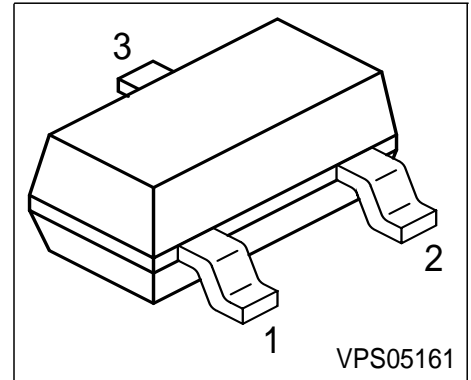


NPN Silicon AF Transistors

- For general AF applications
- High collector current
- High current gain
- Low collector-emitter saturation voltage
- Complementary types: BC807, BC808 (PNP)



Type	Marking	Pin Configuration			Package
BC817-16	6As	1 = B	2 = E	3 = C	SOT23
BC817-25	6Bs	1 = B	2 = E	3 = C	SOT23
BC817-40	6Cs	1 = B	2 = E	3 = C	SOT23
BC818-16	6Es	1 = B	2 = E	3 = C	SOT23
BC818-25	6Fs	1 = B	2 = E	3 = C	SOT23
BC818-40	6Gs	1 = B	2 = E	3 = C	SOT23

Maximum Ratings

Parameter	Symbol	BC817	BC818	Unit
Collector-emitter voltage	V_{CEO}	45	25	V
Collector-base voltage	V_{CBO}	50	30	
Emitter-base voltage	V_{EBO}	5	5	
DC collector current	I_C	500		mA
Peak collector current	I_{CM}	1		A
Base current	I_B	100		mA
Peak base current	I_{BM}	200		
Total power dissipation, $T_S = 79\text{ °C}$	P_{tot}	330		mW
Junction temperature	T_j	150		°C
Storage temperature	T_{stg}	-65 ... 150		

Thermal Resistance

Junction - soldering point ¹⁾	R_{thJS}	≤215	K/W
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¹⁾For calculation of R_{thJA} please refer to Application Note Thermal Resistance

Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified.

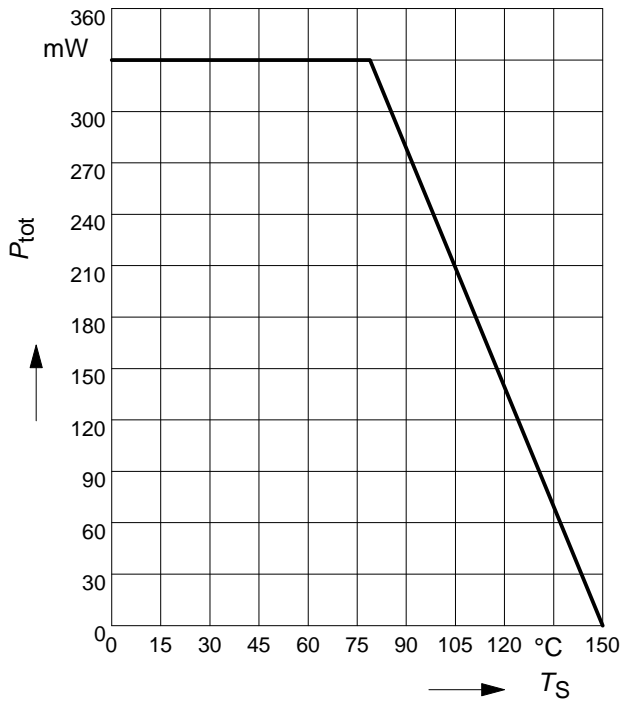
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage $I_C = 10\text{ mA}, I_B = 0$	$V_{(BR)CEO}$	45	-	-	V
BC817					
BC818		25	-	-	
Collector-base breakdown voltage $I_C = 10\text{ }\mu\text{A}, I_E = 0$	$V_{(BR)CBO}$	50	-	-	
BC817					
BC818		30	-	-	
Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}, I_C = 0$	$V_{(BR)EBO}$	5	-	-	
Collector cutoff current $V_{CB} = 25\text{ V}, I_E = 0$	I_{CBO}	-	-	100	nA
Collector cutoff current $V_{CB} = 25\text{ V}, I_E = 0, T_A = 150\text{ }^\circ\text{C}$	I_{CBO}	-	-	50	μA
Emitter cutoff current $V_{EB} = 4\text{ V}, I_C = 0$	I_{EBO}	-	-	100	nA
DC current gain 1) $I_C = 100\text{ mA}, V_{CE} = 1\text{ V}$	h_{FE}	100	160	250	-
$h_{FE}\text{-grp.16}$					
$h_{FE}\text{-grp.25}$		160	250	400	
$h_{FE}\text{-grp.40}$		250	350	630	
DC current gain 1) $I_C = 300\text{ mA}, V_{CE} = 1\text{ V}$	h_{FE}	60	-	-	
$h_{FE}\text{-grp.16}$					
$h_{FE}\text{-grp.25}$		100	-	-	
$h_{FE}\text{-grp.40}$		170	-	-	
Collector-emitter saturation voltage1) $I_C = 500\text{ mA}, I_B = 50\text{ mA}$	V_{CEsat}	-	-	0.7	V
Base-emitter saturation voltage 1) $I_C = 500\text{ mA}, I_B = 50\text{ mA}$	V_{BEsat}	-	-	1.2	

