Silicon NPN Transistor

BC148

30V / 100mA

DATASHEET

OEM – Telefunken

Source: Telefunken Databook 1972/73

Datasheet Rev. 1.3 – 12/18 – data without warranty / liability

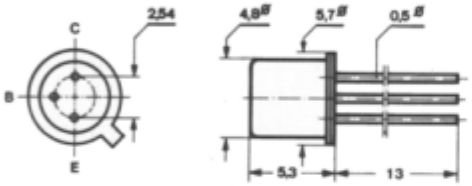
BC 107 · BC 108 · BC 109 · BC 147 · BC 148 · BC 149

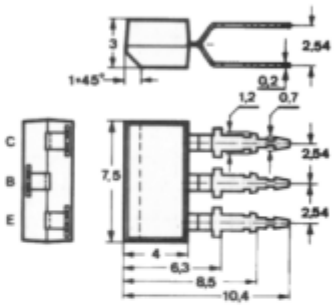
Silizium-NPN-Epitaxial-Planar-Transistoren für NF-Vor- und Treiberstufen, BC 109 und BC 149 besonders für rauscharme Vorstufen. Die Transistoren BC 107, BC 108, BC 109 sind komplementär zu BC 177, BC 178, BC 179.

Silicon NPN epitaxial planar transistors for AF input stages and driver stages, BC 109, and BC 149 especially for low noise input stages. The transistors BC 107, BC 108, BC 109 are complementary to BC 177, BC 178, BC 179.

Abmessungen · Dimensions

Maße in mm · M 2:1





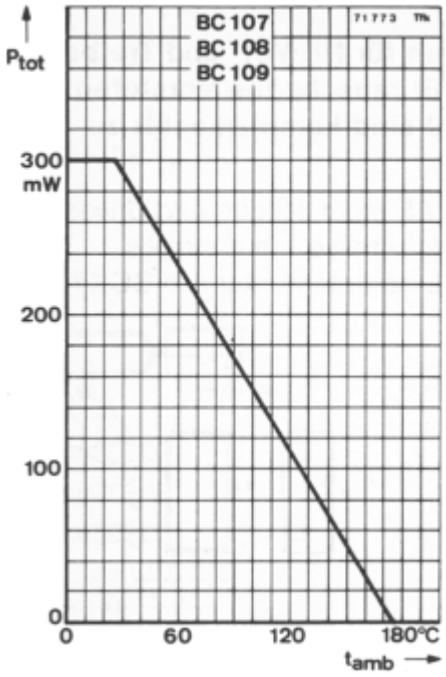
BC 107, BC 108, BC 109
Normgehäuse
DIN 18 A 3
JEDEC TO 18
Kollektor mit Gehäuse verbunden
Collector is connected to case

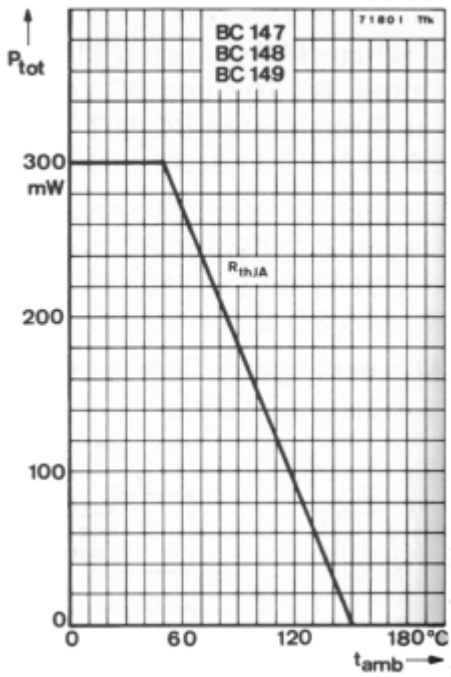
BC 147, BC 148, BC 149
Kunststoffgehäuse
≈ SOT 25
Gewicht · Weight
max. 0,2 g

