

Medium Power Transistor (32V, 2A)

2SD1766 / 2SD1758 / 2SD1862

●Features

1) Low $V_{CE(sat)}$.

$$V_{CE(sat)} = 0.5V(\text{Typ.})$$

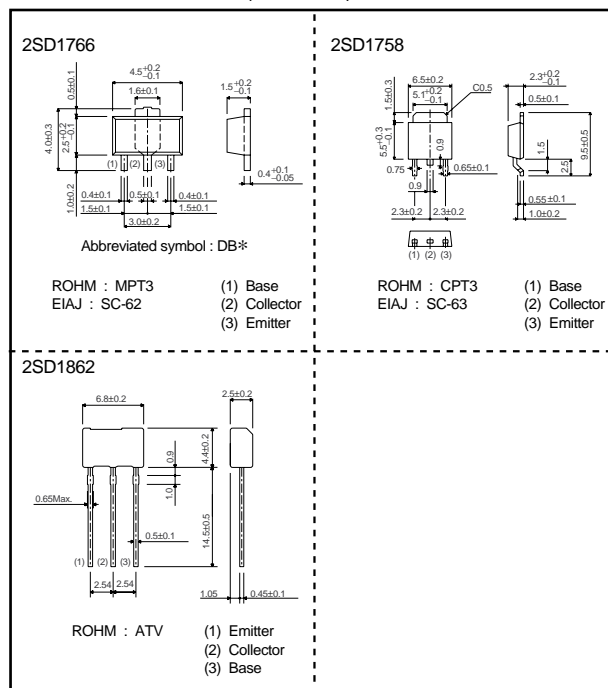
$$(I_c / I_b = 2A / 0.2A)$$

2) Complements the 2SB1188 / 2SB1182 / 2SB1240.

●Structure

Epitaxial planar type
NPN silicon transistor

●External dimensions (Unit : mm)



* Denotes hFE

●Absolute maximum ratings ($T_a=25^\circ\text{C}$)

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)
	I_{CP}	2.5	A (Pulse) *1
Collector power dissipation	2SD1766	0.5	W
		2 *2	
		2SD1758	1
2SD1862	10	W ($T_C=25^\circ\text{C}$)	
	1 *3	W	
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

*1 Single pulse, $P_w=20\text{ms}$

*2 When mounted on a $40 \times 40 \times 0.7$ mm ceramic board.

*3 Printed circuit board: 1.7 mm thick, collector copper plating 1 cm^2 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 _{CEO}	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 _{EBO}	–	–	1	μA	V _{EB} =4V	
DC current transfer ratio	2SD1766,2SD1758,	h _{FE}	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 _r	–	100	–	MHz	V _{CE} =5V, I _E =–500mA, 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 to 180	120 to 270	180 to 390

