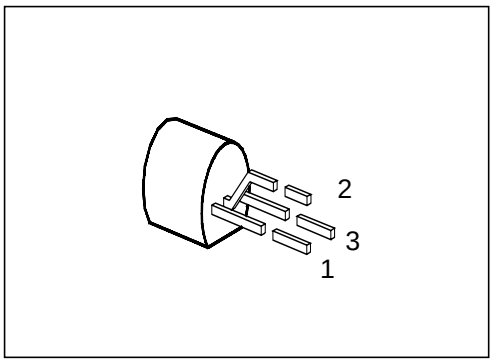
SIEMENS

NPN Silicon AF Switching Transistor — BCX 12

- For general AF applications
- High breakdown voltage
- Low collector-emitter saturation voltage
- Complementary type: BCX 13 (PNP)



Type	Marking	Ordering Code	Pin Configuration 1	2	3	Package[1]
BCX 12	BCX 12	Q62702-C25	C	B	E	TO-92

Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-emitter voltage	V_{CE0}	125	V
Collector-base voltage	V_{CB0}	125	
Emitter-base voltage	V_{EB0}	5	
Collector current	I_C	800	mA
Peak collector current	I_{CM}	1	A
Base current	I_B	100	mA
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	

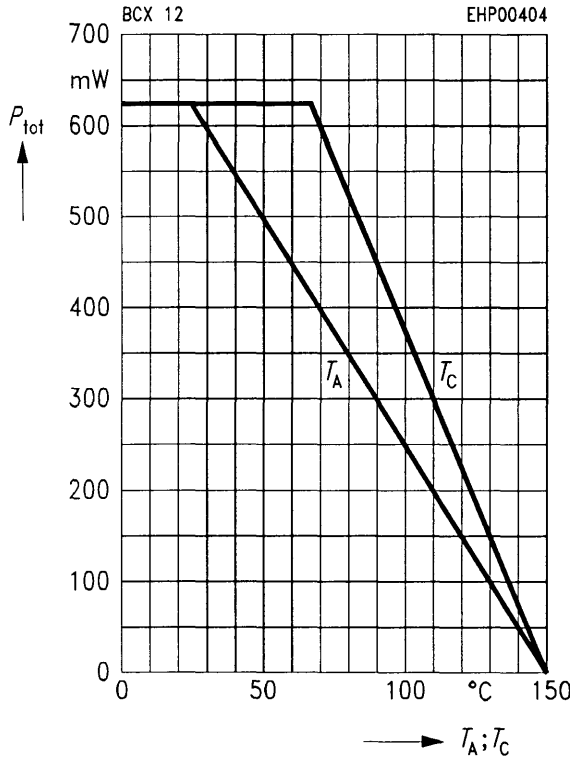
1) For detailed information see chapter Package Outlines.
2) Mounted on Al heat sink 15 mm × 25 mm × 0.5 mm.

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

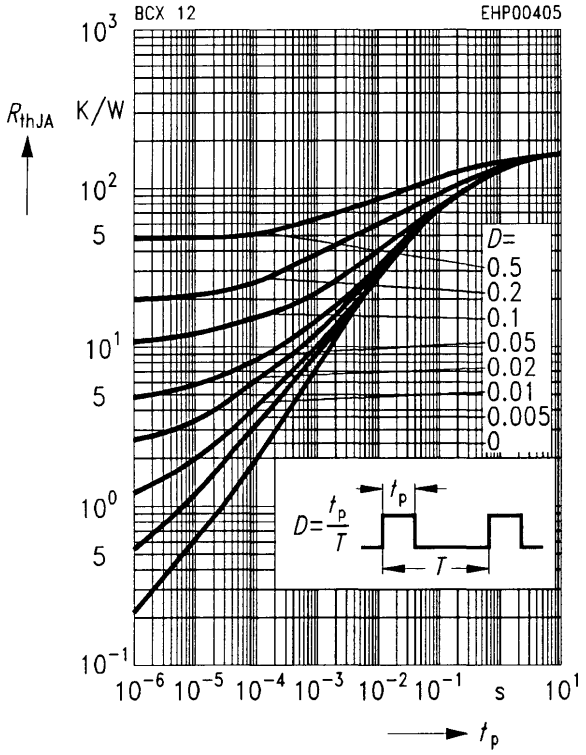
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC characteristics					
Collector-emitter breakdown voltage I_C = 10 mA, I_B = 0	$V_{(BR)CE0}$	125	–	–	V
Collector-base breakdown voltage I_C = 100 µA, I_B = 0	$V_{(BR)CB0}$	125	–	–	
Emitter-base breakdown voltage I_E = 10 µA, I_C = 0	$V_{(BR)EBS}$	5	–	–	
Collector-base cutoff current V_{CB} = 100 V, I_E = 0 V_{CB} = 100 V, I_E = 0, T_A = 150 °C	I_{CB0}	 – –	 – –	 100 10	 nA µA
Emitter cutoff current V_{EB} = 4 V	I_{EB0}	–	–	100	nA
DC current gain[1] I_C = 1 mA, V_{CE} = 1 V I_C = 10 mA, V_{CE} = 1 V I_C = 100 mA, V_{CE} = 1 V I_C = 200 mA, V_{CE} = 1 V	h_{FE}	 25 50 63 40	 – – – –	 – – – –	–
Collector-emitter saturation voltage[1] I_C = 500 mA, I_B = 50 mA	V_{CEsat}	–	–	1.0	V
Base-emitter saturation voltage[1] I_C = 500 mA, I_B = 50 mA	V_{BEsat}	–	–	1.6	
AC characteristics					
Transition frequency I_C = 20 mA, V_{CE} = 5 V, f = 20 MHz	f_t	–	100	–	MHz
Output capacitance V_{CB} = 10 V, f = 1 MHz	C_{obo}	–	10	–	pF