Absolute Grenzdaten · Absolute maximum ratings

		BC 107 BC 147	BC 108 BC 148	BC 109 BC 149	
Kollektor-Basis-Sperrspannung	U_{CBO}	50	30	30	V
Kollektor-Emitter-Sperrspannung	U_{CEO}	45	20	20	V
Emitter-Basis-Sperrspannung	U_{EBO}	6	5	5	V
Kollektorstrom	I_C	100	100	100	mA
Kollektorspitzenstrom	I_{CM}	200	200	200	mA
Basisstrom	I_B	50	50	50	mA
Gesamtverlustleistung					
$t_{amb} \leqq 25°C$ **BC 107, BC 108, BC 109**	P_{tot}		300		mW
$t_{amb} \leqq 50°C$ **BC 147, BC 148, BC 149**	P_{tot}		300		mW
Sperrschichttemperatur					
BC 107, BC 108, BC 109	t_j		175		°C
BC 147, BC 148, BC 149	t_j		150		°C
Lagerungstemperatur					
BC 107, BC 108, BC 109	t_{stg}		−55...+175		°C
BC 147, BC 148, BC 149	t_{stg}		−55...+150		°C

BC 107 · BC 108 · BC 109 · BC 147 · BC 148 · BC 149





Wärmewiderstände · Thermal resistances

			Min.	Typ.	Max.	
Sperrschicht-Umgebung						
BC 107, BC 108, BC 109	R_{thJA}				500	°C/W
BC 147, BC 148, BC 149	R_{thJA}				330	°C/W
Sperrschicht-Gehäuse						
BC 107, BC 108, BC 109	R_{thJC}				200	°C/W

Statische Kenngrößen · DC characteristics

Umgebungstemperatur t_{amb} = 25° C, falls nicht anders angegeben

			Min.	Typ.	Max.	
Kollektorreststrom						
U_{CB} = 20 V, t_{amb} = 150° C						
BC 107, BC 108, BC 109	I_{CBO}				15	µA
U_{CB} = 20 V, t_{amb} = 125° C						
BC 147, BC 148, BC 149	I_{CBO}				5	µA
Kollektor-Emitter-Durchbruchspannung						
I_C = 2 mA **BC 107, BC 147**	$U_{(BR)CEO}$ [1]		45			V
BC 108, BC 109, BC 148, BC 149	$U_{(BR)CEO}$ [1]		20			V
Emitter-Basis-Durchbruchspannung						
I_E = 1 µA **BC 107, BC 147**	$U_{(BR)EBO}$		6			V
BC 108, BC 109, BC 148, BC 149	$U_{(BR)EBO}$		5			V

[1] $\frac{t_p}{T}$ = 0,01, t_p = 0,3 ms

BC 107 · BC 108 · BC 109 · BC 147 · BC 148 · BC 149

		Min.	Typ.	Max.	
Kollektor-Sättigungsspannung					
I_C = 10 mA, I_B = 0,5 mA	U_{CEsat}		90	250	mV
I_C = 10 mA, (U_{CE} = 1 V, I_C = 11 mA)	U_{CEsat} [2]		300	600	mV
I_C = 100 mA, I_B = 5 mA	U_{CEsat} [1]		200		mV
Basis-Sättigungsspannung					
I_C = 10 mA, I_B = 0,5 mA	U_{BEsat}		700		mV
I_C = 100 mA, I_B = 5 mA	U_{BEsat} [1]		900		mV
Basis-Emitterspannung					
U_{CE} = 5 V, I_C = 0,1 mA	U_{BE}		550		mV
U_{CE} = 5 V, I_C = 2 mA	U_{BE}		620	700	mV
U_{CE} = 5 V, I_C = 10 mA	U_{BE}		675		mV
Kollektor-Basis-Gleichstromverhältnis					
U_{CE} = 5 V, I_C = 10 µA					
Gruppe A: BC 107, BC 108					
BC 147, BC 148	h_{FE}		90		
Gruppe B: BC 107, BC 108, BC 109					
BC 147, BC 148, BC 149	h_{FE}	40	150		
Gruppe C: BC 108, BC 109					
BC 148, BC 149	h_{FE}	100	270		
U_{CE} = 5 V, I_C = 2 mA					
Gruppe A: BC 107, BC 108					
BC 147, BC 148	h_{FE}		180		
Gruppe B: BC 107, BC 108, BC 109					
BC 147, BC 148, BC 149	h_{FE}		290		
Gruppe C: BC 108, BC 109					
BC 148, BC 149	h_{FE}		520		

