

Medium power transistor (32V, 2A)

2SD1766 / 2SD1758 / 2SD1862

●Features

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

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

$$(I_C/I_B = 2A / 0.2A)$$

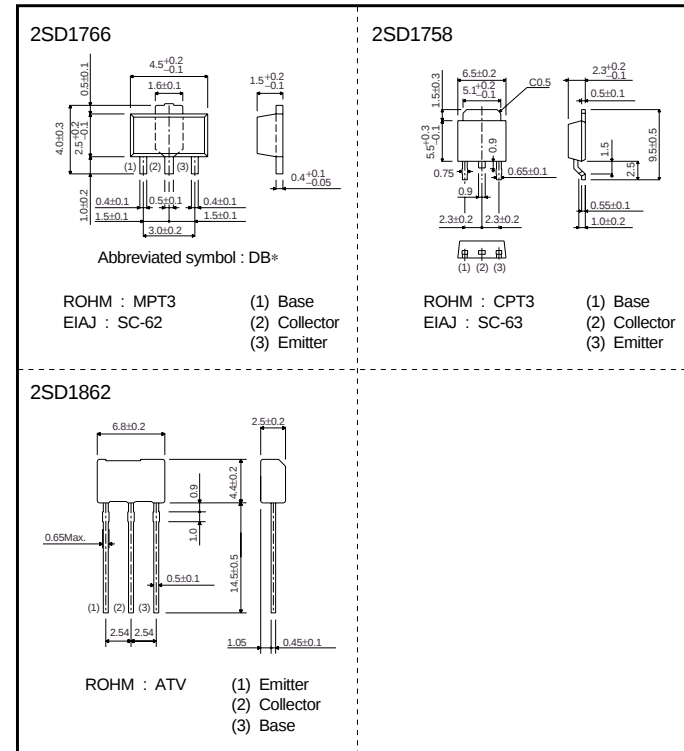
2) Complements the 2SB1188 /
2SB1182 / 2SB1240

●Structure

Epitaxial planar type

NPN silicon transistor

●External dimensions (Units : 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)
			2.5	A (Pulse) *1
Collector power dissipation	2SD1766	P_C	0.5	W *2
	2SD1758		2	W ($T_C=25^\circ\text{C}$)
	2SD1862		10	W *3
	2SD1862		1	W *3
Junction temperature		T_J	150	$^\circ\text{C}$
Storage temperature		T_{stg}	-55~+150	$^\circ\text{C}$

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

*2 When mounted on a 40×40×0.7 mm ceramic board.

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

Transistors

●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 _{EBO}	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 _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

