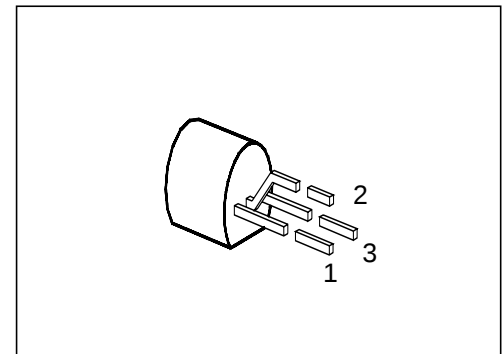


NPN Silicon Darlington Transistors

BC 617
BC 618

- High current gain
- High collector current



Type	Marking	Ordering Code	Pin Configuration			Package ¹⁾
			1	2	3	
BC 617 BC 618	—	Q62702-C1137 Q62702-C1138	C	B	E	TO-92

Maximum Ratings

Parameter	Symbol	Values		Unit
		BC 617	BC 618	
Collector-emitter voltage	V_{CE0}	40	55	V
Collector-base voltage	V_{CB0}	50	80	
Emitter-base voltage	V_{EB0}	12		
Collector current	I_C	500		mA
Peak collector current	I_{CM}	800		
Base current	I_B	100		
Peak base current	I_{BM}	200		
Total power dissipation, $T_C = 66\text{ }^{\circ}\text{C}$	P_{tot}	625		mW
Junction temperature	T_j	150		$^{\circ}\text{C}$
Storage temperature range	T_{stg}	− 65 ... + 150		

Thermal Resistance

Junction - ambient	$R_{th JA}$	≤ 200	K/W
Junction - case ²⁾	$R_{th JC}$	≤ 135	

¹⁾ For detailed information see chapter Package Outlines.

²⁾ Mounted on Al heat sink 15 mm × 25 mm × 0.5 mm.

Electrical Characteristics

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

DC characteristics

Collector-emitter breakdown voltage $I_C = 10\text{ mA}$	$V_{(BR)CE0}$				V
BC 617		40	—	—	
BC 618		55	—	—	
Collector-base breakdown voltage $I_C = 100\text{ }\mu\text{A}$	$V_{(BR)CB0}$				
BC 617		50	—	—	
BC 618		80	—	—	
Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}$	$V_{(BR)EB0}$	12	—	—	
Collector cutoff current $V_{CB} = 40\text{ V}$	I_{CB0}	—	—	100	nA
BC 617		—	—	100	nA
$V_{CB} = 60\text{ V}$		—	—	10	μA
BC 618		—	—	10	μA
$V_{CB} = 40\text{ V}, T_A = 150\text{ }^{\circ}\text{C}$		—	—	10	μA
$V_{CB} = 60\text{ V}, T_A = 150\text{ }^{\circ}\text{C}$		—	—	10	μA
Emitter cutoff current $V_{EB} = 4\text{ V}$	I_{EB0}	—	—	100	nA
DC current gain $I_C = 100\text{ }\mu\text{A}; V_{CE} = 5\text{ V}$	h_{FE}	4000	—	—	—
BC 617		2000	—	—	
$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}^{1)}$		10000	—	—	
BC 617		4000	—	—	
$I_C = 200\text{ mA}; V_{CE} = 5\text{ V}^{1)}$		20000	—	70000	
BC 618		10000	—	50000	
$I_C = 1000\text{ mA}; V_{CE} = 5\text{ V}^{1)}$		10000	—	—	
BC 618		4000	—	—	
Collector-emitter saturation voltage ¹⁾ $I_C = 200\text{ mA}; I_B = 0.2\text{ mA}$	V_{CEsat}	—	—	1.1	V
Base-emitter saturation voltage ¹⁾ $I_C = 200\text{ mA}; I_B = 0.2\text{ mA}$	V_{BEsat}	—	—	1.6	

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

Electrical Characteristics

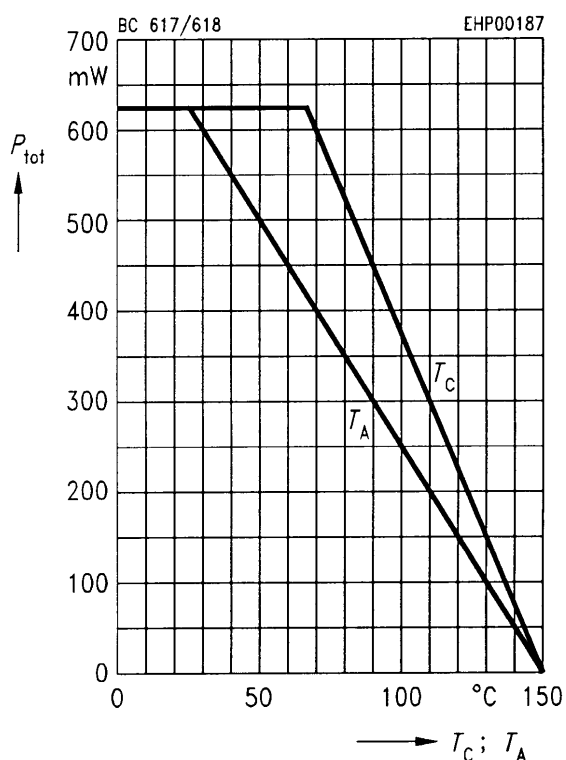
at $T_A = 25^\circ\text{C}$, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

