

# Medium power transistor (32V, 2A)

**2SD1766 / 2SD1758 / 2SD1862**

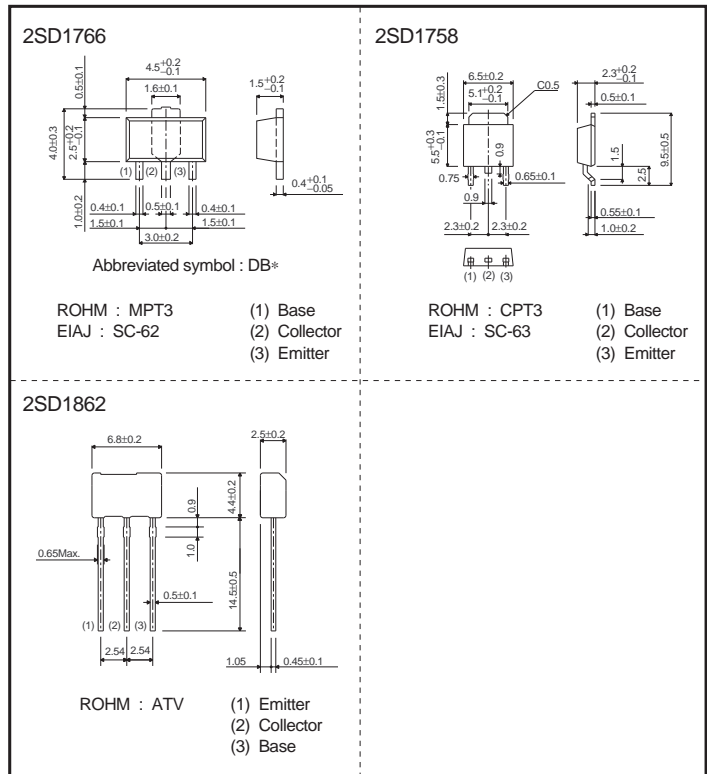
● **Features**

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

● **Structure**

Epitaxial planar type NPN silicon transistor

● **Dimensions (Unit : mm)**



\* Denotes hFE

● **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		$I_C$	2	A (DC)
			2.5 *1	A (Pulse)
Collector power dissipation	2SD1766	$P_C$	0.5	W
	2SD1758		2 *2	
	2SD1862		10	W (Tc=25°C)
Junction temperature		$T_J$	150	°C
Storage temperature		$T_{stg}$	-55~+150	°C

\*1 Single pulse,  $P_W=20ms$   
 \*2 When mounted on a 40×40×0.7 mm ceramic board.  
 \*3 Printed circuit board: 1.7 mm thick, collector copper plating 1 cm<sup>2</sup> 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	$I_{CBO}$	-	-	1	$\mu A$	$V_{CB}=20V$
Emitter cutoff current	$I_{EBO}$	-	-	1	$\mu A$	$V_{EB}=4V$
DC current transfer ratio	$h_{FE}$	120	-	390	-	$V_{CE}=3V, I_C=0.5A$ *
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 Basic ordering unit (pieces)	T100	TL	TV2
2SD1766	QR	○	-	-	-
2SD1758	QR	-	○	-	-
2SD1862	QR	-	-	-	○

