Medium Power Transistor (32V, 1A)

2SD1664 / 2SD1858

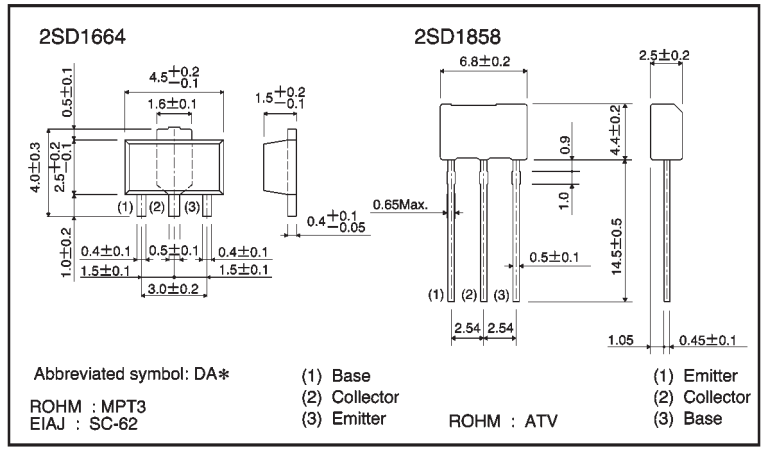
●Features

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 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	P_C	0.5	
			2	W *2
	2SD1858		1	*3
Junction temperature		Tj	150	℃
Storage temperature		Tstg	−55~+150	℃

*1 Pw=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 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	Cob	—	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

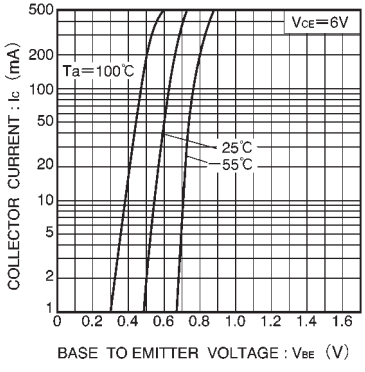


Fig.1 Grounded emitter propagation characteristics

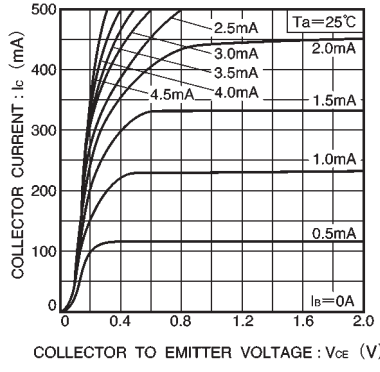


Fig.2 Grounded emitter output characteristics

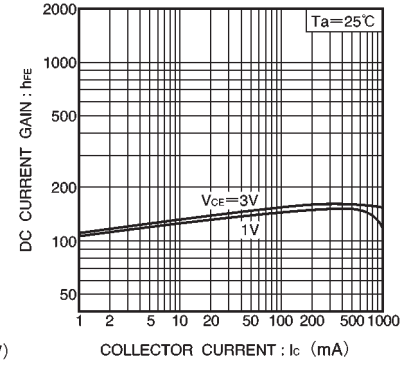


Fig.3 DC current gain vs. collector current (I)

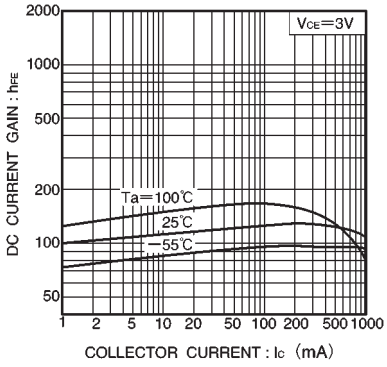


Fig.4 DC current gain vs. collector current (Ⅱ)

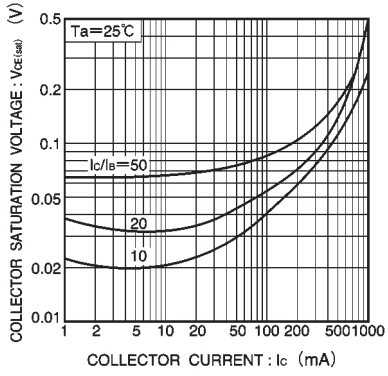


Fig.5 Collector-emitter saturation voltage vs. collector current (Ⅰ)

