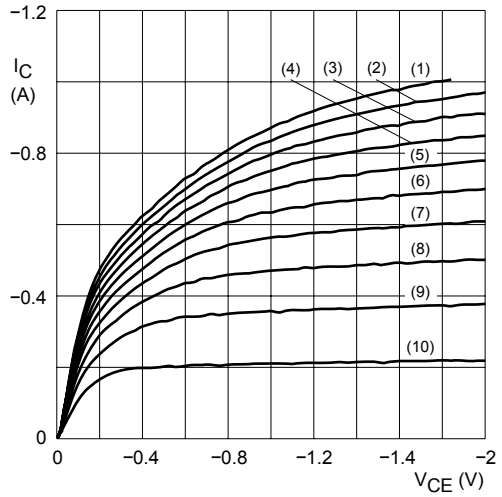
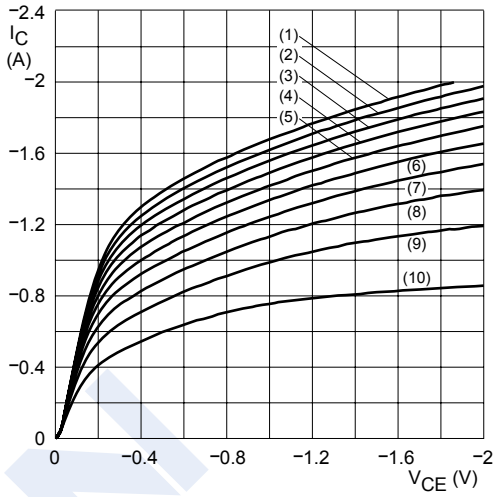
■ Typical Characterisitics



T_{amb} = 25 °C.

(1) I_B = −7 mA.
(2) I_B = −6.3 mA.
(3) I_B = −5.6 mA.
(4) I_B = −4.9 mA.
(5) I_B = −4.2 mA.
(6) I_B = −3.5 mA.
(7) I_B = −2.8 mA.
(8) I_B = −2.1 mA.
(9) I_B = −1.4 mA.
(10) I_B = −0.7 mA.

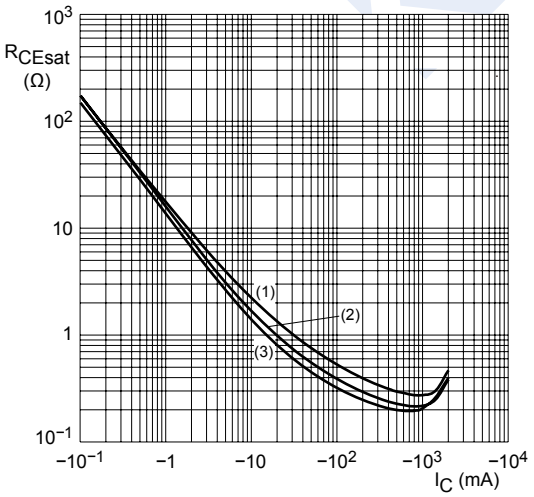
Fig.5 Collector current as a function of collector-emitter voltage; typical values.



T_{amb} = 25 °C.

(1) I_B = −50 mA.
(2) I_B = −45 mA.
(3) I_B = −40 mA.
(4) I_B = −35 mA.
(5) I_B = −30 mA.
(6) I_B = −25 mA.
(7) I_B = −20 mA.
(8) I_B = −15 mA.
(9) I_B = −10 mA.
(10) I_B = −5 mA.

Fig.6 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.7 Collector-emitter equivalent on-resistance as a function of collector current; typical values.

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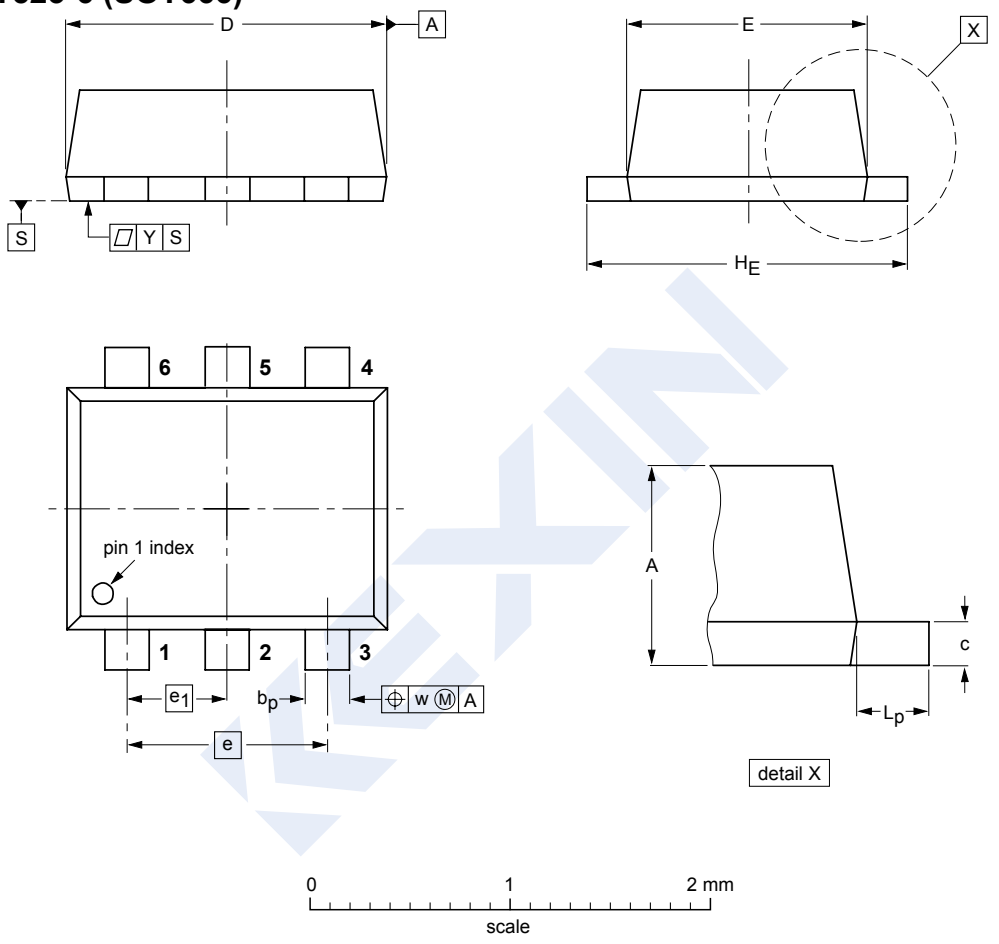
■ Typical Applicationr

PACKAGE OUTLINE

Plastic surface mounted package; 6 leads

SOT523-6 (SOT666)



DIMENSIONS (mm are the original dimensions)

UNIT	A	b_p	c	D	E	e	e_1	H_E	L_p	w	y
mm	0.6 0.5	0.27 0.17	0.18 0.08	1.7 1.5	1.3 1.1	1.0	0.5	1.7 1.5	0.3 0.1	0.1	0.1