Silicon NPN Transistor

BC109

30V / 100mA

DATASHEET

OEM – Telefunken

Source: Telefunken Databook 1985

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

BC 107 · BC 108 · BC 109

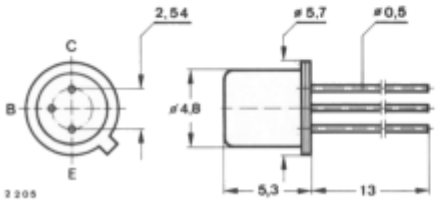
Silizium-NPN-Epitaxial-Planar-NF-Transistoren

Anwendungen: NF-Vor- und Treiberstufen

Besondere Merkmale:

- BC 109 für rauscharme Vorstufen
- Verlustleistung 300 mW
- In Gruppen sortiert
- BC 107, BC 108, BC 109 sind komplementär zu BC 177, BC 178, BC 179

Abmessungen in mm



Kollektor mit Gehäuse verbunden

Normgehäuse
18 A 3 DIN 41876
JEDEC TO 18
Gewicht max. 0.5 g

Absolute Grenzdaten		**BC 107**	**BC 108**	**BC 109**	
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		mA
Kollektorspitzenstrom	I_{CM}		200		mA
Basisstrom	I_B		50		mA
Gesamtverlustleistung $T_{amb} \leq 25$ °C	P_{tot}		300		mW
Sperrschichttemperatur	T_j		175		°C
Lagerungstemperaturbereich	T_{stg}		−55...+175		°C

BC 107 · BC 108 · BC 109

			Min.	Typ.	Max.	
Wärmewiderstände						
Sperrschicht-Umgebung		R_{thJA}			500	K/W
Sperrschicht-Gehäuse		R_{thJC}			200	K/W
Statische Kenngrößen						
T_{amb} = 25 °C, falls nicht anders angegeben						
Kollektorreststrom						
U_{CB} = 20 V, T_{amb} = 150 °C		I_{CBO}			15	µA
Kollektor-Emitter-Durchbruchspannung						
I_C = 2 mA	**BC 107**	$U_{(BR)CEO}$ [1]	45			V
	BC 108, BC 109	$U_{(BR)CEO}$ [1]	20			V
Emitter-Basis-Durchbruchspannung						
I_E = 1 µA	**BC 107**	$U_{(BR)EBO}$	6			V
	BC 108, BC 109	$U_{(BR)EBO}$	5			V
Kollektor-Sättigungsspannung						
I_C = 10 mA, I_B = 0.5 mA		U_{CEsat}		90	250	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-Emitter-Spannung						
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**	h_{FE}		90		
B	**BC 107, BC 108, BC 109**	h_{FE}	40	150		
C	**BC 108, BC 109**	h_{FE}	100	270		
U_{CE} = 5 V, I_C = 2 mA						
Gruppe: A	**BC 107, BC 108**	h_{FE}	110	180	220	
B	**BC 107, BC 108, BC 109**	h_{FE}	200	290	450	
C	**BC 108, BC 109**	h_{FE}	420	520	800	

[1] $\frac{t_p}{T}$ 0.01, t_p = 0.3 ms

BC 107 · BC 108 · BC 109

Dynamische Kenngrößen			**Min.**	**Typ.**	**Max.**	
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
Rauschmaß						
U_{CE} = 5 V, I_C = 200 µA, R_G = 2 kΩ, f = 1 kHz, Δf = 200 Hz	**BC 107, BC 108**	F		3	10	dB
	BC 109	F			4	dB
f = 30 Hz ... 15 kHz	**BC 109**	F			4	dB