Dynamische Kenngrößen · AC characteristics

Umgebungstemperatur t_{amb} = 25° C

Transitfrequenz					
U_{CE} = 5 V, I_C = 0,5 mA, f = 30 MHz	f_T		85		MHz
U_{CE} = 5 V, I_C = 10 mA, f = 100 MHz	f_T		300		MHz
Kollektor-Basis-Kapazität					
U_{CB} = 10 V, f = 1 MHz	C_{CBO}		2,5	4,5	pF

[1] $\frac{t_p}{T}$ = 0,01, t_p = 0,3 ms [2] siehe Seite / see page A 67

BC 107 · BC 108 · BC 109 · BC 147 · BC 148 · BC 149

			Min.	Typ.	Max.	
Rauschmaß						
U_{CE} = 5 V, I_C = 200 µA, R_G = 2 kΩ, f = 1 kHz, Δf = 200 Hz						
BC 107, BC 108, BC 147, BC 148		F		3	10	dB
BC 109, BC 149		F			4	dB
U_{CE} = 5 V, I_C = 200 µA, R_G = 2 kΩ, f = 30 Hz...15 kHz	**BC 109, BC 149**	F			4	dB
Kurzschluß-Stromverstärkung						
U_{CE} = 5 V, I_C = 2 mA, f = 1 kHz						
Gruppe A:	**BC 107, BC 108**					
	BC 147, BC 148	h_{fe}	125	220	260	
Gruppe B:	**BC 107, BC 108, BC 109**					
	BC 147, BC 148, BC 149	h_{fe}	240	330	500	
Gruppe C:	**BC 108, BC 109**					
	BC 148, BC 149	h_{fe}	450	600	900	