AC characteristics

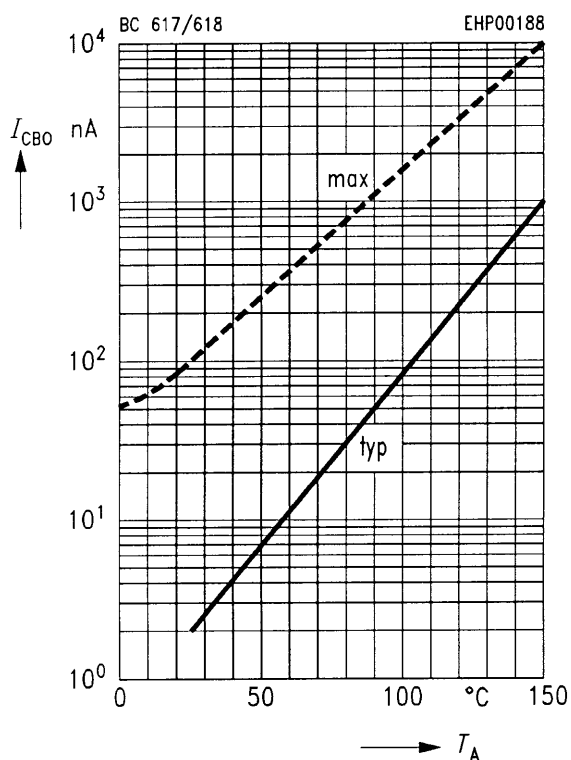
Transition frequency $I_C = 50\text{ mA}$, $V_{CE} = 5\text{ V}$, $f = 20\text{ MHz}$	f_t	—	150	—	MHz
Output capacitance $V_{CB} = 10\text{ V}$, $f = 1\text{ MHz}$	C_{obo}	—	3.5	—	pF

