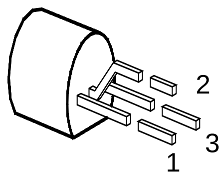
SIEMENS

NPN Silicon Darlington Transistors

BC 617
BC 618

- High current gain
- High collector current



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

Maximum Ratings

Parameter	Symbol	Values BC 617	BC 618	Unit
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, $T_C = 66$ ˚C	P_{tot}	625		mW
Junction temperature	T_j	150		˚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 ˚C, unless otherwise specified.

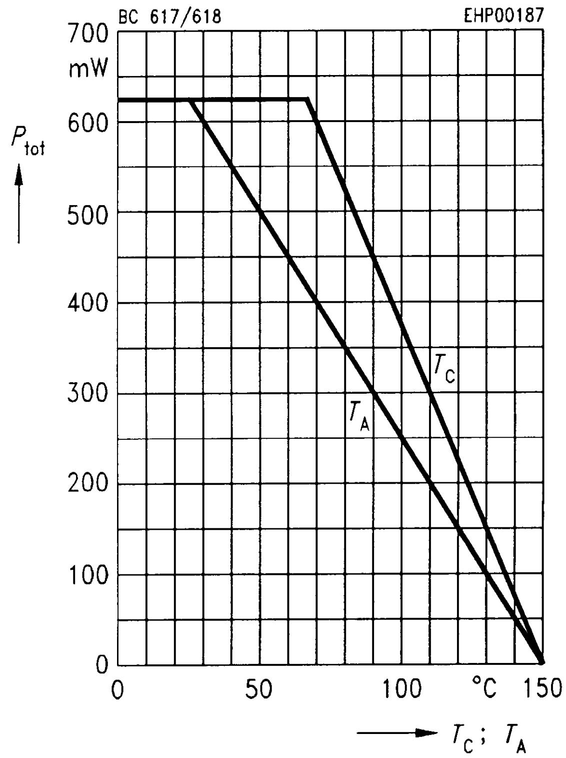
Parameter		Symbol	Values			Unit
			min.	typ.	max.	
DC characteristics						
Collector-emitter breakdown voltage I_C = 10 mA		$V_{(BR)CE0}$				V
	BC 617		40	–	–	
	BC 618		55	–	–	
Collector-base breakdown voltage I_C = 100 µA		$V_{(BR)CB0}$				
	BC 617		50	–	–	
	BC 618		80	–	–	
Emitter-base breakdown voltage I_E = 10 µA		$V_{(BR)EB0}$	12	–	–	
Collector cutoff current		I_{CB0}				
V_{CB} = 40 V	BC 617		–	–	100	nA
V_{CB} = 60 V	BC 618		–	–	100	nA
V_{CB} = 40 V, T_A = 150 ˚C	BC 617		–	–	10	µA
V_{CB} = 60 V, T_A = 150 ˚C	BC 618		–	–	10	µA
Emitter cutoff current V_{EB} = 4 V		I_{EB0}	–	–	100	nA
DC current gain		h_{FE}				–
I_C = 100 µA; V_{CE} = 5 V	BC 617		4000	–	–	
	BC 618		2000	–	–	
I_C = 10 mA; V_{CE} = 5 V[1]	BC 617		10000	–	–	
	BC 618		4000	–	–	
I_C = 200 mA; V_{CE} = 5 V[1]	BC 617		20000	–	70000	
	BC 618		10000	–	50000	
I_C = 1000 mA; V_{CE} = 5 V[1]	BC 617		10000	–	–	
	BC 618		4000	–	–	
Collector-emitter saturation voltage[1] I_C = 200 mA; I_B = 0.2 mA		V_{CEsat}	–	–	1.1	V
Base-emitter saturation voltage[1] I_C = 200 mA; I_B = 0.2 mA		V_{BEsat}	–	–	1.6	

[1] Pulse test: $t \leq$ 300 µs, $D \leq$ 2 %.