Vierpol Kenngrößen · Two port characteristics

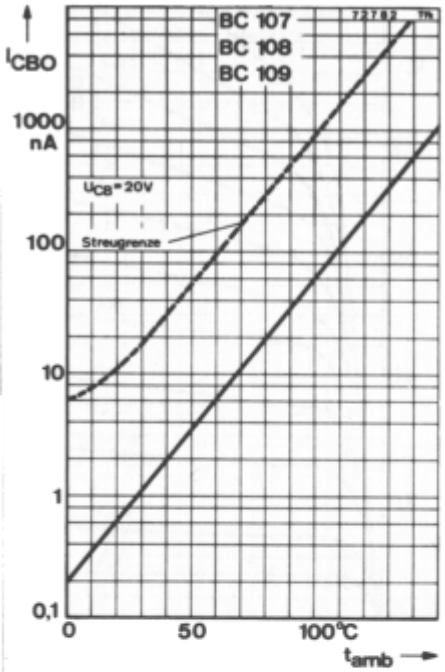
Umgebungstemperatur t_{amb} = 25° C

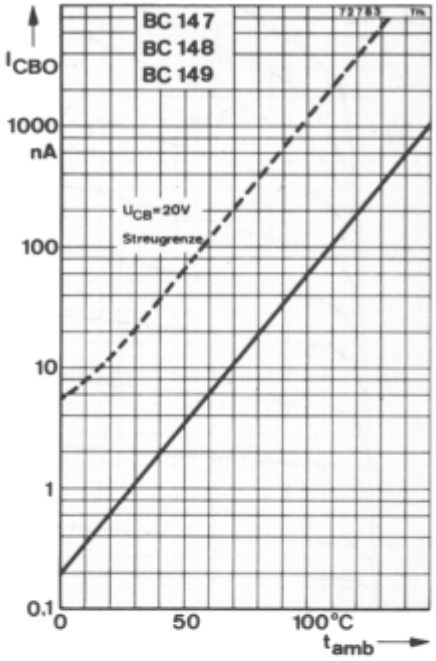
Emitterschaltung

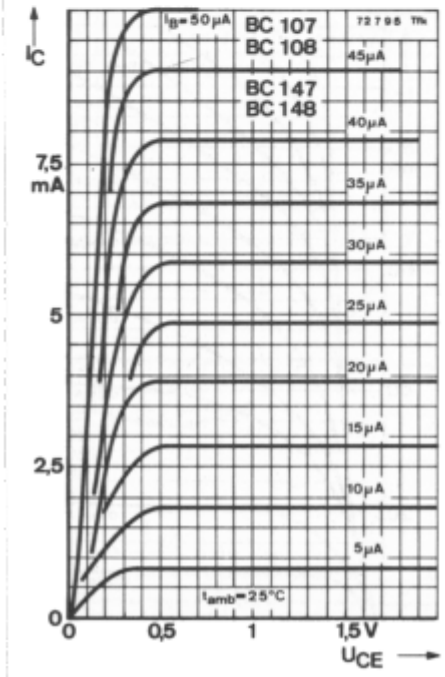
U_{CE} = 5 V, I_C = 2 mA, **f = 1 kHz**

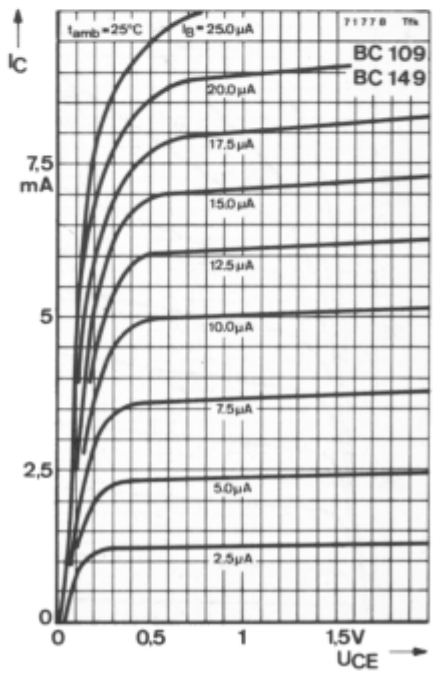
Kurzschluß-Eingangswiderstand						
Gruppe	**A**	h_{ie}	1,6	2,7	4,5	kΩ
	B	h_{ie}	3,2	4,5	8,5	kΩ
	C	h_{ie}	6	8,7	15	kΩ
Leerlauf-Spannungsrückwirkung						
Gruppe	**A**	h_{re}		$1{,}5 \cdot 10^{-4}$		
	B	h_{re}		$2 \cdot 10^{-4}$		
	C	h_{re}		$3 \cdot 10^{-4}$		
Leerlauf-Ausgangsleitwert						
Gruppe	**A**	h_{oe}		18		µS
	B	h_{oe}		30		µS
	C	h_{oe}		60		µS

