

# Power Transistor (−100V , −2A)

## 2SB1316

### ●Features

- 1) Darlington connection for high DC current gain.
- 2) Built-in resistor between base and emitter.
- 3) Built-in damper diode.
- 4) Complements the 2SD2195 / 2SD1980.

### ●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V <sub>CB0</sub>	−100	V
Collector-emitter voltage	V <sub>CEO</sub>	−100	V
Emitter-base voltage	V <sub>EB0</sub>	−8	V
Collector current	I <sub>c</sub>	−2	A(DC)
		−3	A(Pulse) *1
Collector power dissipation	P <sub>c</sub>	2	W
		1	W
		10	W(Tc=25°C)
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	−55 to +150	°C

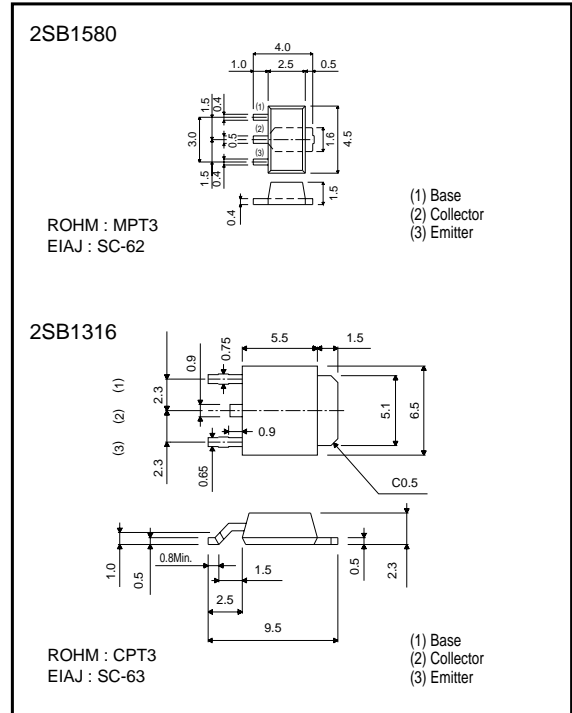
\*1 Single pulse Pw=100ms  
 \*2 When mounted on a 40 x 40 x 0.7 mm ceramic board.

### ●Packaging specifications and hFE

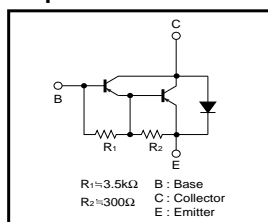
Type	2SB1580	2SB1316
Package	MPT3	CPT3
hFE	1k to 10k	1k to 10k
Marking	BN*	—
Code	T100	TL
Basic ordering unit (pieces)	1000	2500

\* Denotes hFE

### ●External dimensions (Unit : mm)



### ●Equivalent circuit



### ●Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV <sub>CB0</sub>	−100	—	—	V	I <sub>c</sub> = −50μA
Collector-emitter breakdown voltage	BV <sub>CEO</sub>	−100	—	—	V	I <sub>c</sub> = −5mA
Emitter-base breakdown voltage	BV <sub>EB0</sub>	−10	—	—	V	I <sub>E</sub> = −5mA
Collector cutoff current	I <sub>cbo</sub>	—	—	−10	μA	V <sub>CB</sub> = −100V
Emitter cutoff current	I <sub>ebo</sub>	—	—	−3	mA	V <sub>EB</sub> = −7V
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	—	—	−1.5	V	I <sub>c</sub> /I <sub>E</sub> = −1A/−1mA
DC current transfer ratio	h <sub>FE</sub>	1000	—	10000	—	V <sub>CE</sub> = −2V, I <sub>c</sub> = −1A
Transition frequency	f <sub>T</sub>	—	50	—	MHz	V <sub>CE</sub> = −5V, I <sub>E</sub> = 0.1A, f = 30MHz
Output capacitance	C <sub>ob</sub>	—	35	—	pF	V <sub>CB</sub> = −10V, I <sub>E</sub> = 0A, f = 1MHz

\* Measured using pulse current.

Transistors

●Electrical characteristics curve

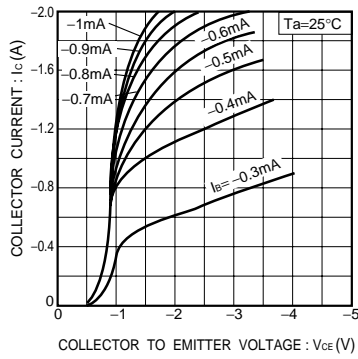


Fig.1 Grounded emitter output characteristics

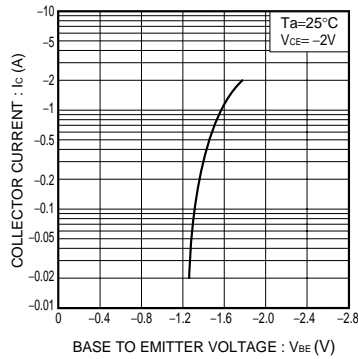


Fig.2 Grounded emitter propagation characteristics

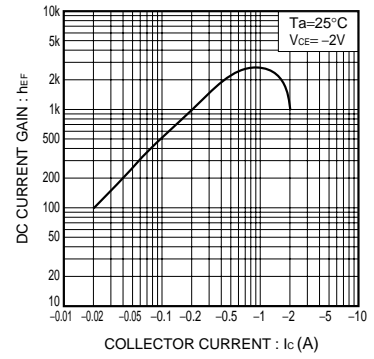


Fig.3 DC current gain vs. collector current

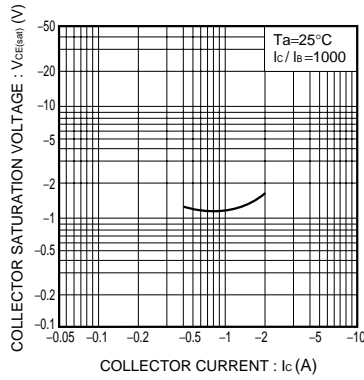


Fig.4 Collector-emitter saturation voltage vs. collector current

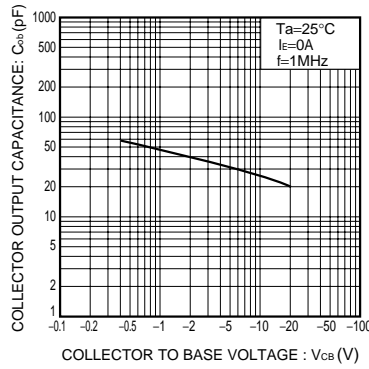


Fig.5 Collector output capacitance vs. collector-base voltage

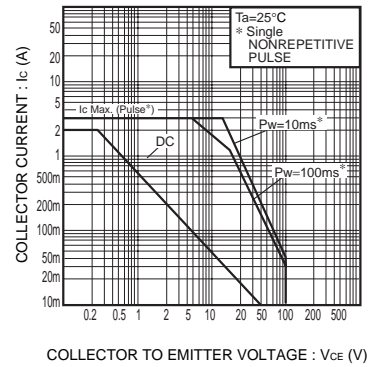


Fig.6 Safe Operating area (2SB1580)

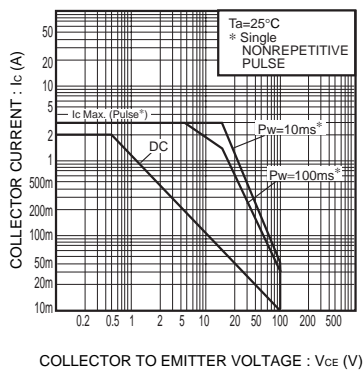


Fig.7 Safe Operating area (2SB1316)

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