

# Low $V_{CE(sat)}$ transistor (strobe flash)

## 2SD2098 / 2SD2118

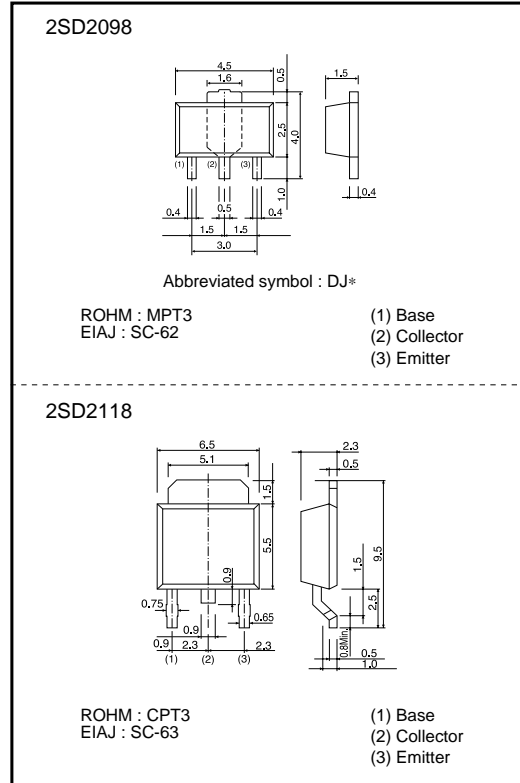
**●Features**

- 1) Low  $V_{CE(sat)}$ .  
 $V_{CE(sat)} = 0.25V$  (Typ.)  
 $(I_c/I_B = 4A / 0.1A)$
- 2) Excellent DC current gain characteristics.
- 3) Complements the 2SB1386 / 2SB1412.

**●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	$V_{CBO}$	50	V
Collector-emitter voltage	$V_{CEO}$	20	V
Emitter-base voltage	$V_{EBO}$	6	V
Collector current	$I_c$	5	A(DC)
	$I_{cP}$	10	A(Pulse) *1
Collector power dissipation	2SD2098	0.5	W *2
		2	
	2SD2118	1	W(Tc=25°C)
		10	
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

\*1 Single pulse Pw=10ms

\*2 When mounted on a 40x40x0.7 mm ceramic board.

## Transistors

## ●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV <sub>CB0</sub>	50	–	–	V	I <sub>C</sub> =50μA
Collector-emitter breakdown voltage	BV <sub>CEO</sub>	20	–	–	V	I <sub>C</sub> =1mA
Emitter-base breakdown voltage	BV <sub>EBO</sub>	6	–	–	V	I <sub>E</sub> =50μA
Collector cutoff current	I <sub>CB0</sub>	–	–	0.5	μA	V <sub>CB</sub> =40V
Emitter cutoff current	I <sub>EBO</sub>	–	–	0.5	μA	V <sub>EB</sub> =5V
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	–	0.3	1.0	V	I <sub>C</sub> /I <sub>B</sub> =4A/0.1A *
DC current transfer ratio	h <sub>FE</sub>	120	–	390	–	V <sub>CE</sub> =2V, I <sub>C</sub> =0.5A *
Transition frequency	f <sub>T</sub>	–	150	–	MHz	V <sub>CE</sub> =6V, I <sub>E</sub> =–50mA, f=100MHz
Output capacitance	C <sub>ob</sub>	–	35	–	pF	V <sub>CE</sub> =20V, I <sub>E</sub> =0A, f=1MHz

\* Measured using pulse current.

