

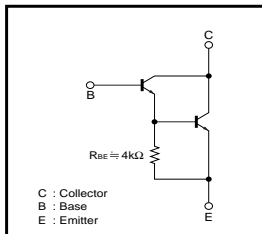
# Power transistor (40V, 2A)

## 2SD1759 / 2SD1861

**●Features**

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

**●Equivalent circuit**

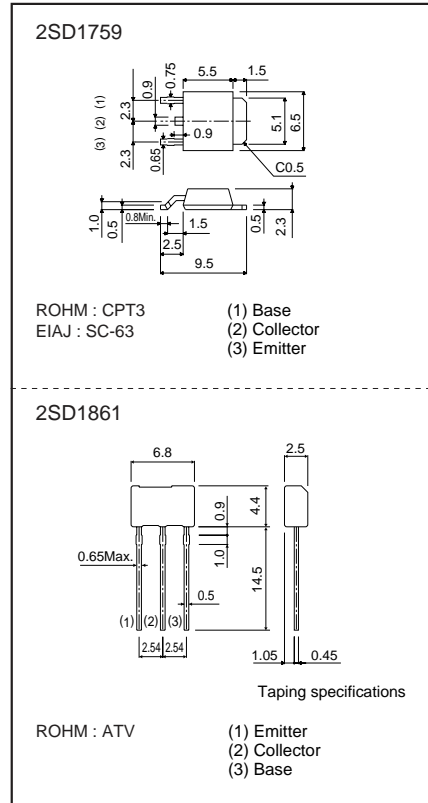


**●Absolute maximum ratings (Ta=25°C)**

Parameter	Symbol	Limits	Unit
Collector-base voltage	V <sub>CB0</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	2SD1861	1	W
	2SD1759	1	W
		10	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 hFE**

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>CB0</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>cbo</sub>	-	-	1	μA	V <sub>CB</sub> =24V
Emitter cutoff current	I <sub>EBO</sub>	-	-	1	μA	V <sub>EB</sub> =4V
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	-	0.8	1.5	V	I <sub>c</sub> /I <sub>B</sub> =0.6A/1.2mA
DC current transfer ratio	2SD1759	h <sub>FE</sub>	1000	-	20000	-
	2SD1861	h <sub>FE</sub>	1000	-	-	V <sub>CE</sub> /I <sub>C</sub> =3V/0.5A
Transition frequency	f <sub>r</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

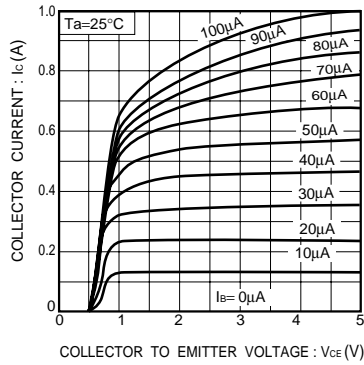


Fig.1 Ground emitter output characteristics

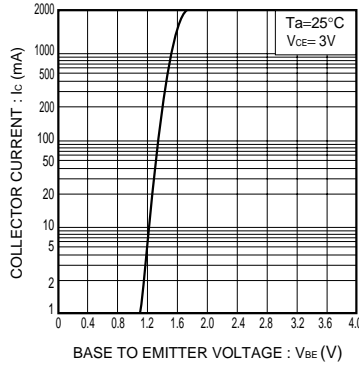


Fig.2 Ground emitter propagation characteristics

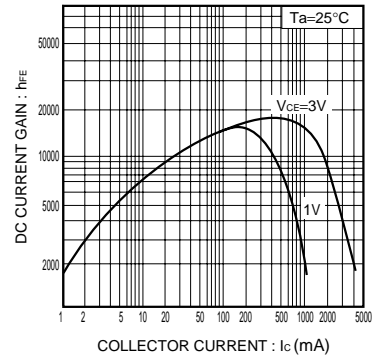


Fig.3 DC current gain vs. collector current

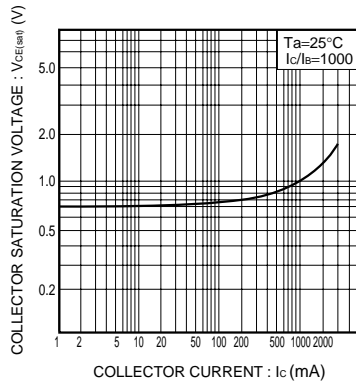


Fig.4 Collector-emitter saturation voltage vs. collector current

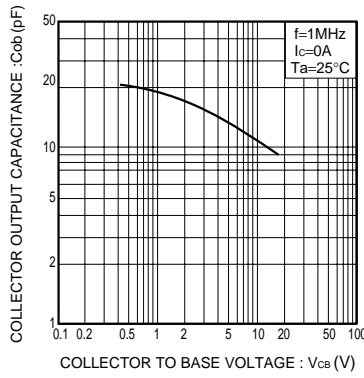


Fig.5 Collector output capacitance vs. collector-base voltage

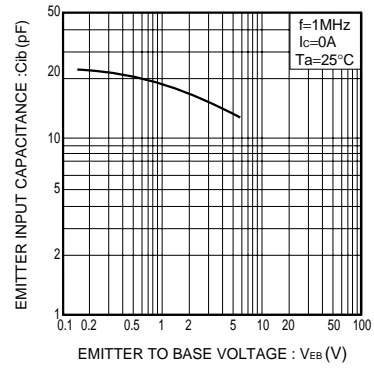


Fig.6 Emitter input capacitance vs. emitter-base voltage

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