 1) Pulse test: $t \leq 300\mu\text{s}$, $D = 2\%$

Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified.

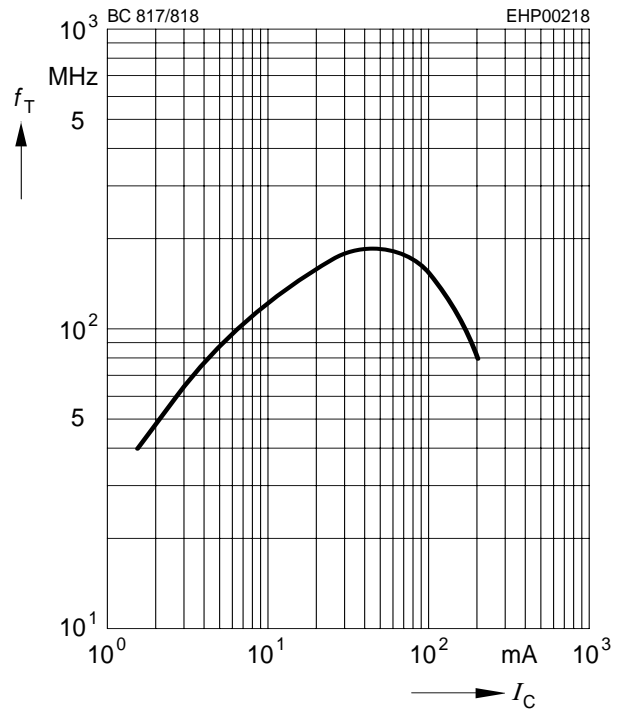
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics					
Transition frequency $I_C = 50 \text{ mA}$, $V_{CE} = 5 \text{ V}$, $f = 100 \text{ MHz}$	f_T	-	170	-	MHz
Collector-base capacitance $V_{CB} = 10 \text{ V}$, $f = 1 \text{ MHz}$	C_{cb}	-	6	-	pF
Emitter-base capacitance $V_{EB} = 0.5 \text{ V}$, $f = 1 \text{ MHz}$	C_{eb}	-	60	-	