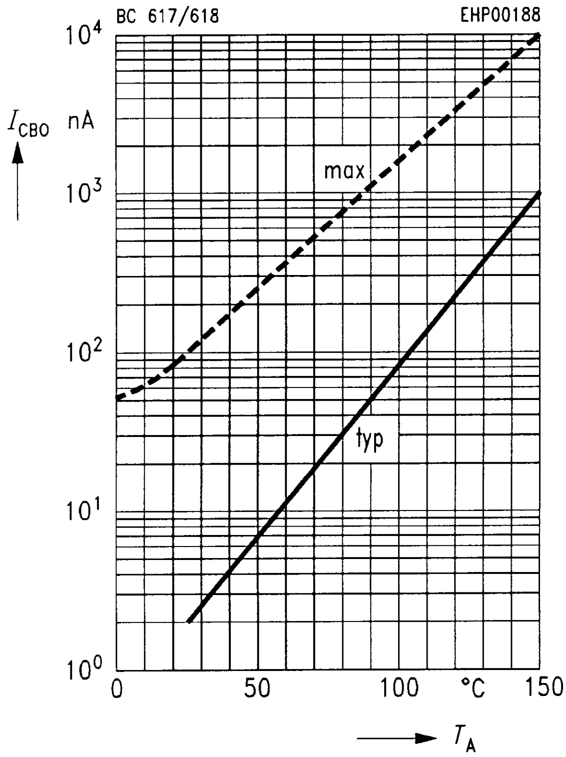
Electrical Characteristics
at T_A = 25 ˚C, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC characteristics					
Transition frequency I_C = 50 mA, V_{CE} = 5 V, f = 20 MHz	f_T	–	150	–	MHz
Output capacitance V_{CB} = 10 V, f = 1 MHz	C_{obo}	–	3.5	–	pF

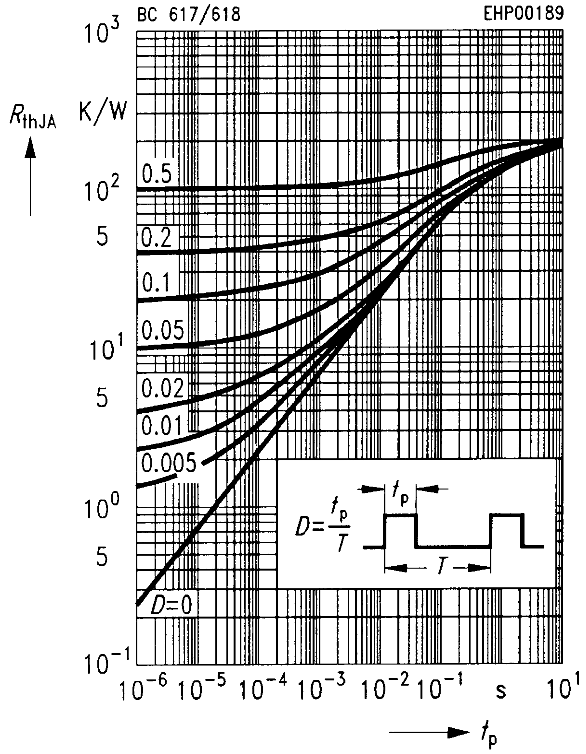
Total power dissipation $P_{tot} = f(T_A; T_C)$



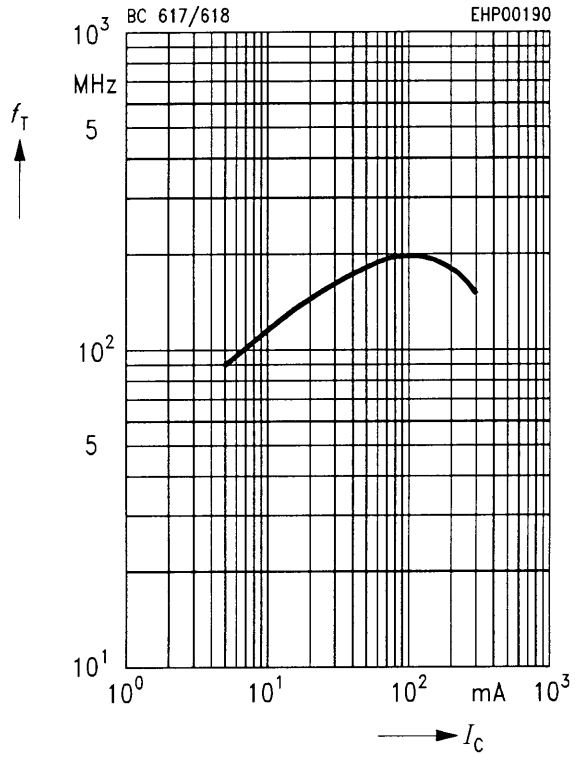
Collector cutoff current $I_{CB0} = f(T_A)$
V_{CB} = 40 V, 60 V



