

Power Transistor (80V, 1A)

2SD1898 / 2SD1733 / 2SD1768S / 2SD1863 / 2SD1381F

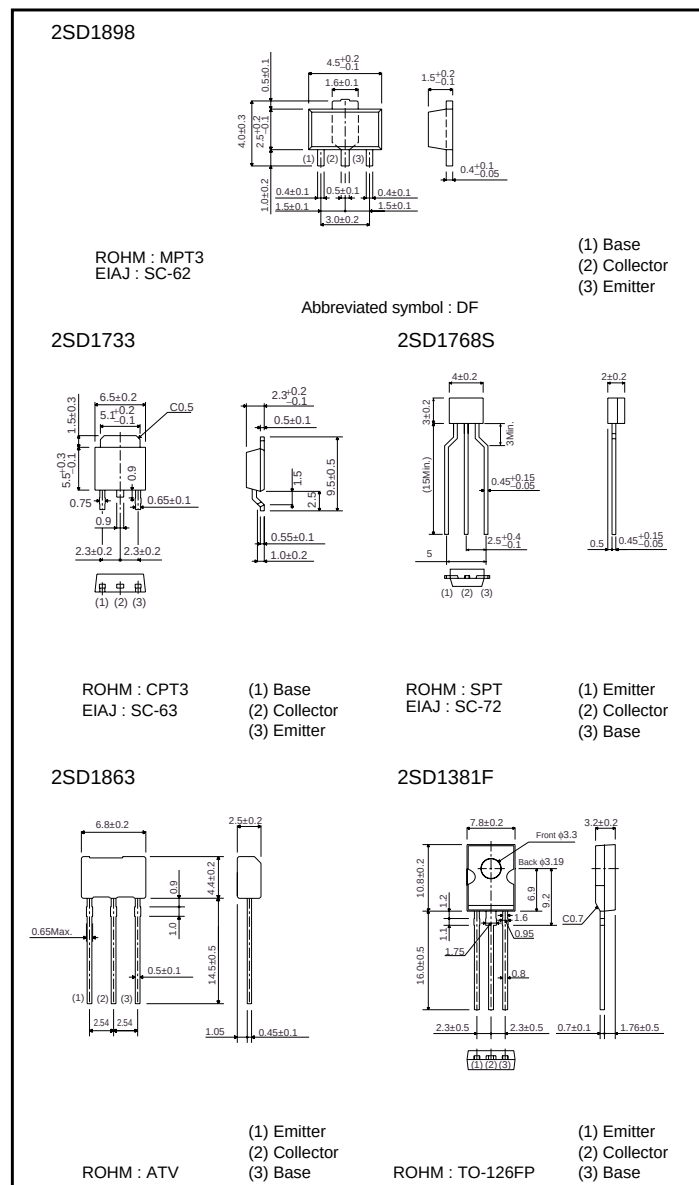
●Features

- 1) High V_{CEO} , $V_{CEO}=80V$
- 2) High I_c , $I_c=1A$ (DC)
- 3) Good h_{FE} linearity
- 4) Low V_{CE} (sat)
- 5) Complements the 2SB1260 / 2SB1241 / 2SB1181

●Structure

Epitaxial planer type
NPN silicon transistor

●External dimensions (Units : mm)



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Transistors

●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Collector-base voltage		V_{CBO}	100	V
Collector-emitter voltage		V_{CEO}	80	V
Emitter-base voltage		V_{EBO}	5	V
Collector current		I_C	1	A (DC)
			2	A (Pulse) *1
Collector power dissipation	2SD1898	P_C	0.5	W *3
			2	
			1	
	2SD1733		10	W (Tc=25°C)
	2SD1768S		0.3	W *2
	2SD1863		1	
	2SD1381F		1.2	
Junction temperature		T_j	150	°C
Storage temperature		T_{stg}	-55~+150	°C

*1 $P_w=20ms$, duty=1 / 2

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

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

●Electrical characteristics (Ta=25°C)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage		BV_{CBO}	100	—	—	V	$I_C=50\mu A$
Collector-emitter breakdown voltage		BV_{CEO}	80	—	—	V	$I_C=1mA$
Emitter-base breakdown voltage		BV_{EBO}	5	—	—	V	$I_E=50\mu A$
Collector cutoff current		I_{CBO}	—	—	1	μA	$V_{CB}=80V$
Emitter cutoff current		I_{EBO}	—	—	1	μA	$V_{EB}=4V$
DC current transfer ratio	2SD1863	h_{FE}	180	—	390	—	$V_{CE}=3V$, $I_C=0.5A$ *
	2SD1733, 2SD1898		82	—	390	—	
	2SD1768S		120	—	390	—	
	2SD1381F		82	—	270	—	
Collector-emitter saturation voltage		$V_{CE(sat)}$	—	0.15	0.4	V	$I_C/I_B=500mA/20mA$
Transition frequency		f_T	—	100	—	MHz	$V_{CE}=10V$, $I_E=-50mA$, $f=100MHz$
Output capacitance		C_{ob}	—	20	—	pF	$V_{CB}=10V$, $I_E=0A$, $f=1MHz$

* Measured using pulse current

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●Packaging specifications and h_{FE}

