

# Transistors

## Power Transistor ( $-60\text{V}$ , $-3\text{A}$ )

# 2SB1184 / 2SB1243

## ●Features

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

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

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

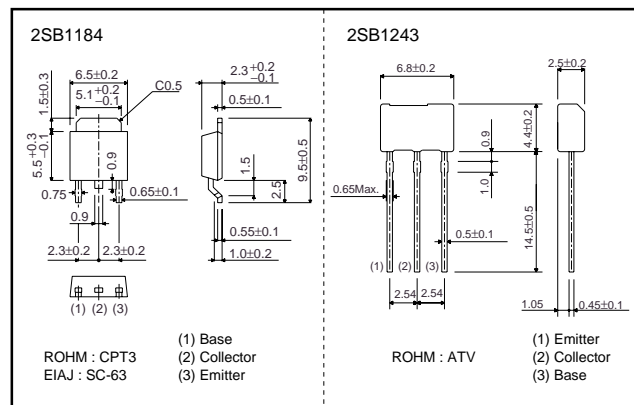
- 2) Complements the 2SD1760 / 2SD1864.

## ● Structure

Epitaxial planar type

PNP silicon transistor

●External dimensions (Units : mm)



●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Collector-base voltage		$V_{CBO}$	−60	V
Collector-emitter voltage		$V_{CEO}$	−50	V
Emitter-base voltage		$V_{EBO}$	−5	V
Collector current		$I_C$	−3	A (DC)
		$I_{CP}$	−4.5	A (Pulse) *1
Collector power dissipation	2SB1184	$P_C$	1	W
			15	W ( $T_C=25^{\circ}\text{C}$ )
	2SB1243		1	W *2
Junction temperature		$T_j$	150	$^{\circ}\text{C}$
Storage temperature		$T_{stg}$	−55~+150	$^{\circ}\text{C}$

\*1 Single pulse, Pw=100ms

\*2 Printed circuit board, 1.7mm thick, collector copper plating 100mm<sup>2</sup> or larger.

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$BV_{CBO}$	-60	—	—	V	$I_C = -50\mu A$
Collector-emitter breakdown voltage	$BV_{CEO}$	-50	—	—	V	$I_C = -1mA$
Emitter-base breakdown voltage	$BV_{EBO}$	-5	—	—	V	$I_E = -50\mu A$
Collector cutoff current	$I_{CBO}$	—	—	-1	$\mu A$	$V_{CB} = -40V$
Emitter cutoff current	$I_{EBO}$	—	—	-1	$\mu A$	$V_{EB} = -4V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	-1	V	$I_C/I_B = -2A/-0.2A$ *
Base-emitter saturation voltage	$V_{BE(sat)}$	—	—	-1.2	V	$I_C/I_B = -1.5A/-0.15A$ *
DC current transfer ratio	$h_{FE}$	82	—	390	—	$V_{CE} = -3V$ , $I_C = -0.5A$ *
Transition frequency	$f_T$	—	70	—	MHz	$V_{CE} = -5V$ , $I_E = 0.5A$ , $f = 30MHz$
Output capacitance	$C_{ob}$	—	50	—	pF	$V_{CB} = -10V$ , $I_E = 0A$ , $f = 1MHz$

\* Measured using pulse current.

●Packaging specifications and  $h_{FE}$ 

Type	$h_{FE}$	Package	Taping	
		Code	TL	TV2
		Basic ordering unit (pieces)	2500	2500
2SB1184	PQR		○	—
2SB1243	PQR		—	○

 $h_{FE}$  values are classified as follows :

Item	P	Q	R
$h_{FE}$	82~180	120~270	180~390

## ●Electrical characteristic curves

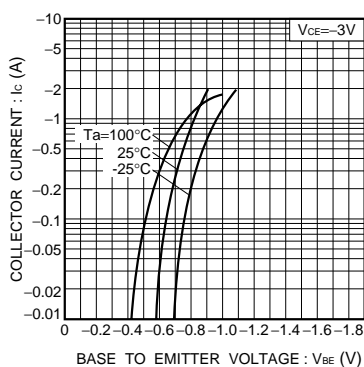


Fig.1 Grounded emitter propagation characteristics

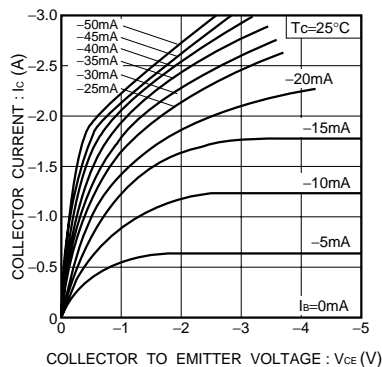


Fig.2 Grounded emitter output characteristics ( I )

