Power Transistor (50V, 3A)

2SD1760 / 2SD1864

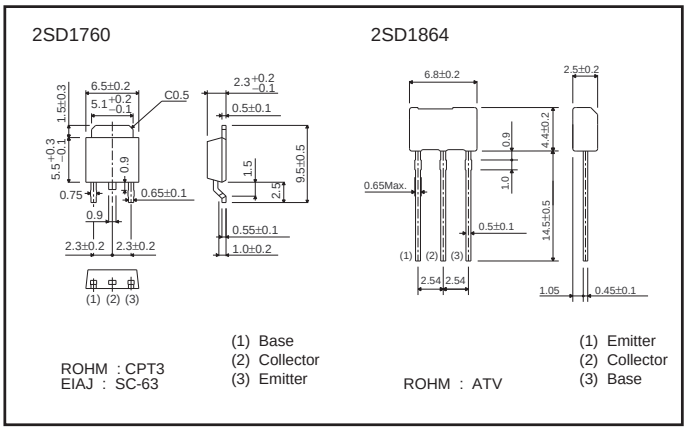
●Features

1) Low $V_{CE(sat)}$.
   $V_{CE(sat)}$ = 0.5V (Typ.)
   (I_C/I_B = 2A / 0.2A)
2) Complements the 2SB1184 / 2SB1243.

●Structure

Epitaxial planar type
NPN silicon transistor

●Dimensions (Unit : mm)



●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Collector-base voltage		V_{CBO}	60	V
Collector-emitter voltage		V_{CEO}	50	V
Emitter-base voltage		V_{EBO}	5	V
Collector current		I_C	3	A (DC)
			4.5	A (Pulse) *1
Collector power dissipation	2SD1760	P_C	15	W (Tc=25°C)*2
	2SD1864		1	W
Junction temperature		Tj	150	°C
Storage temperature		Tstg	−55 to +150	°C

*1 Single pulse, P_W=100ms
*2 Printed circuit board, 1.7mm thick, collector copper plating 100mm² or larger.

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	60	–	–	V	I_C=50μA
Collector-emitter breakdown voltage	BV_{CEO}	50	–	–	V	I_C=1mA
Emitter-base breakdown voltage	BV_{EBO}	5	–	–	V	I_E=50μA
Collector cutoff current	I_{CBO}	–	–	1	μA	V_{CB}=40V
Emitter cutoff current	I_{EBO}	–	–	1	μA	V_{EB}=4V
Collector-emitter saturation voltage	$V_{CE\ (sat)}$	–	0.5	1	V	I_C/I_B=2A/0.2A *
DC current transfer ratio	h_{FE}	120	–	390	–	V_{CE}=3V, I_C=0.5A *
Transition frequency	f_T	–	90	–	MHz	V_{CE}=5V, I_E=−500mA, f=30MHz *
Output capacitance	Cob	–	40	–	pF	V_{CB}=10V, I_E=0A, f=1MHz

* Measured using pulse current.

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●Packaging specifications and h_{FE}

Type	h_{FE}	Package	Taping	
		Code	TL	TV2
		Basic ordering unit (pieces)	2500	2500
2SD1760	QR		○	–
2SD1864	QR		–	○

h_{FE} values are classified as follows:

Item	Q	R
h_{FE}	120 to 270	180 to 390

●Electrical characteristic curves

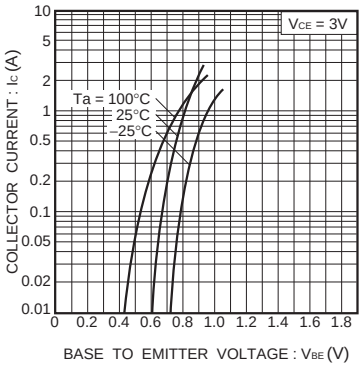


Fig.1 Grounded emitter propagation characteristics

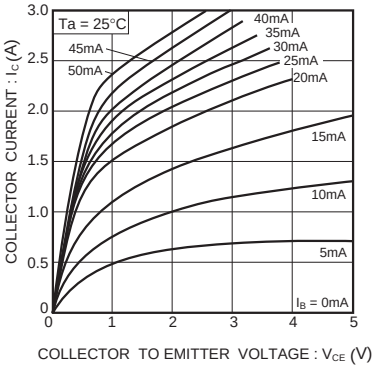


Fig.2 Grounded emitter output characteristics (I)

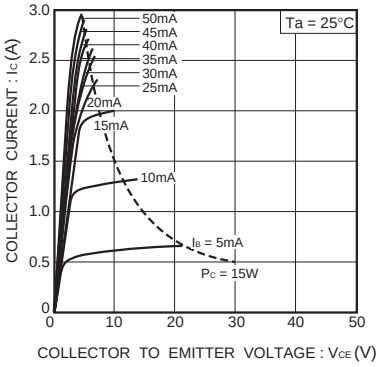


Fig.3 Grounded-emitter output characteristics(II)

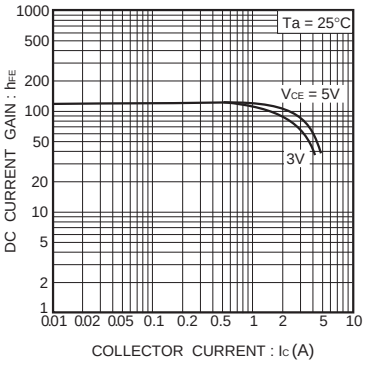


Fig.4 DC current gain vs. collector current(I)

