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Transistors

Power Transistor (−160V, −1.5A)

2SB1275 / 2SB1236A / 2SB1569A / 2SB1186A

●Features

- 1) High breakdown voltage. ($BV_{CEO} = -160V$)
- 2) Low collector output capacitance. (Typ. 30pF at $V_{CB} = 10V$)
- 3) High transition frequency. ($f_T = 50MHz$)
- 4) Complements the 2SD1918 / 2SD1857A / 2SD2400A / 2SD1763A.

●Packaging specifications and h_{FE}

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

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

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	W *2
		1	W *2
		2	W
Junction temperature	T_j	150	$^\circ C$
		20	W ($T_c = 25^\circ C$)
Storage temperature	T_{stg}	−55~+150	$^\circ C$

*1 Single pulse $P_w = 100ms$

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

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

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	μA	$V_{CB} = -120V$
Emitter cutoff current	I_{EBO}	—	—	−1	μA	$V_{EB} = -4V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	−2	V	$I_C/I_B = -1A/-0.1A$ *
Base-emitter saturation voltage	$V_{BE(sat)}$	—	—	−1.5	V	$I_C/I_B = -1A/-0.1A$ *
DC current transfer ratio	h_{FE}	2SB1275	56	—	180	—
		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)

Power Transistor (160V, 1.5A)

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

●Features

- 1) High breakdown voltage. ($BV_{CEO} = 160V$)
- 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 h_{FE}

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

* Denotes h_{FE}

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

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	W *3
		1	W
		10	W ($T_c = 25^\circ C$)
Junction temperature	T_j	150	$^\circ C$
		2	W
Storage temperature	T_{stg}	−55~+150	$^\circ C$

*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.

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

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	μA	$V_{CB} = 120V$
Emitter cutoff current	I_{EBO}	—	—	1	μA	$V_{EB} = 4V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	2	V	$I_C/I_B = 1A/0.1A$ *
Base-emitter saturation voltage	$V_{BE(sat)}$	—	—	1.5	V	$I_C/I_B = 1A/0.1A$ *
DC current transfer ratio	h_{FE}	2SD2211, 2SD1918	120	—	390	—
		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.

(96-744-C58)