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

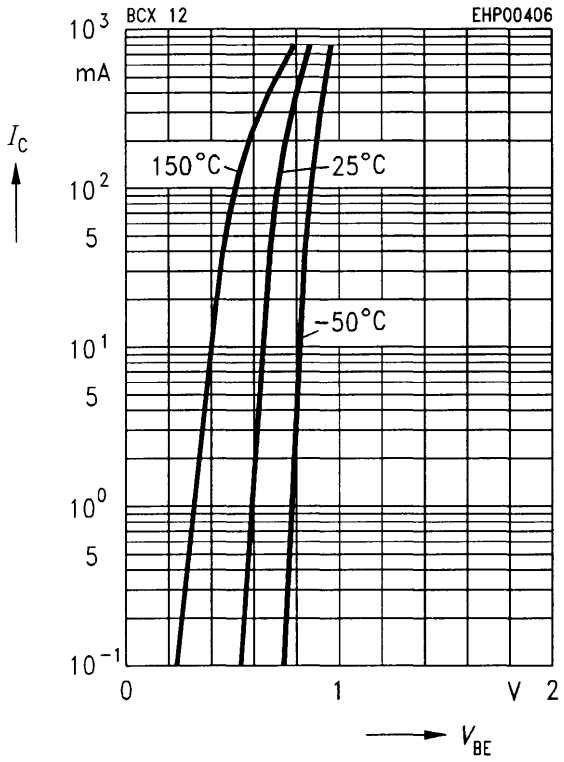
Total power dissipation $P_{tot} = f(T_A; T_C)$



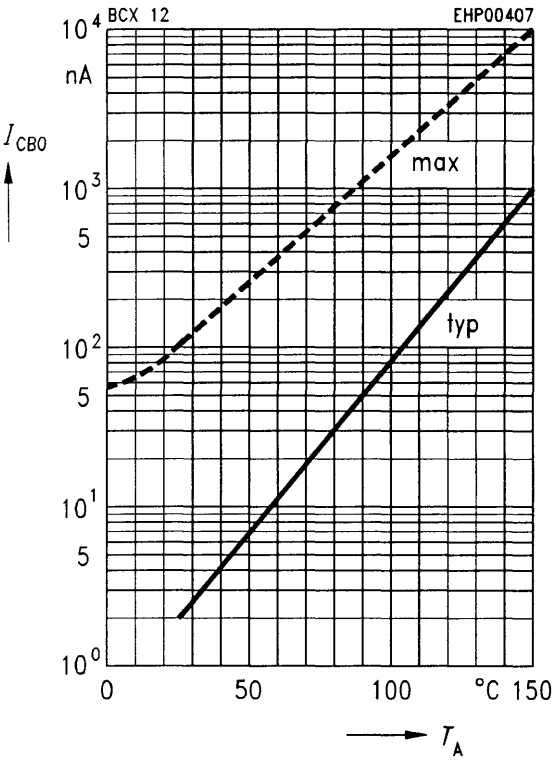
Permissible pulse load $R_{thJA} = f(t_p)$



