

# 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.

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	$V_{CBO}$	−80	V
Collector-emitter voltage	$V_{CEO}$	−60	V
Emitter-base voltage	$V_{EBO}$	−6	V
Collector current	$I_C$	−3	A
Collector power dissipation	$P_C$	2	W
		30	W (Tc=25°C)
Junction temperature	$T_J$	150	°C
Storage temperature	$T_{stg}$	−55~150	°C

●Packaging specifications and  $h_{FE}$

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

●Electrical characteristics (Ta=25°C)

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

(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.

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	$V_{CBO}$	80	V
Collector-emitter voltage	$V_{CEO}$	60	V
Emitter-base voltage	$V_{EBO}$	6	V
Collector current	$I_C$	3	A
		4.5	A (Pulse) *
Collector power dissipation	$P_C$	1	W
		15	W (Tc=25°C)
		2	W
Junction temperature	$T_J$	30	W (Tc=26°C)
		150	°C
Storage temperature	$T_{stg}$	−55~150	°C

\* Single pulse Pw=100ms

●Packaging specifications and  $h_{FE}$

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

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$BV_{CBO}$	80	—	—	V	$I_C = 50 \mu A$
Collector-emitter breakdown voltage	$BV_{CEO}$	60	—	—	V	$I_C = 1mA$
Emitter-base breakdown voltage	$BV_{EBO}$	6	—	—	V	$I_E = 50 \mu A$
Collector cutoff current	$I_{CBO}$	—	—	100	$\mu A$	$V_{CB} = 80V$
Emitter cutoff current	$I_{EBO}$	—	—	100	$\mu A$	$V_{EB} = 6V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	1.0	V	$I_C/I_B = 2A/0.05A$ *
Base-emitter saturation voltage	$V_{BE(sat)}$	—	—	1.5	V	$I_C/I_B = 2A/0.05A$ *
DC current transfer ratio	$h_{FE}$	2SD2318	560	—	1800	—
		2SD1944	400	—	2000	—
Transition frequency	$f_T$	—	50	—	MHz	$V_{CE} = 5V, I_C = -0.2A, f = 10MHz$ *
Output capacitance	$C_{ob}$	—	60	—	pF	$V_{CB} = 10V, I_E = 0A, f = 1MHz$

\* Measured using pulse current.

(96-244-D302)