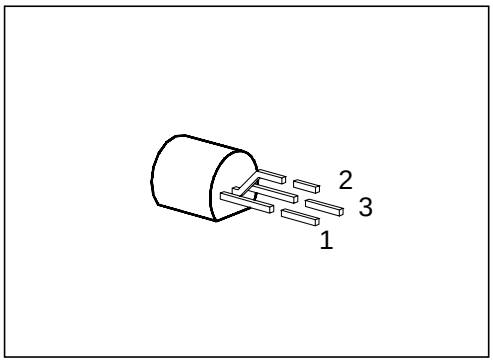
SIEMENS

NPN Silicon AF Transistors

BC 635
… BC 639

- High current gain
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BC 636, BC 638, BC 640 (PNP)



Type	Marking	Ordering Code	Pin Configuration 1	2	3	Package[1)]
BC 635 BC 637 BC 639	–	Q68000-A3360 Q68000-A2285 Q68000-A3361	E	C	B	TO-92

If desired, selected transistors, type BC 63 ★ –10 (h_{FE} = 63 … 160), or BC 63 ★ –16 (h_{FE} = 100 … 250) are available. Ordering codes upon request.

1) For detailed information see chapter Package Outlines.

Maximum Ratings

Parameter	Symbol	Values			Unit
		BC 635	BC 637	BC 639	
Collector-emitter voltage	V_{CE0}	45	60	80	V
Collector-base voltage	V_{CB0}	45	60	100	
Emitter-base voltage	V_{EB0}	5			
Collector current	I_C	1			A
Peak collector current	I_{CM}	1.5			
Base current	I_B	100			mA
Peak base current	I_{BM}	200			
Total power dissipation, T_C = 90 °C[1)]	P_{tot}	0.8 (1)			W
Junction temperature	T_j	150			°C
Storage temperature range	T_{stg}	– 65 … + 150			

Thermal Resistance

Junction - ambient[1)]	$R_{th\ JA}$	≤ 156	K/W
Junction - case[2)]	$R_{th\ JC}$	≤ 75	

1) If the transistors with max. 4 mm lead length are fixed on PCBs with a min. 10 mm × 10 mm large copper area for the collector terminal, $R_{th\ JA}$ = 125 K/W and thus $P_{tot\ max}$ = 1 W at T_A = 25 °C.

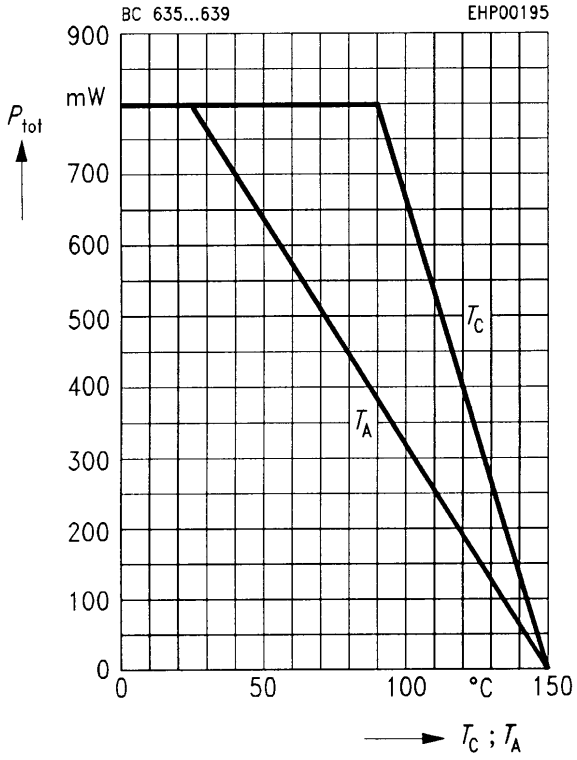
2) Mounted on Al heat sink 15 mm × 25 mm × 0.5 mm.