Total power dissipation $P_{tot} = f(T_S)$



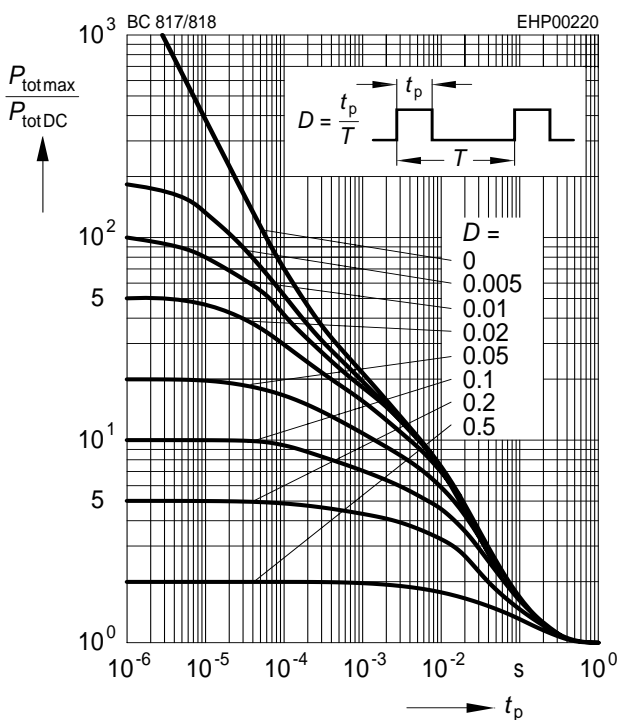
Transition frequency $f_T = f(I_C)$

$V_{CE} = 5V$



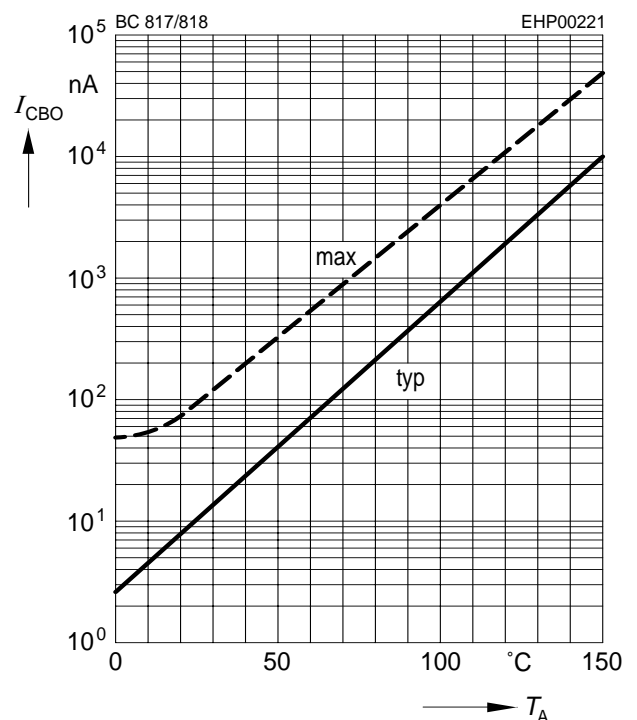
Permissible pulse load

$P_{totmax} / P_{totDC} = f(t_p)$



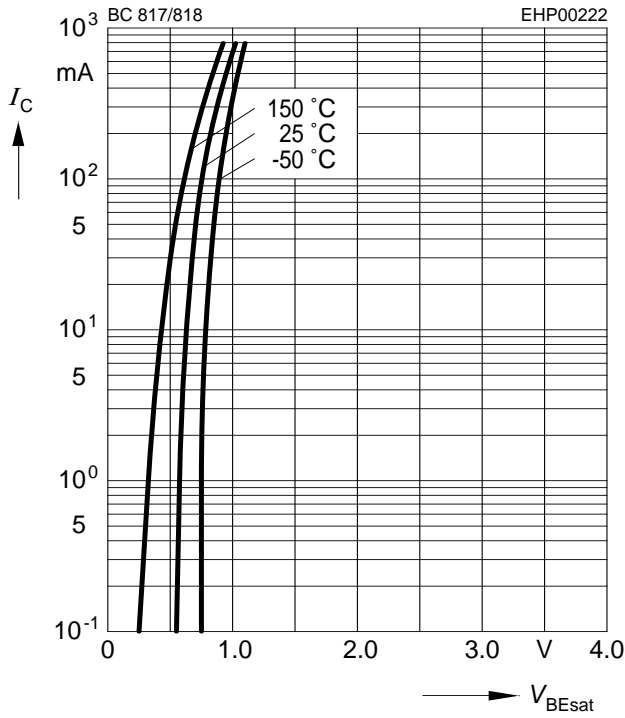
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CBO} = 25V$



