

# Medium Power Transistor (32V, 1A)

**2SD1858**

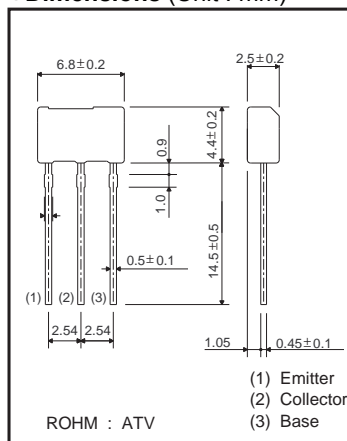
## ●Features

- 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  $h_{FE}$ 

Type	$h_{FE}$	Package	Taping
		Code	TV2
		Basic ordering unit (pieces)	2500
2SD1858	QR		○

$h_{FE}$  values are classified as follows :

Item	Q	R
$h_{FE}$	120 to 270	180 to 390

## ●Electrical characteristics curves

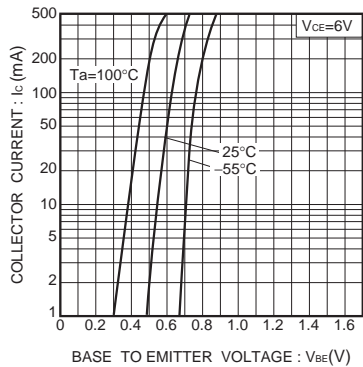


Fig.1 Grounded emitter propagation characteristics

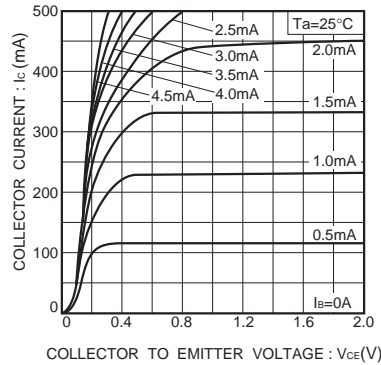


Fig.2 Grounded emitter output characteristics

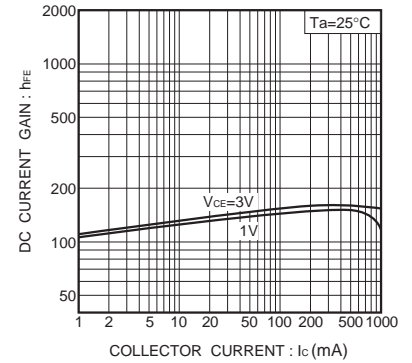


Fig.3 DC current gain vs. collector current (I)

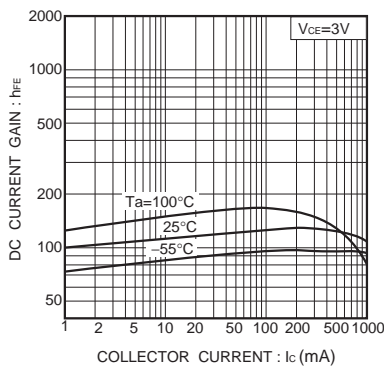


Fig.4 DC current gain vs. collector current (II)

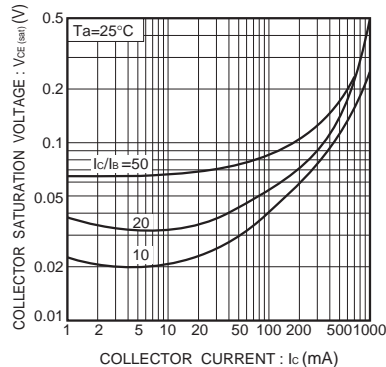


Fig.5 Collector-emitter saturation voltage vs. collector current (I)

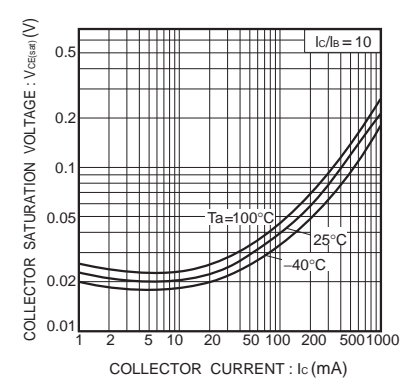


Fig.6 Collector-emitter saturation voltage vs. collector current (II)

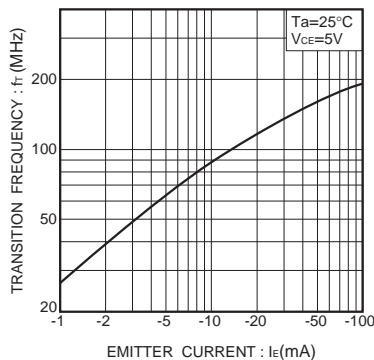


Fig.7 Gain bandwidth product vs. emitter current

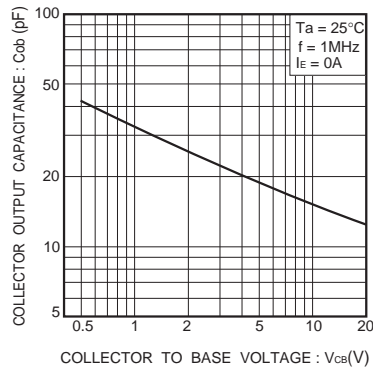


Fig.8 Collector output capacitance vs. collector-base voltage

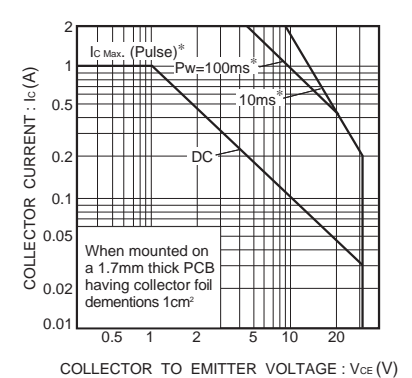


Fig.9 Safe operating area

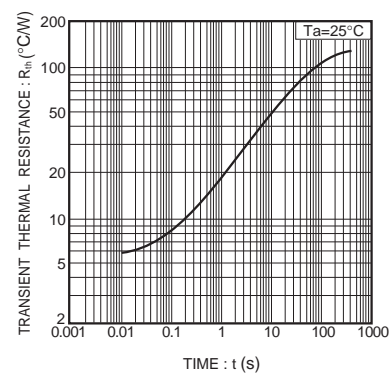


Fig.10 Transient thermal resistance

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