

Medium Power Transistor (32V, 2A)

2SD1766 / 2SD1758 / 2SD1862 / 2SD1055 / 2SD1919 / 2SD1227M

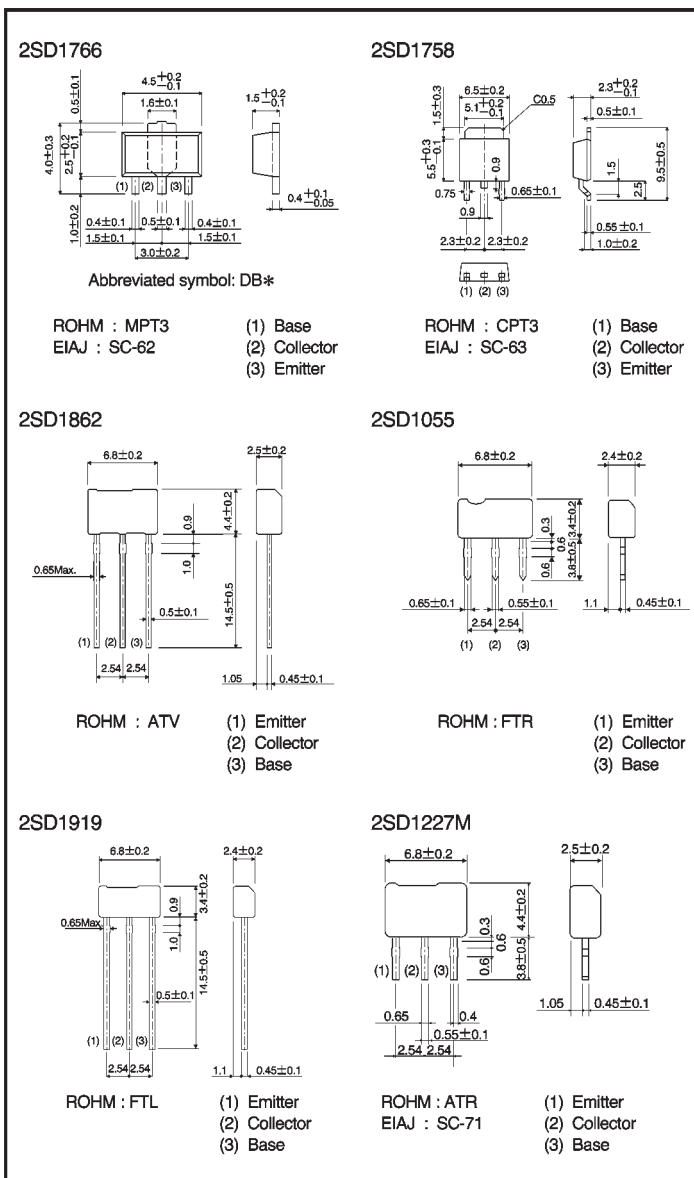
● Features

- 1) Low $V_{CE(sat)}$.
 $V_{CE(sat)} = 0.5V$ (Typ.)
 $(I_c / I_B = 2A / 0.2A)$
- 2) Complements the
 2SB1188 / 2SB1182 / 2SB1240 /
 2SB891F / 2SB822 / 2SB1277 /
 2SB911M

● Structure

Epitaxial planar type
 NPN silicon transistor

● External dimensions (Units: mm)



* Denotes hFE

● Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Limits	Unit
Collector-base voltage		V _{CB0}	40	V
Collector-emitter voltage		V _{CE0}	32	V
Emitter-base voltage		V _{EB0}	5	V
Collector current		I _c	2	A (DC)
			2.5	A (Pulse) *1
Collector power dissipation	2SD1766	P _c	0.5	W *2
			2	
	2SD1758		10	W (T _c =25°C)
	2SD1862,2SD1227M		1	W *3
2SD1055,2SD1919		0.75	W	
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 cm² or larger.

● Electrical characteristics (Ta = 25°C)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage		BV _{CB0}	40	—	—	V	I _c =50 μA
Collector-emitter breakdown voltage		BV _{CE0}	32	—	—	V	I _c =1mA
Emitter-base breakdown voltage		BV _{EB0}	5	—	—	V	I _E =50 μA
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,	h _{FE}	82	—	390	—	V _{CE} =3V, I _c =0.5A * *
	2SD1862		120	—	390		
	2SD1055		180	—	390		
	2SD1919,2SD1227M		120	—	270		
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			Bulk	
		Code	T100	TL	TV2	—	TL2
		Basic ordering unit (pieces)	1000	2500	2500	2000	2500
2SD1766	PQR	○	—	—	—	—	
2SD1758	PQR	—	○	—	—	—	
2SD1862	QR	—	—	○	—	—	
2SD1055	R	—	—	—	○	—	
2SD1919	Q	—	—	—	—	○	
2SD1227M	Q	—	—	—	○	—	

h_{FE} values are classified as follows :