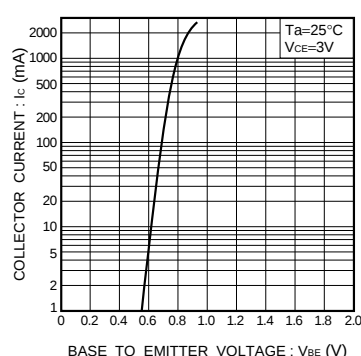


Fig.1 Grounded emitter propagation characteristics

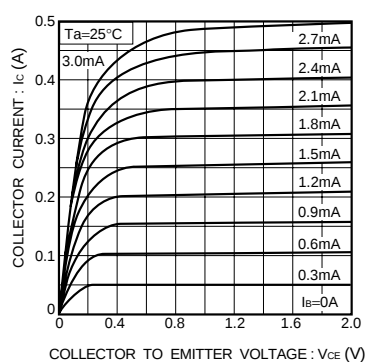


Fig.2 Grounded emitter output characteristics

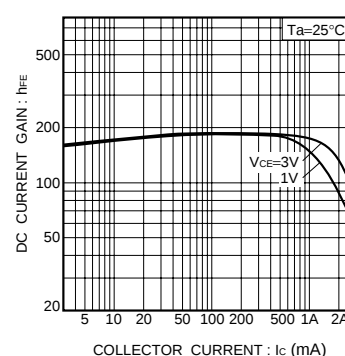


Fig.3 DC current gain vs. collector current

Transistors

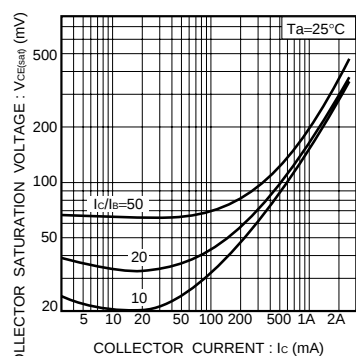


Fig.4 Collector-emitter saturation voltage vs. collector current

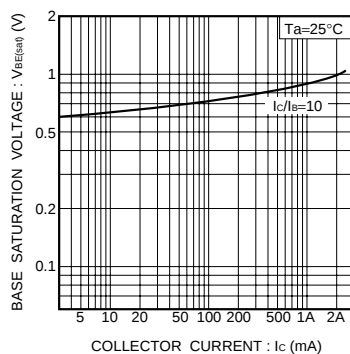


Fig.5 Collector-emitter saturation voltage vs. collector current

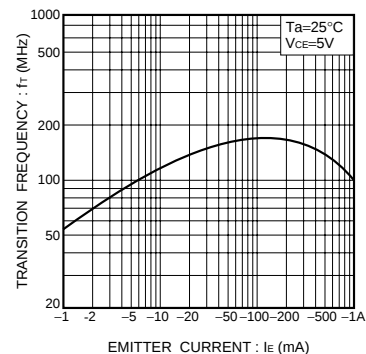


Fig.6 Transition frequency vs. emitter current

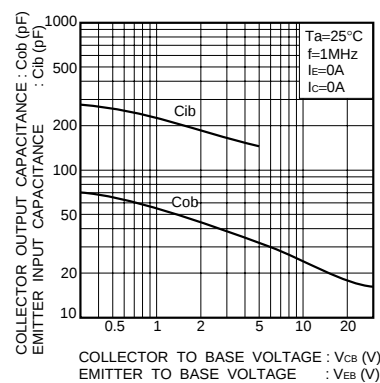
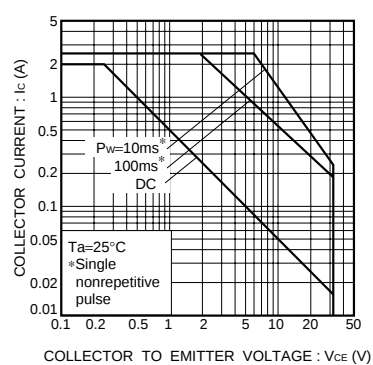
Fig.7 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

Fig.8 Safe operating area (2SD1766)

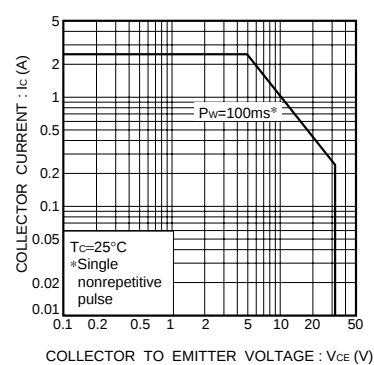


Fig.9 Safe operating area (2SD1758)

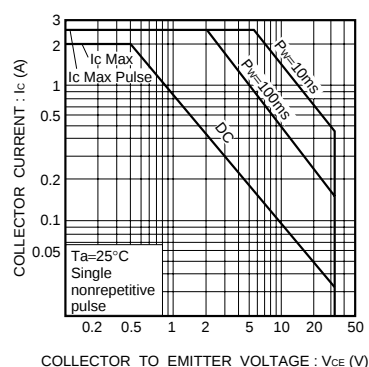


Fig.10 Safe operating area (2SD1862)