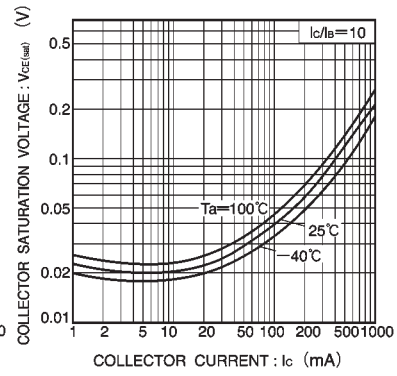


Fig.6 Collector-emitter saturation voltage vs. collector current (Ⅱ)

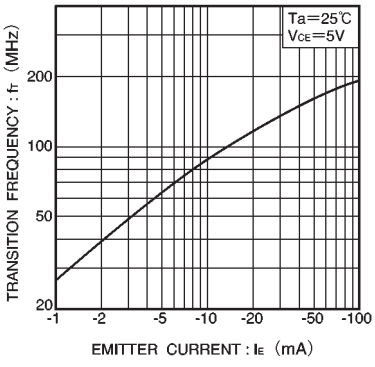


Fig.7 Gain bandwidth product vs. emitter current

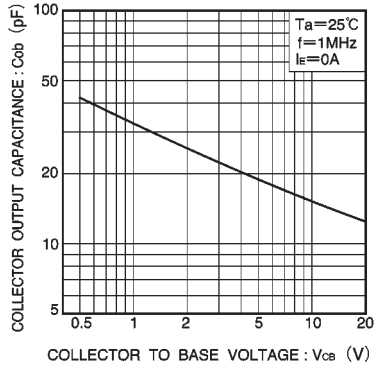


Fig.8 Collector output capacitance vs. collector-base voltage

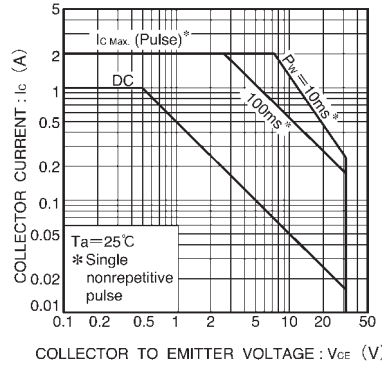


Fig.9 Safe operating area (2SD1664)

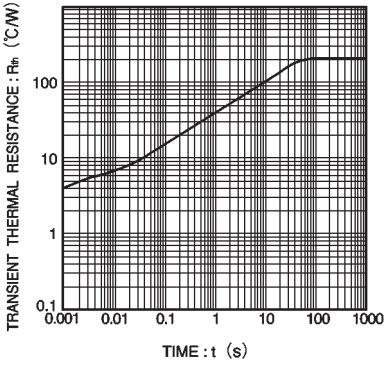


Fig.10 Transient thermal resistance (2SD1664)

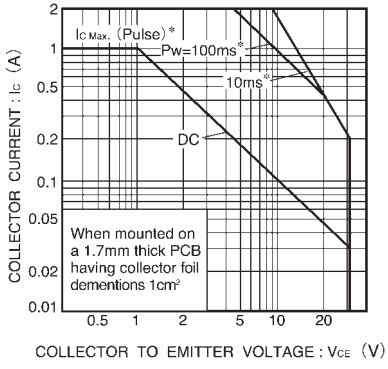


Fig.11 Safe operating area (2SD1858)

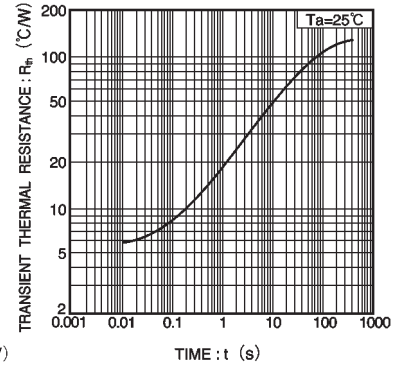


Fig.12 Transient thermal resistance (2SD1858)