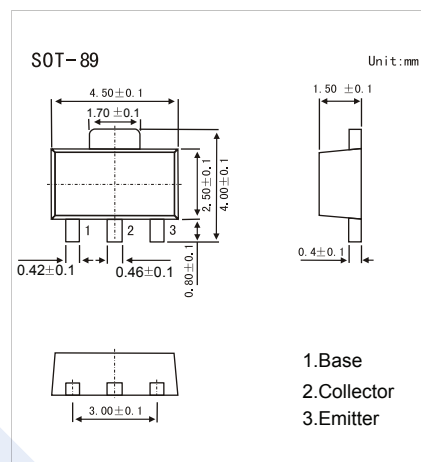


PNP Transistor

PBSS5350X (KBSS5350X)

■ Features

- Low collector-emitter saturation voltage V_{CEsat}
- High collector current capability: I_c and I_{CM}
- Higher efficiency leading to less heat generation
- Reduced printed-circuit board requirements.

■ Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$ unless otherwise noted)

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 (DC)	Note 4	I_c	-3	A
Peak collector current	Limited by $T_{j(max)}$	I_{CM}	-5	
Base current (DC)		I_B	-0.5	
Collector power dissipation	Note 1	P_{tot}	0.55	W
	Note 2		1	
	Note 3		1.4	
	Note 4		1.6	
Thermal resistance junction to ambient	Note 1	$R_{th(j-a)}$	225	$^\circ\text{C/W}$
	Note 2		125	
	Note 3		90	
	Note 4		80	
Thermal resistance from junction to soldering point		$R_{th(j-s)}$	16	
Junction temperature		T_J	150	$^\circ\text{C}$
Storage temperature range		T_{stg}	-65 to 150	

Notes:

- 1.Device mounted on a FR4 printed-circuit board; single-sided copper; tin-plated; standard footprint.
- 2.Device mounted on a FR4 printed-circuit board; single-sided copper; tin-plated; mounting pad for collector 1 cm^2 .
- 3.Device mounted on a FR4 printed-circuit board; single-sided copper; tin-plated; mounting pad for collector 6 cm^2 .
- 4.Device mounted on a ceramic printed-circuit board 7 cm^2 , single-sided copper, tin-plated.

PNP Transistor

PBSS5350X (KBSS5350X)

■ Electrical Characteristics (Ta = 25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	V _{CBO}	I _C = -100 μ A, I _E = 0	-50			V
Collector- emitter breakdown voltage	V _{CEO}	I _C = -1 mA, I _B = 0	-50			
Emitter - base breakdown voltage	V _{EBO}	I _E = -100 μ A, I _C = 0	-5			
Collector-base cut-off current	I _{CBO}	V _{CB} = -50 V, I _E = 0			-100	nA
		V _{CB} = -50 V, I _E = 0; T _j = 150°C			-50	μ A
Collector- emitter cut-off current	I _{CES}	V _{CB} = -50 V, V _{BE} = 0 V			-100	nA
Emitter cut-off current	I _{EBO}	V _{EB} = -5V, I _C = 0			-100	
Collector-emitter saturation voltage	V _{CE(sat)}	I _C = -0.5 A, I _B = -50 mA			-90	mV
		I _C = -1 A, I _B = -50 mA			-180	
		I _C = -2 A, I _B = -100 mA			-320	
		I _C = -2 A, I _B = -200 mA; Note 1			-270	
		I _C = -3 A, I _B = -300 mA; Note 1			-390	
Base - emitter saturation voltage	V _{BE(sat)}	I _C = -2 A, I _B = -100 mA			-1.1	V
		I _C = -3 A, I _B = -300 mA; Note 1			-1.2	
Base-emitter turn-on voltage	V _{BE(on)}	V _{CE} = -2 V, I _C = -1A	-1.1			
Equivalent on-resistance	R _{CEsat}	I _C = -2 A, I _B = -200 mA; Note 1			135	m Ω
DC current gain	h _{FE}	V _{CE} = -2 V, I _C = -0.1A	200			
		V _{CE} = -2 V, I _C = -0.5A	200			
		V _{CE} = -2 V, I _C = -1A; Note 1	200		450	
		V _{CE} = -2 V, I _C = -2A; Note 1	130			
		V _{CE} = -2 V, I _C = -3A; Note 1	80			
Transition frequency	f _T	I _C = -100 mA; V _{CE} = -5 V; f = 100 MHz	100			MHz
Collector capacitance	C _c	V _{CB} = -10 V; I _E = I _C = 0 A; f = 1 MHz			35	pF

Note 1. Pulse test: t_p ≤ 300 μ s; δ ≤ 0.02.