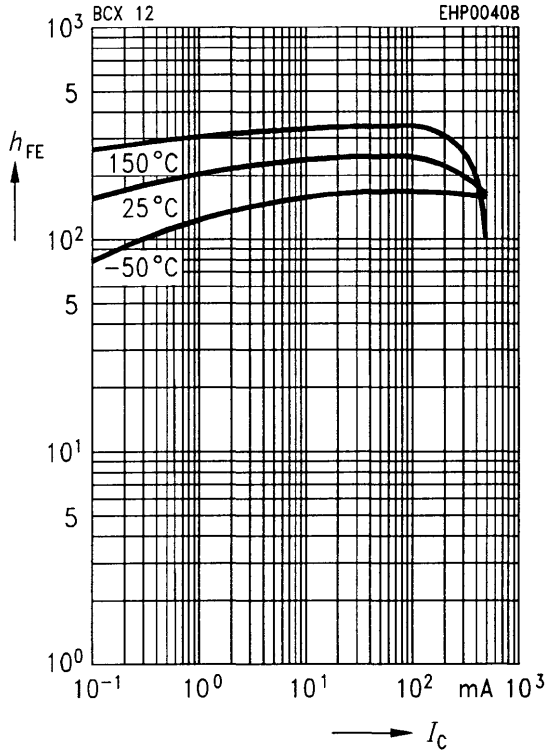
Collector current $I_C = f(V_{BE})$
V_C = 1 V



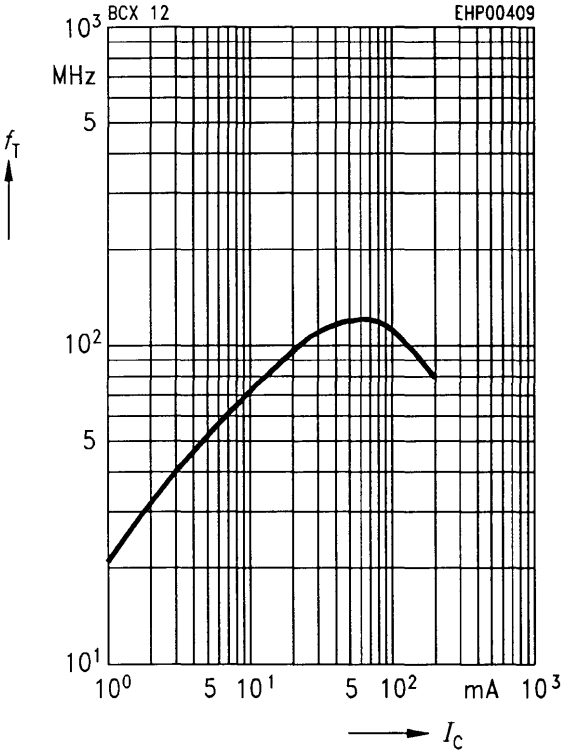
Collector cutoff current $I_{CB0} = f(T_A)$
$V_{CB} = V_{CBmax}$



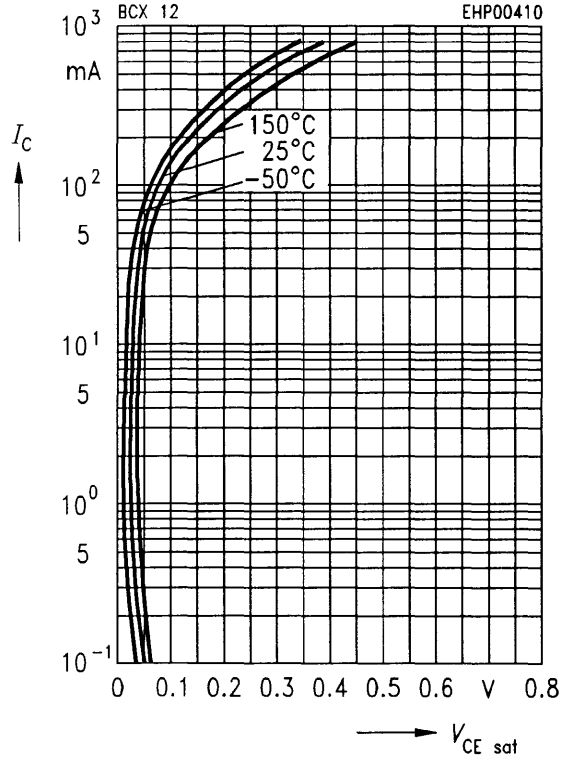
DC current gain $h_{FE} = f(I_C)$
V_{CE} = 1 V



Transition frequency $f_T = f(I_C)$
f= 20 MHz, V_{CE} = 5 V, T_A = 25 °C



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



Base-emitter saturation voltage
$I_C = f(V_{BEsat})$, h_{FE} = 10