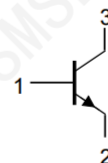
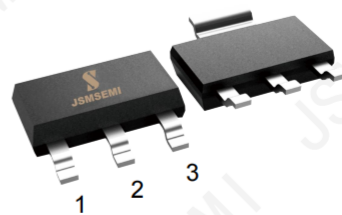


■ Features

- High collector current capability
- High collector current gain
- Improved efficiency due to reduced heat generation.
- Low collector-emitter saturation voltage V_{CEsat} and corresponding low R_{CEsat}



- 1. BASE
- 2. COLLECTOR
- 3. EMITTER

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

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 - Continuous	I_C	3	A
Repetitive Peak Collector Current (Note.1)	I_{CRP}	3	
Collector Current - Pulse	I_{CP}	5	
Base Current	I_B	0.5	
Collector Power Dissipation (Note.2) (Note.3) (Note.4) (Note.1 and 2)	P_C	300	mW
		480	
		540	
		1.2	W
Thermal Resistance Junction to Ambient (Note.2) (Note.3) (Note.4) (Note.1 and 2)	$R_{\theta JA}$	417	$^\circ\text{C/W}$
		260	
		230	
		104	
Junction Temperature	T_J	150	$^\circ\text{C}$
Operating Ambient Temperature	T_{amb}	-65 to 150	
Storage Temperature Range	T_{stg}	-65 to 150	

Note.1: Operated under pulsed conditions: pulse width $t_p \leq 100$ ms; duty cycle $\delta \leq 0.25$.

Note.2: Device mounted on a printed-circuit board; single sided copper; tinplated; standard footprint.

Note.3: Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 1 cm^2 .

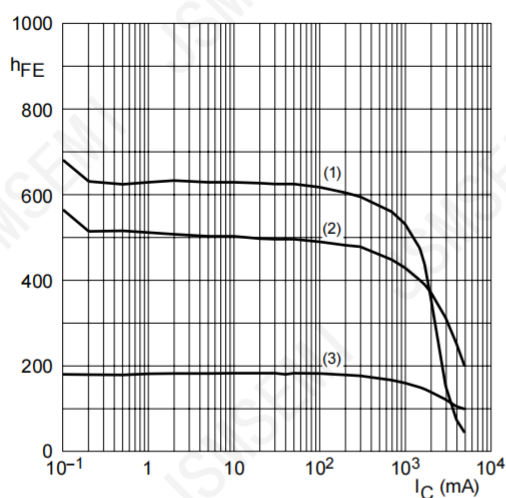
Note.4: Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 6 cm^2 .

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	V _{CBO}	I _C = 100 μA, I _E = 0	50			V
Collector- emitter breakdown voltage	V _{CEO}	I _C = 1 mA, I _B = 0	50			
Emitter - base breakdown voltage	V _{EB0}	I _E = 100 μA, I _C = 0	5			
Collector-base cut-off current	I _{CBO}	V _{CB} = 50 V, I _E = 0			0.1	uA
		V _{CB} = 50 V, I _E = 0, T _J = 150°C			50	
Emitter cut-off current	I _{EBO}	V _{EB} = 5V, I _C =0			0.1	
Collector-emitter saturation voltage	V _{CE(sat)}	I _C =500 mA, I _B =50mA			80	mV
		I _C =1 A, I _B =50mA			160	
		I _C =2 A, I _B =100mA (Note.1)			280	
		I _C =2 A, I _B =200mA (Note.1)			260	
		I _C =3 A, I _B =300mA (Note.1)			370	
Base - emitter saturation voltage	V _{BE(sat)}	I _C =2 A, I _B =100mA (Note.1)			1.1	V
		I _C =3 A, I _B =300mA (Note.1)			1.2	
Base - emitter turn on voltage	V _{BE(on)}	V _{CE} = 2V, I _C = 1 A (Note.1)			1.2	
Equivalent on-resistance	R _{CE(sat)}	I _C =2 A, I _B =200mA (Note.1)			130	mΩ
DC current gain	h _{FE}	V _{CE} = 2V, I _C = 100mA	300			
		V _{CE} = 2V, I _C = 500mA	300			
		V _{CE} = 2V, I _C = 1 A (Note.1)	300			
		V _{CE} = 2V, I _C = 2 A (Note.1)	200			
		V _{CE} = 2V, I _C = 3 A (Note.1)	100			
Collector output capacitance	C _{ob}	V _{CB} = 10V, I _E =I _C =0, f=1MHz			25	pF
Transition frequency	f _T	V _{CE} = 5V, I _C = 100mA, f=100MHz	100			MHz

