

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 _{CCEO}	-80	V
Emitter-base voltage	V _{EBO}	-5	V
Collector current	I _C	-0.7	A
Collector power dissipation	2SB1189	0.5	
	P _C	2	W
	2SB1238	1	=2
Junction temperature	T _J	150	°C
Storage temperature	T _{STG}	-55 to +150	°C

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

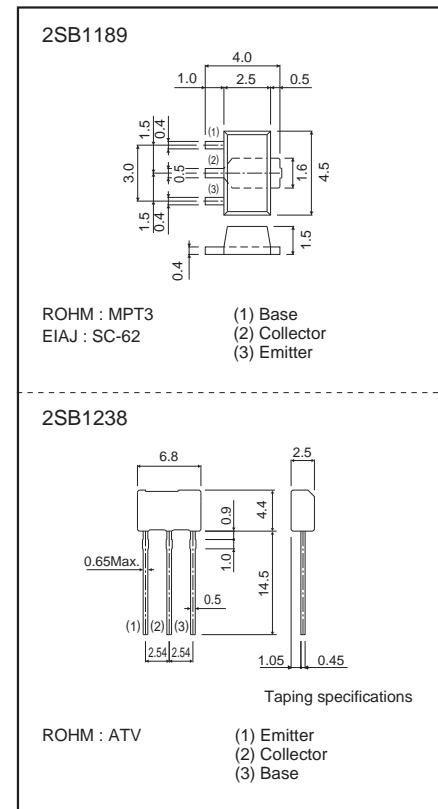
*2 Printed circuit board 1.7 mm thick, collector plating 1cm² or larger.

- Packaging specifications and h_{FE}

Type	2SB1189	2SB1238
Package	MPT3	ATV
hFE	QR	QR
Marking	BD*	-
Code	T100	TV2
Basic ordering unit (pieces)	1000	2500

*Denotes h_{FE}

●Dimensions (Unit : mm)



● Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CEO}	-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_{C0}	-	-	-0.5	μA	$V_{CB} = -50V$
Emitter cutoff current	I_{E0}	-	-	-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	$V_{CE} = -10V, I_E = 50mA, f_T = 100MHz$
Output capacitance	C_{OB}	-	14	20	pF	$V_{CE} = -10V, I_E = 0A, f_T = 1MHz$

●Electrical characteristics curves

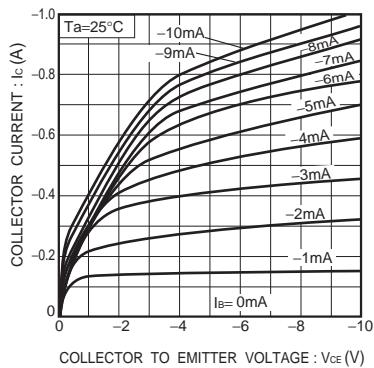


Fig.1 Ground emitter output characteristics

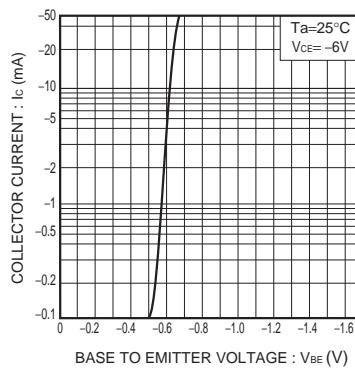


Fig.2 Ground emitter propagation characteristics

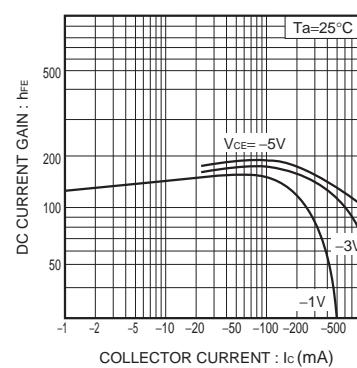


Fig.3 DC current gain vs. collector current

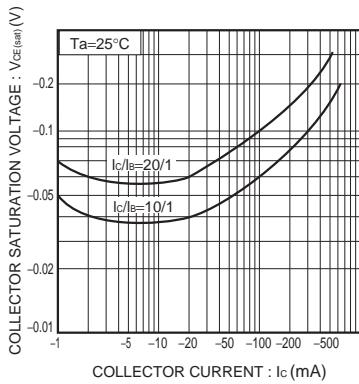


Fig.4 Collector-emitter saturation voltage vs. collector current

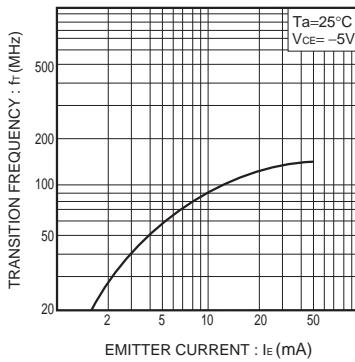


Fig.5 Gain bandwidth product vs. emitter current

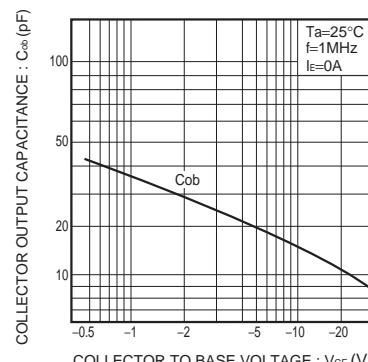


Fig.6 Collector output capacitance vs. collector-base voltage

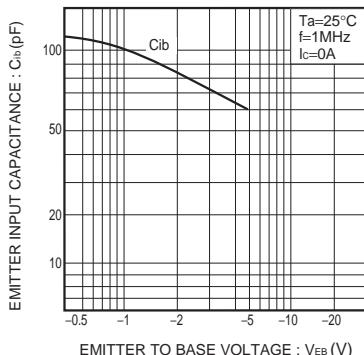


Fig.7 Emitter input capacitance vs. emitter-base voltage

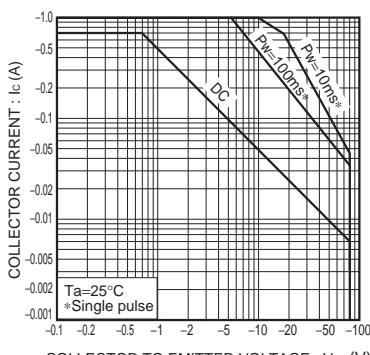


Fig.8 Safe operating area (2SB1189)

Notes

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