

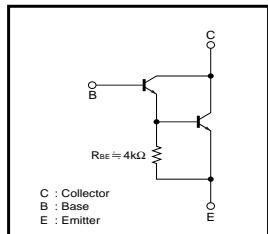
# Power transistor (40V, 2A)

## 2SD1759 / 2SD1861

### ●Features

- 1) Darlington connection for high DC current gain.
- 2) Built-in  $4k\Omega$  resistor between base and emitter.
- 3) Complements the 2SB1183 / 2SB1239.

### ●Equivalent circuit

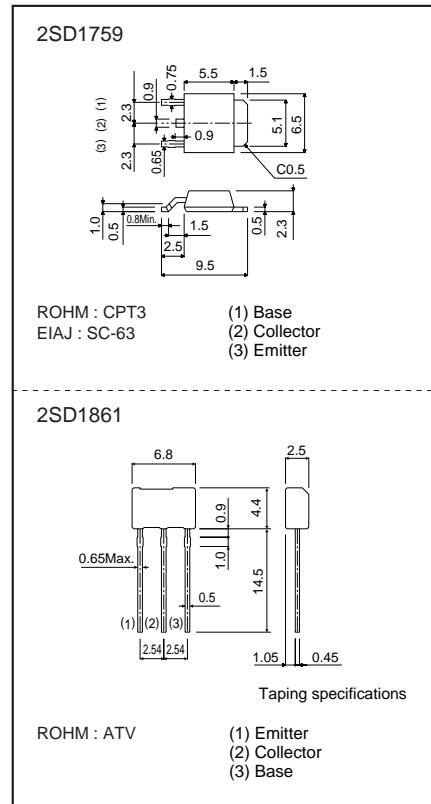


### ●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V <sub>CBO</sub>	40	V
Collector-emitter voltage	V <sub>CER</sub>	40	V(R <sub>BE</sub> =10kΩ)
Emitter-base voltage	V <sub>EBO</sub>	5	V
Collector current	I <sub>C</sub>	2	A(DC)
Collector power dissipation	P <sub>C</sub>	1 * 10	W W(T <sub>C</sub> =25°C)
Junction temperature	T <sub>J</sub>	150	°C
Storage temperature	T <sub>STG</sub>	-55 to +150	°C

\* Printed circuit board 1.7mm thick, collector plating 1cm<sup>2</sup> or larger.

### ●External dimensions (Unit : mm)



### ●Packaging specifications and h<sub>FE</sub>

Type	2SD1759	2SD1861
Package	CPT3	ATV
h <sub>FE</sub>	1k to 200k	1k to
Code	TL	TV2
Basic ordering unit (pieces)	2500	2500

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV <sub>CBO</sub>	40	—	—	V	I <sub>C</sub> =50μA
Collector-emitter breakdown voltage	BV <sub>CER</sub>	40	—	—	V	I <sub>C</sub> =1mA, R <sub>BE</sub> =10kΩ
Emitter-base breakdown voltage	BV <sub>EBO</sub>	5	—	—	V	I <sub>E</sub> =50μA
Collector cutoff current	I <sub>CB0</sub>	—	—	1	μA	V <sub>CB</sub> =24V
Emitter cutoff current	I <sub>EB0</sub>	—	—	1	μA	V <sub>EB</sub> =4V
Collector-emitter saturation voltage	V <sub>CESat</sub>	—	0.8	1.5	V	I <sub>C</sub> /I <sub>B</sub> =0.6A/1.2mA
DC current transfer ratio	h <sub>FE</sub>	1000	—	20000	—	V <sub>CE</sub> /I <sub>C</sub> =3V/0.5A
Transition frequency	f <sub>T</sub>	—	150	—	MHz	V <sub>CE</sub> =6V, I <sub>E</sub> =-0.1A, f=100MHz
Output capacitance	C <sub>OB</sub>	—	11	—	pF	V <sub>CB</sub> =10V, I <sub>E</sub> =0A, f=1MHz

## Transistors

## ● Electrical characteristics curves

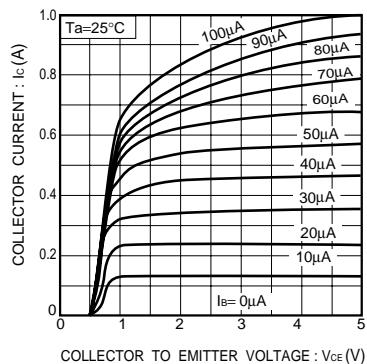


Fig.1 Ground emitter output characteristics

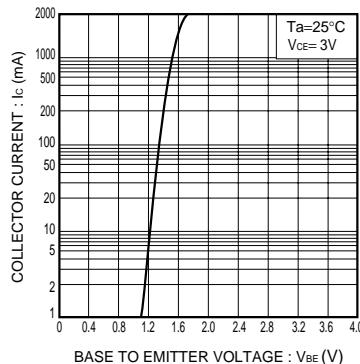


Fig.2 Ground emitter propagation characteristics

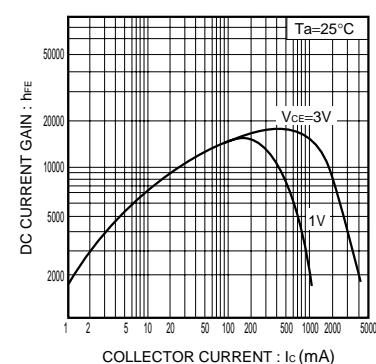


Fig.3 DC current gain vs. collector current

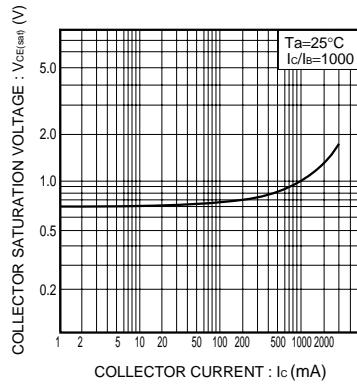


Fig.4 Collector-emitter saturation voltage vs. collector current

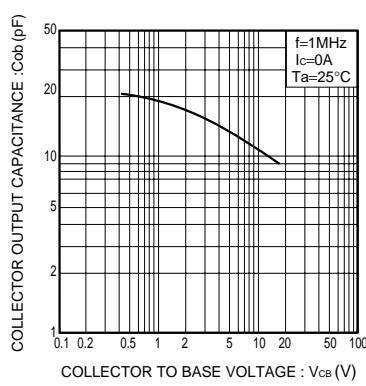


Fig.5 Collector output capacitance vs. collector-base voltage

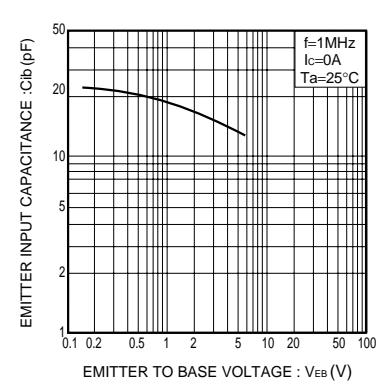


Fig.6 Emitter input capacitance vs. emitter-base voltage

## Appendix

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