

# Medium Power Transistor (−80V, −0.7A)

2SB1189 / 2SB1238 / 2SB889F

●Features

- 1) High breakdown voltage,  $BV_{Eco} = -80V$ , and high current,  $-0.7A$ .
- 2) Complements the 2SD1767 / 2SD1859 / 2SD1200F.

●Packaging specifications and  $h_{FE}$

Type	2SB1189	2SB1238	2SB889F
Package	MPT3	ATV	TO-126FP
$h_{FE}$	PQR	PQR	Q
Marking	BD*	—	—
Code	T100	TV2	—
Basic ordering unit (pieces)	1000	2500	1000

\* Denotes  $h_{FE}$

●Absolute maximum ratings ( $T_a = 25^\circ C$ )

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	Pc	0.5	W *1	
			2		
	2SB1238	Pc	1		*2
			2SB889F		5
Junction temperature	$T_j$	150	$^\circ C$		
Storage temperature	$T_{stg}$	−55~+150	$^\circ C$		

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

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

●Electrical characteristics ( $T_a = 25^\circ C$ )

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	$\mu A$	$V_{CB} = -50V$	
Emitter cutoff current	$I_{eBo}$	—	—	−0.5	$\mu A$	$V_{EB} = -4V$	
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	−0.2	−0.4	V	$I_c/I_b = -500mA/-50mA$	
DC current transfer ratio	2SB1189, 2SB1186A	$h_{FE}$	82	—	390	—	$V_{CE}/I_c = -3V/-0.1A$
	2SB889F		120	—	270	—	
Transition frequency	$f_t$	—	100	—	MHz	$V_{CE} = -10V, I_e = 50mA, f = 100MHz$	
Output capacitance	$C_{ob}$	—	14	20	pF	$V_{CB} = -10V, I_e = 0A, f = 1MHz$	

(96-618-B13)

# Medium Power Transistor (80V, 0.7A)

2SD1767 / 2SD1859 / 2SD1200F

●Features

- 1) High breakdown voltage,  $BV_{CEo} = 80V$ , and high current, 0.7A.
- 2) Complements the 2SB1189 / 2SB1238 / 2SB889F.

●Packaging specifications and  $h_{FE}$

Type	2SD1767	2SD1859	2SD1200F
Package	MPT3	ATV	TO-126FP
$h_{FE}$	PQR	QR	QR
Marking	DC*	—	—
Code	T100	TV2	—
Basic ordering unit (pieces)	1000	2500	1000

\* Denotes  $h_{FE}$

●Absolute maximum ratings ( $T_a = 25^\circ C$ )

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 (DC)		
		1	A (Pulse) *1		
Collector power dissipation	2SD1767	Pc	0.5	W *2	
			2		
	2SD1859	Pc	1		*3
			2SD1200F		5
Junction temperature	$T_j$	150	$^\circ C$		
Storage temperature	$T_{stg}$	−55~+150	$^\circ C$		

\*1  $P_w = 10ms, duty = 1/2$

\*2 When mounted on a 40×40×0.7mm ceramic board.

\*3 Printed circuit board 1.7mm thick, collector plating 1cm<sup>2</sup> or larger.

●Electrical characteristics ( $T_a = 25^\circ C$ )

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	$\mu A$	$V_{CB} = 50V$	
Emitter cutoff current	$I_{eBo}$	—	—	0.5	$\mu A$	$V_{EB} = 4V$	
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	0.2	0.4	V	$I_c/I_b = 500mA/50mA$	
DC current transfer ratio	2SD1767	$h_{FE}$	82	—	390	—	$V_{CE}/I_c = 3V/0.1A$
	2SD1859, 2SD1200F		120	—	390	—	
Transition frequency	$f_t$	—	120	—	MHz	$V_{CE} = 10V, I_e = -50mA, f = 100MHz$	
Output capacitance	$C_{ob}$	—	10	—	pF	$V_{CB} = 10V, I_e = 0A, f = 1MHz$	

(96-750-D13)