

# Medium Power Transistor (32V, 1A)

## 2SD1858

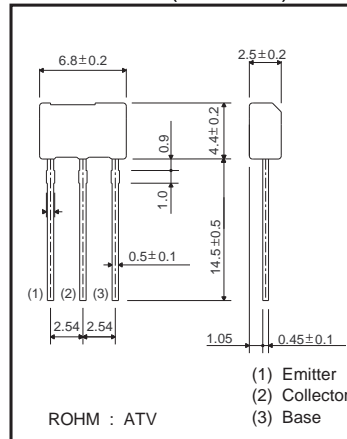
### ●Features

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

### ●Structure

Epitaxial planar type  
NPN silicon transistor

### ●Dimensions (Unit : mm)



### ●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	$P_c$	1	W *2
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

\*1  $P_w=20ms$ , duty=1/2

\*2 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	TV2
		Basic ordering unit (pieces)	2500
2SD1858	QR		○

hFE values are classified as follows :

Item	Q	R
hFE	120 to 270	180 to 390

●Electrical characteristics curves

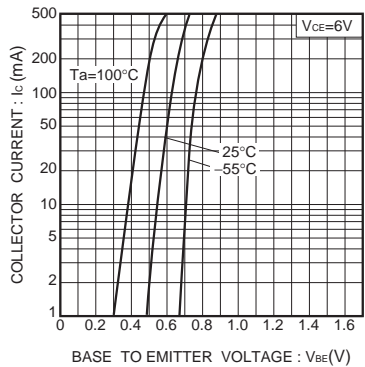


Fig.1 Grounded emitter propagation characteristics

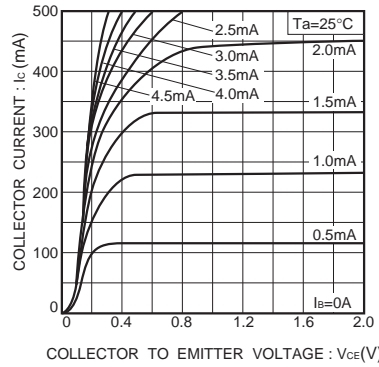


Fig.2 Grounded emitter output characteristics

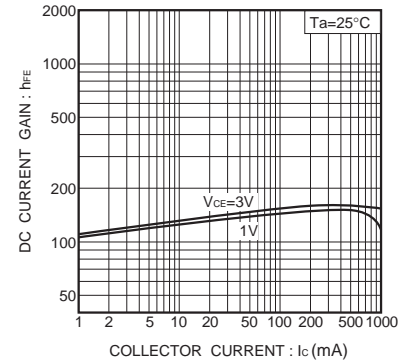


Fig.3 DC current gain vs. collector current ( I )

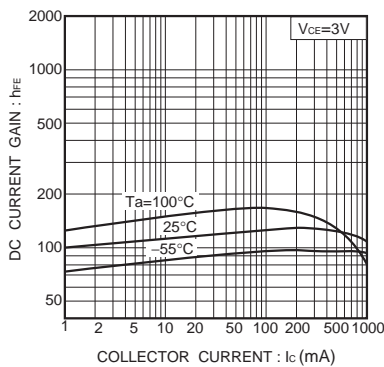


Fig.4 DC current gain vs. collector current (II)

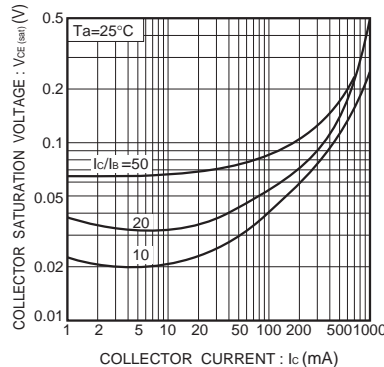


Fig.5 Collector-emitter saturation voltage vs. collector current ( I )

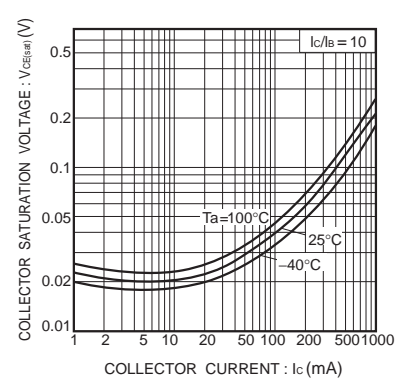


Fig.6 Collector-emitter saturation voltage vs. collector current (II)

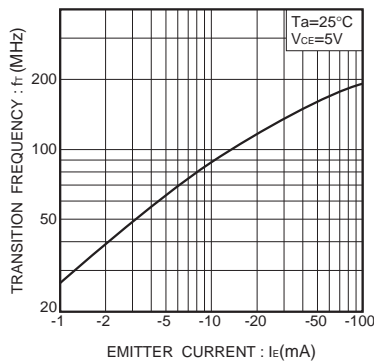


Fig.7 Gain bandwidth product vs. emitter current

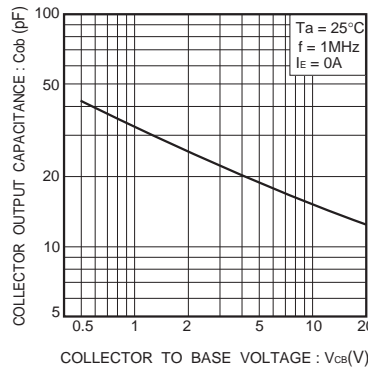


Fig.8 Collector output capacitance vs. collector-base voltage

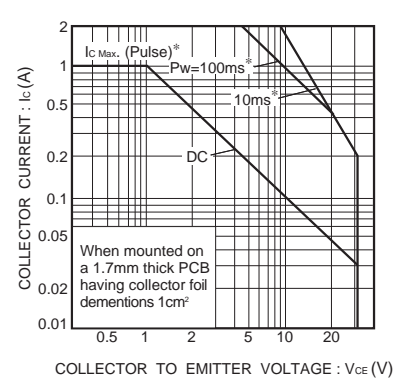


Fig.9 Safe operating area

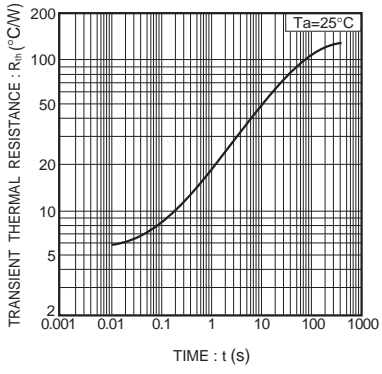


Fig.10 Transient thermal resistance

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