

Medium Power Transistor (32V, 1A)

2SD1664 / 2SD1858

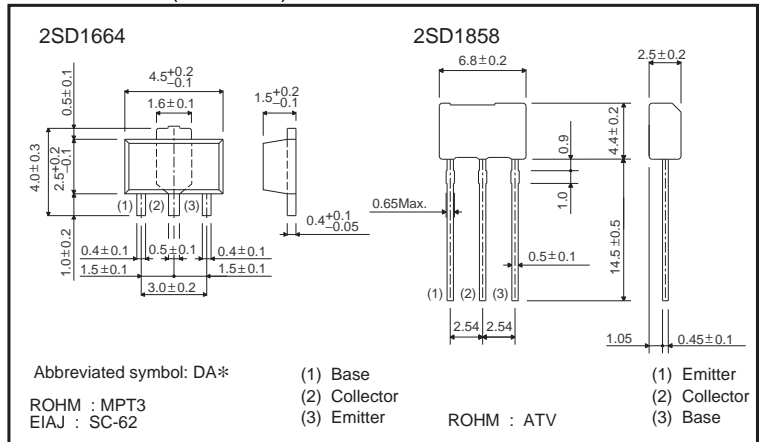
●Features

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

●Structure

Epitaxial planar type
NPN silicon transistor

●Dimensions (Unit : mm)



* Denotes h_{FE}

●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 2SD1858	P_C	0.5	W *2	
			2		*3
			1		
Junction temperature	T_j	150	$^\circ C$		
Storage temperature	T_{stg}	-55 to +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 ($T_a=25^\circ C$)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	40	—	—	V	$I_C=50\mu A$
Collector-emitter breakdown voltage	BV_{CEO}	32	—	—	V	$I_C=1mA$
Emitter-base breakdown voltage	BV_{EBO}	5	—	—	V	$I_E=50\mu A$
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}	120	—	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 hFE

Type	hFE	Package	Taping	
		Code	T100	TV2
		Basic ordering unit (pieces)	1000	2500
2SD1664	QR		○	—
2SD1858	QR		—	○

hFE values are classified as follows :

Item	Q	R
hFE	120 to 270	180 to 390

●Electrical characteristics curves

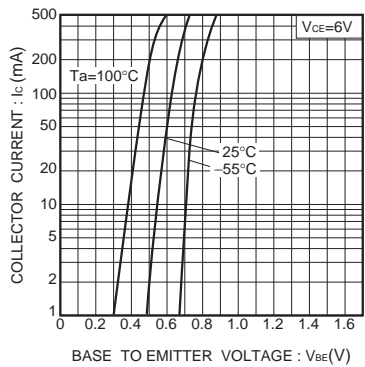


Fig.1 Grounded emitter propagation characteristics

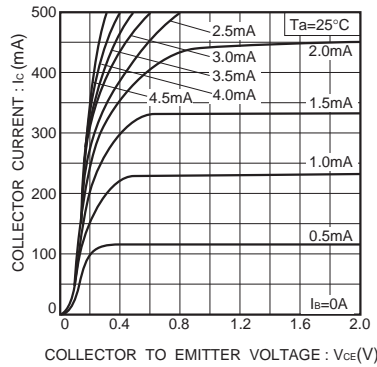


Fig.2 Grounded emitter output characteristics

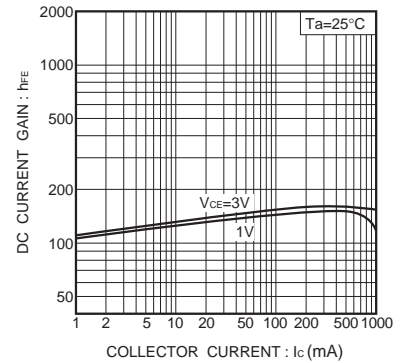


Fig.3 DC current gain vs. collector current (I)

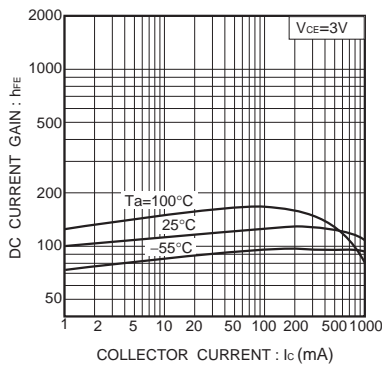


Fig.4 DC current gain vs. collector current (II)

