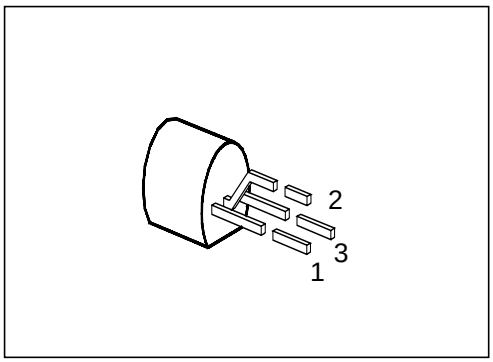
SIEMENS

PNP Silicon Darlington Transistor — BC 516

- High current gain
- High collector current
- Complementary type: BC 517 (NPN)



Type	Marking	Ordering Code	Pin Configuration 1	2	3	Package[1]
BC 516	–	Q62702-C944	C	B	E	TO-92

Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-emitter voltage	V_{CE0}	30	V
Collector-base voltage	V_{CB0}	40	
Emitter-base voltage	V_{EB0}	10	
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	

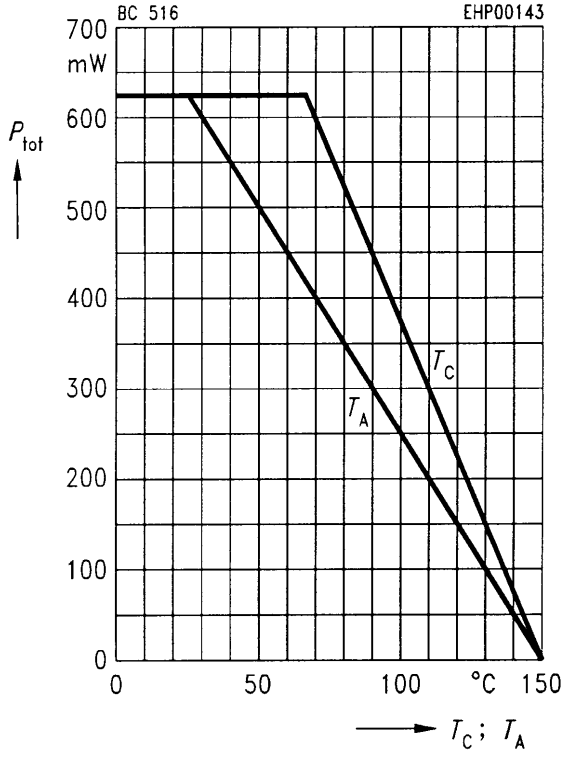
1) For detailed information see chapter Package Outlines.
2) Mounted on Al heat sink 15 mm × 25 mm × 0.5 mm.

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

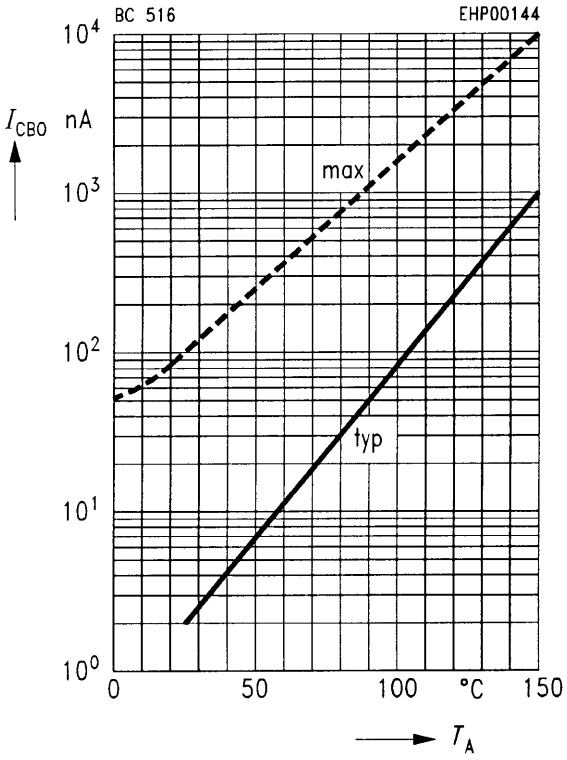
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC characteristics					
Collector-emitter breakdown voltage I_C = 10 mA	$V_{(BR)CE0}$	30	–	–	V
Collector-base breakdown voltage I_C = 100 µA	$V_{(BR)CB0}$	40	–	–	
Emitter-base breakdown voltage I_E = 10 µA	$V_{(BR)EB0}$	10	–	–	
Collector cutoff current V_{CB} = 30 V V_{CB} = 30 V, T_A = 150 °C	I_{CB0}	 – –	 – –	 100 10	 nA µA
Emitter cutoff current V_{EB} = 4 V	I_{EB0}	–	–	100	µA
DC current gain I_C = 20 mA; V_{CE} = 2 V	h_{FE}	30 000	–	–	–
Collector-emitter saturation voltage[1)] I_C = 100 mA; I_B = 0.1 mA	V_{CEsat}	–	–	1	V
Base-emitter voltage[1)] I_C = 10 mA; V_{CE} = 5 V	V_{BE}	–	–	1.4	
AC characteristics					
Transition frequency I_C = 50 mA, V_{CE} = 5 V, f = 20 MHz	f_t	–	200	–	MHz
Output capacitance V_{CB} = 10 V, f = 1 MHz	C_{obo}	–	3.5	–	pF