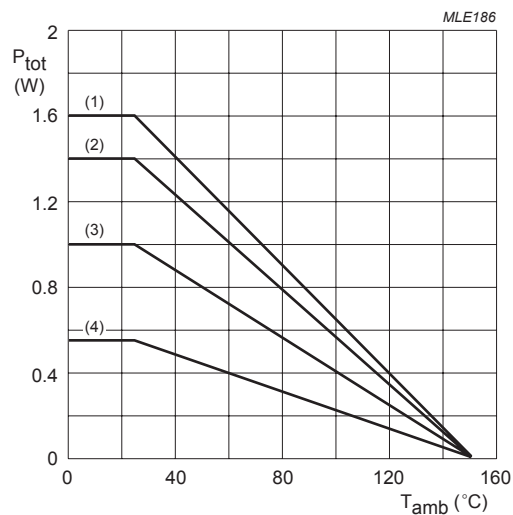
■ Marking

Marking	S46
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PNP Transistor

PBSS5350X (KBSS5350X)

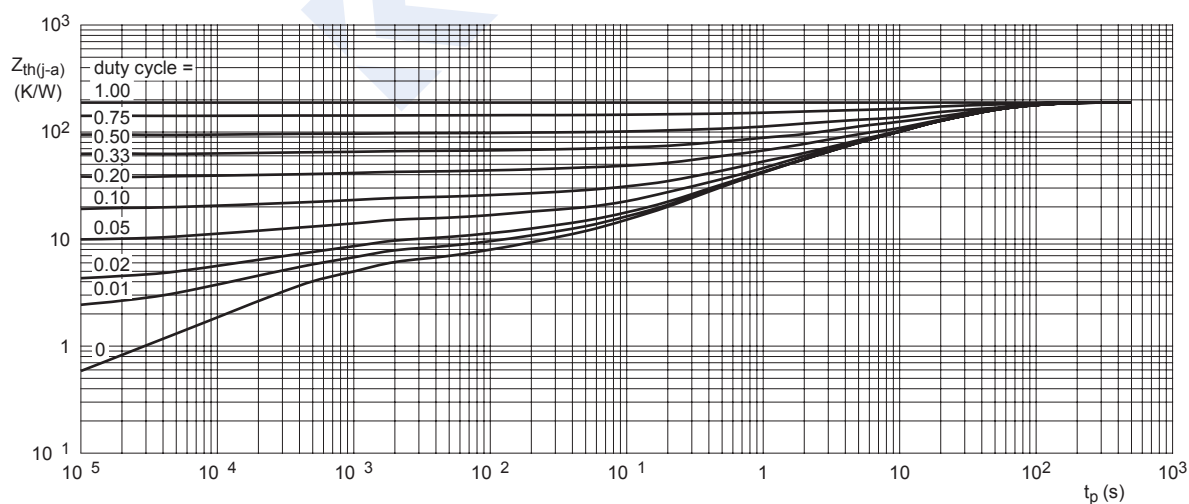
■ Typical Characteristics



(1) Ceramic PCB; 7 cm² mounting pad for collector.
 (2) FR4 PCB; 6 cm² copper mounting pad for collector.

(3) FR4 PCB; 1 cm² copper mounting pad for collector.
 (4) Standard footprint.

Fig.1 Power derating curves.

