

# Medium power transistor (−80V, −0.7A)

## 2SB1189 / 2SB1238

### ●Features

- 1) High breakdown voltage,  $BV_{CE0}=-80V$ , 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	$V_{CB0}$	−80	V		
Collector-emitter voltage	$V_{CE0}$	−80	V		
Emitter-base voltage	$V_{EB0}$	−5	V		
Collector current	$I_C$	−0.7	A		
Collector power dissipation	2SB1189	$P_C$	0.5	W	*1
			2		
			1		
2SB1238					
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.

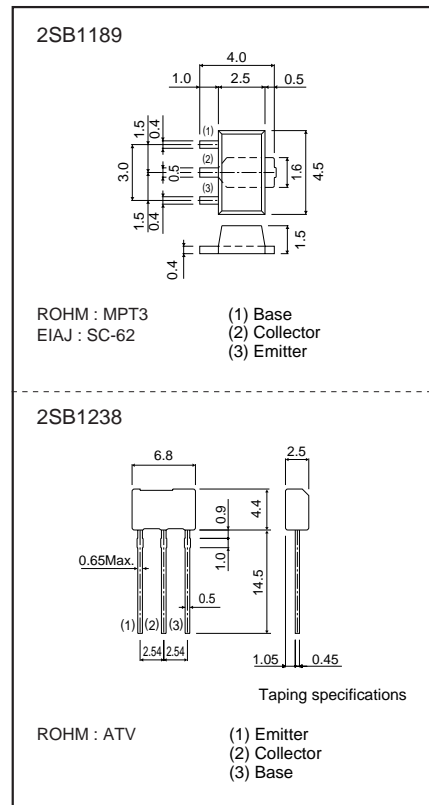
\*2 Printed circuit board 1.7 mm thick, collector plating 1cm<sup>2</sup> or larger.

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

Type	2SB1189	2SB1238
Package	MPT3	ATV
h <sub>FE</sub>	QR	QR
Marking	BD*	—
Code	T100	TV2
Basic ordering unit (pieces)	1000	2500

\*Denotes h<sub>FE</sub>

### ●External dimensions (Unit : mm)



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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$BV_{CB0}$	−80	—	—	V	$I_C=-50\mu A$
Collector-emitter breakdown voltage	$BV_{CE0}$	−80	—	—	V	$I_C=-2mA$
Emitter-base breakdown voltage	$BV_{EB0}$	−5	—	—	V	$I_E=-50\mu A$
Collector cutoff current	$I_{CBO}$	—	—	−0.5	$\mu A$	$V_{CB}=-50V$
Emitter cutoff current	$I_{EBO}$	—	—	−0.5	$\mu A$	$V_{EB}=-4V$
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

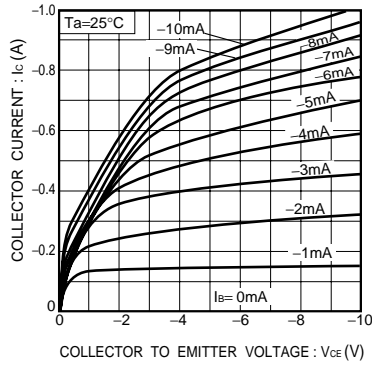


Fig.1 Ground emitter output characteristics

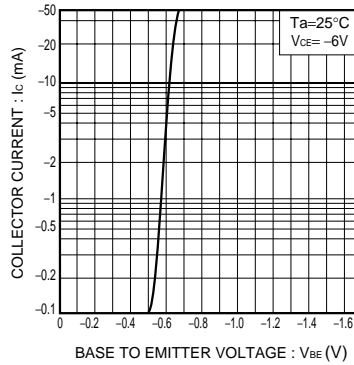


Fig.2 Ground emitter propagation characteristics

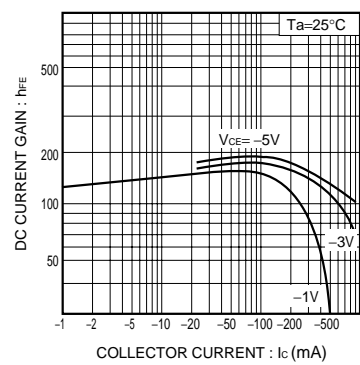


Fig.3 DC current gain vs. collector current

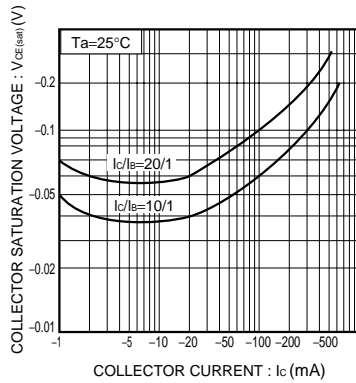


Fig.4 Collector-emitter saturation voltage vs. collector current

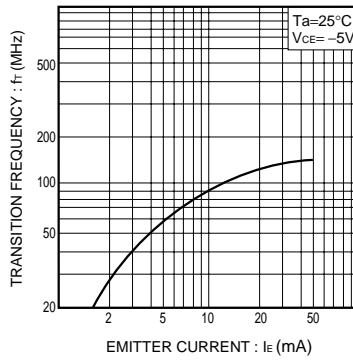


Fig.5 Gain bandwidth product vs. emitter current

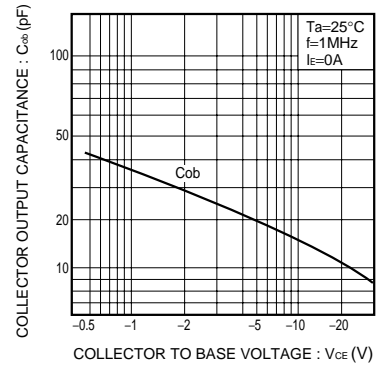


Fig.6 Collector output capacitance vs. collector-base voltage

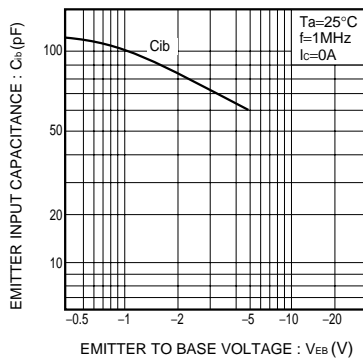


Fig.7 Emitter input capacitance vs. emitter-base voltage

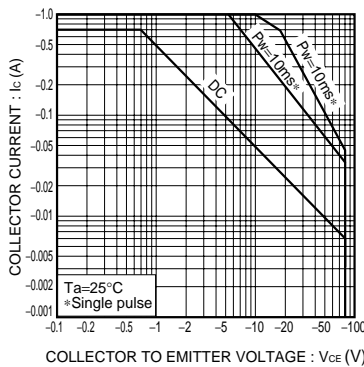


Fig.8 Safe operating area (2SB1189)

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