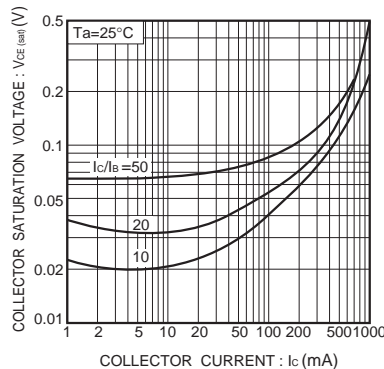


Fig.5 Collector-emitter saturation voltage vs. collector current (I)

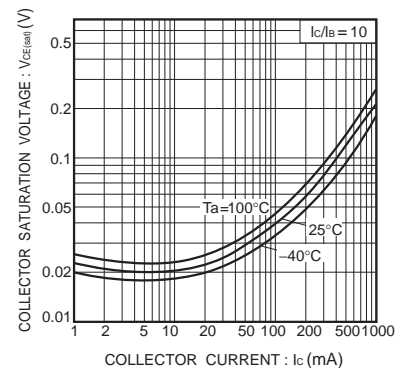


Fig.6 Collector-emitter saturation voltage vs. collector current (II)

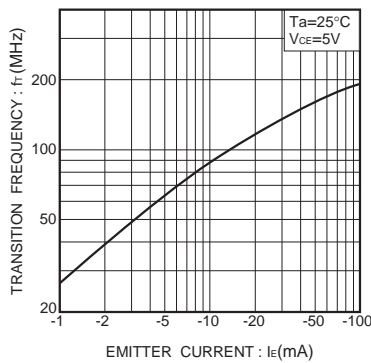


Fig.7 Gain bandwidth product vs. emitter current

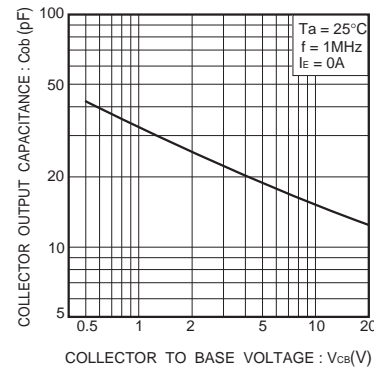


Fig.8 Collector output capacitance vs. collector-base voltage

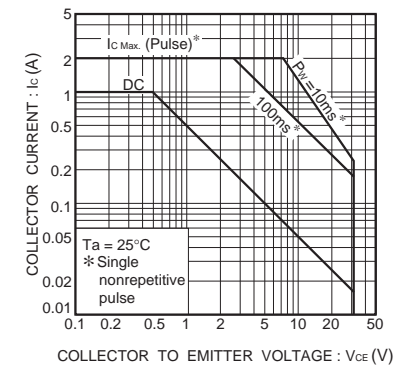


Fig.9 Safe operating area (2SD1664)

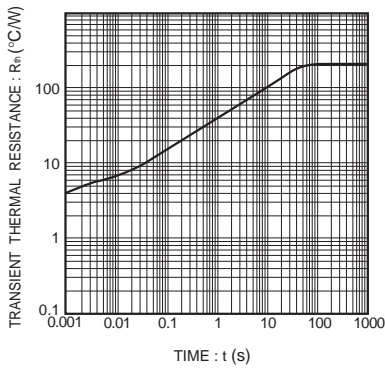


Fig.10 Transient thermal resistance (2SD1664)

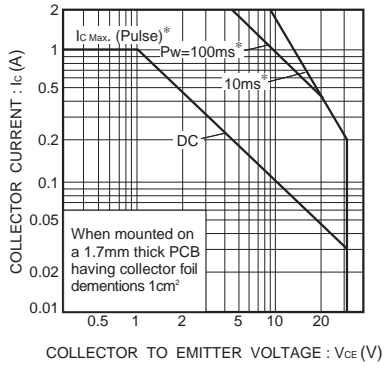


Fig.11 Safe operating area (2SD1858)

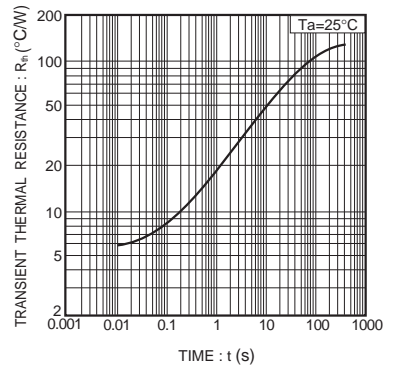


Fig.12 Transient thermal resistance (2SD1858)

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