●Electrical characteristic curves

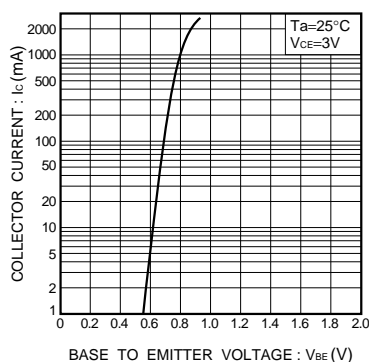


Fig.1 Grounded emitter propagation characteristics

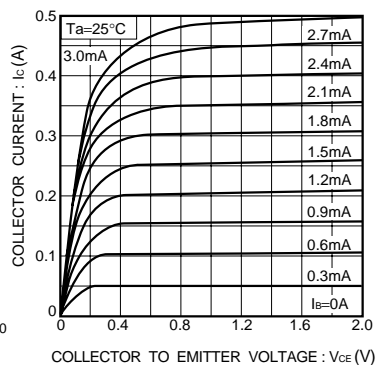


Fig.2 Grounded emitter output characteristics

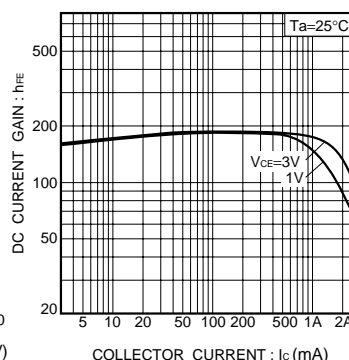


Fig.3 DC current gain vs. collector current

Transistors

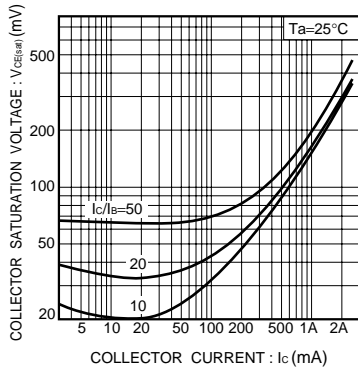


Fig.4 Collector-emitter saturation voltage vs. collector current

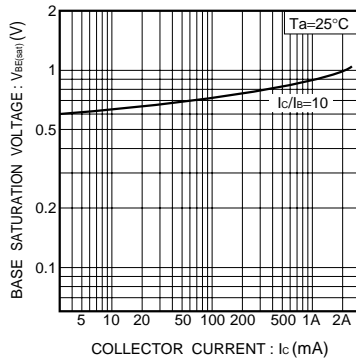


Fig.5 Collector-emitter saturation voltage vs. collector current

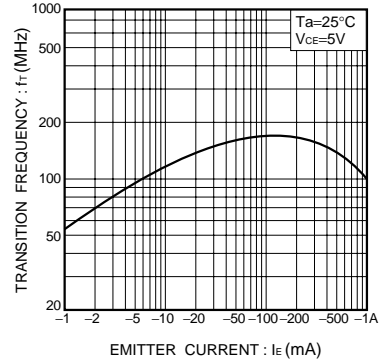


Fig.6 Transition frequency vs. emitter current

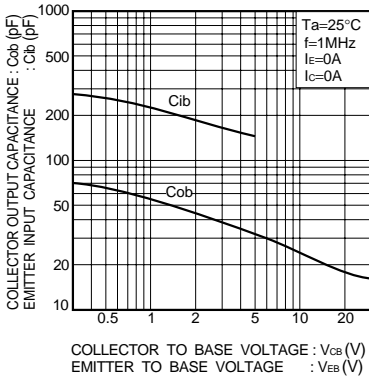


Fig.7 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

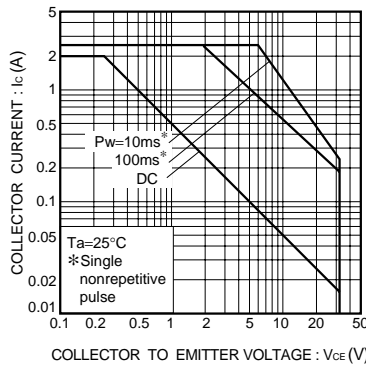


Fig.8 Safe operating area (2SD1766)

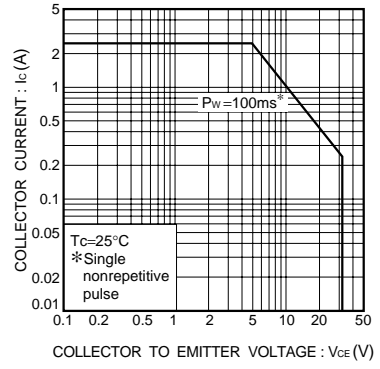


Fig.9 Safe operating area (2SD1758)

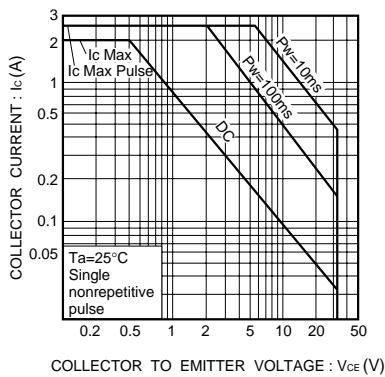


Fig.10 Safe operating area (2SD1862)

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