

# Power Transistor (−160V, −1.5A)

2SB1275 / 2SB1236A / 2SB1569A / 2SB1186A

●Features

- 1) High breakdown voltage. ( $V_{CE0} = -160V$ )
- 2) Low collector output capacitance. (Typ. 30pF at  $V_{CB} = 10V$ )
- 3) High transition frequency. ( $f_T = 50MHz$ )
- 4) Complements the 2SD1918 / 2SD1857A / 2SC2400A / 2SD1763A.

●Packaging specifications and hfe

Type	2SB1275	2SB1236A	2SB1569A	2SB1186A
Package	CPT3	ATV	TO-220FN	TO-220FP
hFE	NP	PQ	E	DE
Code	TL	TV2	—	—
Basic ordering unit (pieces)	2500	2500	500	500

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions	
Collector-base breakdown voltage	$BV_{CBO}$	-160	—	—	V	$I_C = -50 \mu A$	
Collector-emitter breakdown voltage	$BV_{CEO}$	-160	—	—	V	$I_C = -1mA$	
Emitter-base breakdown voltage	$BV_{EBO}$	-5	—	—	V	$I_E = -50 \mu A$	
Collector cutoff current	$I_{CBO}$	—	—	-1	$\mu A$	$V_{CB} = -120V$	
Emitter cutoff current	$I_{EBO}$	—	—	-1	$\mu A$	$V_{EB} = -4V$	
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	-2	V	$I_C/I_E = -1A/-0.1A$ *	
Base-emitter saturation voltage	$V_{BE(sat)}$	—	—	-1.5	V	$I_C/I_E = -1A/-0.1A$ *	
DC current transfer ratio	2SB1275	hFE	56	—	180	—	$V_{CE} = -5V, I_C = -1A$
	2SB1236A		82	—	270	—	
	2SB1569A		100	—	200	—	
	2SB1186A		60	—	200	—	
Transition frequency	$f_T$	—	50	—	MHz	$V_{CE} = -5V, I_E = 0.1A, f = 30MHz$	
Output capacitance	$C_{ob}$	—	30	—	pF	$V_{CB} = -10V, I_E = 0A, f = 1MHz$	

\* Measured using pulse current.

(96-612-A58)

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit	
Collector-base voltage	$V_{CBO}$	-160	V	
Collector-emitter voltage	$V_{CEO}$	-160	V	
Emitter-base voltage	$V_{EBO}$	-5	V	
Collector current	$I_C$	-1.5	A (DC)	
		-3	A (Pulse) *1	
Collector power dissipation	$P_C$	1	W ( $T_C = 25^\circ C$ )	
		10		
		1	W *2	
		2		
Junction temperature		TJ	150	°C
Storage temperature		Tstg	-55 ~ +150	°C

\*1 Single pulse  $P_w = 100ms$

\*2 Printed circuit board 1.7mm thick, collector plating  $1cm^2$  or larger.

# Power Transistor (160V, 1.5A)

2SD2211 / 2SD1918 / 2SD1857A / 2SD2400A / 2SD1763A

●Features

- 1) High breakdown voltage. ( $V_{CE0} = 160V$ )
- 2) Low collector output capacitance. (Typ. 20pF at  $V_{CB} = 10V$ )
- 3) High transition frequency. ( $f_T = 80MHz$ )
- 4) Complements the 2SB1275 / 2SB1236A / 2SB1569A / 2SB1186A.

●Packaging specifications and hfe

Type	2SD2211	2SD1918	2SD1857A	2SD2400A	2SD1763A
Package	MPT3	CPT3	ATV	TO-220FN	TO-220FP
hFE	Q	Q	PQ	E	DE
Marking	DQ*	—	—	—	—
Code	T100	TL	TV2	—	—
Basic ordering unit (pieces)	1000	2500	2500	500	500

\* Denotes hFE

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions	
Collector-base breakdown voltage	$BV_{CBO}$	160	—	—	V	$I_C = 50 \mu A$	
Collector-emitter breakdown voltage	$BV_{CEO}$	160	—	—	V	$I_C = 1mA$	
Emitter-base breakdown voltage	$BV_{EBO}$	5	—	—	V	$I_E = 50 \mu A$	
Collector cutoff current	$I_{CBO}$	—	—	1	$\mu A$	$V_{CB} = 120V$	
Emitter cutoff current	$I_{EBO}$	—	—	1	$\mu A$	$V_{EB} = 4V$	
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	2	V	$I_C/I_E = 1A/0.1A$ *	
Base-emitter saturation voltage	$V_{BE(sat)}$	—	—	1.5	V	$I_C/I_E = 1A/0.1A$ *	
DC current transfer ratio	2SD2211, 2SD1918	hFE	120	—	390	—	$V_{CE}/I_C = 5V/0.1A$
	2SD1857A		82	—	270	—	
	2SD2400A		100	—	200	—	
	2SD1763A		60	—	200	—	
Transition frequency	$f_T$	—	80	—	MHz	$V_{CE} = 5V, I_E = -0.1A, f = 30MHz$	
Output capacitance	$C_{ob}$	—	20	—	pF	$V_{CB} = 10V, I_E = 0A, f = 1MHz$	

\* Measured using pulse current.

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit	
Collector-base voltage	$V_{CBO}$	160	V	
Collector-emitter voltage	$V_{CEO}$	160	V	
Emitter-base voltage	$V_{EBO}$	5	V	
Collector current	$I_C$	1.5	A (DC)	
		3	A (Pulse) *1	
Collector power dissipation	$P_C$	1	W *2	
		2		
		1	W *3	
		10		
Junction temperature		TJ	150	°C
Storage temperature		Tstg	-55 ~ +150	°C

\*1 Single pulse  $P_w = 100ms$

\*2 Printed circuit board 1.7mm thick, collector plating  $1cm^2$  or larger.

\*3 When mounted on a  $40 \times 40 \times 0.7mm$  ceramic board.

(96-744-C58)