

Medium power transistor (−80V, −0.7A)

2SB1189 / 2SB1238

●Features

- 1) High breakdown voltage, $BV_{CEO} = -80V$, and high current, $I_C = -0.7A$.
- 2) Complements the 2SD1767 / 2SD1859.

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	−80	V
Collector-emitter voltage	V_{CEO}	−80	V
Emitter-base voltage	V_{EBO}	−5	V
Collector current	I_C	−0.7	A
Collector power dissipation	2SB1189	0.5	W
		2	
		1	
Junction temperature	T_J	150	°C
		−55 to +150	
Storage temperature	T_{stg}	−55 to +150	°C

*1 When mounted on a 40×40×0.7 mm ceramic board.

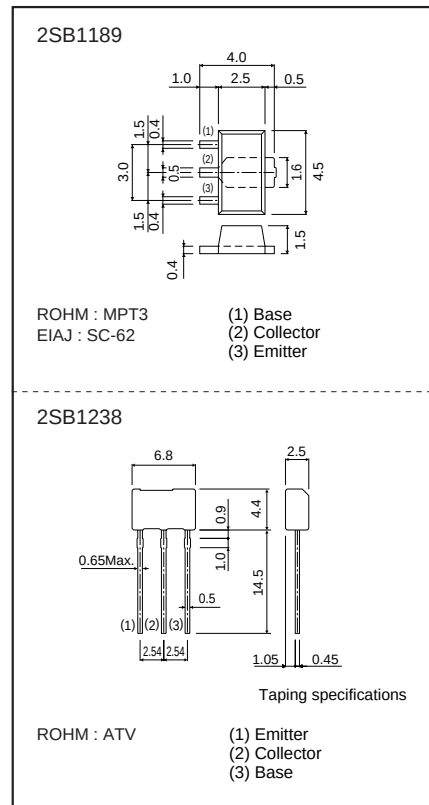
*2 Printed circuit board 1.7 mm thick, collector plating 1cm² or larger.

●Packaging specifications and h_{FE}

Type	2SB1189	2SB1238
Package	MPT3	ATV
h _{FE}	QR	QR
Marking	BD*	—
Code	T100	TV2
Basic ordering unit (pieces)	1000	2500

*Denotes h_{FE}

●External dimensions (Unit : mm)



●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	−80	—	—	V	$I_C = -50\mu A$
Collector-emitter breakdown voltage	BV_{CEO}	−80	—	—	V	$I_C = -2mA$
Emitter-base breakdown voltage	BV_{EBO}	−5	—	—	V	$I_E = -50\mu A$
Collector cutoff current	I_{CBO}	—	—	−0.5	μA	$V_{CB} = -50V$
Emitter cutoff current	I_{EBO}	—	—	−0.5	μA	$V_{EB} = -4V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	−0.2	−0.4	V	$I_C/I_E = -500mA/-50mA$
DC current transfer ratio	h_{FE}	120	—	390	—	$V_{CE}/I_C = -3V/-0.1A$
Transition frequency	f_T	—	100	—	MHz	$V_{CE} = -10V, I_E = 50mA, f = 100MHz$
Output capacitance	C_{ob}	—	14	20	pF	$V_{CB} = -10V, I_E = 0A, f = 1MHz$

Transistors

●Electrical characteristics curves

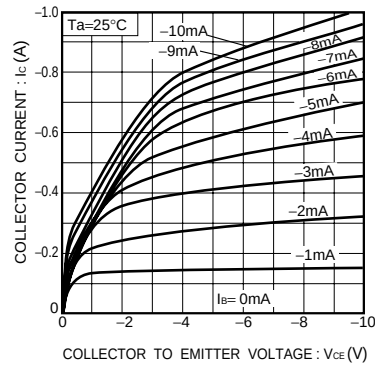


Fig.1 Ground emitter output characteristics

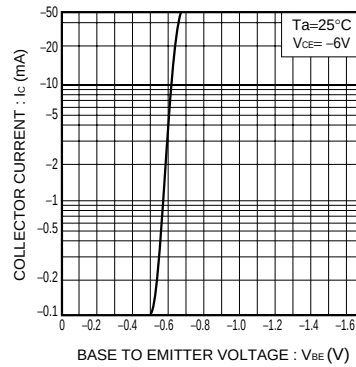


Fig.2 Ground emitter propagation characteristics

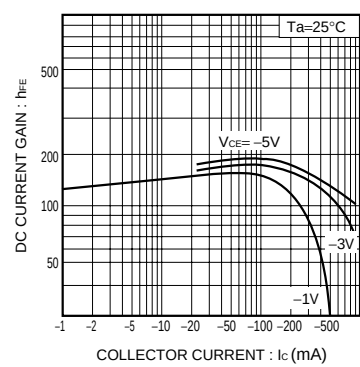


Fig.3 DC current gain vs. collector current

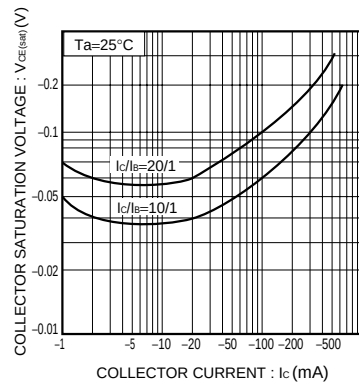


Fig.4 Collector-emitter saturation voltage vs. collector current

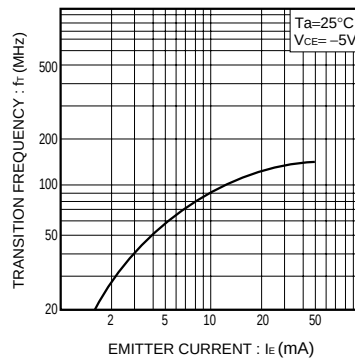


Fig.5 Gain bandwidth product vs. emitter current

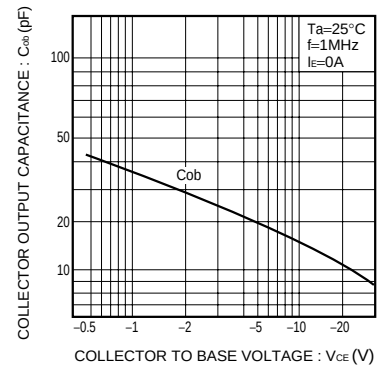


Fig.6 Collector output capacitance vs. collector-base voltage

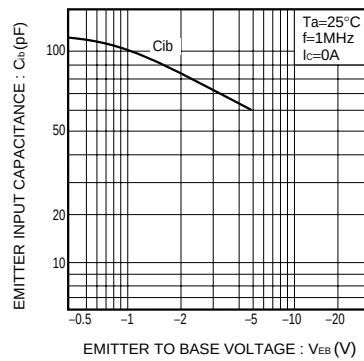


Fig.7 Emitter input capacitance vs. emitter-base voltage

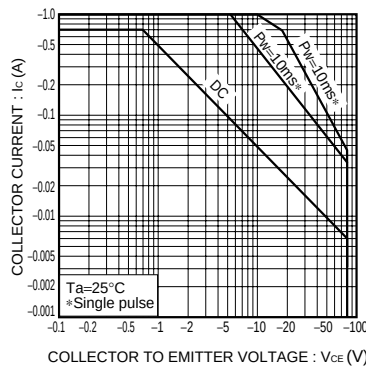


Fig.8 Safe operating area (2SB1189)

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