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

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

● Electrical characteristic curves

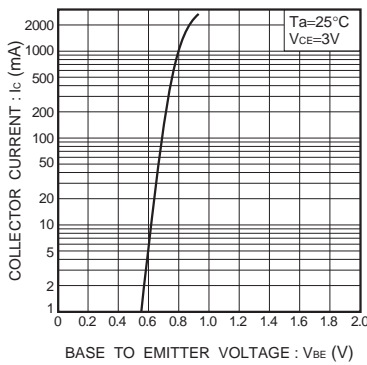


Fig.1 Grounded emitter propagation characteristics

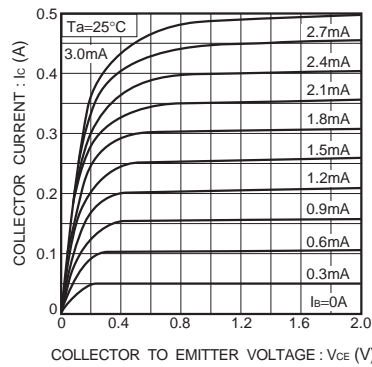


Fig.2 Grounded emitter output characteristics

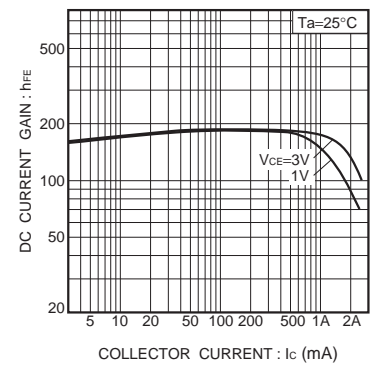


Fig.3 DC current gain vs. collector current

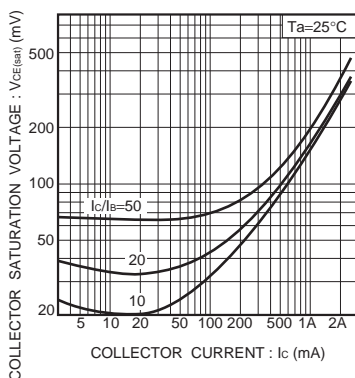


Fig.4 Collector-emitter saturation voltage vs. collector current

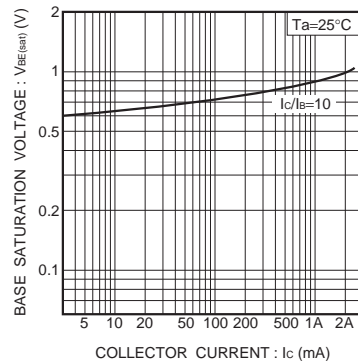


Fig.5 Collector-emitter saturation voltage vs. collector current

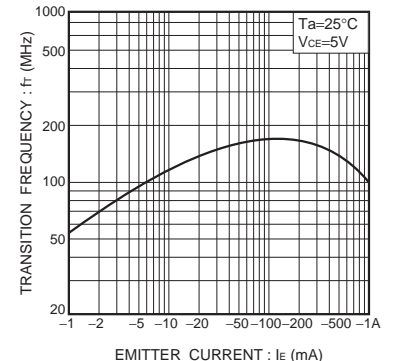


Fig.6 Transition frequency vs. emitter current

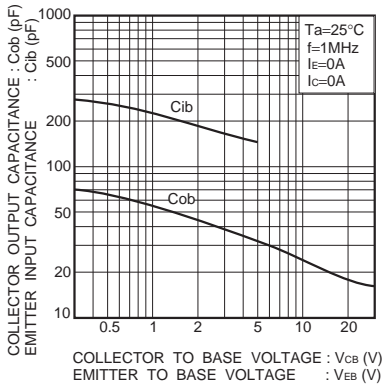


Fig.7 Collector output capacitance vs. collector-base voltage  
Emitter input capacitance vs. emitter-base voltage

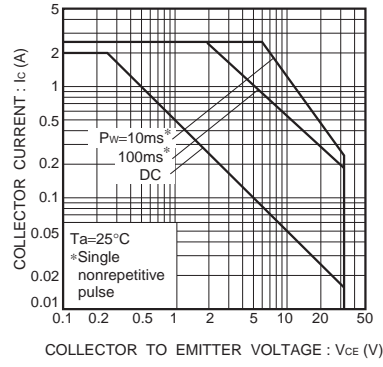


Fig.8 Safe operating area (2SD1766)

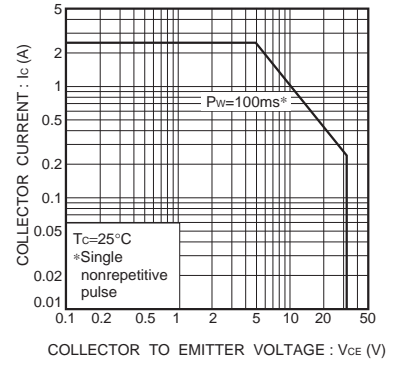


Fig.9 Safe operating area (2SD1758)

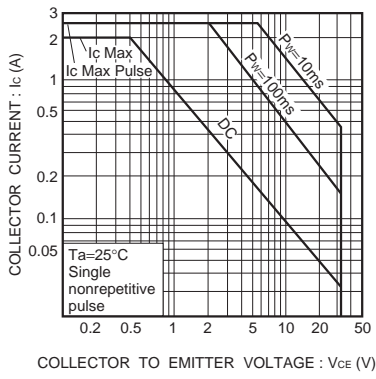


Fig.10 Safe operating area (2SD1862)

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