

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

## 2SB1189 / 2SB1238 / 2SB899F

### ●Features

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

### ●Packaging specifications and hfe

Type	2SB1189	2SB1238	2SB899F
Package	MPT3	ATV	TO-126FP
hfe	PQR	PQR	Q
Marking	BD*	—	—
Code	T100	TV2	—
Basic ordering unit (pieces)	1000	2500	1000

\* Denotes hfe

### ●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 2SB1238 2SB899F	$P_c$	0.5	W *1	
			2		
			1		*2
			5		W (Tc=25°C)
Junction temperature	$T_j$	150	°C		
Storage temperature	$T_{stg}$	−55~+150	°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 (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	$\mu A$	$V_{CB} = -50V$
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	2SB1189,2SB1186A	hfe	82	390	—	$V_{CE}/I_c = -3V/-0.1A$
	2SB899F	hfe	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 / 2SB899F.

### ●Packaging specifications and hfe

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

\* Denotes hfe

### ●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 (DC)		
		1	A (Pulse) *1		
		0.5			
Collector power dissipation	2SD1767 2SD1859 2SD1200F	$P_c$	2	W *2	
			1		*3
			5		W (Tc=25°C)
			—		
Junction temperature	$T_j$	150	°C		
Storage temperature	$T_{stg}$	−55~+150	°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 (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	$\mu A$	$V_{CB} = 50V$
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	2SD1767	hfe	82	390	—	$V_{CE}/I_c = 3V/0.1A$
	2SD1859,2SD1200F	hfe	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)