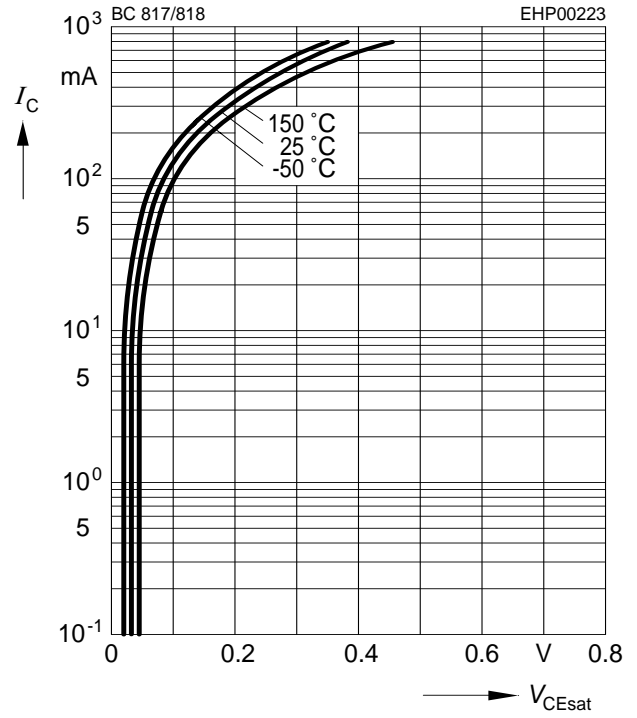
Base-emitter saturation voltage

$$I_C = f(V_{BEsat}), h_{FE} = 10$$



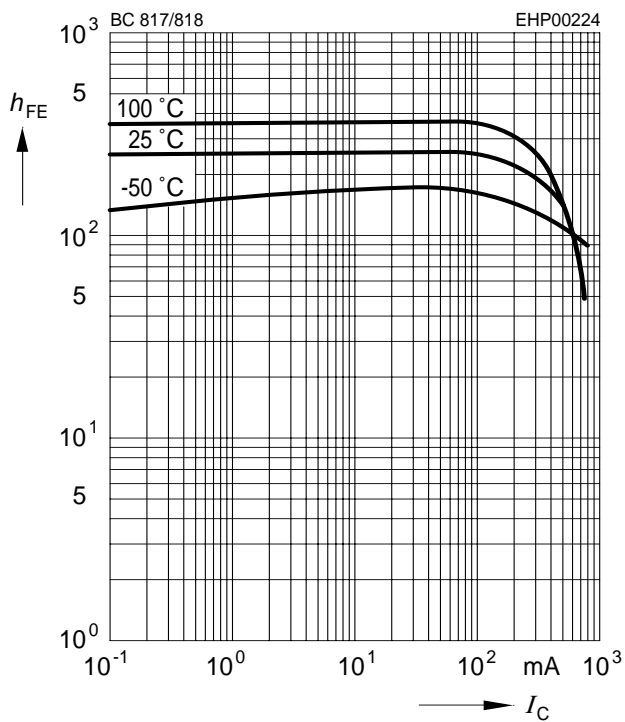
Collector-emitter saturation voltage

$$I_C = f(V_{CEsat}), h_{FE} = 10$$

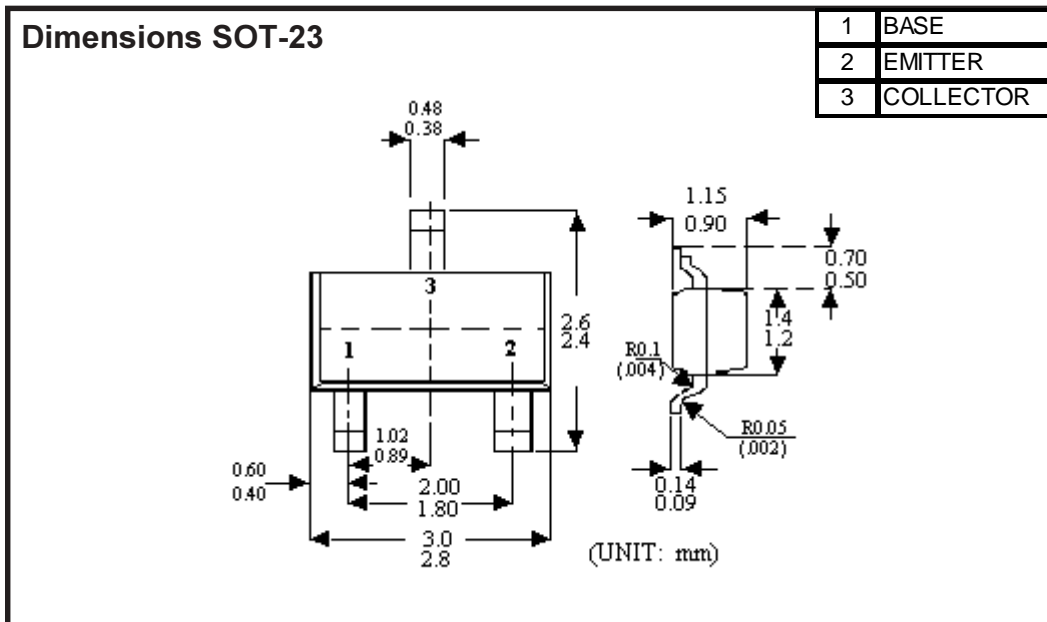


DC current gain $h_{FE} = f(I_C)$

$$V_{CE} = 1V$$



NPN Silicon Planar Epitaxial Transistor



Absolute Maximum Ratings (Ta=25°C unless specified otherwise)

Desription	SYMBOL	VALUE	UNITS
Collector-Emitter Voltage ($V_{BE} = 0V$)	V_{CES}	50	V
Collector Emitter Voltage (open base) $I_C = 10mA$	V_{CEO}	45	V
Emitter Base Voltage	V_{EBO}	5	V
Collector Current (DC)	I_C	500	mA
Collector Current - Peak	I_{CM}	1000	mA
Emitter Current - Peak	$(-I_{EM})$	1000	mA
Base Current (DC)	I_B	100	mA
Base Current - Peak	I_{BM}	200	mA
Total Power Dissipation up to $T_{amb} = 25^\circ C$	P_{tot}	250	mW
Storage Temperature	T_{stg}	(-55 to +150)	°C
Junction Temperature	T_J	150	°C

