

High-current gain Power Transistor (—60V, —3A)

2SB1639

●Features

- 1) High DC current gain. (Typ.440 at $V_{CE}/I_C = -4V/-0.5A$)
- 2) Low $V_{CE(sat)}$. (Typ.—0.2V at $I_C/I_B = -2/-0.05A$)
- 3) Complements the 2SD1944.

●Packaging specifications and h_{FE}

Type	2SB1639
Package	TO-220FN
h_{FE}	H
Code	—
Basic ordering unit (pieces)	500

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

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CB0}	—80	V
Collector-emitter voltage	V_{CE0}	—60	V
Emitter-base voltage	V_{EB0}	—6	V
Collector current	I_C	—3	A
Collector power dissipation	P_C	2 30	W W ($T_C=25^\circ\text{C}$)
Junction temperature	T_J	150	$^\circ\text{C}$
Storage temperature	T_{stg}	—55~150	$^\circ\text{C}$

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-emitter breakdown voltage	BV_{CEO}	—60	—	—	V	$I_C = -1\text{mA}$
Collector-base breakdown voltage	BV_{CBO}	—60	—	—	V	$I_C = -50\mu\text{A}$
Emitter-base breakdown voltage	BV_{EBO}	—6	—	—	V	$I_E = -50\mu\text{A}$
Collector cutoff current	I_{CBO}	—	—	—10	μA	$V_{CB} = -60\text{V}$
Emitter cutoff current	I_{EBO}	—	—	—10	μA	$V_{EB} = -6\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	—1	V	$I_C/I_B = -1\text{V}/-0.05\text{A}$
DC current transfer ratio	h_{FE}	400	—	800	—	$V_{CE} = -4\text{V}$, $I_C = -0.5\text{A}$
Transition frequency	f_T	—	60	—	MHz	$V_{CE} = -5\text{V}$, $I_E = -0.5\text{A}$, $f = 30\text{MHz}$
Output capacitance	C_{ob}	—	80	—	pF	$V_{CB} = -10\text{V}$, $I_E = 0\text{A}$, $f = 1\text{MHz}$

(SPEC-B302)

High-current gain Power Transistor (60V, 3A)

2SD2318/2SD1944

●Features

- 1) High DC current gain.
- 2) Low $V_{CE(sat)}$. (Typ. 0.5V at $I_C/I_B = 2/0.5A$)
- 3) Complements the 2SB1639.

●Packaging specifications and h_{FE}

Type	2SD2318	2SD1944
Package	CPT3	TO-220FP
h_{FE}	UV	HJK
Code	TL	—
Basic ordering unit (pieces)	2500	500

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

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CB0}	80	V
Collector-emitter voltage	V_{CE0}	60	V
Emitter-base voltage	V_{EB0}	6	V
Collector current	I_C	3 4.5	A A (Pulse) *
Collector power dissipation	P_C	1 15 2 30	W W ($T_C=25^\circ\text{C}$) W W ($T_C=28^\circ\text{C}$)
Junction temperature	T_J	150	$^\circ\text{C}$
Storage temperature	T_{stg}	—55~150	$^\circ\text{C}$

* Single pulse $P_w=100\text{ms}$ ●Electrical characteristics ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	80	—	—	V	$I_C = 50\mu\text{A}$
Collector-emitter breakdown voltage	BV_{CEO}	60	—	—	V	$I_C = 1\text{mA}$
Emitter-base breakdown voltage	BV_{EBO}	6	—	—	V	$I_E = 50\mu\text{A}$
Collector cutoff current	I_{CBO}	—	—	100	μA	$V_{CB} = 80\text{V}$
Emitter cutoff current	I_{EBO}	—	—	100	μA	$V_{EB} = 6\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	1.0	V	$I_C/I_B = 2\text{A}/0.05\text{A}$ *
Base-emitter saturation voltage	$V_{BE(sat)}$	—	—	1.5	V	$I_C/I_B = 2\text{A}/0.05\text{A}$ *
DC current transfer ratio	h_{FE}	560 400	— —	1800 2000	—	$V_{CE}/I_C = 4\text{V}/0.5\text{A}$
Transition frequency	f_T	—	50	—	MHz	$V_{CE} = 5\text{V}$, $I_C = -0.2\text{A}$, $f = 10\text{MHz}$ *
Output capacitance	C_{ob}	—	60	—	pF	$V_{CB} = 10\text{V}$, $I_E = 0\text{A}$, $f = 1\text{MHz}$

* Measured using pulse current.

(96-244-D302)