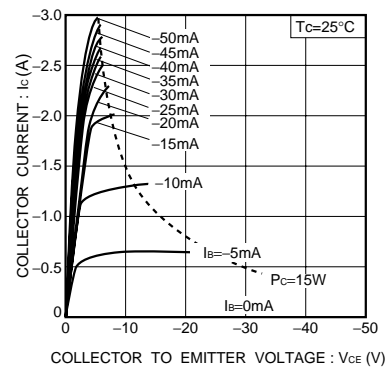


Fig.3 Grounded emitter output characteristics ( II )

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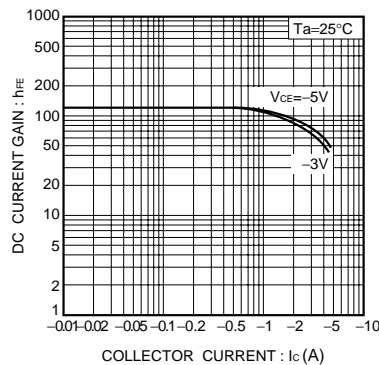


Fig.4 DC current gain vs. collector current ( I )

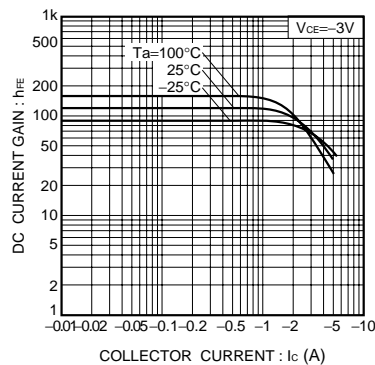


Fig.5 DC current gain vs. collector current ( II )

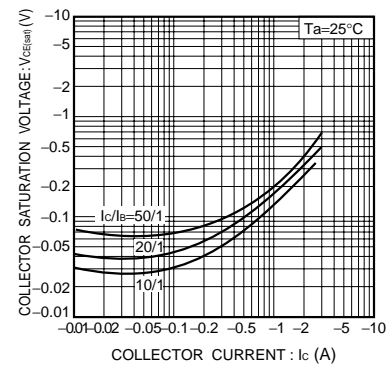


Fig.6 Collector-emitter saturation voltage vs. collector current

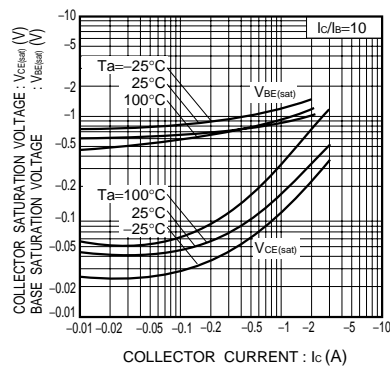
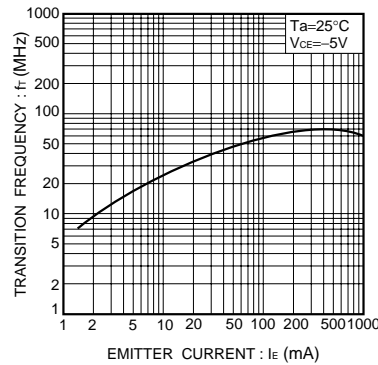
Fig.7 Collector-emitter saturation voltage vs. collector current  
Base-emitter saturation voltage vs. collector current

Fig.8 Gain bandwidth product vs. emitter current

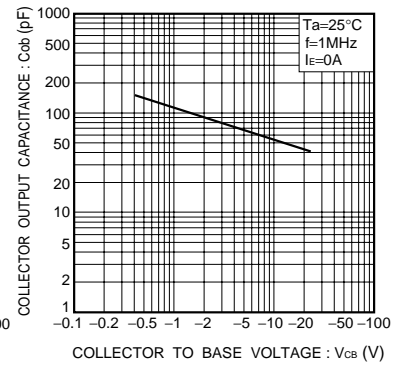


Fig.9 Collector output capacitance vs. collector base voltage

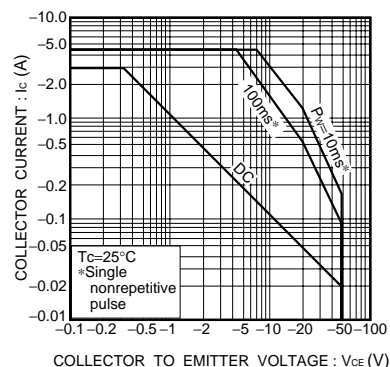


Fig.10 Safe operation area (2SB1184)

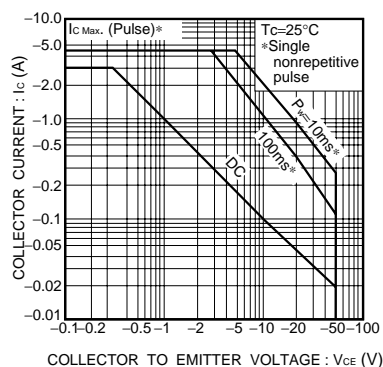


Fig.11 Safe operation area (2SB1243)