Vierpol Kenngrößen

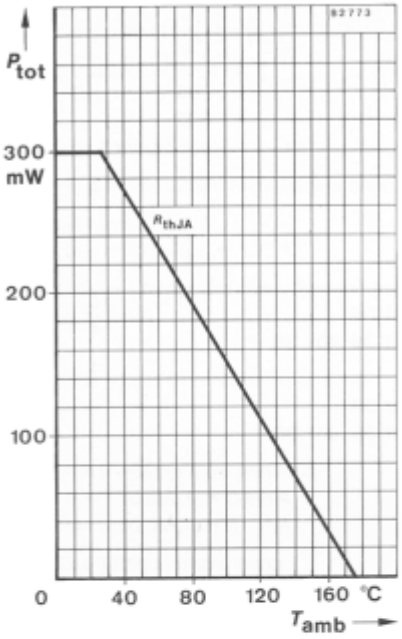
T_{amb} = 25 °C

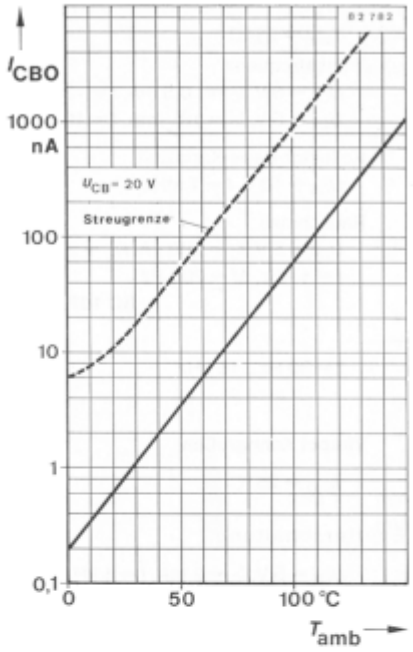
Emitterschaltung

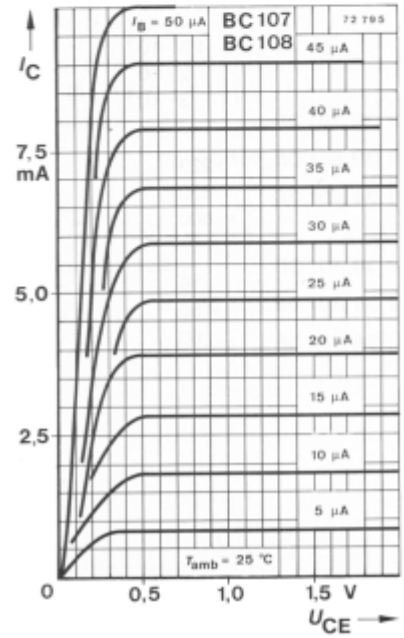
U_{CE} = 5 V, I_C = 2 mA, f = 1 kHz

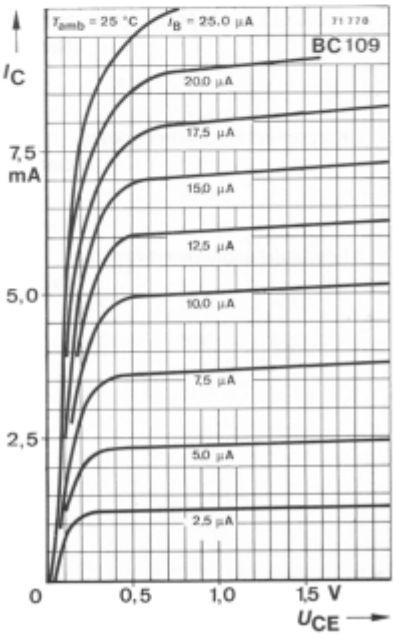
Kurzschluß-Eingangswiderstand						
Gruppe:	**A**	h_{ie}	1.6	2.7	4.5	kΩ
	B	h_{ie}	3.2	4.5	8.5	kΩ
	C	h_{ie}	6	8.7	15	kΩ
Leerlauf-Spannungsrückwirkung						
Gruppe:	**A**	h_{re}		$1.5 \cdot 10^{-4}$		
	B	h_{re}		$2 \cdot 10^{-4}$		
	C	h_{re}		$3 \cdot 10^{-4}$		
Kurzschluß-Stromverstärkung						
Gruppe:	**A**	h_{fe}		220		
	B	h_{fe}		330		
	C	h_{fe}		600		
Leerlauf-Ausgangsleitwert						
Gruppe:	**A**	h_{oe}		18		µS
	B	h_{oe}		30		µS
	C	h_{oe}		60		µS

