

# Power Transistor ( - 60V, - 3A)

## 2SB1184 / 2SB1243 / 2SB1185

●Features

1) Low  $V_{CE(sat)}$ .

$$V_{CE(sat)} = -0.5V \text{ (Typ.)}$$

$$(I_c / I_B = -2A / -0.2A)$$

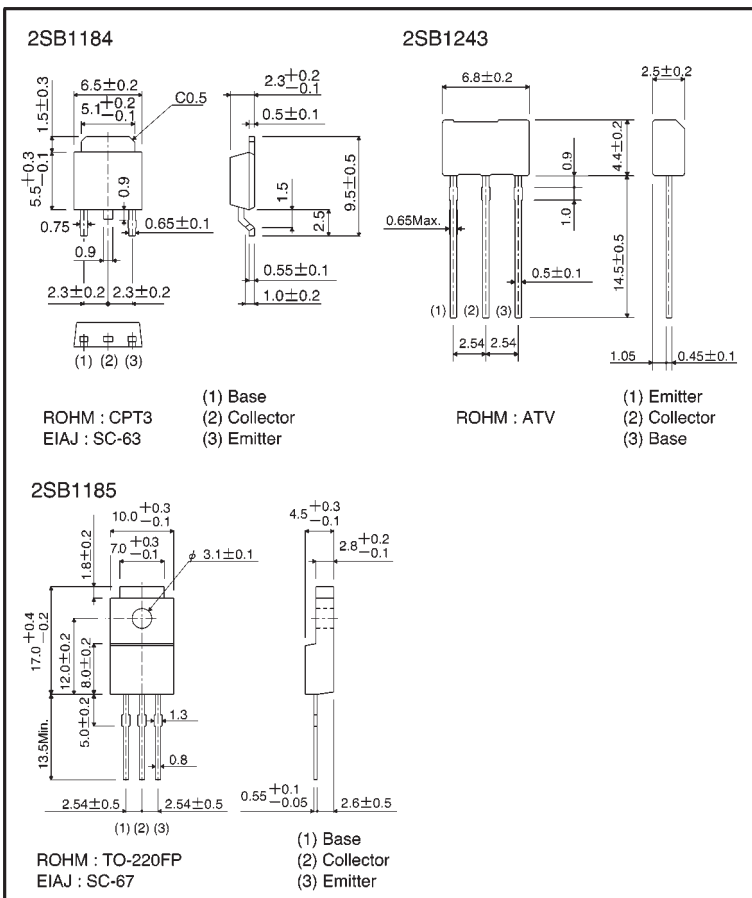
2) Complements the 2SD1760 / 2SD1864 / 2SD1762.

●Structure

Epitaxial planar type

PNP silicon transistor

●External dimensions (Units: mm)



## ● Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V <sub>CB0</sub>	-60	V
Collector-emitter voltage	V <sub>CE0</sub>	-50	V
Emitter-base voltage	V <sub>EB0</sub>	-5	V
Collector current	I <sub>c</sub>	-3	A (DC)
	I <sub>cP</sub>	-4.5	A (Pulse) *1
Collector power dissipation	P <sub>c</sub>	1	W
		15	W (T <sub>c</sub> =25°C)
		1	W *2
		2	W
		25	W (T <sub>c</sub> =25°C)
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55~+150	°C

\*1 Single pulse, P<sub>w</sub>=100ms\*2 Printed circuit board, 1.7mm thick, collector copper plating 100mm<sup>2</sup> or larger.

## ● Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions	
Collector-base breakdown voltage	BV <sub>CB0</sub>	-60	—	—	V	I <sub>c</sub> =-50 μA	
Collector-emitter breakdown voltage	BV <sub>CE0</sub>	-50	—	—	V	I <sub>c</sub> =-1mA	
Emitter-base breakdown voltage	BV <sub>EB0</sub>	-5	—	—	V	I <sub>E</sub> =-50 μA	
Collector cutoff current	I <sub>cBO</sub>	—	—	-1	μA	V <sub>CB</sub> =-40V	
Emitter cutoff current	I <sub>EBO</sub>	—	—	-1	μA	V <sub>EB</sub> =-4V	
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	—	—	-1	V	I <sub>c</sub> /I <sub>B</sub> =-2A/-0.2A *	
Base-emitter saturation voltage	V <sub>BE(sat)</sub>	—	—	-1.5	V	I <sub>c</sub> /I <sub>B</sub> =-2A/-0.2A *	
DC current transfer ratio	2SB1184, 2SB1243	h <sub>FE</sub>	82	—	390	—	V <sub>CE</sub> =-3V, I <sub>c</sub> =-0.5A *
	2SB1185	h <sub>FE</sub>	60	—	320	—	
Transition frequency	f <sub>T</sub>	—	70	—	MHz	V <sub>CE</sub> =-5V, I <sub>E</sub> =0.5A, f=30MHz	
Output capacitance	C <sub>ob</sub>	—	50	—	pF	V <sub>CB</sub> =-10V, I <sub>E</sub> =0A, f=1MHz	

\* Measured using pulse current.

● Packaging specifications and h<sub>FE</sub>

Type	h <sub>FE</sub>	Package	Taping		Bulk
		Code	TL	TV2	—
		Basic ordering unit (pieces)	2500	2500	200
2SB1184	PQR		○	—	—
2SB1243	PQR		—	○	—
2SB1185	DEF		—	—	○

h<sub>FE</sub> values are classified as follows :

Item	D	E	F
h <sub>FE</sub>	60~120	100~200	160~320

Item	P	Q	R
h <sub>FE</sub>	82~180	120~270	180~390

●Electrical characteristic curves

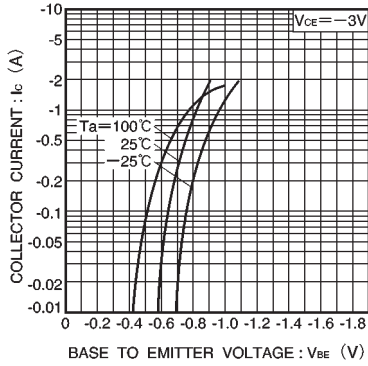


Fig.1 Grounded emitter propagation characteristics

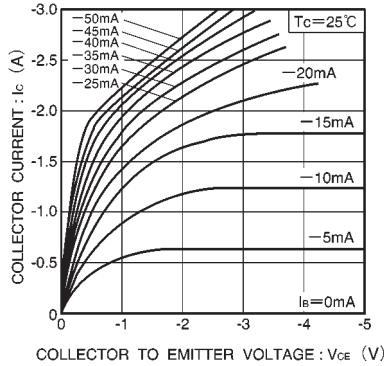


Fig.2 Grounded emitter output characteristics ( I )

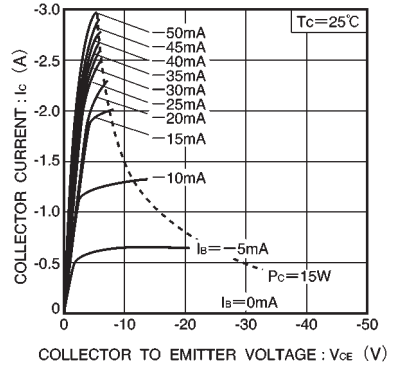


Fig.3 Grounded emitter output characteristics ( II )

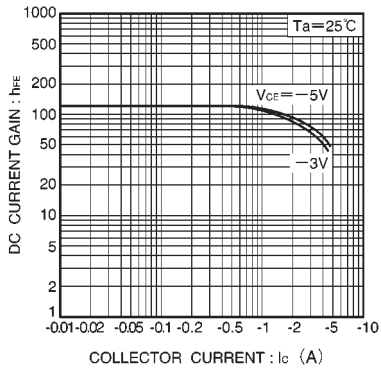


Fig.4 DC current gain vs. collector current ( I )

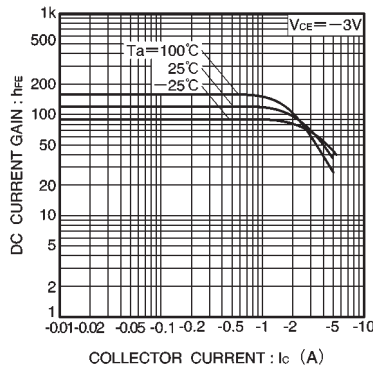


Fig.5 DC current gain vs. collector current ( II )