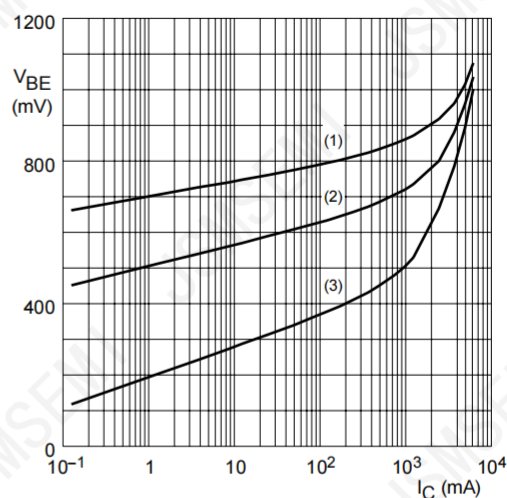
 Note.1: Pulse test: t_p ≤ 300 us; δ ≤ 0.02.

■ Typical Characteristics



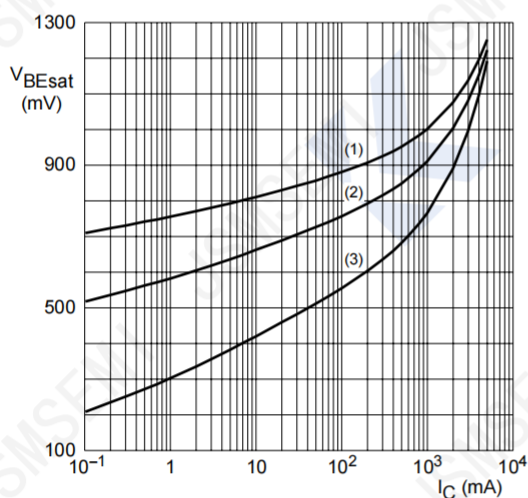
$V_{CE} = 2\text{ V}$.
 (1) $T_{amb} = 150^\circ\text{C}$. (2) $T_{amb} = 25^\circ\text{C}$. (3) $T_{amb} = -55^\circ\text{C}$.

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



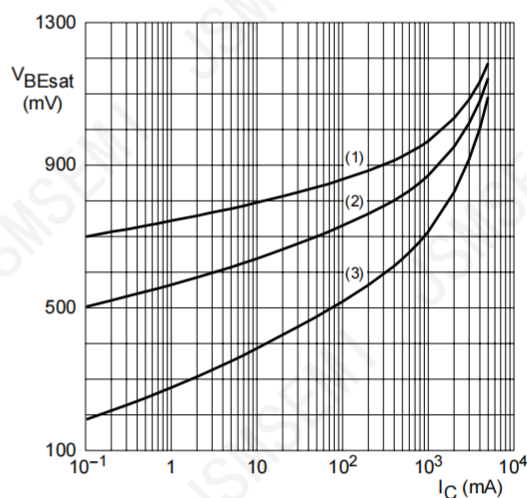
$V_{CE} = 2\text{ V}$.
 (1) $T_{amb} = -55^\circ\text{C}$. (2) $T_{amb} = 25^\circ\text{C}$. (3) $T_{amb} = 150^\circ\text{C}$.

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



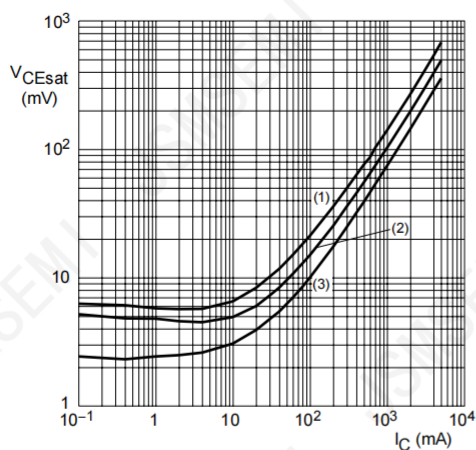
$I_C/I_B = 10$.
 (1) $T_{amb} = -55^\circ\text{C}$. (2) $T_{amb} = 25^\circ\text{C}$. (3) $T_{amb} = 150^\circ\text{C}$.