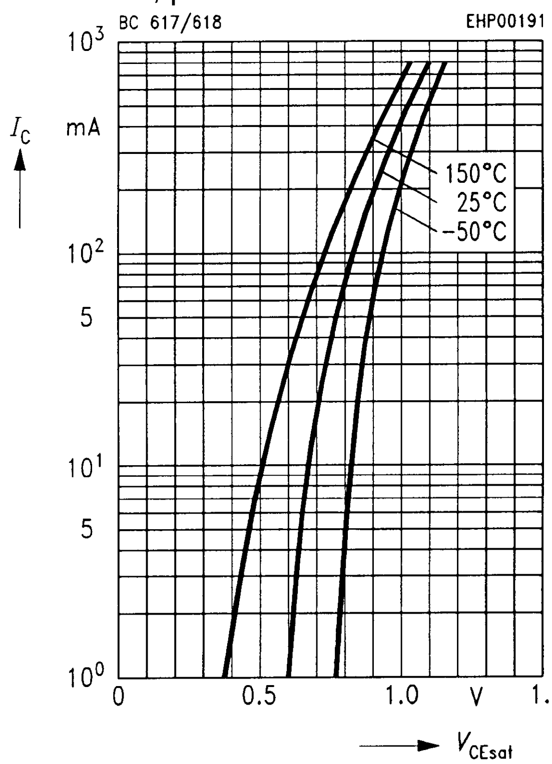
Permissible pulse load $R_{thJA} = f(t_p)$



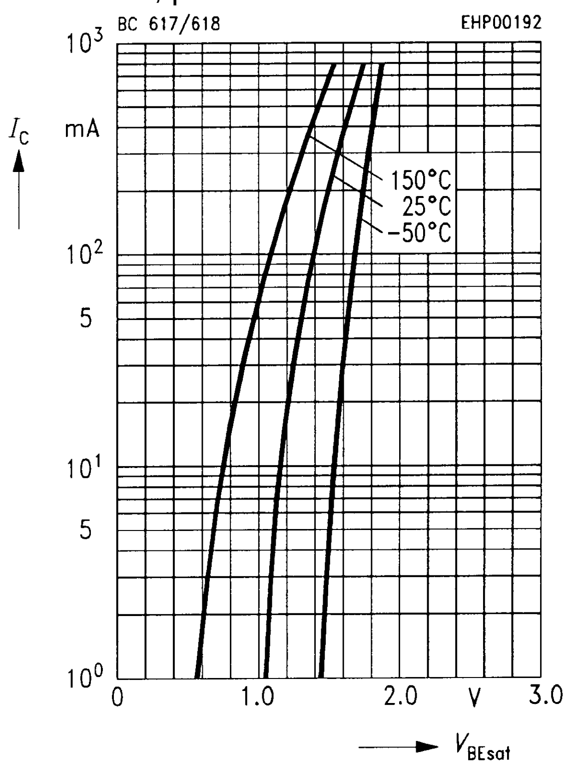
Transition frequency $f_T = f(I_C)$
V_{CE} = 5 V, f = 20 MHz



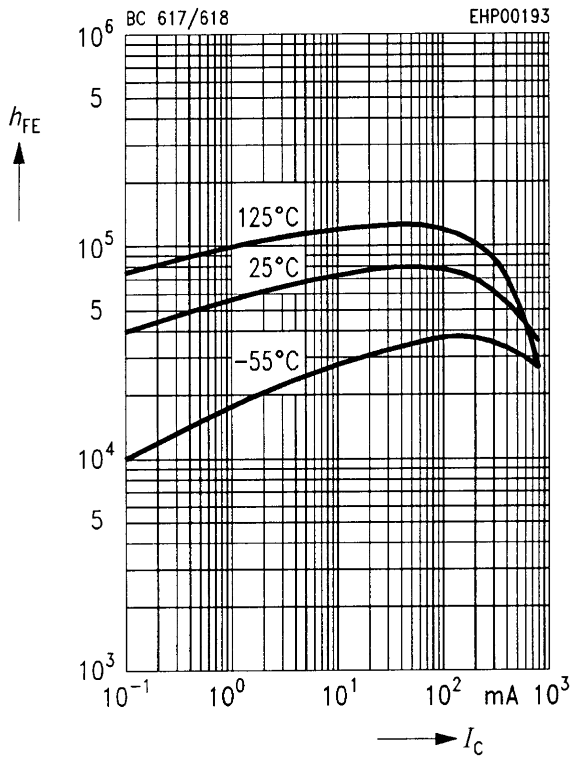
Collector-emitter saturation voltage
$V_{CEsat} = f(I_C)$
h_{FE} = 1000, parameter = T_A



Base-emitter saturation voltage
$V_{BEsat} = f(I_C)$
h_{FE} = 1000, parameter = T_A



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



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