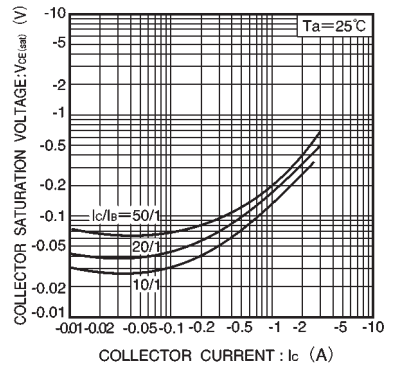


Fig.6 Collector-emitter saturation voltage vs. collector current

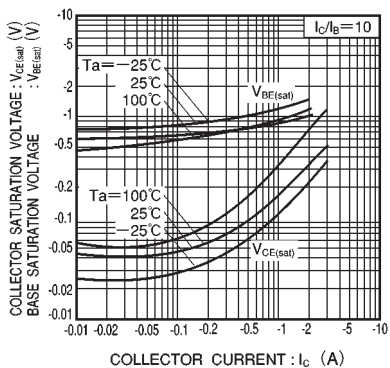


Fig.7 Collector-emitter saturation voltage vs. collector current  
Base-emitter saturation voltage vs. collector current

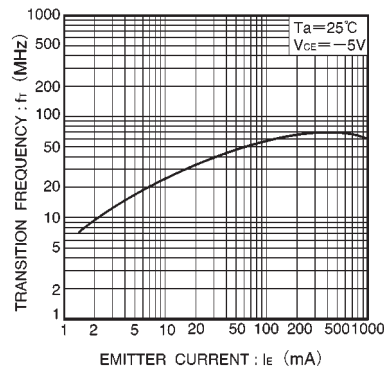


Fig.8 Gain bandwidth product vs. emitter current

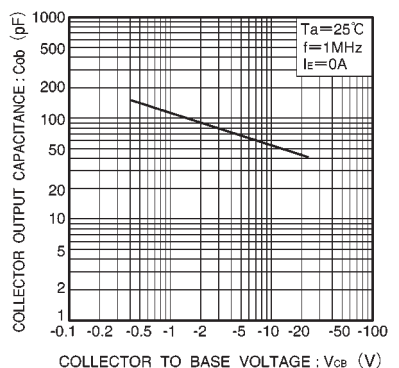


Fig.9 Collector output capacitance vs. collector base voltage

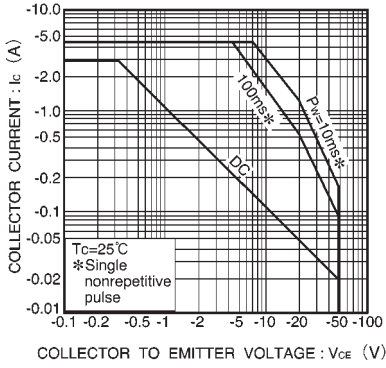


Fig.10 Safe operation area (2SB1184)

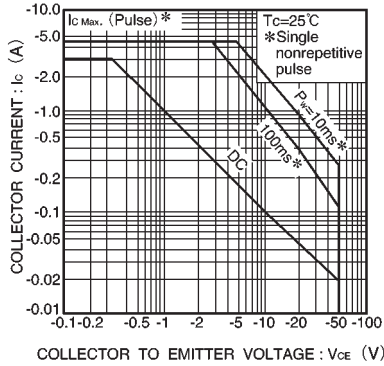


Fig.11 Safe operation area (2SB1243)

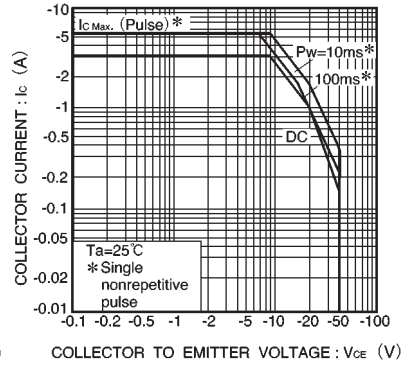


Fig.12 Safe operation area (2SB1185)