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



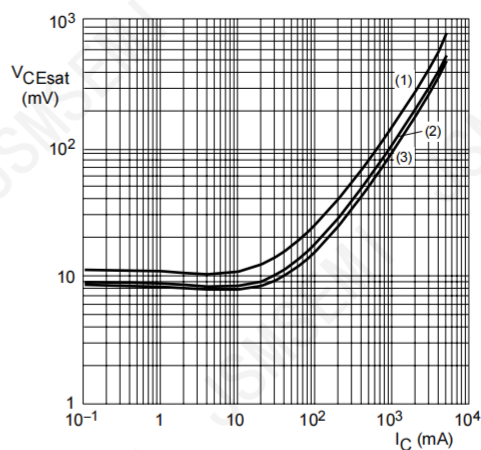
$I_C/I_B = 20$.
 (1) $T_{amb} = -55^\circ\text{C}$. (2) $T_{amb} = 25^\circ\text{C}$. (3) $T_{amb} = 150^\circ\text{C}$.

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



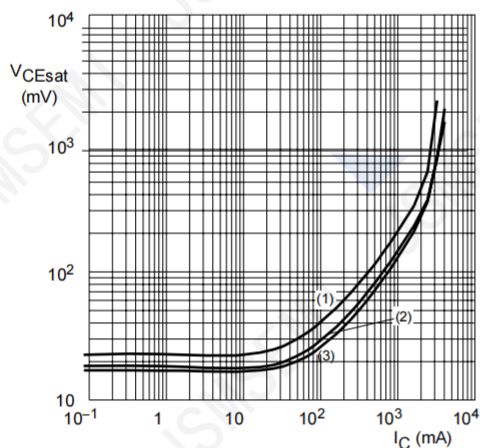
$I_C/I_B = 10$.
(1) $T_{amb} = 150\text{ }^{\circ}\text{C}$. (2) $T_{amb} = 25\text{ }^{\circ}\text{C}$. (3) $T_{amb} = -55\text{ }^{\circ}\text{C}$.

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



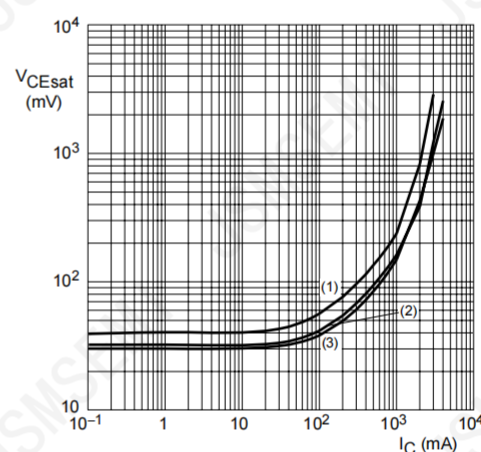
$I_C/I_B = 20$.
(1) $T_{amb} = 150\text{ }^{\circ}\text{C}$. (2) $T_{amb} = 25\text{ }^{\circ}\text{C}$. (3) $T_{amb} = -55\text{ }^{\circ}\text{C}$.

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



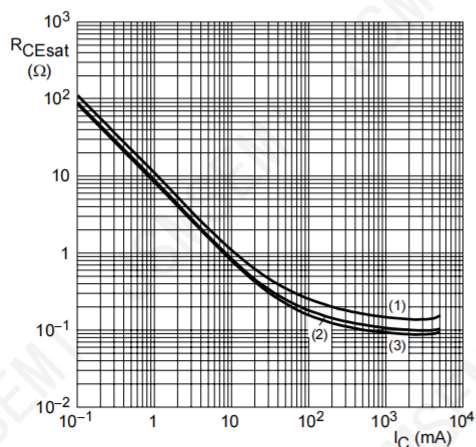
$I_C/I_B = 50$.
(1) $T_{amb} = 150\text{ }^{\circ}\text{C}$. (2) $T_{amb} = 25\text{ }^{\circ}\text{C}$. (3) $T_{amb} = -55\text{ }^{\circ}\text{C}$.

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



$I_C/I_B = 100$.
(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.8 Collector-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.

Revision History

Rev.	Change	Date
V1.0	Initial version	2/23/2024

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