BC 107 · BC 108 · BC 109

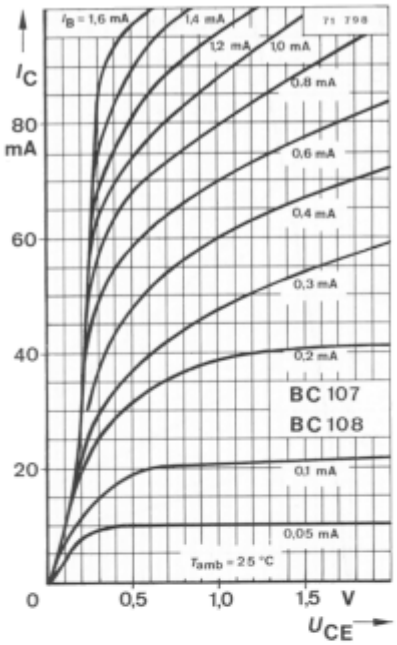


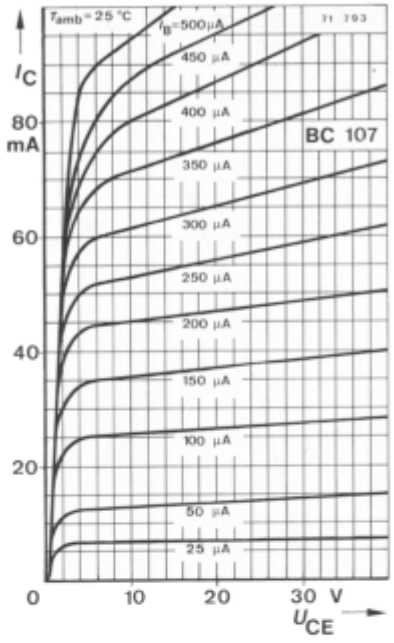


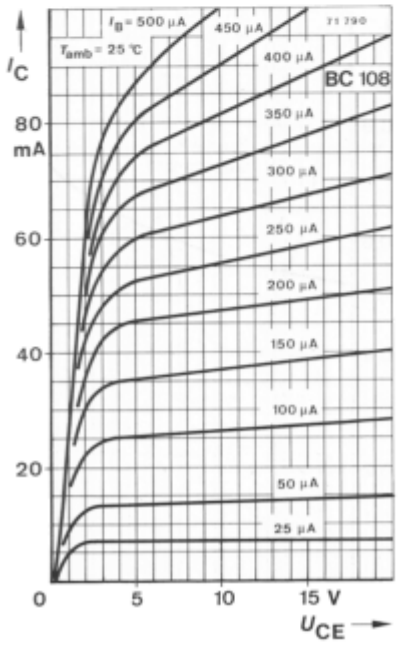


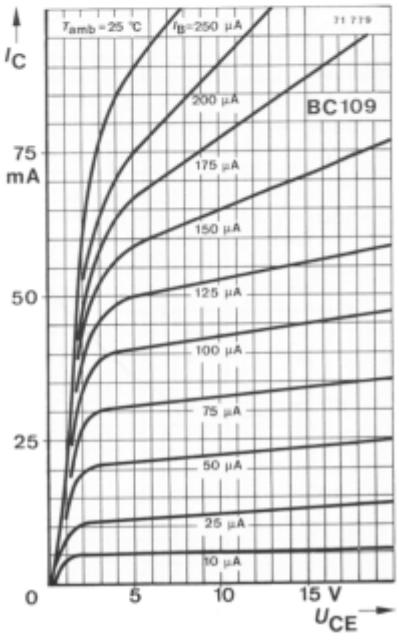


BC 107 · BC 108 · BC 109

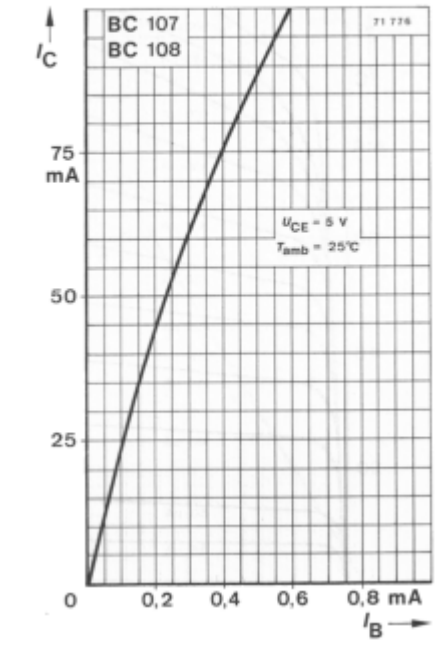


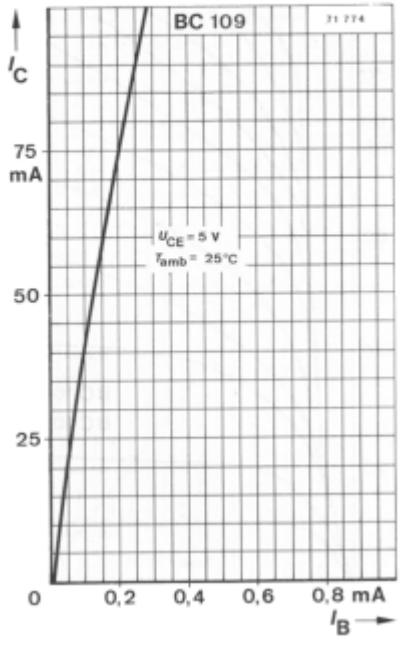


