

# Medium Power Transistor (32V, 1A)

2SD1664 / 2SD1858

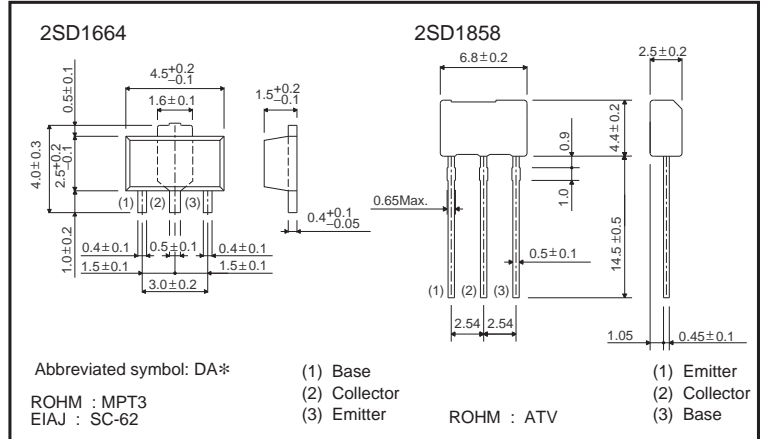
**●Features**

- 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 (Ta=25°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	
			1	*3
Junction temperature	$T_j$	150	°C	
Storage temperature	$T_{stg}$	-55 to +150	°C	

\*1  $P_w=20ms, duty=1/2$   
 \*2 When mounted on a 40×40×0.7 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	$I_C=50\mu A$
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	$\mu A$	$V_{CB}=20V$
Emitter cutoff current	$I_{EBO}$	—	—	0.5	$\mu A$	$V_{EB}=4V$
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

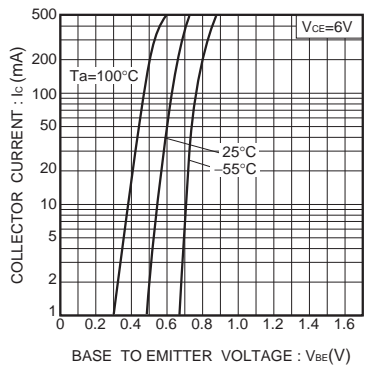


Fig.1 Grounded emitter propagation characteristics

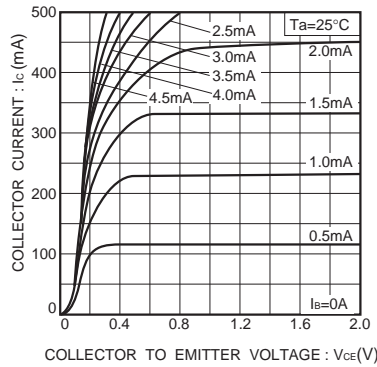


Fig.2 Grounded emitter output characteristics

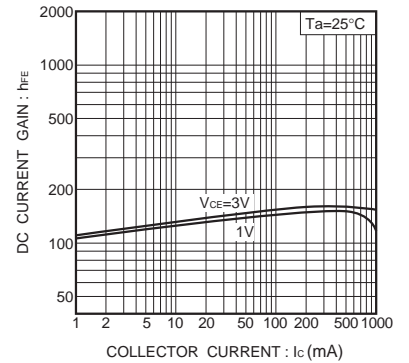


Fig.3 DC current gain vs. collector current ( I )

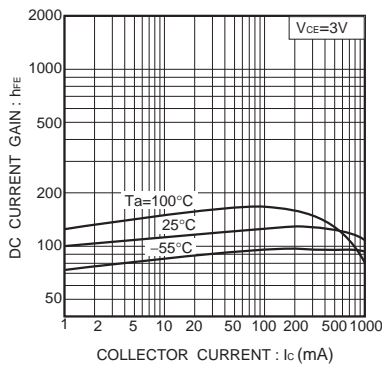


Fig.4 DC current gain vs. collector current (II)

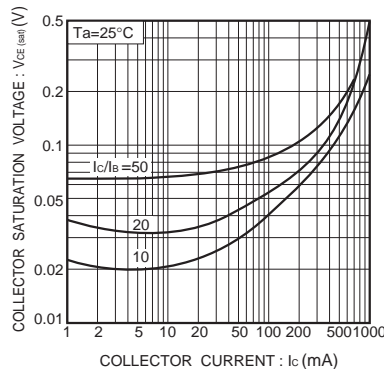


Fig.5 Collector-emitter saturation voltage vs. collector current ( I )

