

Medium power transistor (32V, 2A)

2SD1766 / 2SD1758 / 2SD1862

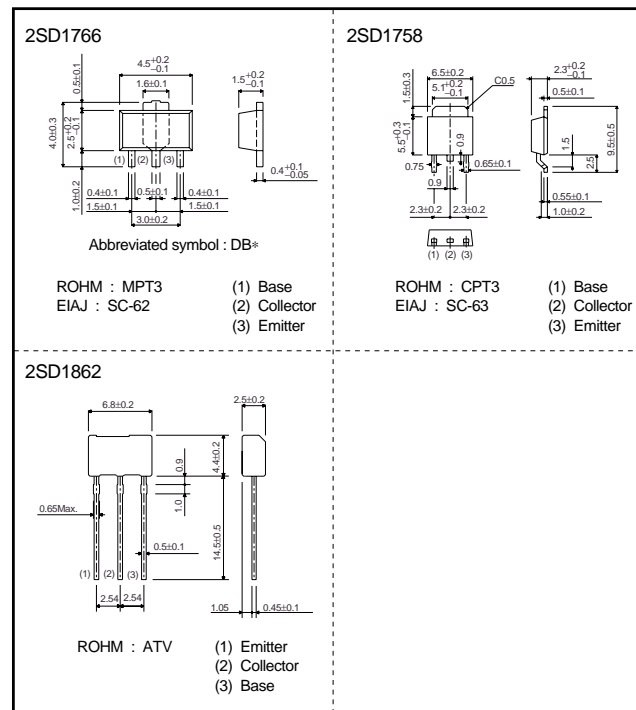
●Features

- Low $V_{CE(sat)}$.
 $V_{CE(sat)} = 0.5V$ (Typ.)
 $(I_C/I_B = 2A / 0.2A)$
- Complements the 2SB1188 /
 2SB1182 / 2SB1240

●Structure

Epitaxial planar type
 NPN silicon transistor

●External dimensions (Units : 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	2	A (DC)
		2.5	A (Pulse) *1
Collector power dissipation	P_C	0.5	W *2
		2	W ($T_C=25^\circ C$)
		1	W *3
Junction temperature	T_j	150	$^\circ C$
Storage temperature	T_{stg}	-55~+150	$^\circ C$

*1 Single pulse, $P_{VI}=20ms$

*2 When mounted on a 40x40x0.7 mm ceramic board.

*3 Printed circuit board: 1.7 mm thick, collector copper plating 1 cm² or larger.

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● Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV _{CB0}	40	-	-	V	I _C =50μA
Collector-emitter breakdown voltage	BV _{CE0}	32	-	-	V	I _C =1mA
Emitter-base breakdown voltage	BV _{EB0}	5	-	-	V	I _E =50μA
Collector cutoff current	I _{CB0}	-	-	1	μA	V _{CB} =20V
Emitter cutoff current	I _{EB0}	-	-	1	μA	V _{EB} =4V
DC current transfer ratio	2SD1766,2SD1758	82	-	390	-	V _{CE} =3V, I _C =0.5A
	2SD1862	120	-	390	-	
Collector-emitter saturation voltage	V _{CE(sat)}	-	0.5	0.8	V	I _C /I _B =2A/0.2A
Transition frequency	f _T	-	100	-	MHz	V _{CE} =5V, I _E =-50mA, f=100MHz
Output capacitance	C _{ob}	-	30	-	pF	V _{CB} =10V, I _E =0A, f=1MHz

* Measured using pulse current.

● Packaging specifications and h_{FE}

Type	h _{FE}	Package	Taping		
		Code	T100	TL	TV2
		Basic ordering unit (pieces)	1000	2500	2500
2SD1766	PQR		○	-	-
2SD1758	PQR		-	○	-
2SD1862	QR		-	-	○

h_{FE} values are classified as follows :

