

Power Transistor (50V, 3A)

2SD1760 / 2SD1864

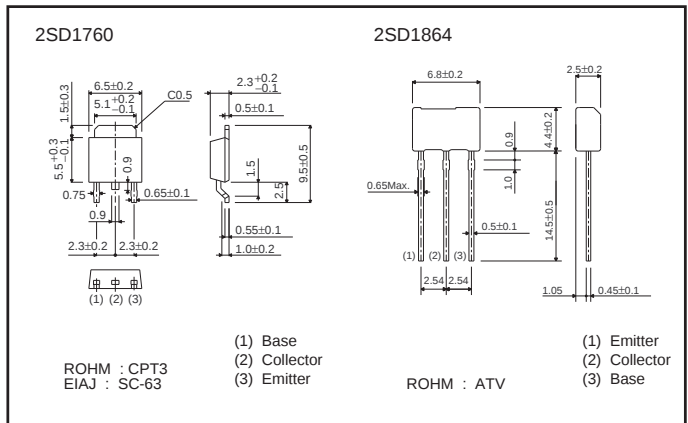
●Features

- 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	15	W (Tc=25°C)*2
	2SD1864	1	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-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	$I_C=50\mu A$
Collector-emitter breakdown voltage	BV_{CEO}	50	—	—	V	$I_C=1mA$
Emitter-base breakdown voltage	BV_{EBO}	5	—	—	V	$I_E=50\mu A$
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	C_{ob}	—	40	—	pF	$V_{CB}=10V, I_E=0A, f=1MHz$

* Measured using pulse current.

●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

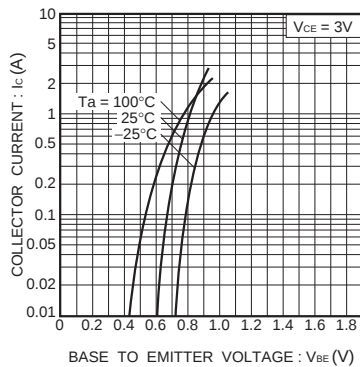


Fig.1 Grounded emitter propagation characteristics

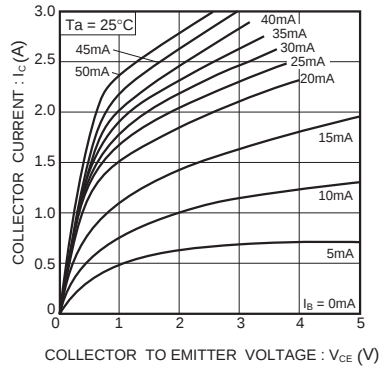


Fig.2 Grounded emitter output characteristics (I)

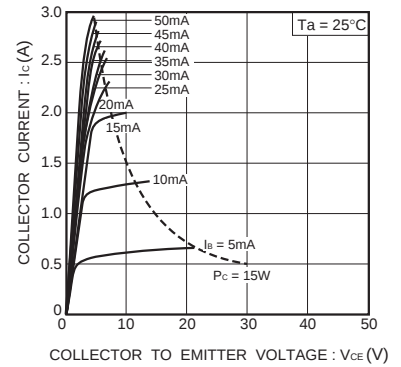


Fig.3 Grounded-emitter output characteristics (II)

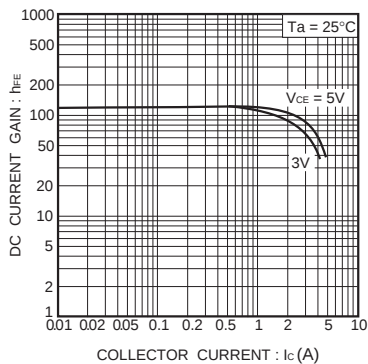


Fig.4 DC current gain vs. collector current(I)

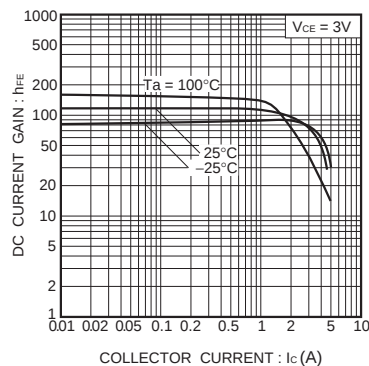


Fig.5 DC current gain vs. collector current(II)