●Packaging specifications and h<sub>FE</sub>

Type	h <sub>FE</sub>	Package	Taping	
		Code	T100	TL
		Basic ordering unit (pieces)	1000	2500
2SD2098	QR		○	–
2SD2118	QR		–	○

h<sub>FE</sub> values are classified as follows :

Item	Q	R
h <sub>FE</sub>	120 to 270	180 to 390

Transistors

●Electrical characteristic curves

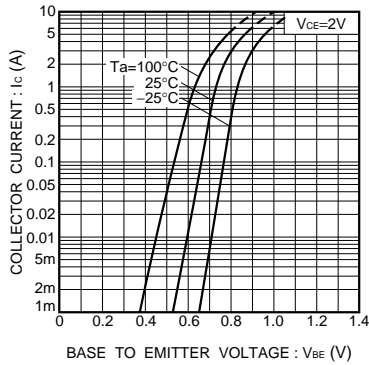


Fig.1 Grounded emitter propagation characteristics

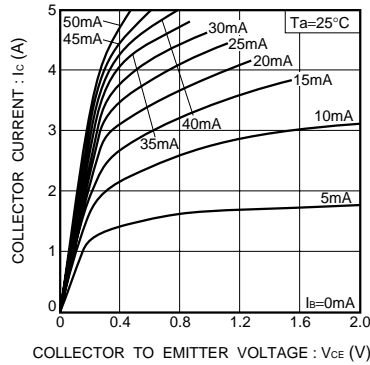


Fig.2 Grounded emitter output characteristics

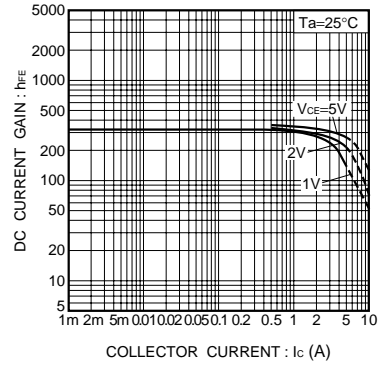


Fig.3 DC current gain vs. collector current ( I )

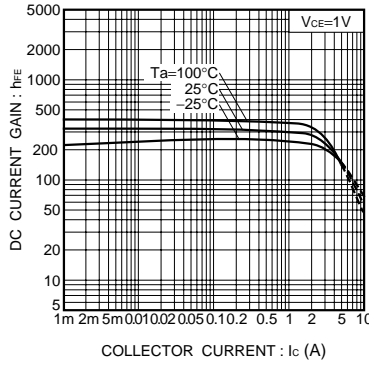


Fig.4 DC current gain vs. collector current ( II )

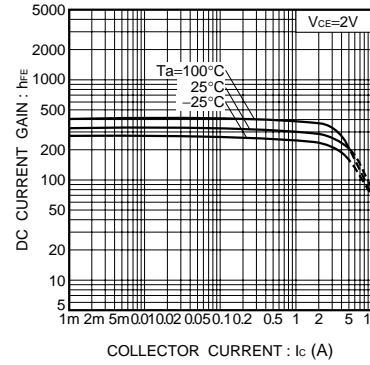


Fig.5 DC current gain vs. collector current ( III )

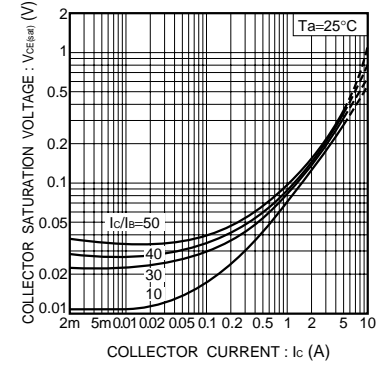


Fig.6 Collector-emitter saturation voltage vs. collector current ( I )

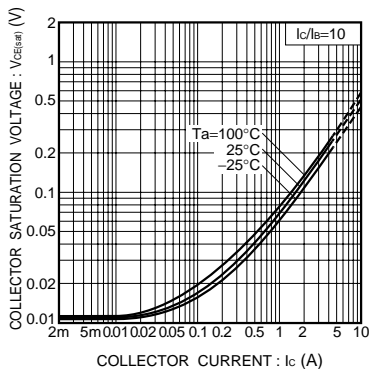


Fig.7 Collector-emitter saturation voltage vs. collector current ( II )