Item	P	Q	R
h _{FE}	82~180	120~270	180~390

● Electrical characteristic curves

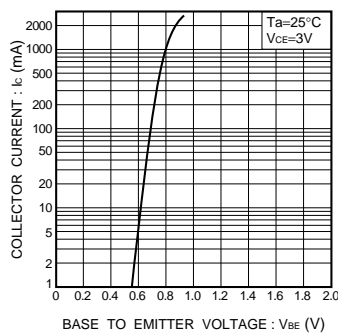


Fig.1 Grounded emitter propagation characteristics

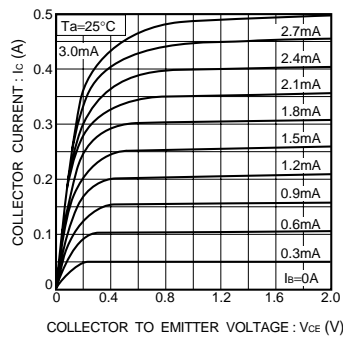


Fig.2 Grounded emitter output characteristics

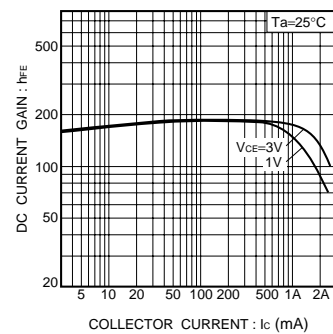


Fig.3 DC current gain vs. collector current

Transistors

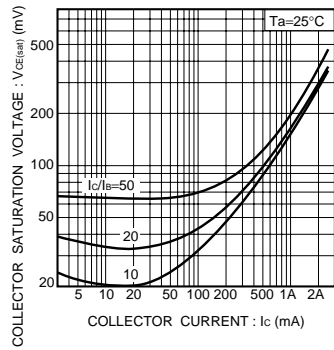


Fig.4 Collector-emitter saturation voltage vs. collector current

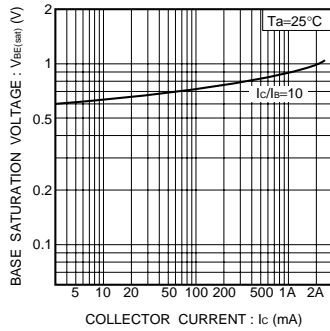


Fig.5 Collector-emitter saturation voltage vs. collector current

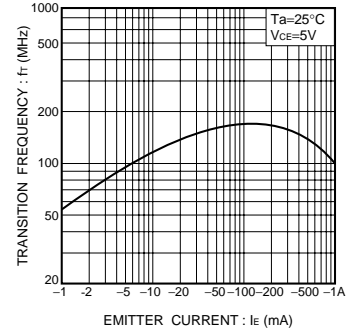


Fig.6 Transition frequency vs. emitter current

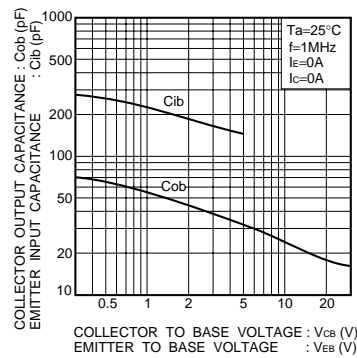


Fig.7 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

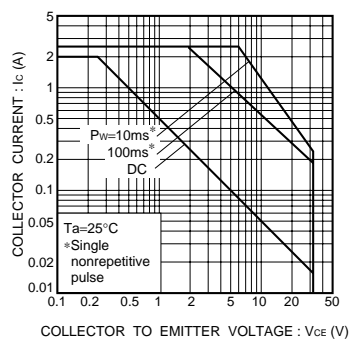


Fig.8 Safe operating area (2SD1766)

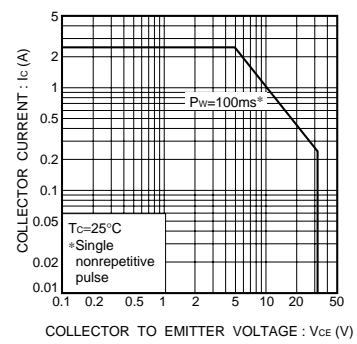


Fig.9 Safe operating area (2SD1758)

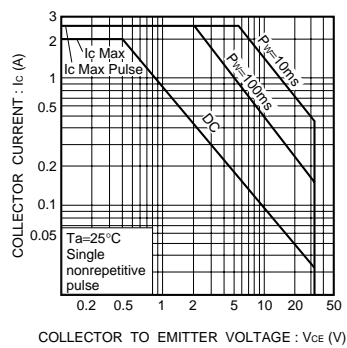


Fig.10 Safe operating area (2SD1862)