

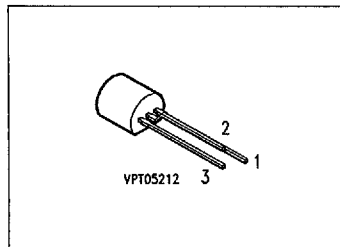
**SIEMENS**

SIEMENS AKTIENGESELLSCHAFT

T-29-21

**NPN Silicon AF Transistors****BCX 73****BCX 74**

- High current gain
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BCX 75, BCX 76 (PNP)



Type	Marking	Ordering Code	Pin Configuration			Package <sup>1)</sup>
			1	2	3	
BCX 73	—	Q62702-C634	C	B	E	TO-92
BCX 73-16		Q62702-C634-S1				
BCX 73-25		Q62702-C634-S2				
BCX 73-40		Q62702-C634-S3				
BCX 74		Q62702-C635				
BCX 74-16		Q62702-C635-S1				
BCX 74-25		Q62702-C635-S2				
BCX 74-40		Q62702-C635-S3				

<sup>1)</sup> For detailed information see chapter Package Outlines.

**Maximum Ratings**

Parameter	Symbol	Values		Unit
		BCX 73	BCX 74	
Collector-emitter voltage	$V_{CE0}$	32	45	V
Collector-base voltage	$V_{CB0}$	60	75	
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, $T_C = 66\text{ °C}$	$P_{tot}$		625	mW
Junction temperature	$T_j$		150	°C
Storage temperature range	$T_{stg}$		- 65 ... + 150	

**Thermal Resistance**

Junction - ambient	$R_{thJA}$	$\leq 200$	K/W
Junction - case <sup>1)</sup>	$R_{thJC}$	$\leq 135$	

<sup>1)</sup> Mounted on Al heat sink 15 mm × 25 mm × 0.5 mm.

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>DC characteristics</b>					
Collector-emitter breakdown voltage $I_C = 10\text{ mA}$	$V_{(BR)CEO}$	32 45	— —	— —	V
Collector-base breakdown voltage $I_C = 100\ \mu\text{A}$	$V_{(BR)CBO}$	60 75	— —	— —	
Emitter-base breakdown voltage $I_E = 10\ \mu\text{A}$	$V_{(BR)EBO}$	5	—	—	
Collector cutoff current $V_{CB} = 35\text{ V}$ $V_{CB} = 45\text{ V}$ $V_{CB} = 35\text{ V}, T_A = 150^\circ\text{C}$ $V_{CB} = 45\text{ V}, T_A = 150^\circ\text{C}$	$I_{CBO}$	— — — —	— — — —	20 20 5 5	nA nA $\mu\text{A}$ $\mu\text{A}$
Emitter cutoff current $V_{EB} = 4\text{ V}$	$I_{EBO}$	—	—	100	nA
DC current gain $I_C = 100\ \mu\text{A}, V_{CE} = 10\text{ V}$ $I_C = 1\text{ mA}, V_{CE} = 1\text{ V}$ $I_C = 10\text{ mA}, V_{CE} = 1\text{ V}$ $I_C = 100\text{ mA}, V_{CE} = 1\text{ V}^1)$ BCX 73-16, BCX 74-16 BCX 73-25, BCX 74-25 BCX 73-40, BCX 74-40 $I_C = 500\text{ mA}, V_{CE} = 2\text{ V}^1)$	$h_{FE}$	35 50 75 100 160 250 35	— — — 160 250 350 —	— — — 250 400 630 —	—
Collector-emitter saturation voltage <sup>1)</sup> $I_C = 100\text{ mA}, I_B = 10\text{ mA}$ $I_C = 500\text{ mA}, I_B = 50\text{ mA}$	$V_{CEsat}$	— —	— —	0.25 0.6	V
Base-emitter saturation voltage <sup>1)</sup> $I_C = 500\text{ mA}, I_B = 50\text{ mA}$	$V_{BEsat}$	—	—	1.5	

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

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

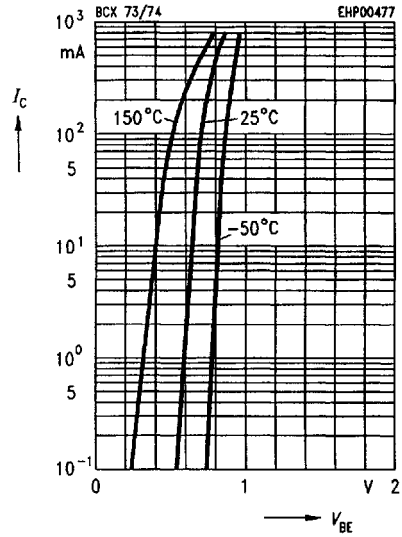
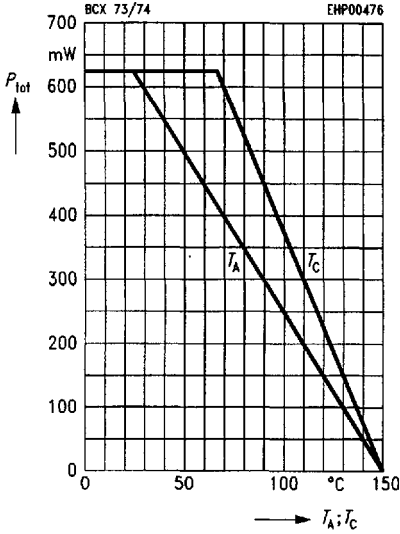
Parameter	Symbol	Values			Unit
		min.	typ.	max.	