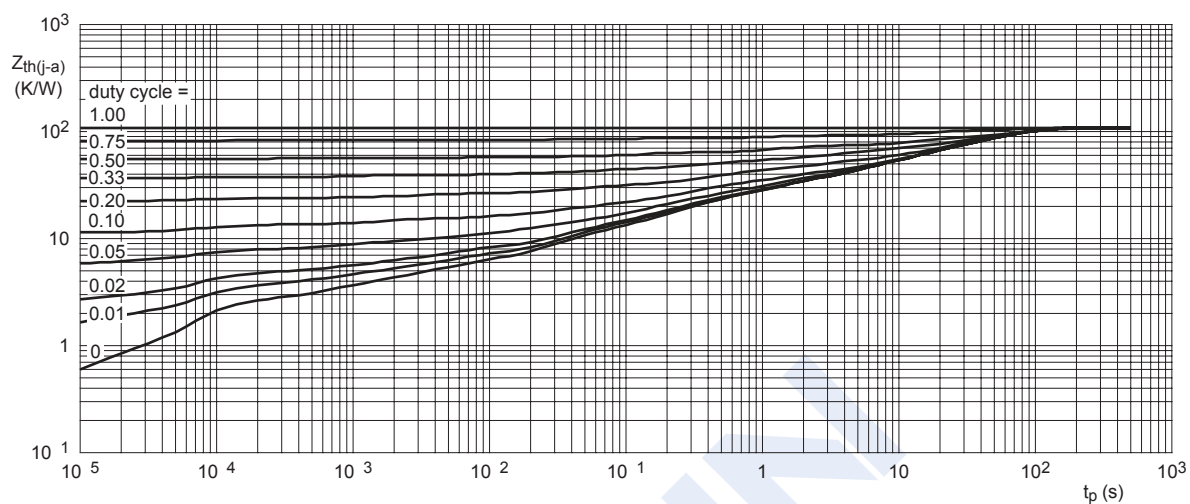


Mounted on FR4 printed-circuit board; standard footprint.

Fig.2 Transient thermal impedance as a function of pulse time; typical values.

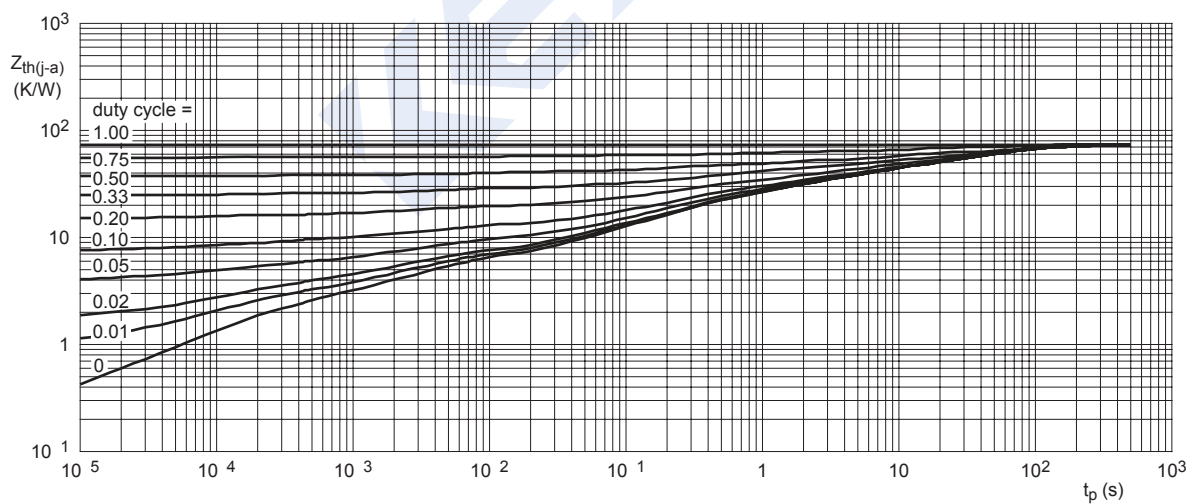
PNP Transistor

PBSS5350X (KBSS5350X)



Mounted on FR4 printed-circuit board; mounting pad for collector 1 cm².

Fig.3 Transient thermal impedance as a function of pulse time; typical values.

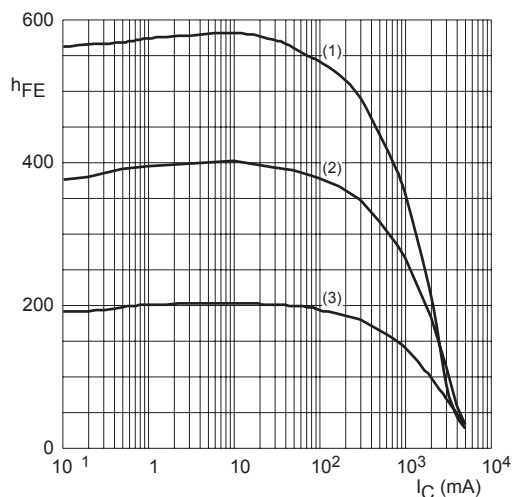


Mounted on FR4 printed-circuit board; mounting pad for collector 6 cm².