BC 107 · BC 108 · BC 109 · BC 147 · BC 148 · BC 149

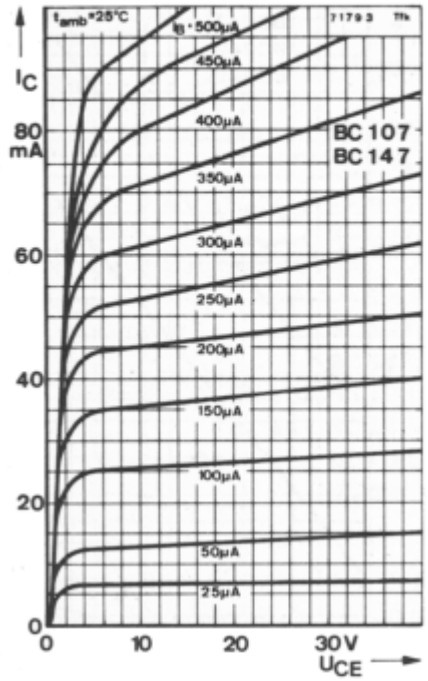


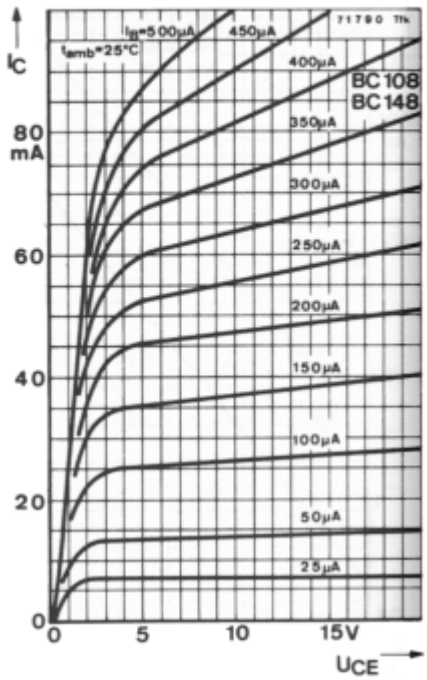


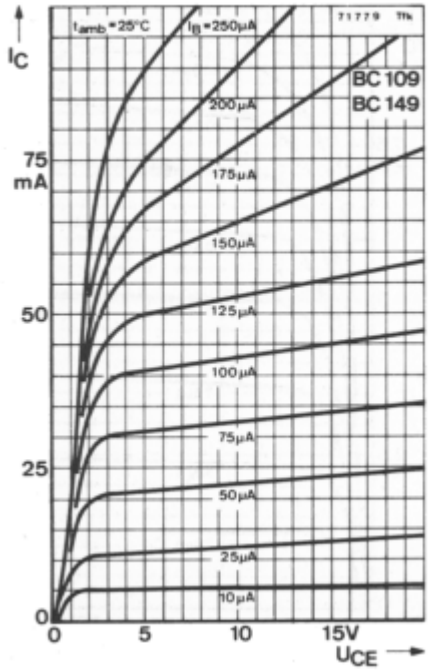


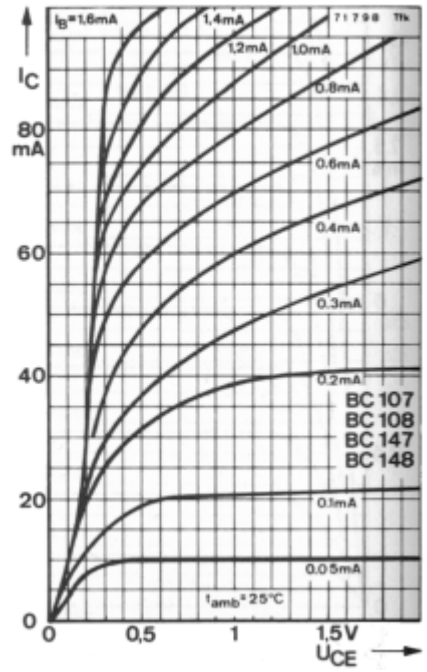