Type	h_{FE}	Package	Taping				Bulk
		Code	T100	TL	TP	TV2	
		Basic ordering unit (pieces)	1000	2500	5000	2500	
2SD1898	PQR		○	—	—	—	—
2SD1733	PQR		—	○	—	—	—
2SD1768S	QR		—	—	○	—	—
2SD1863	R		—	—	—	○	—
2SD1381F	PQ		—	—	—	—	○

h_{FE} values are classified as follows :

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

●Electrical characteristic curves

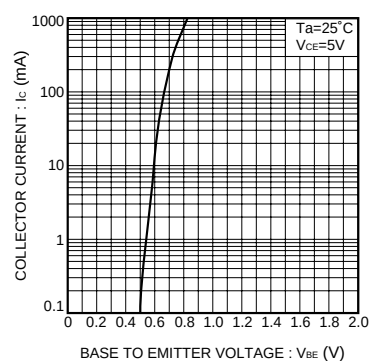


Fig.1 Grounded emitter propagation characteristics

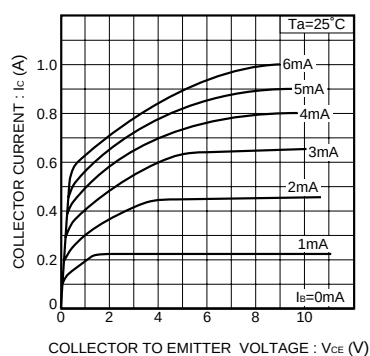


Fig.2 Grounded emitter output characteristics

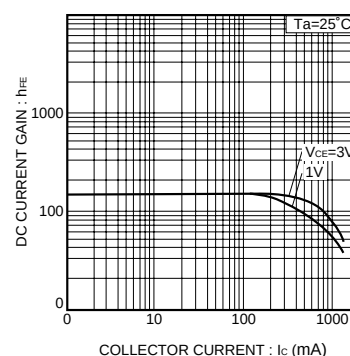


Fig.3 DC current gain vs. collector current

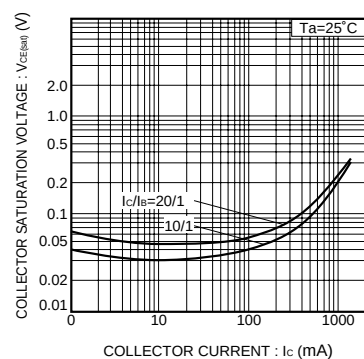


Fig.4 Collector-emitter saturation voltage vs. collector current

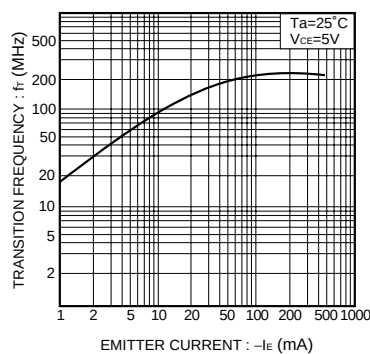


Fig.5 Gain bandwidth product vs. emitter current

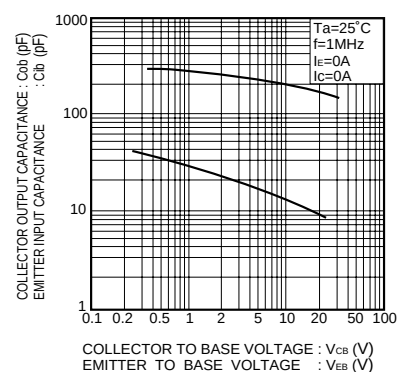


Fig.6 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

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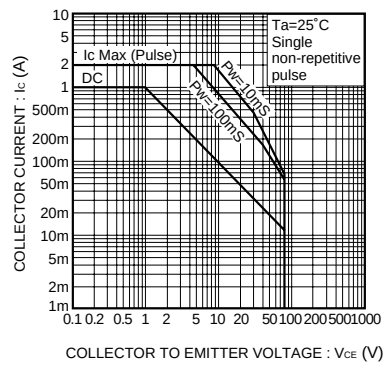


Fig.7 Safe operating area
(2SD1863)

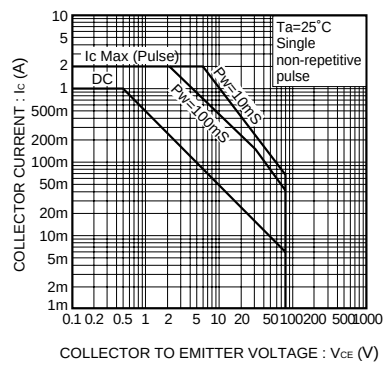


Fig.8 Safe operating area
(2SD1898)

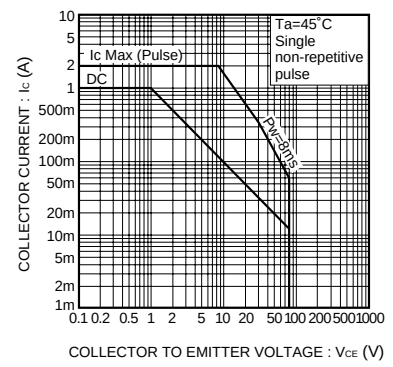


Fig.9 Safe operating area
(2SD1381F)