Medium power Transistor(−32V, −2A)

2SB1188 / 2SB1182 / 2SB1240 / 2SB822 / 2SB1277 / 2SB911M

●Features

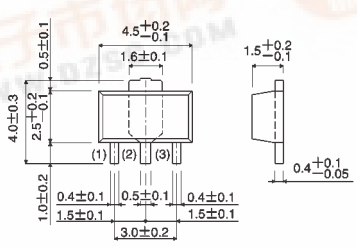
1) Low $V_{CE(sat)}$.
   $V_{CE(sat)}$ = −0.5V (Typ.)
   (I_C / I_B = −2A / −0.2A)
2) Complements the 2SD1766 / 2SD1758 / 2SD1862 / 2SD1189F / 2SD1055 / 2SD1919 / SD1227M.

●Structure

Epitaxial planar type
PNP silicon transistor

●External dimensions (Unit: mm)

2SB1188

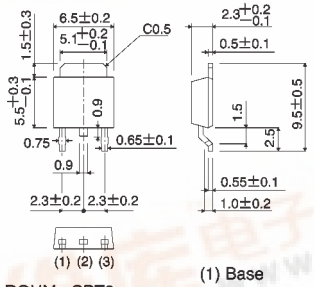


ROHM : MPT3
EIAJ : SC-62

(1) Base
(2) Collector
(3) Emitter

Abbreviated symbol: BC∗

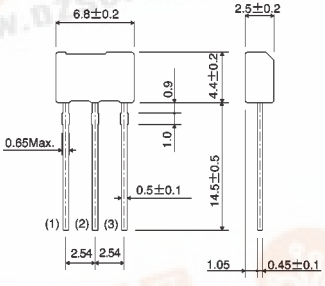
2SB1182



ROHM : CPT3
EIAJ : SC-63

(1) Base
(2) Collector
(3) Emitter

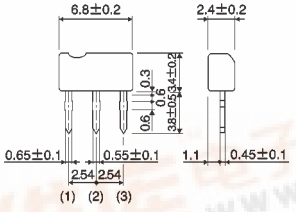
2SB1240



ROHM : ATV

(1) Emitter
(2) Collector
(3) Base

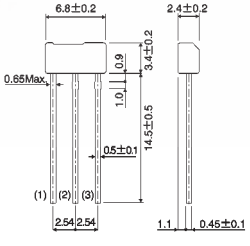
2SB822



ROHM : FTR

(1) Emitter
(2) Collector
(3) Base

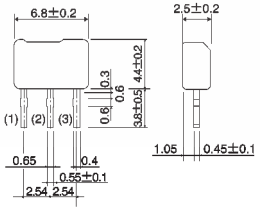
2SB1277



ROHM : FTL

(1) Emitter
(2) Collector
(3) Base

2SB911M



ROHM : ATR
EIAJ : SC-71

(1) Emitter
(2) Collector
(3) Base

∗ Denotes h_{FE}

●Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Limits	Unit
Collector-base voltage		V_{CBO}	−40	V
Collector-emitter voltage		V_{CEO}	−32	V
Emitter-base voltage		V_{EBO}	−5	V
Collector current		I_C	−2	A (DC)
			−3	A (Pulse) ∗1
Collector power dissipation	2SB1188	P_C	0.5	W
			2	W ∗2
	2SB1182		10	W (Tc=25℃)
	2SB1240,2SB911M		1	W ∗3
	2SB822,2SB1277		0.75	W
Junction temperature		Tj	150	℃
Storage temperature		Tstg	−55～+150	℃

∗1 Single pulse, Pw=100ms
∗2 When mounted on a 40×40×0.7 mm ceramic board.
∗3 Printed circuit board, 1.7mm thick, collector copper plating 100mm² or larger.