BC 107 · BC 108 · BC 109 · BC 147 · BC 148 · BC 149

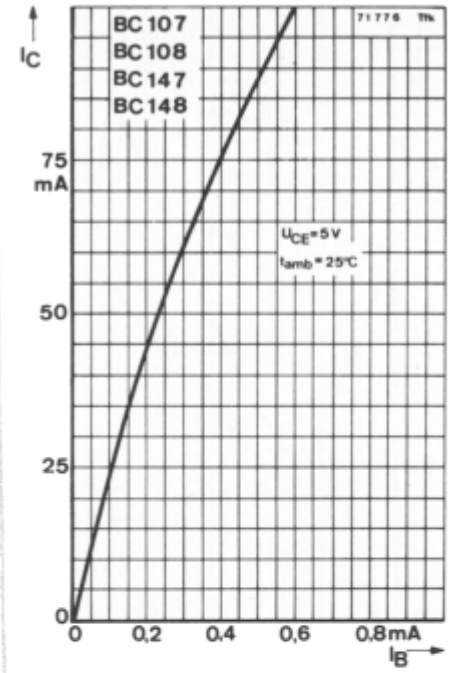


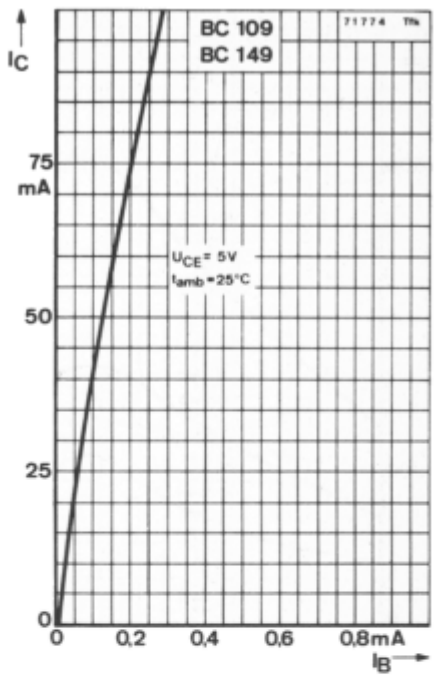


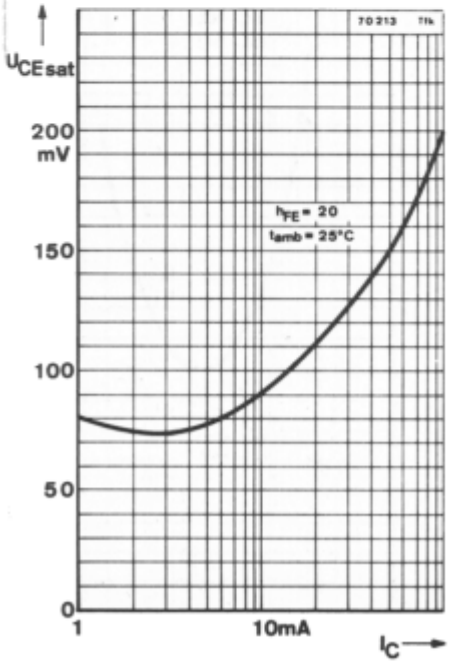


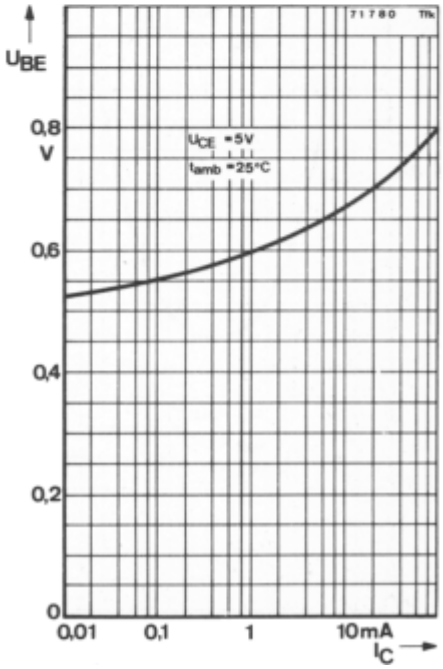