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

●Electrical characteristic curves

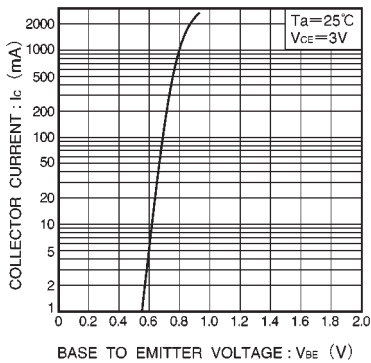


Fig.1 Grounded emitter propagation characteristics

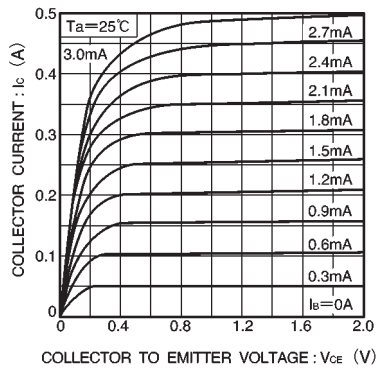


Fig.2 Grounded emitter output characteristics

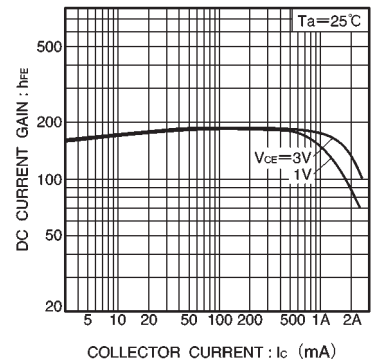


Fig.3 DC current gain vs. collector current

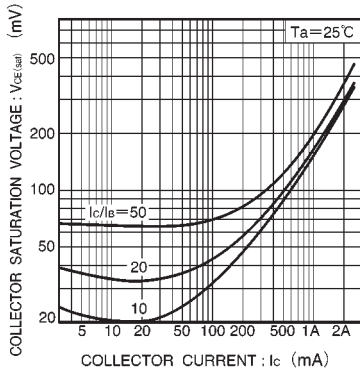


Fig.4 Collector-emitter saturation voltage vs. collector current

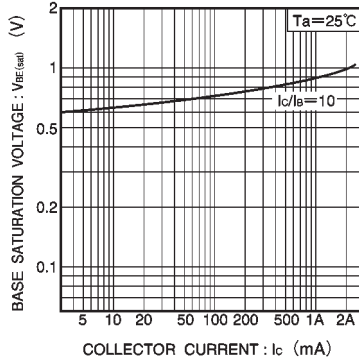


Fig.5 Collector-emitter saturation voltage vs. collector current

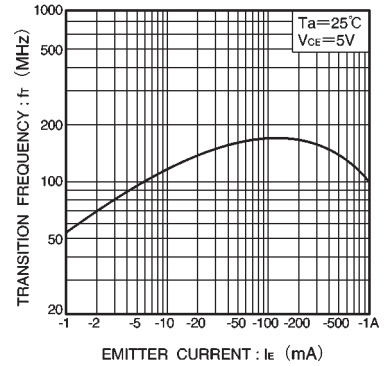


Fig.6 Transition frequency vs. emitter current

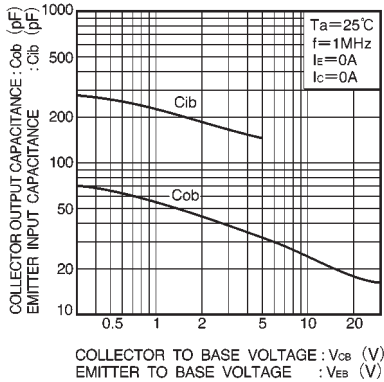


Fig.7 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

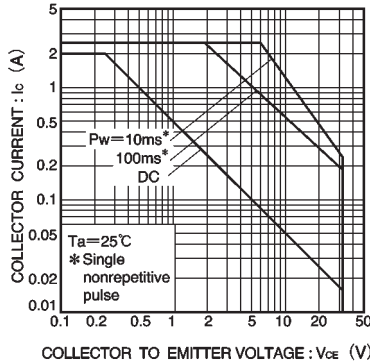


Fig.8 Safe operating area (2SD1766)

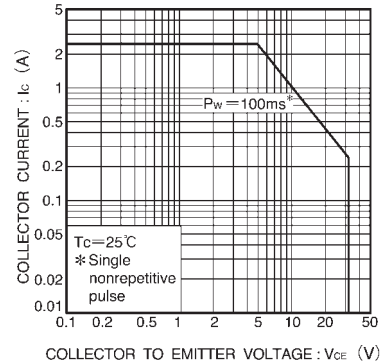


Fig.9 Safe operating area (2SD1758)

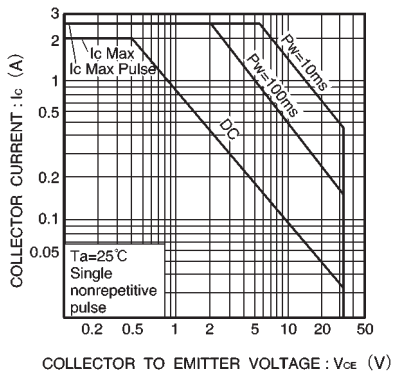


Fig.10 Safe operating area (2SD1862, 2SD1227M)

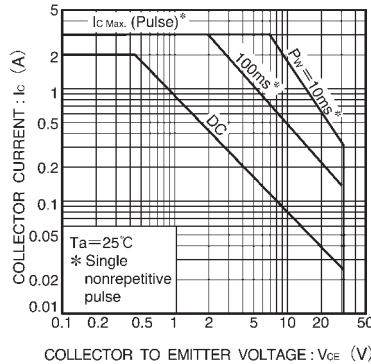


Fig.11 Safe operating area (2SD1055, 2SD1919)