●Electrical characteristics (Ta = 25°C)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage		BV_{CBO}	−40	—	—	V	I_C=−50 μA
Collector-emitter breakdown voltage		BV_{CEO}	−32	—	—	V	I_C=−1mA
Emitter-base breakdown voltage		BV_{EBO}	−5	—	—	V	I_E=−50 μA
Collector cutoff current		I_{CBO}	—	—	−1	μA	V_{CB}=−20V
Emitter cutoff current		I_{EBO}	—	—	−1	μA	V_{EB}=−4V
Collector-emitter saturation voltage		$V_{CE(sat)}$	—	−0.5	−0.8	V	I_C/I_B=−2A/−0.2A ∗
DC current transfer ratio	2SB1188,2SB1182 2SB1240	h_{FE}	82	—	390	—	V_{CE}=−3V, I_C=−0.5A ∗
	2SB822,2SB1277 2SB911M		120	—	270		
Transition frequency		f_T	—	100	—	MHz	V_{CE}=−5V, I_E=0.5A, f=30MHz
Output capacitance		Cob	—	50	—	pF	V_{CB}=−10V, I_E=0A, f=1MHz

∗ Measured using pulse current.

●Packaging specifications and h_{FE}

Type	h_{FE}	Package	Taping				Bulk
		Code	T100	TL	TV2	TL2	—
		Basic ordering unit (pieces)	1000	2500	2500	2500	2000
2SB1188	PQR		○	—	—	—	—
2SB1182	PQR		—	○	—	—	—
2SB1240	PQR		—	—	○	—	—
2SB822	Q		—	—	—	—	○
2SB1277	Q		—	—	—	○	—
2SB911M	Q		—	—	—	—	○

h_{FE} values are classified as follows :

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

●Electrical characteristic curves

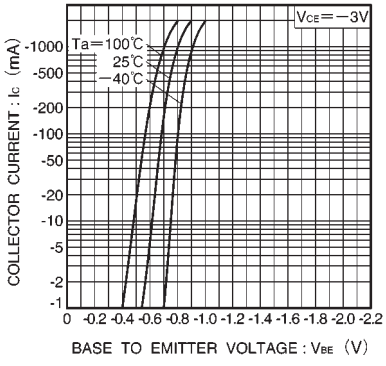


Fig.1 Grounded emitter propagation characteristics

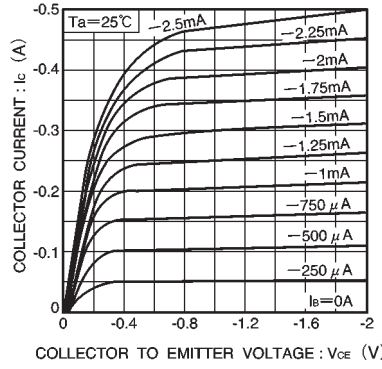


Fig.2 Grounded emitter output characteristics

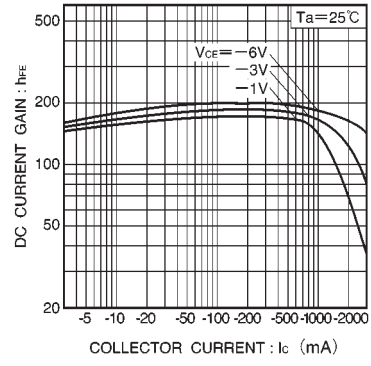


Fig.3 DC current gain vs. collector current (I)

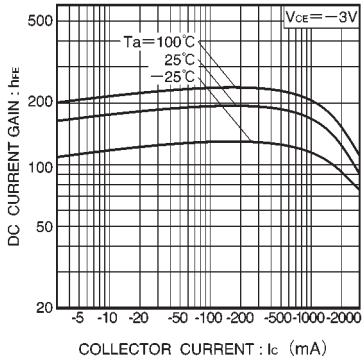


Fig.4 DC current gain vs. collector current (Ⅱ)