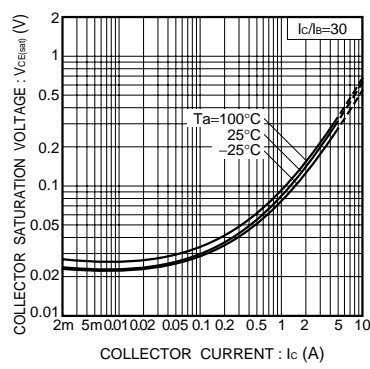


Fig.8 Collector-emitter saturation voltage vs. collector current ( III )

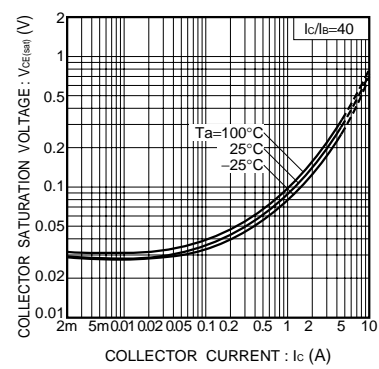


Fig.9 Collector-emitter saturation voltage vs. collector current (IV)

Transistors

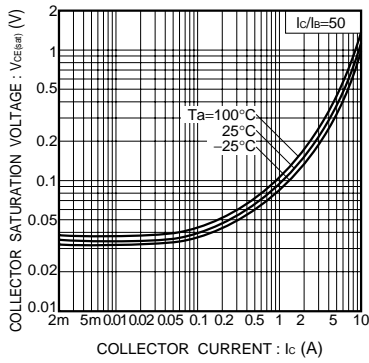


Fig.10 Collector-emitter saturation voltage vs. collector current (V)

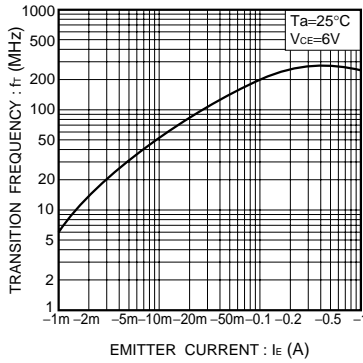


Fig.11 Gain bandwidth product vs. emitter current

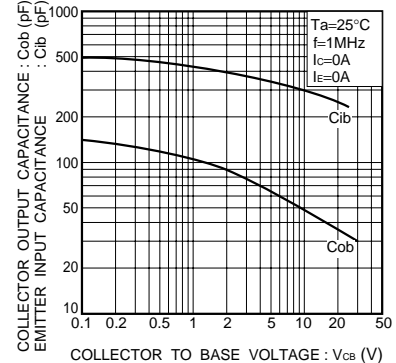


Fig.12 Collector output capacitance vs. collector-base voltage  
Emitter input capacitance vs. emitter-base voltage

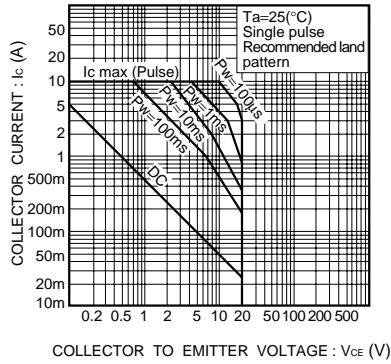


Fig.13 Safe operating area (2SD2098)

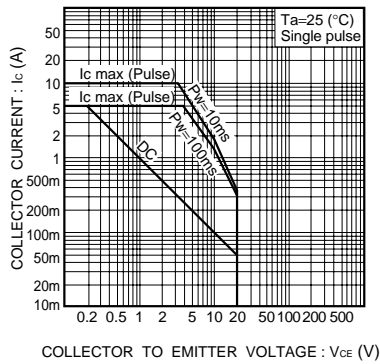


Fig.14 Safe operating area (2SD2118)

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