

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

2SB1189 / 2SB1238

## ●Features

- 1) High breakdown voltage,  $V_{CE0}=-80V$ , 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	$V_{CBO}$	-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	$P_c$	0.5	W	*1
			2		
		2SB1238	1		
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.

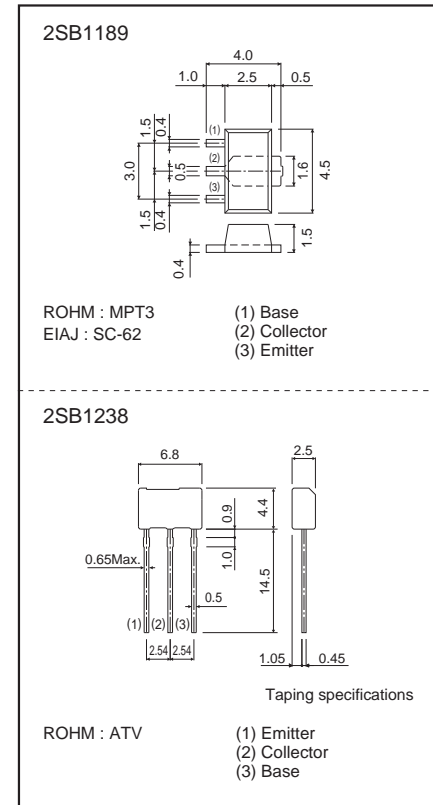
\*2 Printed circuit board 1.7 mm thick, collector plating 1cm<sup>2</sup> or larger.

## ●Packaging specifications and hFE

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

\*Denotes hFE

## ●Dimensions (Unit : mm)



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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$V_{CBO}$	-80	-	-	V	$I_c=-50\mu A$
Collector-emitter breakdown voltage	$V_{CEO}$	-80	-	-	V	$I_c=-2mA$
Emitter-base breakdown voltage	$V_{EBO}$	-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	$V_{CB}=-10V, I_E=0A, f=1MHz$

●Electrical characteristics curves

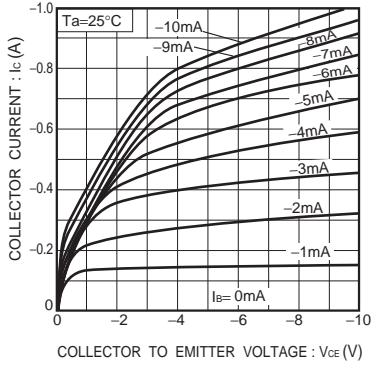


Fig.1 Ground emitter output characteristics

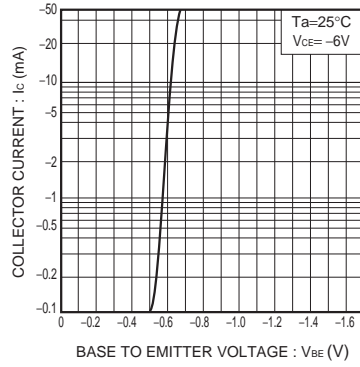


Fig.2 Ground emitter propagation characteristics

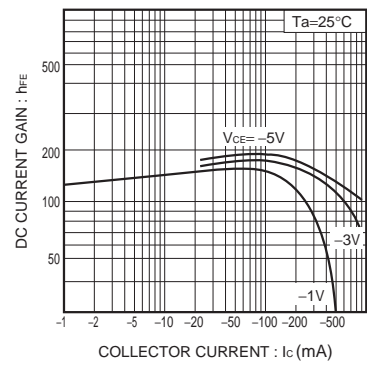


Fig.3 DC current gain vs. collector current

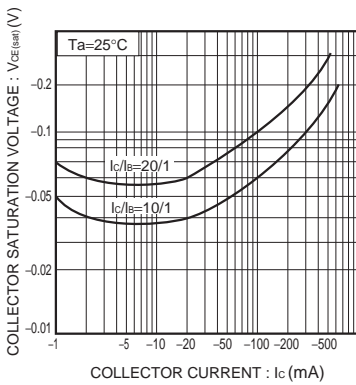


Fig.4 Collector-emitter saturation voltage vs. collector current

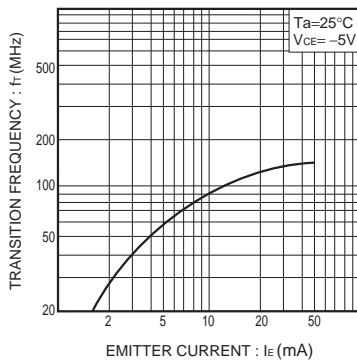


Fig.5 Gain bandwidth product vs. emitter current

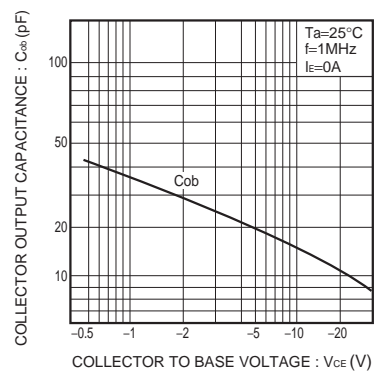


Fig.6 Collector output capacitance vs. collector-base voltage

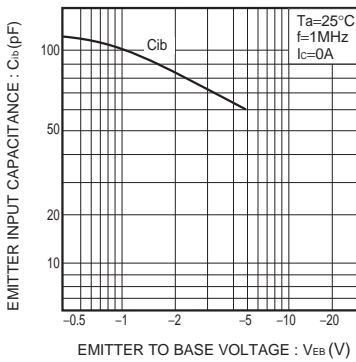


Fig.7 Emitter input capacitance vs. emitter-base voltage

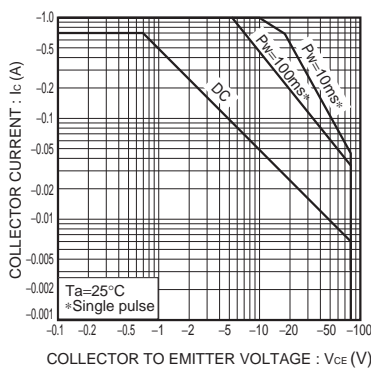


Fig.8 Safe operating area (2SB1189)

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