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

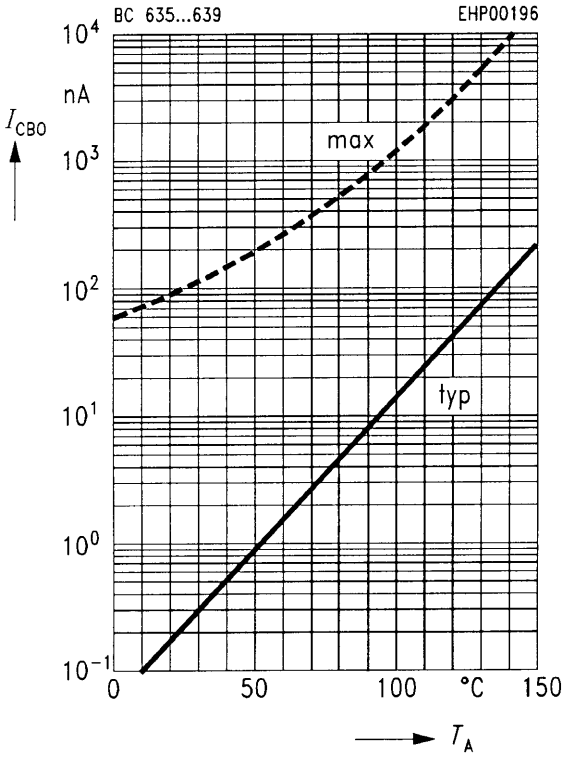
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC characteristics					
Collector-emitter breakdown voltage I_C = 10 mA	$V_{(BR)CE0}$				V
BC 635		45	–	–	
BC 637		60	–	–	
BC 639		80	–	–	
Collector-base breakdown voltage I_C = 100 µA	$V_{(BR)CB0}$				
BC 635		45	–	–	
BC 637		60	–	–	
BC 639		100	–	–	
Emitter-base breakdown voltage I_E = 10 µA	$V_{(BR)EB0}$	5	–	–	
Collector cutoff current V_{CB} = 30 V V_{CB} = 30 V, T_A = 150 ˚C	I_{CB0}	 – –	 – –	 100 20	 nA µA
Emitter cutoff current V_{EB} = 4 V	I_{EB0}	–	–	100	nA
DC current gain I_C = 5 mA; V_{CE} = 2 V I_C = 150 mA; V_{CE} = 2 V[1)] I_C = 500 mA; V_{CE} = 2 V[1)]	h_{FE}	 25 40 25	 – – –	 – 250 –	–
Collector-emitter saturation voltage[1)] I_C = 500 mA; I_B = 50 mA	V_{CEsat}	–	–	500	mV
Base-emitter voltage[1)] I_C = 500 mA; V_{CE} = 2 V	$V_{BE)}$	–	–	1	V
AC characteristics					
Transition frequency I_C = 50 mA, V_{CE} = 10 V, f = 20 MHz	f_T	–	100	–	MHz

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

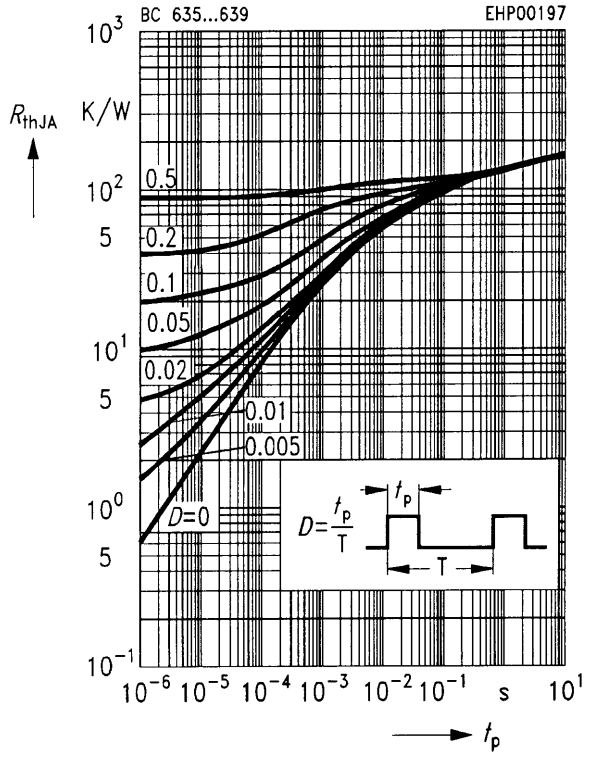
Total power dissipation $P_{tot} = f(T_A; T_C)$