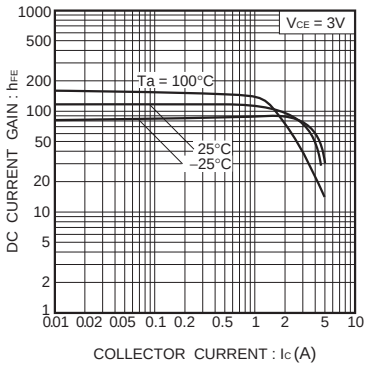


Fig.5 DC current gain vs. collector curren(II)

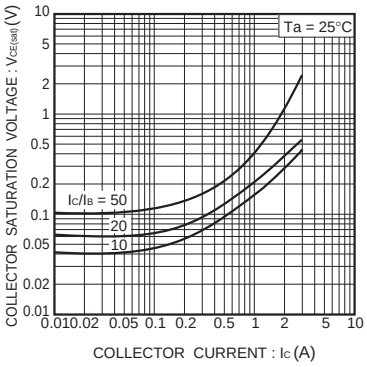


Fig.6 Collector-emitter saturation voltage vs. collector current

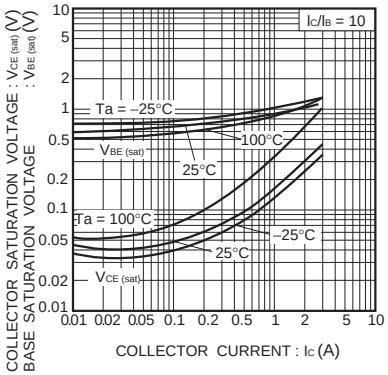


Fig.7 Collector-emitter saturation voltage vs. collector current
Base-emitter saturation voltage vs. collector current

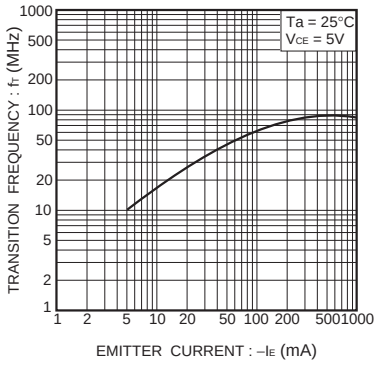


Fig.8 Gain bandwidth product vs. emitter current

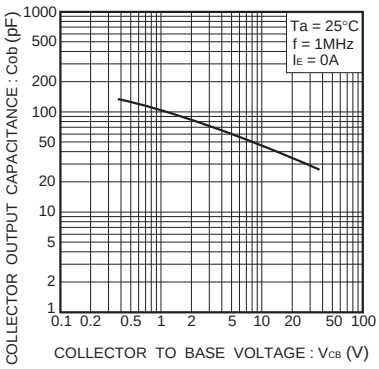


Fig.9 Collector output capacitance vs. collector-base voltage

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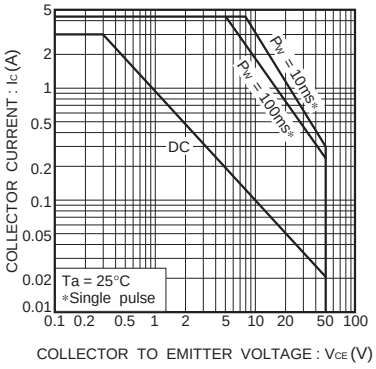


Fig.10 Safe operating area
(2SD1760)

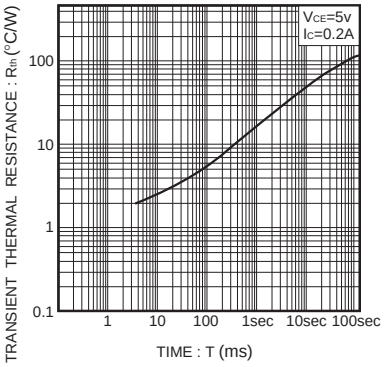


Fig.11 Transient thermal resistance
(2SD1760)

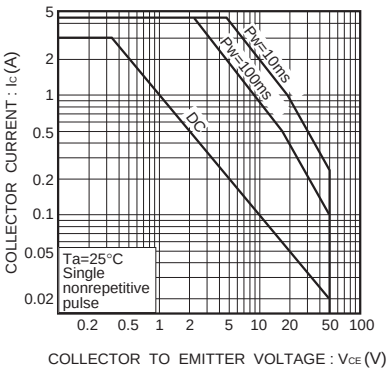


Fig.12 Safe operating area
(2SD1864)

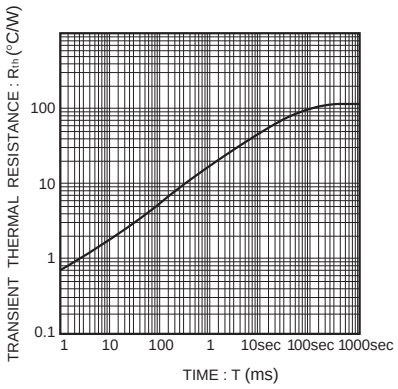


Fig.13 Transient thermal resistance
(2SD1864)

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