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Medium Power Transistor (32V, 1A)

2SD1664 / 2SD1858

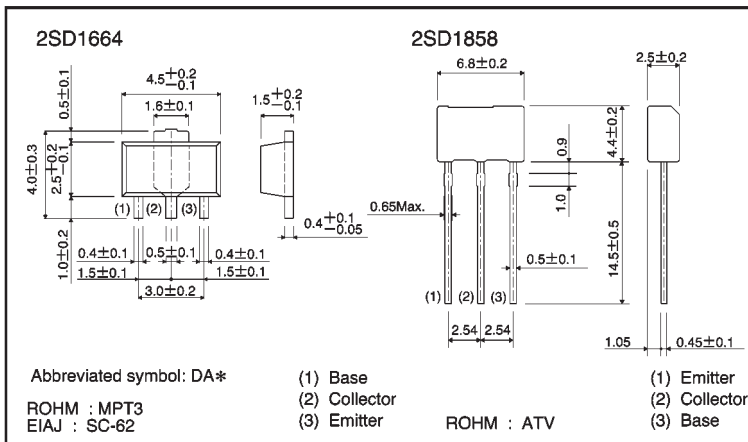
●Features

- 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	0.5	W *2
		2	
	2SD1858	1	*3
Junction temperature	T_j	150	$^\circ C$
Storage temperature	T_{stg}	-55~+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.

●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 _r	—	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

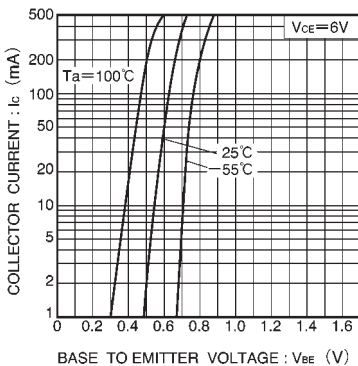


Fig.1 Grounded emitter propagation characteristics

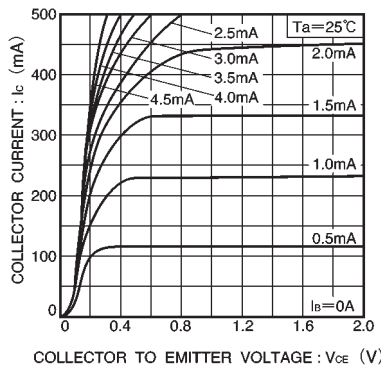


Fig.2 Grounded emitter output characteristics

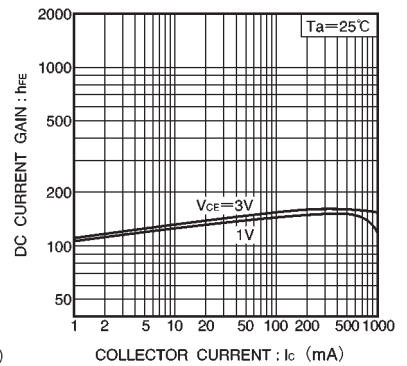


Fig.3 DC current gain vs. collector current (I)

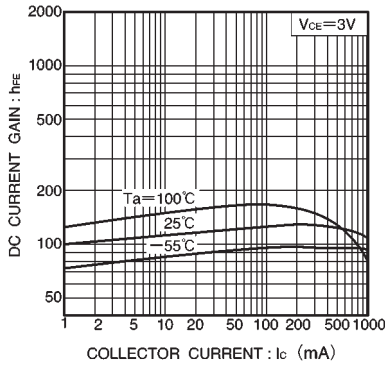


Fig.4 DC current gain vs. collector current (II)

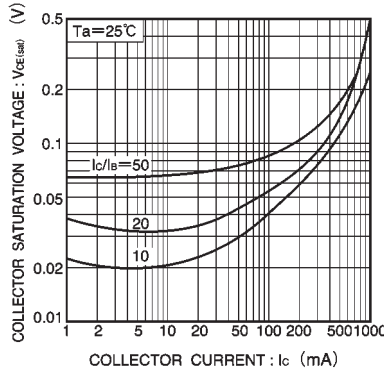


Fig.5 Collector-emitter saturation voltage vs. collector current (I)