Fig.4 Transient thermal impedance as a function of pulse time; typical values.

PNP Transistor

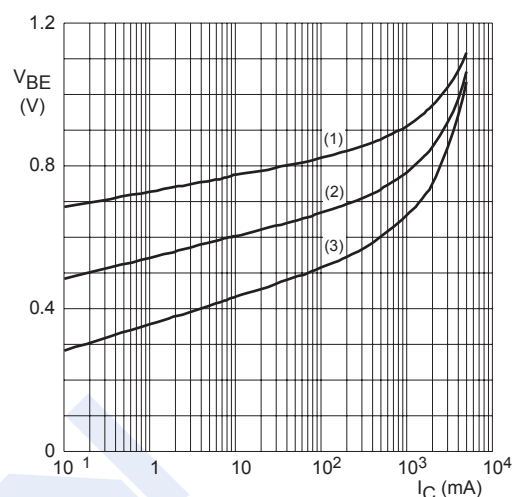
PBSS5350X (KBSS5350X)



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

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

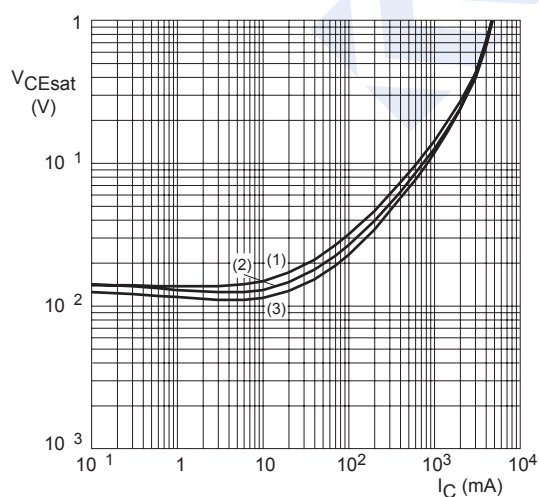
Fig.5 DC current gain as a function of collector current; typical values.



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

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

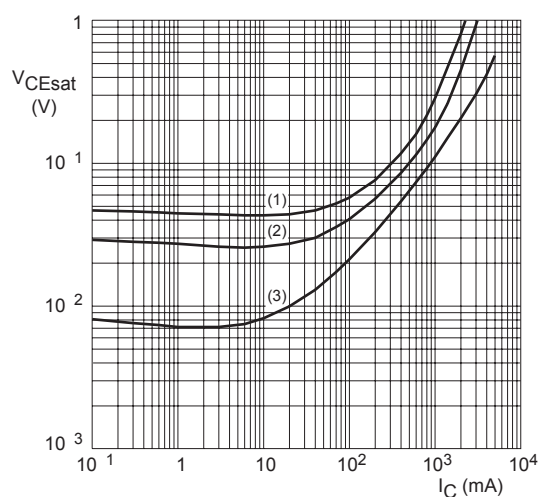
Fig.6 Base-emitter voltage as a function of collector current; typical values.



$I_C/I_B = 20$.

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



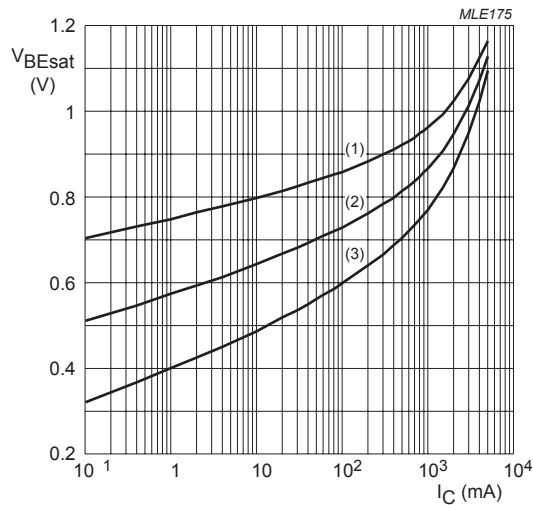
$T_{amb} = 25 \text{ }^{\circ}\text{C}$.

- (1) $I_C/I_B = 100$.
- (2) $I_C/I_B = 50$.
- (3) $I_C/I_B = 10$.