Thermal Resistance

From junction to ambient	$R_{th(j-a)}$	500	k / W
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Electical Characteristics (at $T_a = 25^\circ\text{C}$ unless otherwise specified)

	Symbol	Test Conditions		Typ.	Unit
Collector Cut off Current	I_{CBO}	$V_{CB} = 20\text{V}, I_E = 0, T_J = 25^\circ\text{C}$	<	100	nA
		$V_{CB} = 20\text{V}, I_E = 0, T_J = 150^\circ\text{C}$	<	5	μA
Emitter cut-off current	I_{EBO}	$I_C = 0, V_{EB} = 5\text{V}$	<	10	μA
Base Emitter on Voltage	V_{BE}	$I_C = 500\text{ mA}, V_{CE} = 1\text{V}$	<	1, 2V	V
Saturation Voltage	V_{CEsat}	$I_C = 500\text{ mA}, I_B = 50\text{mA}$	<	700	mV
DC Current Gain	h_{FE}	$I_C = 500\text{ mA}, V_{CE} = 1\text{V}$	>	40	
		$I_C = 100\text{ mA}, V_{CE} = 1\text{V}$	-	100 to 600	
Collector Capacitance	C_C	$I_E = I_E = 0, V_{CB} = 10\text{V},$ $f = 1\text{MHz}$	typ.	5	pF
Transition Frequency	f_T	$I_C = 10\text{mA}, V_{CE} = 5\text{V},$ $f = 100\text{MHz}$	>	100	MHz