Total power dissipation $P_{tot} = f(T_A; T_C)$

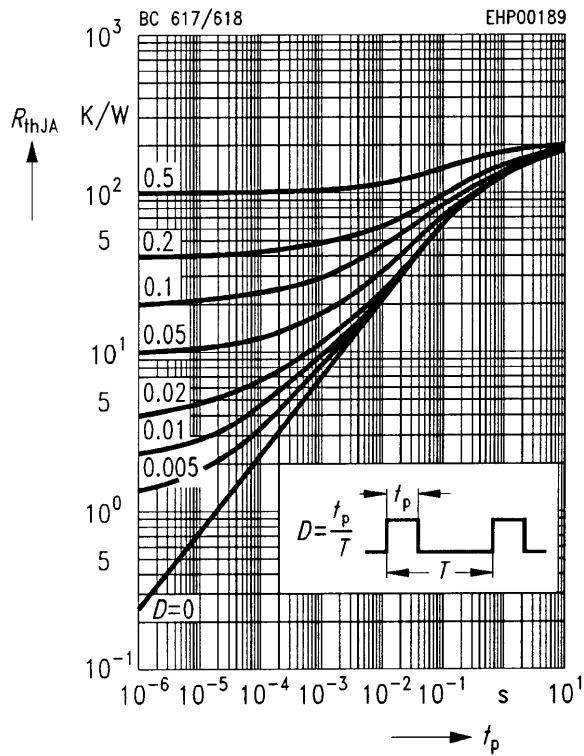


Collector cutoff current $I_{CB0} = f(T_A)$

$V_{CB} = 40\text{ V}, 60\text{ V}$

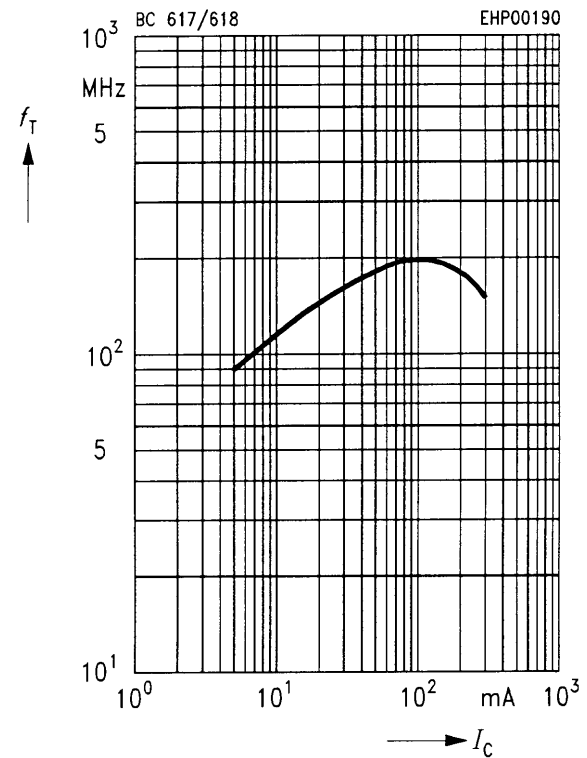


Permissible pulse load $R_{thJA} = f(t_p)$



Transition frequency $f_T = f(I_C)$

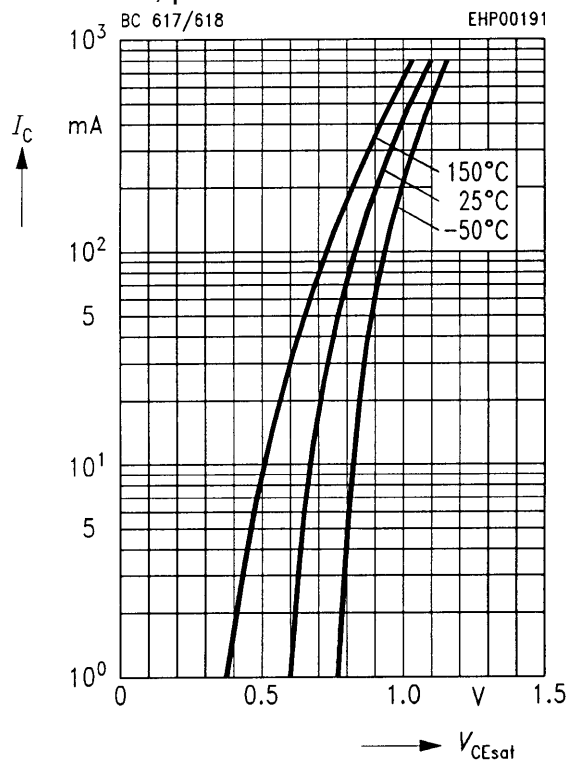
$V_{CE} = 5$ V, $f = 20$ MHz



Collector-emitter saturation voltage

$V_{CEsat} = f(I_C)$

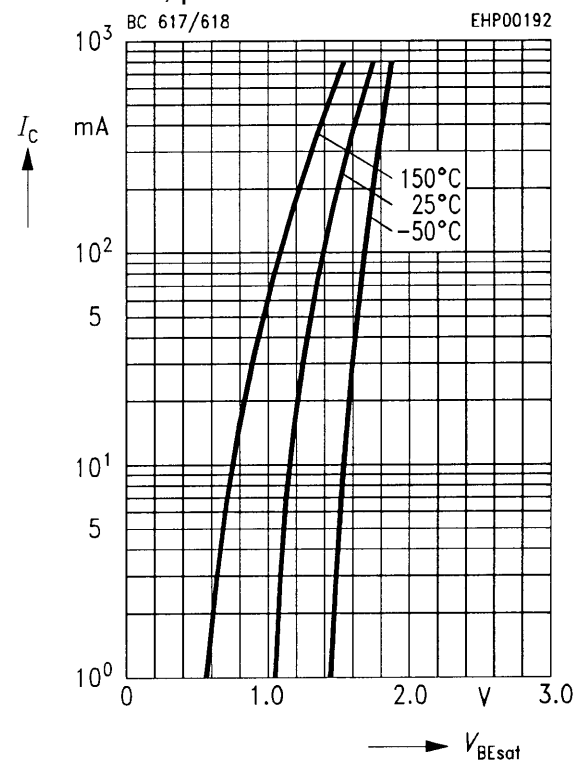
$h_{FE} = 1000$, parameter = T_A



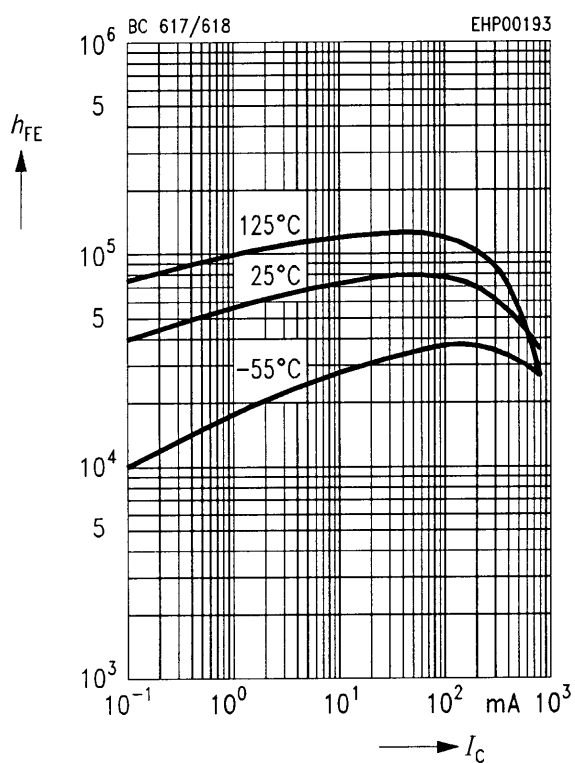
Base-emitter saturation voltage

$V_{BEsat} = f(I_C)$

$h_{FE} = 1000$, parameter = T_A



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



Capacitance $C = f(V_{EB}, V_{CB})$

