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 / 2SC2400A / 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 (Ta=25℃)

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	2SB1275	P_C	1	W (Tc=25℃)
			10	
	2SB1236A		1	W ✻2
	2SB1569A,2SB1186A		2	W
			20	W (Tc=25℃)
Junction temperature		Tj	150	℃
Storage temperature		Tstg	−55～+150	℃

✻1 Single pulse Pw=100ms
✻2 Printed circuit board 1.7mm thick, collector plating 1cm² or larger.

●Electrical characteristics (Ta=25℃)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage		BV_{CBO}	−160	—	—	V	I_C=−50μA
Collector-emitter breakdown voltage		BV_{CEO}	−160	—	—	V	I_C=−1mA
Emitter-base breakdown voltage		BV_{EBO}	−5	—	—	V	I_E=−50μA
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	2SB1275	h_{FE}	56	—	180	—	V_{CE}=−5V, I_C=−1A
	2SB1236A		82	—	270	—	
	2SB1569A		100	—	200	—	
	2SB1186A		60	—	200	—	
Transition frequency		fr	—	50	—	MHz	V_{CE}=−5V, I_E=0.1A, f=30MHz
Output capacitance		Cob	—	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 (Ta=25℃)

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	2SD1857A	P_C	1	W ✻2
	2SD2211		2	W ✻3
	2SD1918		1	
			10	W (Tc=25℃)
	2SD2400A,2SD1763A		2	W
			20	W (Tc=25℃)
Junction temperature		Tj	150	℃
Storage temperature		Tstg	−55～+150	℃

✻1 Single pulse Pw=100ms
✻2 Printed circuit board 1.7mm thick, collector plating 1cm² or larger.
✻3 When mounted on a 40 x 40 x 0.7mm ceramic board.

●Electrical characteristics (Ta=25℃)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage		BV_{CBO}	160	—	—	V	I_C=50μA
Collector-emitter breakdown voltage		BV_{CEO}	160	—	—	V	I_C=1mA
Emitter-base breakdown voltage		BV_{EBO}	5	—	—	V	I_E=50μA
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	2SD2211,2SD1918	h_{FE}	120	—	390	—	V_{CE}/I_C=5V/0.1A
	2SD1857A		82	—	270	—	
	2SD2400A		100	—	200	—	
	2SD1763A		60	—	200	—	
Transition frequency		fr	—	80	—	MHz	V_{CE}=5V, I_E=−0.1A, f=30MHz
Output capacitance		Cob	—	20	—	pF	V_{CB}=10V, I_E=0A, f=1MHz

✻ Measured using pulse current.

(96-744-C58)