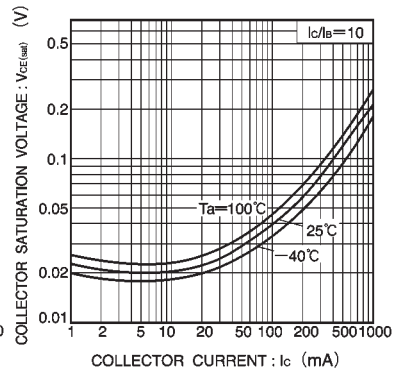


Fig.6 Collector-emitter saturation voltage vs. collector current (II)

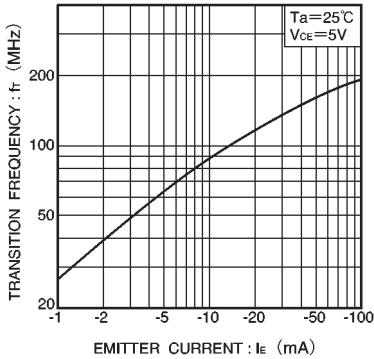


Fig.7 Gain bandwidth product vs. emitter current

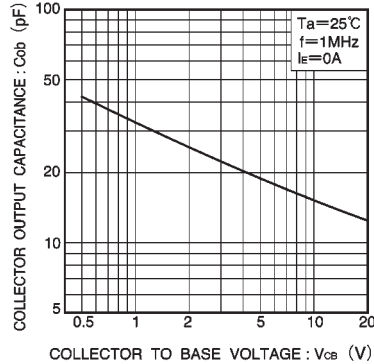


Fig.8 Collector output capacitance vs. collector-base voltage

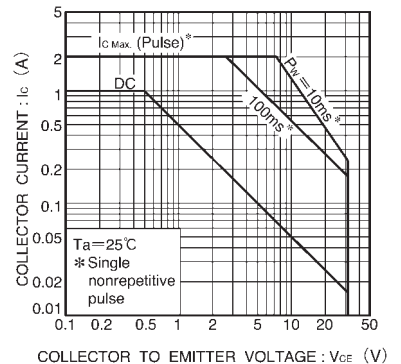


Fig.9 Safe operating area (2SD1664)

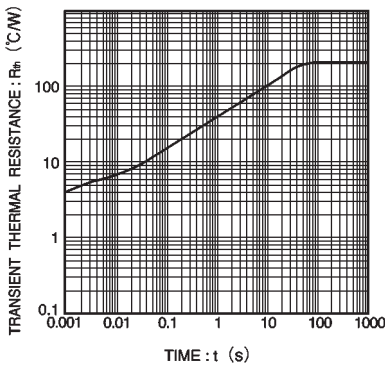


Fig.10 Transient thermal resistance (2SD1664)

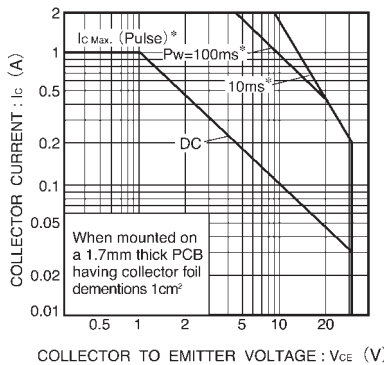


Fig.11 Safe operating area (2SD1858)

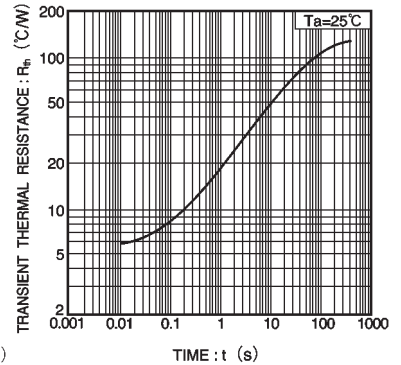


Fig.12 Transient thermal resistance (2SD1858)