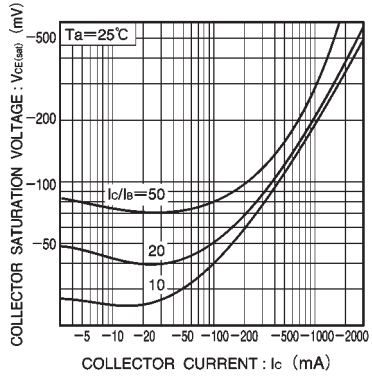


Fig.5 Collector-emitter saturation voltage vs. collector current (Ⅰ)

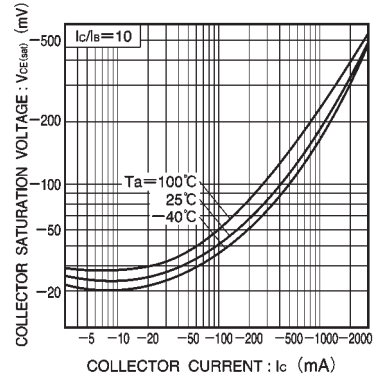


Fig.6 Collector-emitter saturation voltage vs. collector current (Ⅱ)

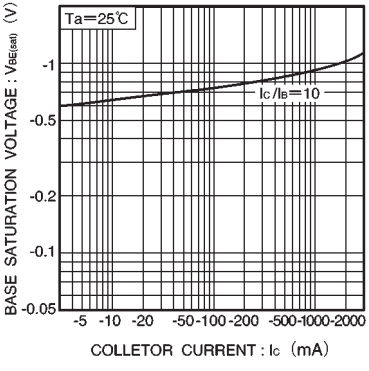


Fig.7 Base-emitter saturation voltage vs. collector current

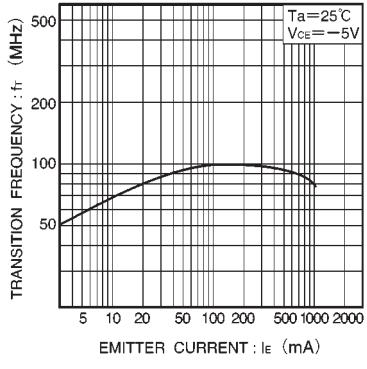


Fig.8 Gain bandwidth product vs. emitter current

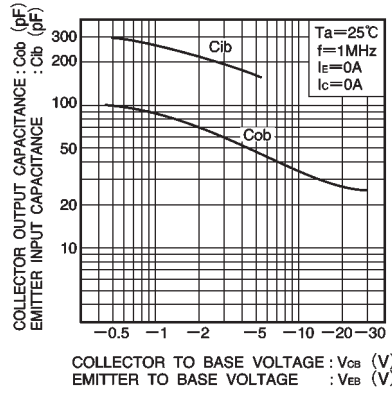


Fig.9 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

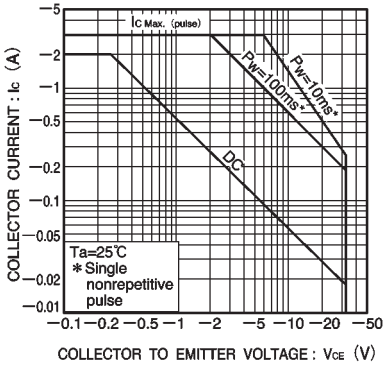


Fig.10 Safe operation area (2SB1188)

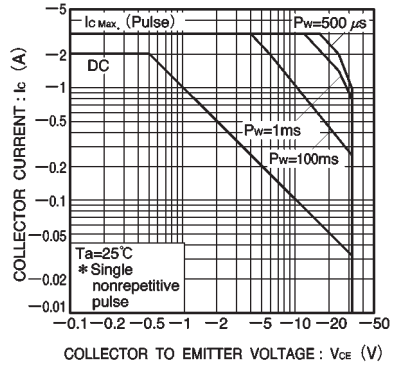


Fig.11 Safe operation area (2SB1182)