BC 107 · BC 108 · BC 109 · BC 147 · BC 148 · BC 149









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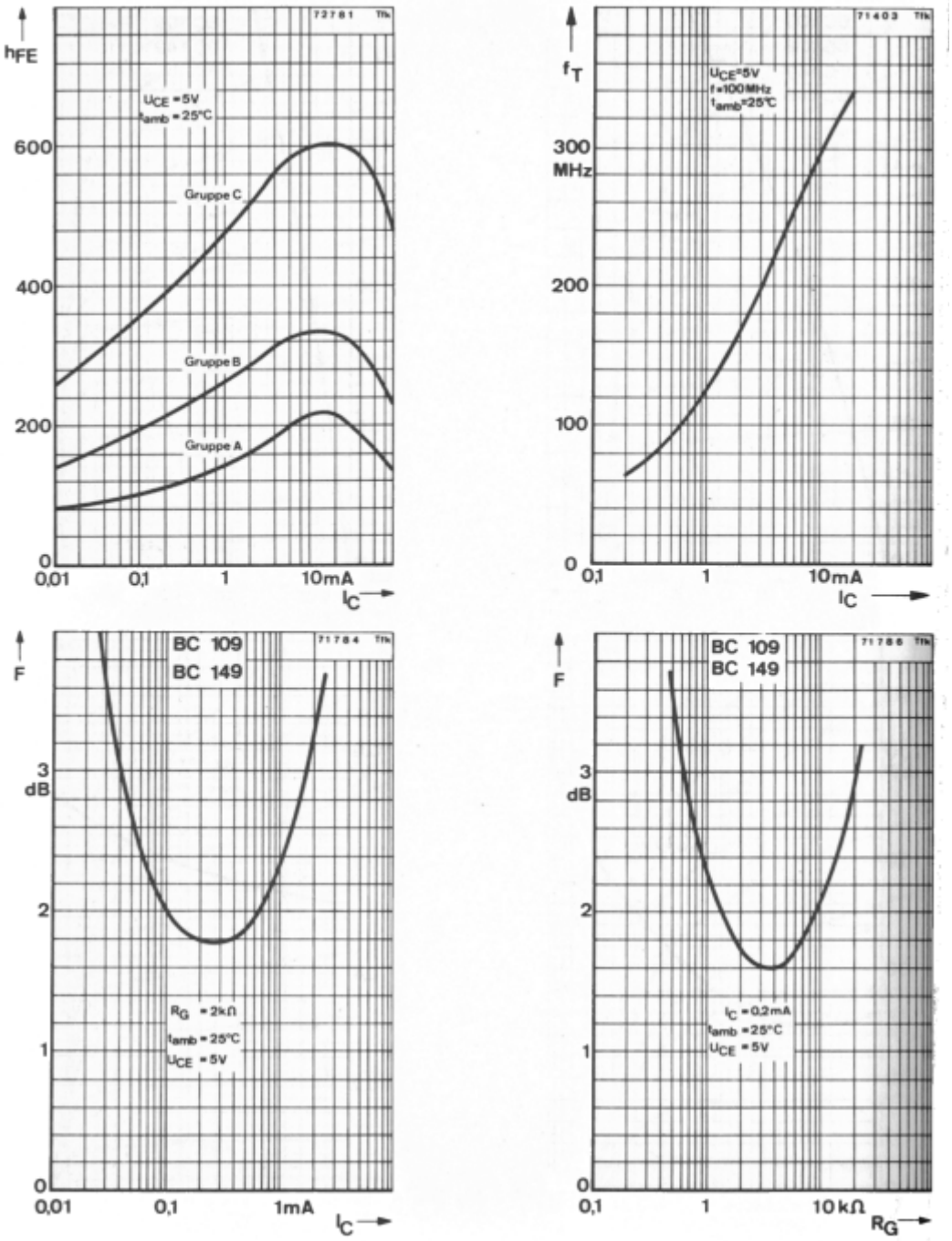

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