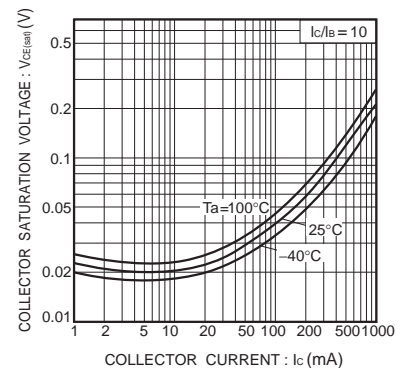


Fig.6 Collector-emitter saturation voltage vs. collector current (II)

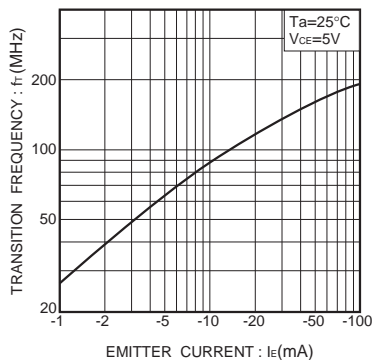


Fig.7 Gain bandwidth product vs. emitter current

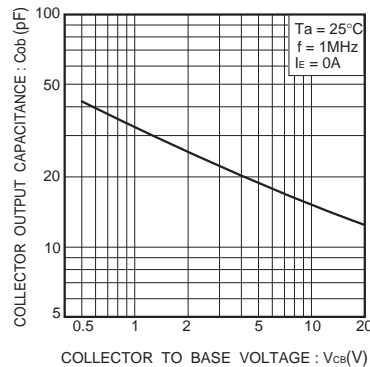


Fig.8 Collector output capacitance vs. collector-base voltage

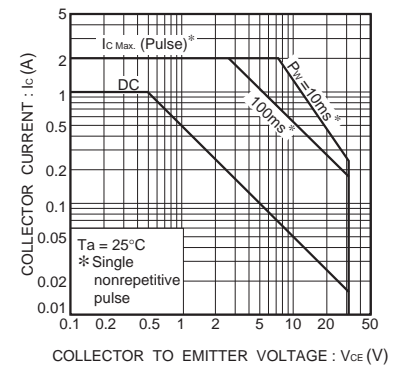


Fig.9 Safe operating area (2SD1664)

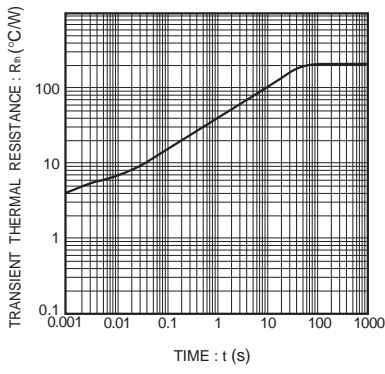


Fig.10 Transient thermal resistance (2SD1664)

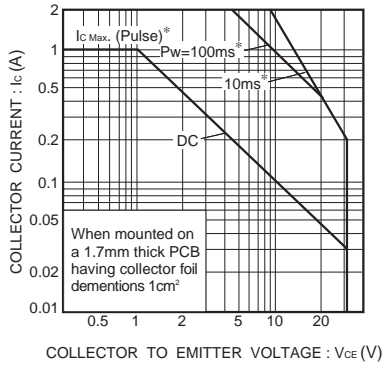


Fig.11 Safe operating area (2SD1858)

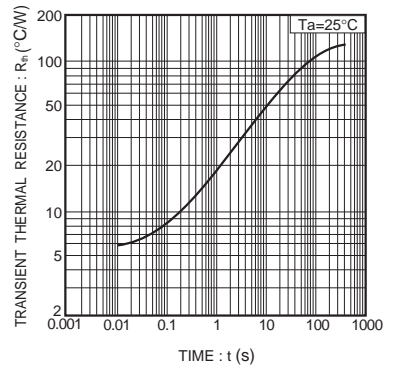


Fig.12 Transient thermal resistance (2SD1858)

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