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

2SD2098 / 2SD2118 / 2SD2097

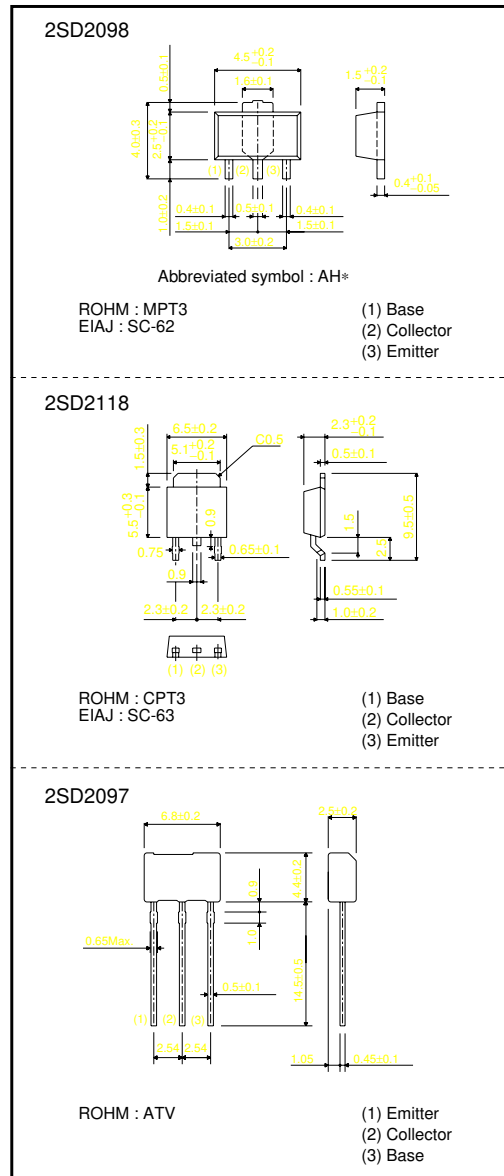
●Features

- 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 / 2SB1326.

●Structure

Epitaxial planar type
 NPN silicon transistor

●External dimensions (Units : mm)



Transistors

●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Collector-base voltage		V _{CB0}	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	P _C	0.5	W *2
			2	
	2SD2118		1	
			10	W(T _C =25°C)
2SD2097	1	W *3		
Junction temperature		T _J	150	°C
Storage temperature		T _{stg}	-55~+150	°C

*1 Single pulse P_w=10ms

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

*3 Printed circuit board glass epoxy board, 1.6 mm thick with copper plating 100mm² or larger.

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV _{CB0}	50	–	–	V	I _C =50μA
Collector-emitter breakdown voltage	BV _{CEO}	20	–	–	V	I _C =1mA
Emitter-base breakdown voltage	BV _{EBO}	6	–	–	V	I _E =50μA
Collector cutoff current	I _{CB0}	–	–	0.5	μA	V _{CB} =40V
Emitter cutoff current	I _{EBO}	–	–	0.5	μA	V _{EB} =5V
Collector-emitter saturation voltage	V _{CE(sat)}	–	0.25	1.0	V	I _C /I _B =4A/0.1A *
DC current transfer ratio	h _{FE}	120	–	390	–	V _{CE} =2V, I _C =0.5A *
Transition frequency	f _T	–	150	–	MHz	V _{CE} =6V, I _E =-50mA, f=100MHz
Output capacitance	C _{ob}	–	30	–	pF	V _{CE} =20V, 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
2SD2098	QR		○	–	–
2SD2118	QR		–	○	–
2SD2097	QR		–	–	○

h_{FE} values are classified as follows :

Item	Q	R
h _{FE}	120~270	180~390

Transistors

●Electrical characteristic curves

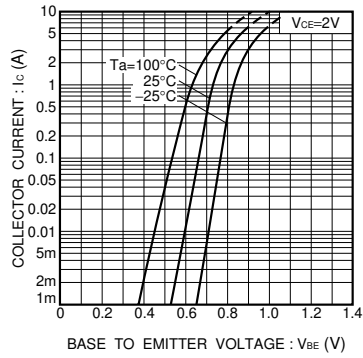


Fig.1 Grounded emitter propagation characteristics

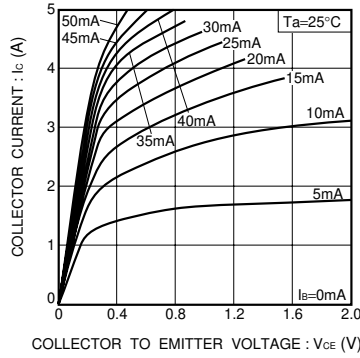


Fig.2 Grounded emitter output characteristics

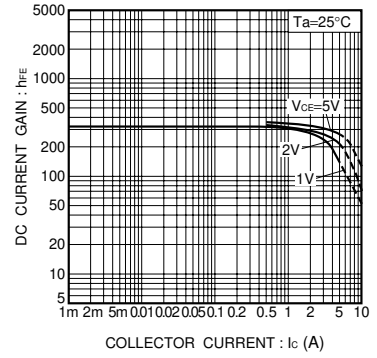


Fig.3 DC current gain vs. collector current (I)