**AC characteristics**

Transition frequency $I_C = 50\text{ mA}$ , $V_{CE} = 5\text{ V}$ , $f = 20\text{ MHz}$	$f_T$	–	170	–	MHz
Output capacitance $V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$	$C_{obo}$	–	8	–	pF
Input capacitance $V_{EB} = 0.5\text{ V}$ , $f = 1\text{ MHz}$	$C_{ibo}$	–	60	–	

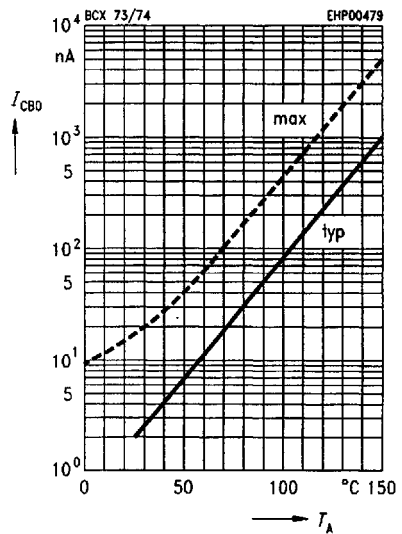
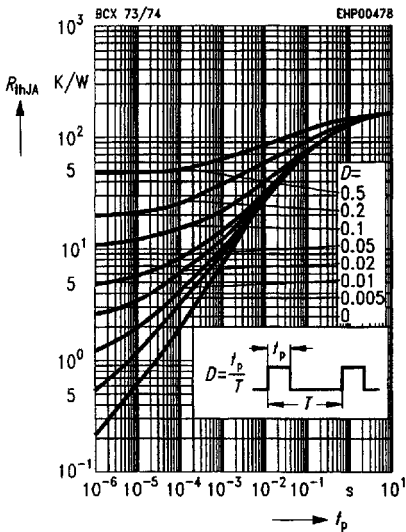
**Total power dissipation  $P_{tot} = f(T_A; T_C)$**

**Collector current  $I_C = f(V_{BE})$**   
 $V_{CE} = 1 \text{ V}$



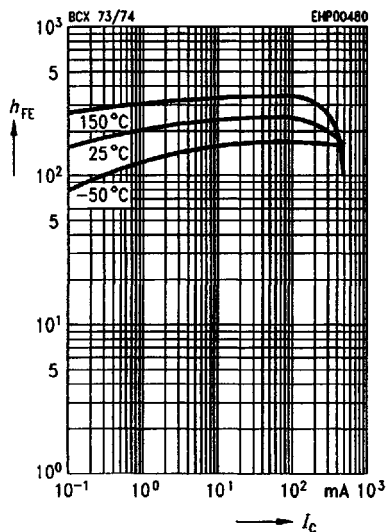
**Permissible pulse load  $R_{thJA} = f(t_p)$**

**Collector cutoff current  $I_{CBO} = f(T_A)$**   
 $V_{CB} = 45 \text{ V}$



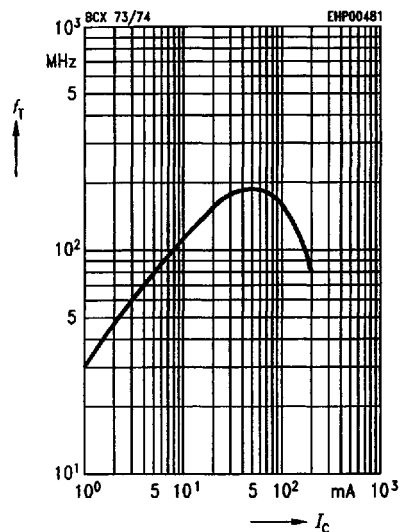
**DC current gain  $h_{FE} = f(I_C)$**

$V_{CE} = 1 \text{ V}$



**Transition frequency  $f_T = f(I_C)$**

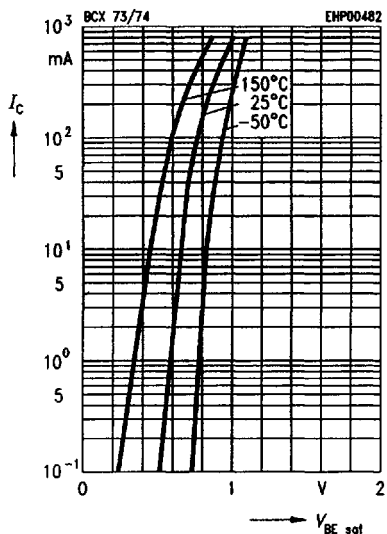
$V_{CE} = 5 \text{ V}, f = 200 \text{ MHz}$



**Base-emitter saturation voltage**

$V_{BEsat} = f(I_C)$

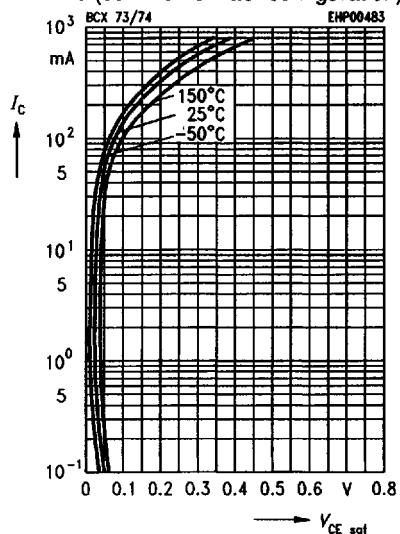
$h_{FE} = 10$



**Collector-emitter saturation voltage**

$V_{CEsat} = f(I_C)$

$h_{FE} = 10$  (common emitter configuration)



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