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

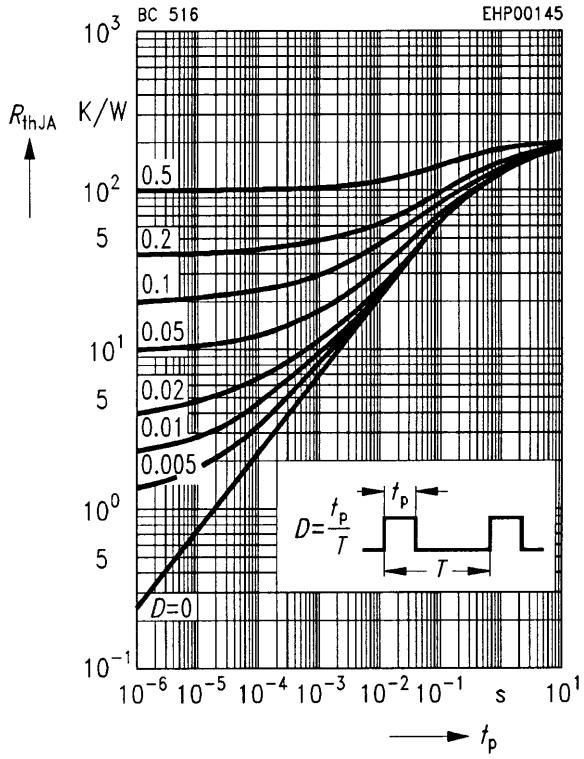
Total power dissipation $P_{tot} = f(T_A; T_C)$



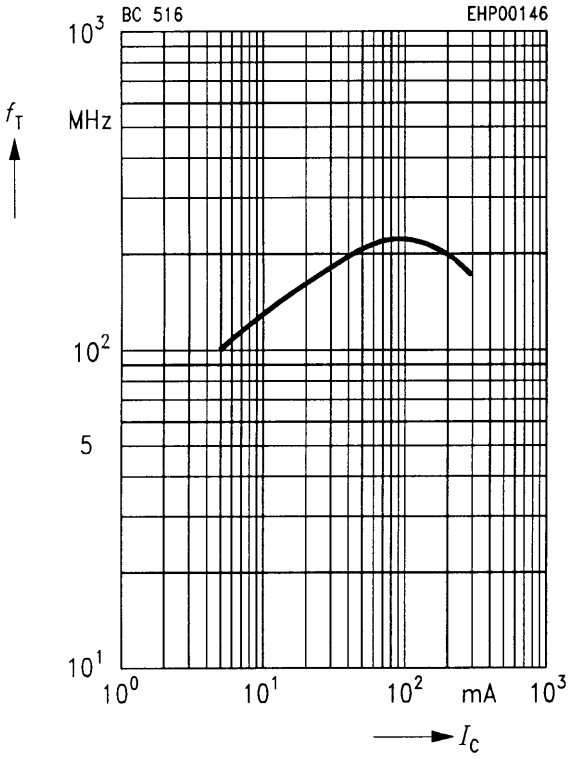
Collector cutoff current $I_{CB0} = f(T_A)$
V_{CB} = 30 V