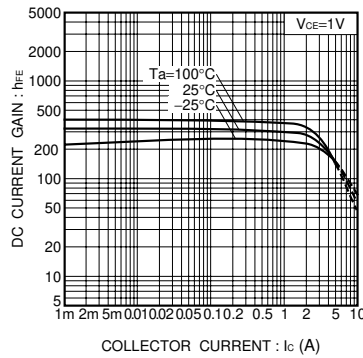


Fig.4 DC current gain vs. collector current (II)

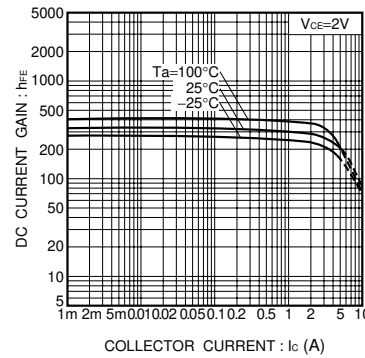


Fig.5 DC current gain vs. collector current (III)

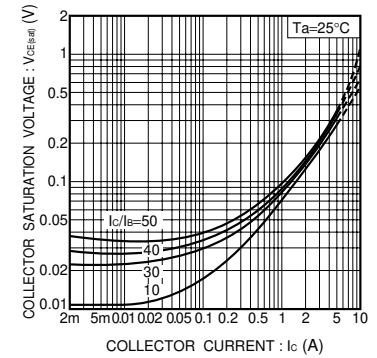


Fig.6 Collector-emitter saturation voltage vs. collector current (I)

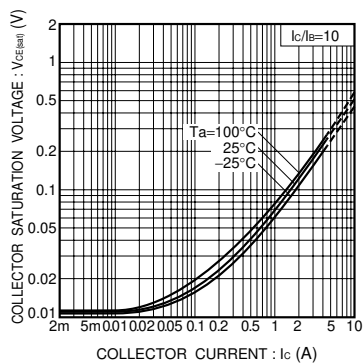


Fig.7 Collector-emitter saturation voltage vs. collector current (II)

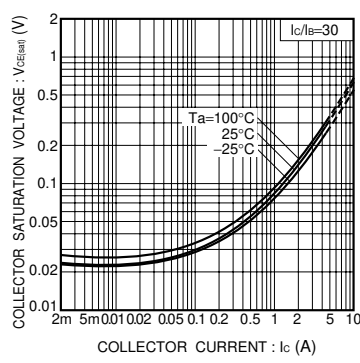


Fig.8 Collector-emitter saturation voltage vs. collector current (III)

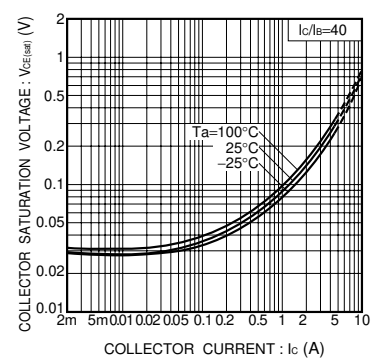


Fig.9 Collector-emitter saturation voltage vs. collector current (IV)

Transistors

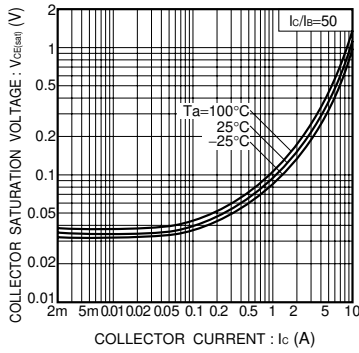


Fig.10 Collector-emitter saturation voltage vs. collector current (V)

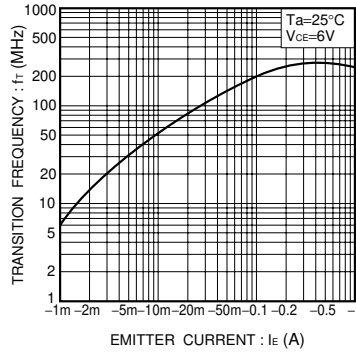


Fig.11 Gain bandwidth product vs. emitter current

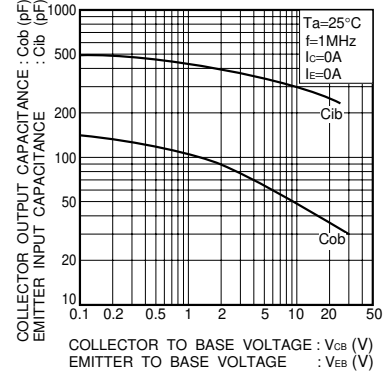


Fig.12 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

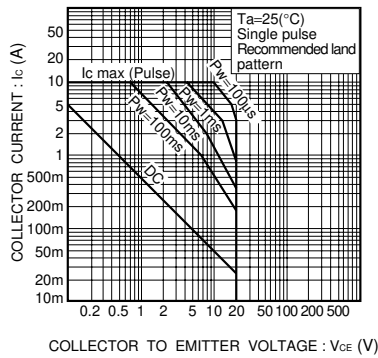


Fig.13 Safe operating area (2SD2098)

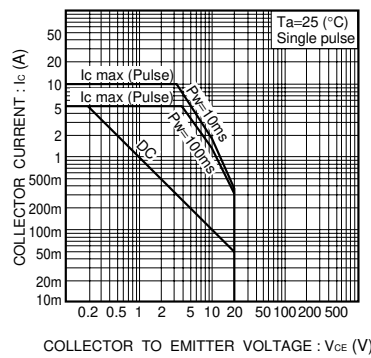


Fig.14 Safe operating area (2SD2118)