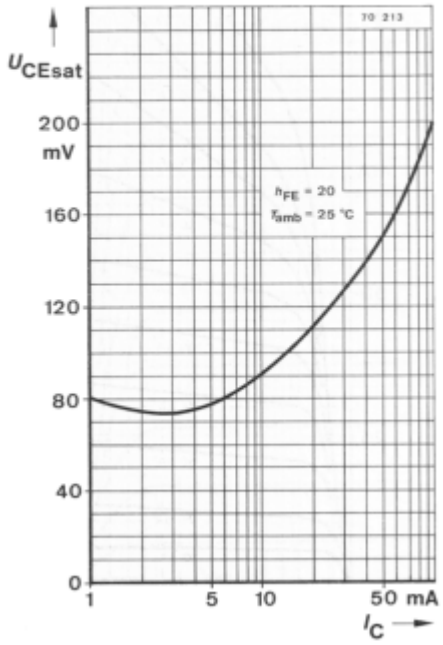


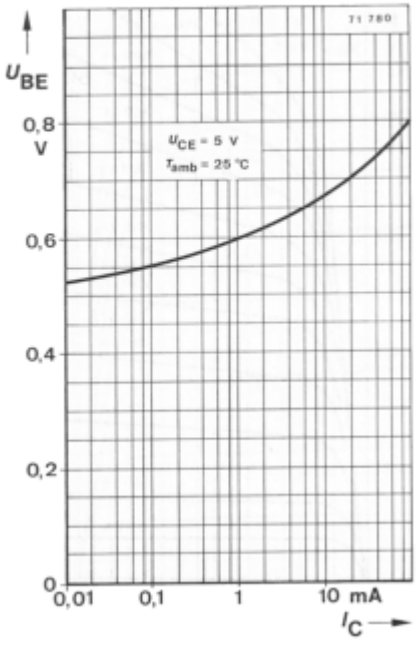


BC 107 · BC 108 · BC 109

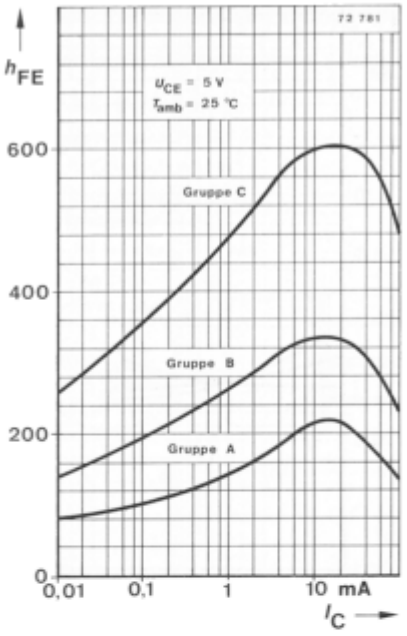


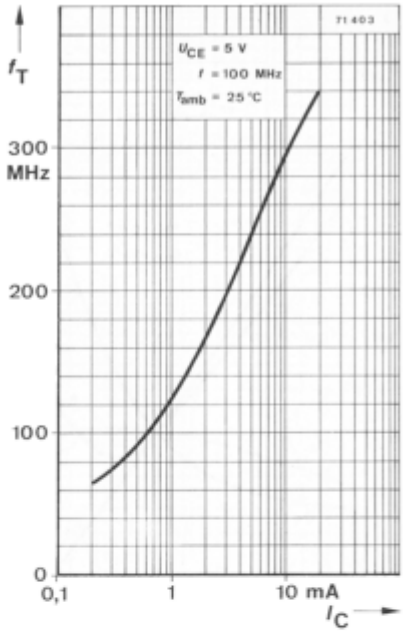


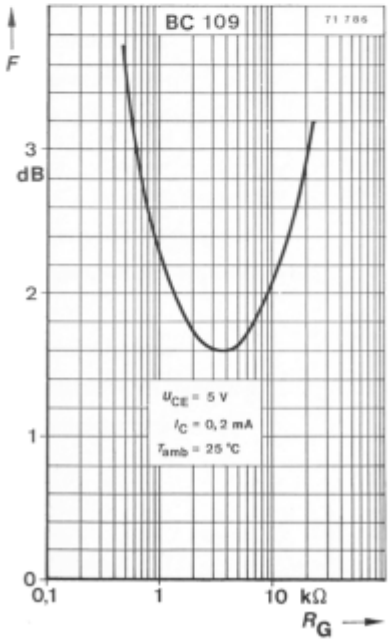


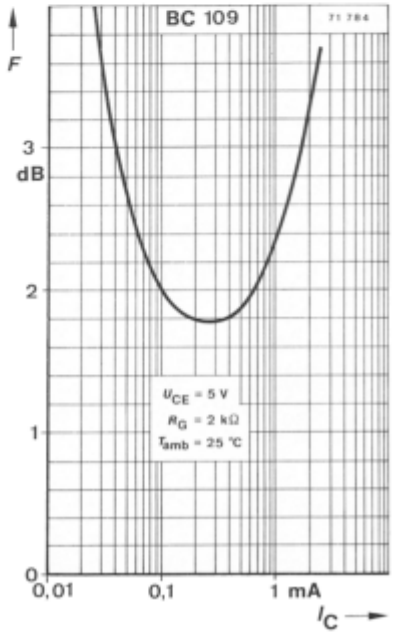


BC 107 · BC 108 · BC 109









BC 107 · BC 108 · BC 109