

Transistors

Medium Power Transistor (32V, 1A)

2SD1664 / 2SD1858

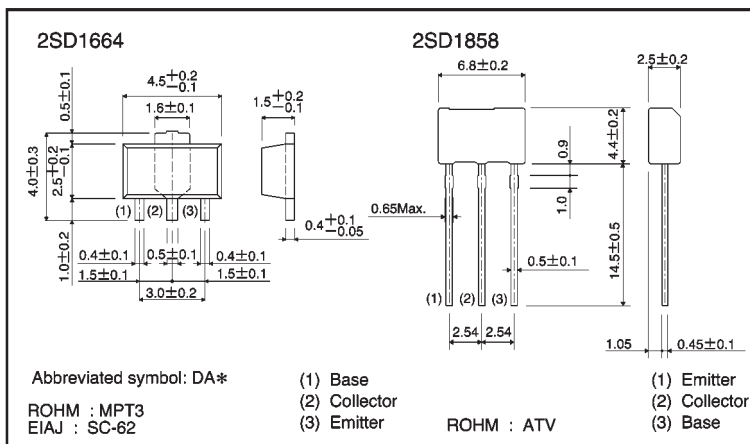
●Features

- 1) Low $V_{CE(sat)}$, $V_{CE(sat)} = 0.15V$ (typical).
($I_C/I_B = 500mA/50mA$)
- 2) Complements the
2SB1132 / 2SB1237.

●Structure

Epitaxial planar type
NPN silicon transistor

●External dimensions (Units: mm)



* Denotes hFE

●Absolute maximum ratings ($T_a = 25^\circ C$)

Parameter		Symbol	Limits	Unit
Collector-base voltage		V_{CBO}	40	V
Collector-emitter voltage		V_{CEO}	32	V
Emitter-base voltage		V_{EBO}	5	V
Collector current		I_C	1	A (DC)
			2	A (Pulse) *1
Collector power dissipation	2SD1664	P_C	0.5	W *2
			2	
	2SD1858		1	*3
Junction temperature		T_j	150	$^\circ C$
Storage temperature		T_{stg}	$-55 \sim +150$	$^\circ C$

*1 $P_W = 20ms$, $duty = 1/2$

*2 When mounted on a $40 \times 40 \times 0.7$ mm ceramic board.

*3 When it is mounted on the copper clad PCB (1.7mm thick) with land size for collector 1 square CM or larger.

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●Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV _{CBO}	40	—	—	V	I _C =50 μA
Collector-emitter breakdown voltage	BV _{CEO}	32	—	—	V	I _C =1mA
Emitter-base breakdown voltage	BV _{EBO}	5	—	—	V	I _E =50 μA
Collector cutoff current	I _{CBO}	—	—	0.5	μA	V _{CB} =20V
Emitter cutoff current	I _{EBO}	—	—	0.5	μA	V _{EB} =4V
DC current transfer ratio	h _{FE}	82	—	390	—	V _{CE} =3V, I _C =100mA
Collector-emitter saturation voltage	V _{CE(sat)}	—	0.15	0.4	V	I _C /I _B =500mA/50mA
Transition frequency	f _T	—	150	—	MHz	V _{CE} =5V, I _E =-50mA, f=100MHz
Output capacitance	C _{ob}	—	15	—	pF	V _{CB} =10V, I _E =0A, f=1MHz

●Packaging specifications and h_{FE}

Type	h _{FE}	Package	Taping	
		Code	T100	TV2
		Basic ordering unit (pieces)	1000	2500
2SD1664	PQR		○	—
2SD1858	PQR		—	○

h_{FE} values are classified as follows :

Item	P	Q	R
h _{FE}	82~180	120~270	180~390

●Electrical characteristic curves

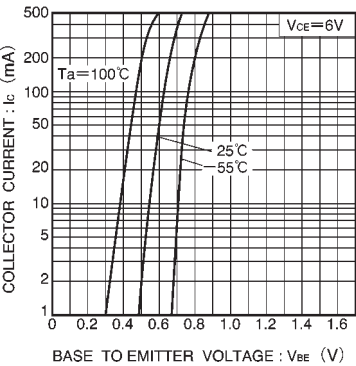


Fig.1 Grounded emitter propagation characteristics

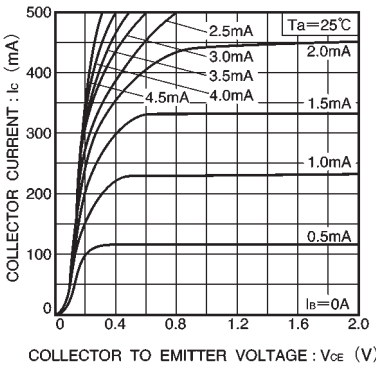


Fig.2 Grounded emitter output characteristics

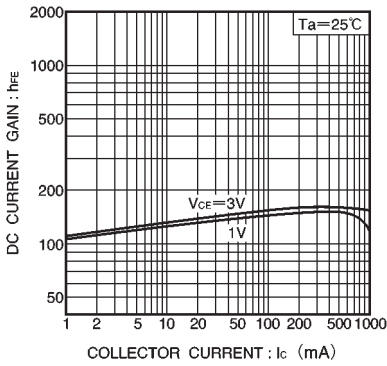


Fig.3 DC current gain vs. collector current (I)