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

PNP Transistor

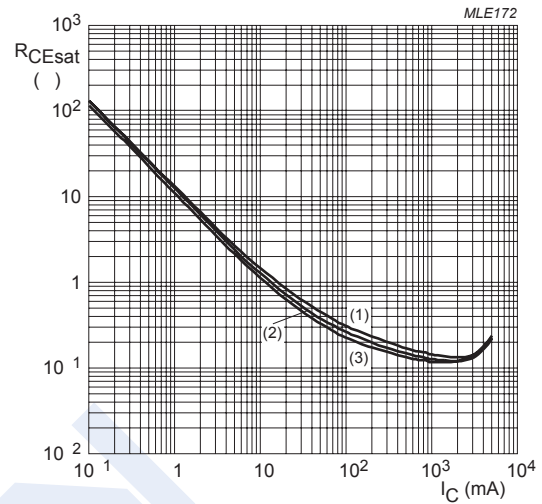
PBSS5350X (KBSS5350X)



$I_C/I_B = 20$.

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

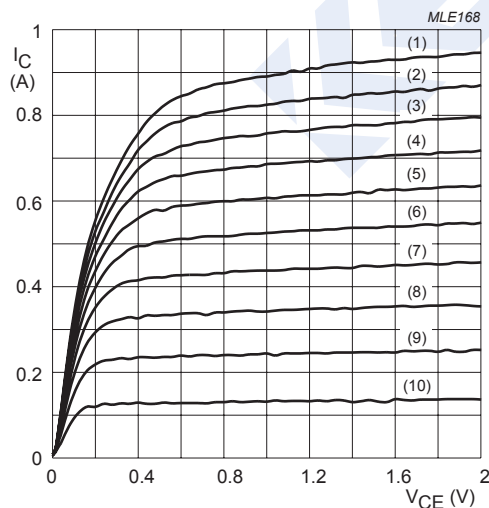
Fig.9 Base-emitter saturation voltage as a function of collector current; typical values.



$I_C/I_B = 20$.

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

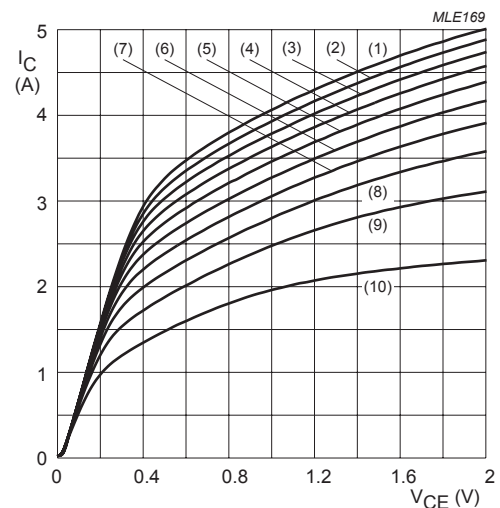
Fig.10 Equivalent on-resistance as a function of collector current; typical values.



$T_{amb} = 25\text{ }^{\circ}\text{C}$.

(1) $I_B = -3500\text{ }\mu\text{A}$. (5) $I_B = -2100\text{ }\mu\text{A}$. (9) $I_B = -700\text{ }\mu\text{A}$.
 (2) $I_B = -3150\text{ }\mu\text{A}$. (6) $I_B = -1750\text{ }\mu\text{A}$. (10) $I_B = -350\text{ }\mu\text{A}$.
 (3) $I_B = -2800\text{ }\mu\text{A}$. (7) $I_B = -1400\text{ }\mu\text{A}$.
 (4) $I_B = -2450\text{ }\mu\text{A}$. (8) $I_B = -1050\text{ }\mu\text{A}$.

Fig.11 Collector current as a function of collector-emitter voltage; typical values.



$T_{amb} = 25\text{ }^{\circ}\text{C}$.

(1) $I_B = -140\text{ mA}$. (5) $I_B = -84\text{ mA}$. (9) $I_B = -28\text{ mA}$.
 (2) $I_B = -126\text{ mA}$. (6) $I_B = -70\text{ mA}$. (10) $I_B = -14\text{ mA}$.
 (3) $I_B = -112\text{ mA}$. (7) $I_B = -56\text{ mA}$.
 (4) $I_B = -98\text{ mA}$. (8) $I_B = -42\text{ mA}$.

Fig.12 Collector current as a function of collector-emitter voltage; typical values.