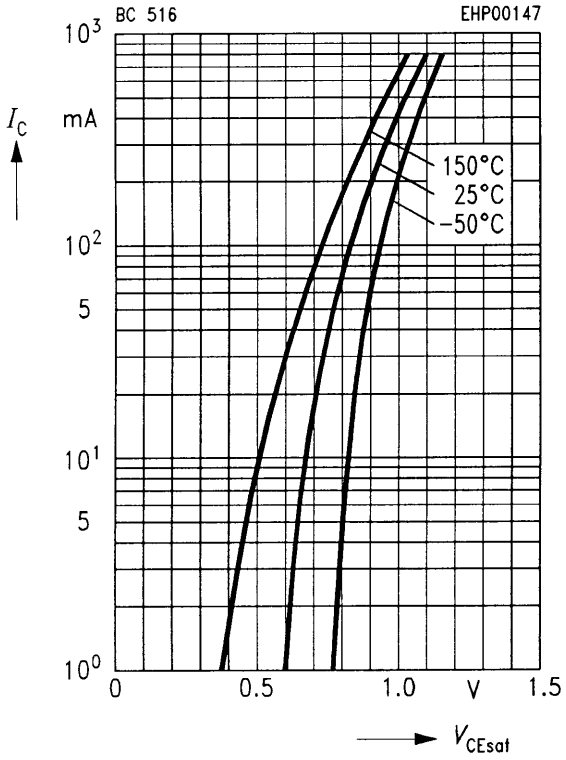
Permissible pulse load $R_{thJA} = f(t_p)$



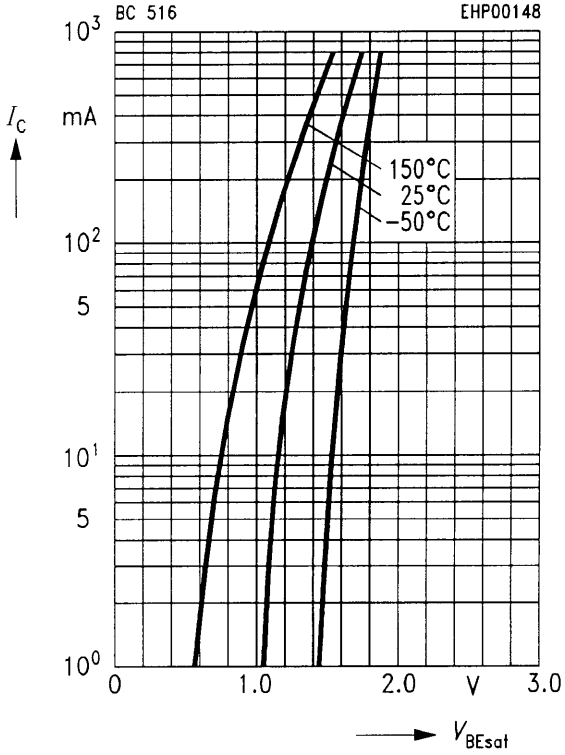
Transition frequency $f_T = f(I_C)$
V_{CE} = 5 V



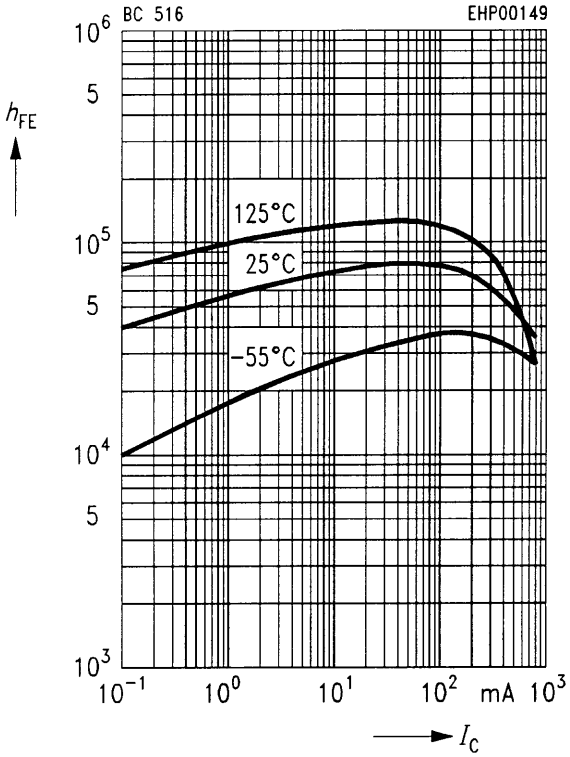
Collector-emitter saturation voltage
$I_C = f(V_{CEsat})$
$h_{FE} = 1000$



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



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



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