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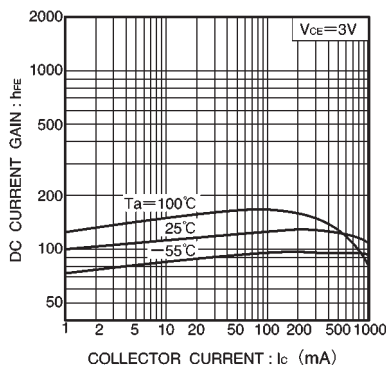


Fig.4 DC current gain vs. collector current (I)

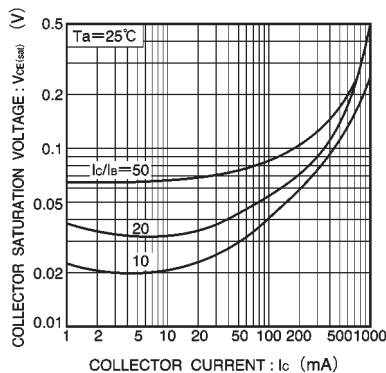


Fig.5 Collector-emitter saturation voltage vs. collector current (I)

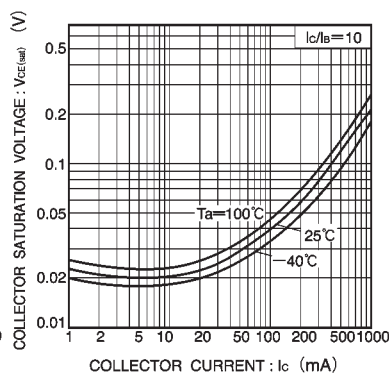


Fig.6 Collector-emitter saturation voltage vs. collector current (I)

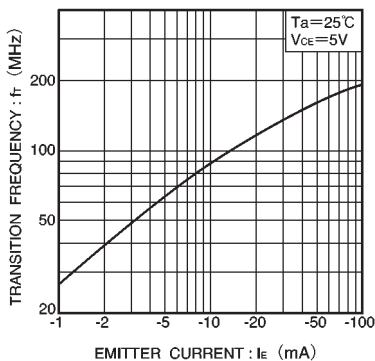


Fig.7 Gain bandwidth product vs. emitter current

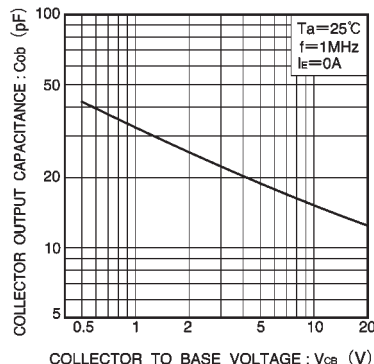


Fig.8 Collector output capacitance vs. collector-base voltage

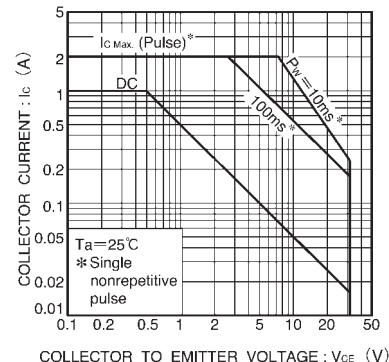


Fig.9 Safe operating area (2SD1664)

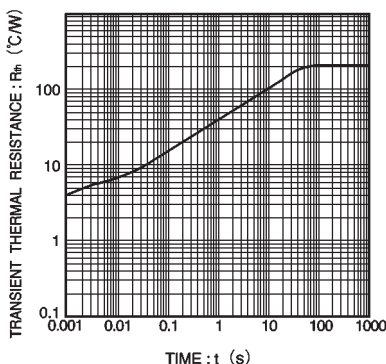


Fig.10 Transient thermal resistance (2SD1664)

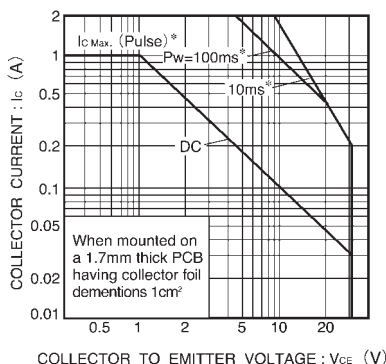


Fig.11 Safe operating area (2SD1858)

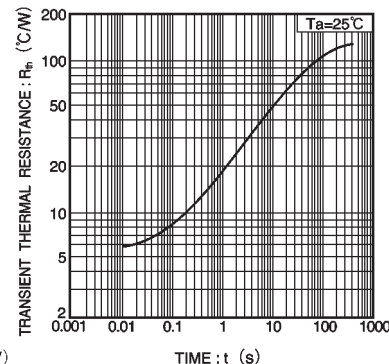


Fig.12 Transient thermal resistance (2SD1858)