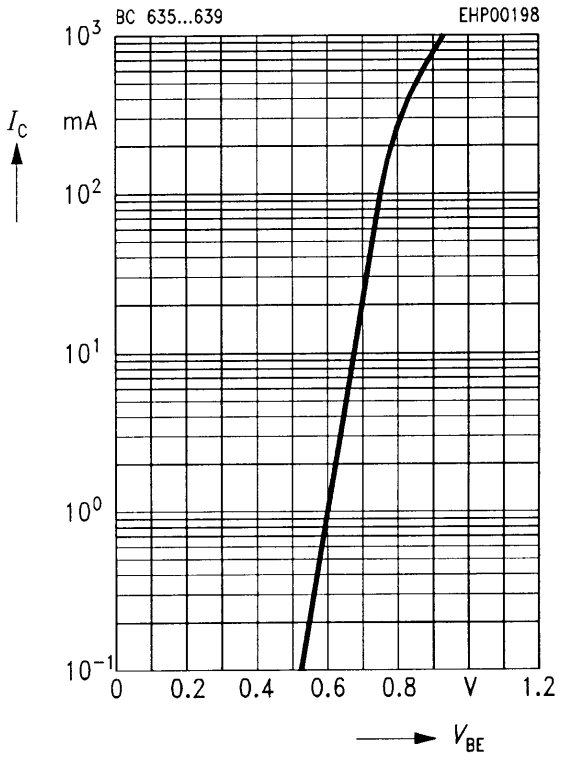
Collector cutoff current $I_{CB0} = f(T_A)$
V_{CB} = 30 V



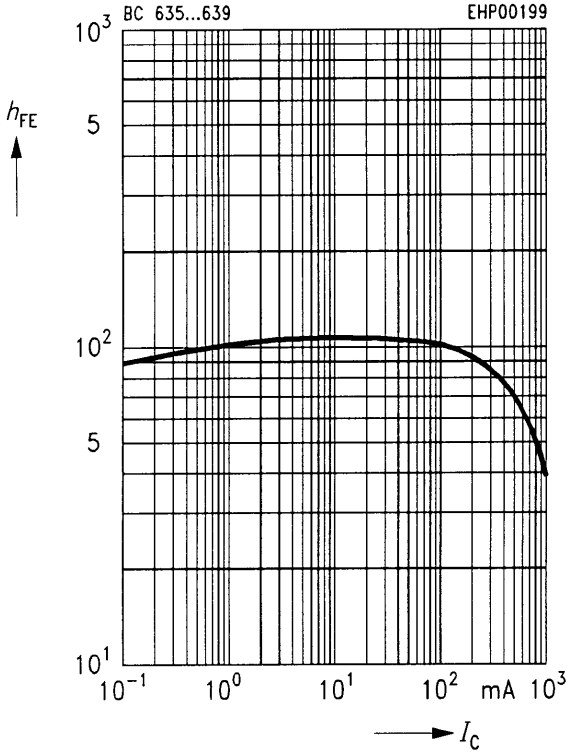
Permissible pulse load $R_{thJA} = f(t_p)$
V_{CE} = 2 V



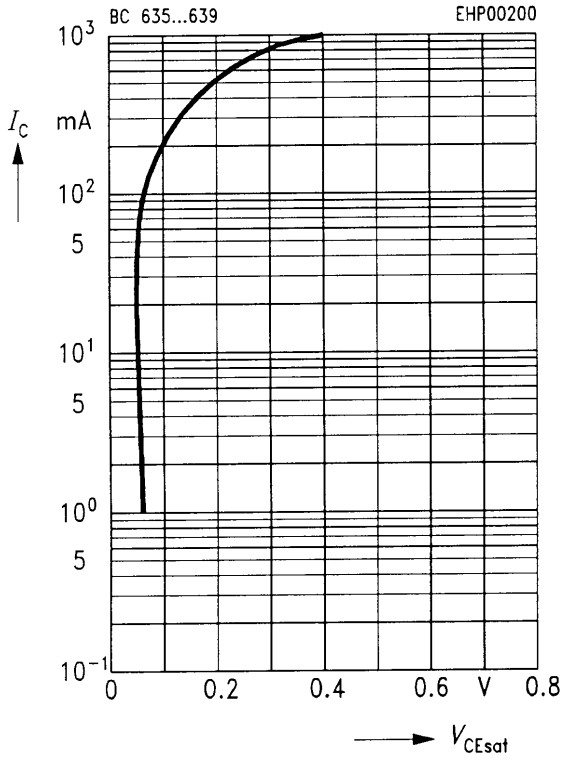
Collector current $I_C = f(V_{BE})$



DC current gain $h_{FE} = f(I_C)$
V_{CE} = 2 V



Collector-emitter saturation voltage
$V_{CEsat} = f(I_C)$
h_{FE} = 10



Transition frequency $f_T = f(I_C)$
V_{CE} = 10 V, f = 20 MHz