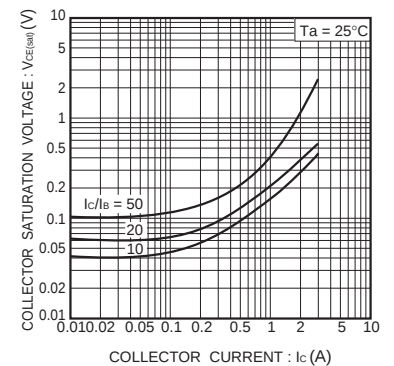


Fig.6 Collector-emitter saturation voltage vs. collector current

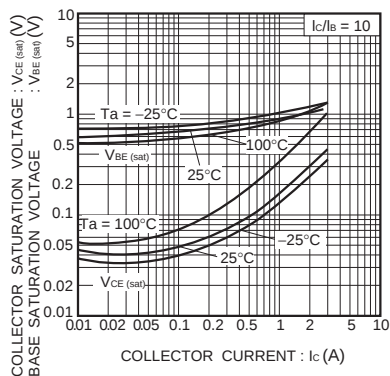


Fig.7 Collector-emitter saturation voltage vs. collector current
Base-emitter saturation voltage vs. collector current

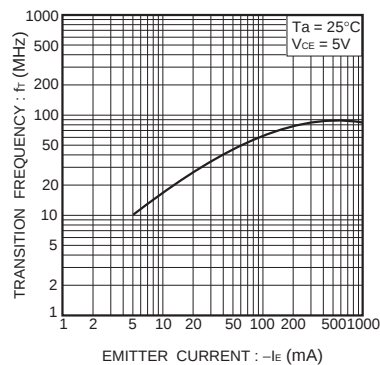


Fig.8 Gain bandwidth product vs. emitter current

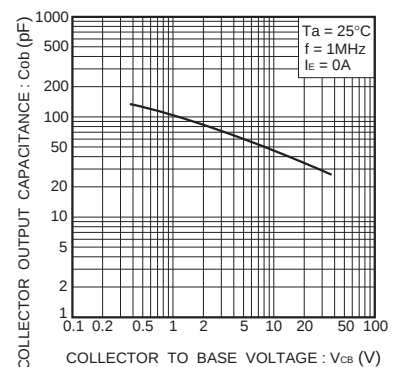


Fig.9 Collector output capacitance vs. collector-base voltage

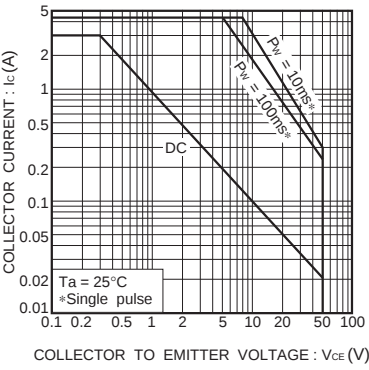


Fig.10 Safe operating area (2SD1760)

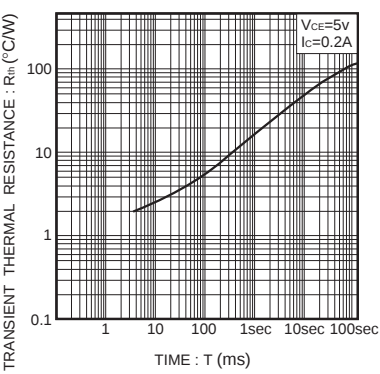


Fig.11 Transient thermal resistance (2SD1760)

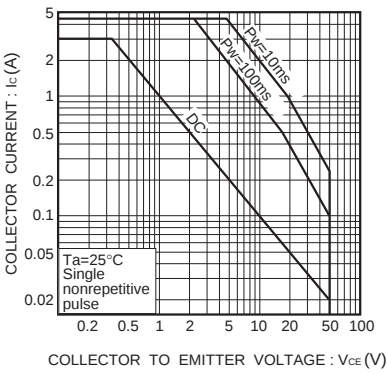


Fig.12 Safe operating area (2SD1864)

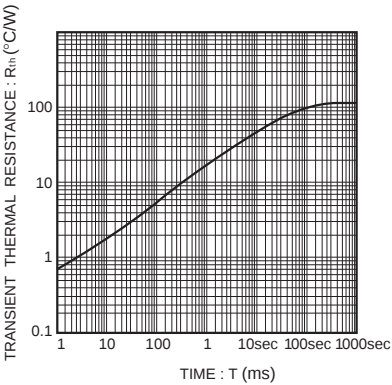


Fig.13 Transient thermal resistance (2SD1864)

Notes

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