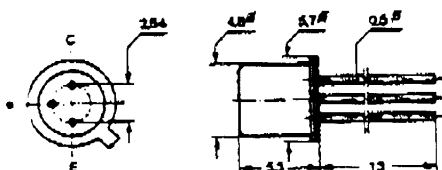


Silicium-NPN-Epitaxial-Planar-Transistoren für NF-Vor- und Treiberstufen, BC 109 und BC 149 besonders für rauscharme Vorstufen.
Die Transistoren BC 107, BC 108, BC 109 sind komplementär zu BC 177, BC 178, BC 179.

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

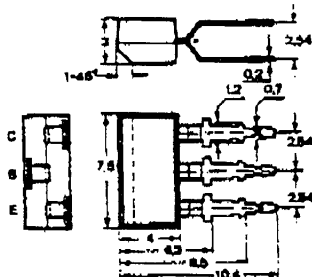
Normgehäuse

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 Grenzwerte · Absolute maximum ratings

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

Kollektor-Basis-Sperrspannung	U_{CBO}	50	30	30	V
Kollektor-Emitter-Sperrspannung	U_{CEO}	45	20	20	V
Emitter-Basis-Sperrspannung	U_{EB0}	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

$t_{amb} \leq 25^\circ C$ **BC 107, BC 108, BC 109**

P_{tot} 300 mW

$t_{amb} \leq 50^\circ C$ **BC 147, BC 148, BC 149**

P_{tot} 300 mW

Sperrschichttemperatur

BC 107, BC 108, BC 109

t_j 175 $^\circ C$

BC 147, BC 148, BC 149

t_j 150 $^\circ C$

Lagerungstemperatur

BC 107, BC 108, BC 109

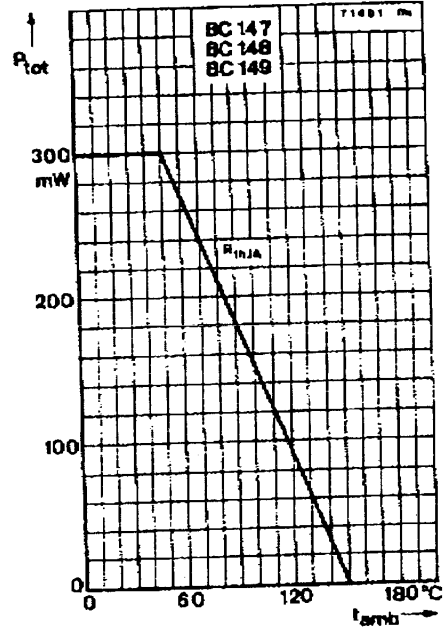
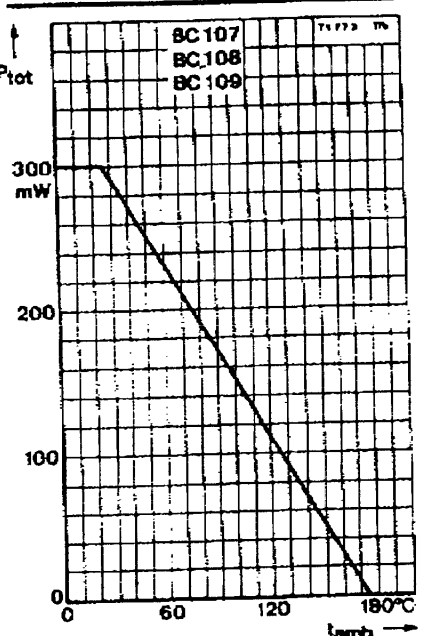
t_{stg} -55...+175 $^\circ C$

BC 147, BC 148, BC 149

t_{stg} -55...+150 $^\circ C$

AEG-TELEFUNKEN

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



Wärmewiderstände · Thermal resistances

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 $t_{amb} = 25^\circ\text{C}$, falls nicht anders angegeben

Kollektorruhestrom			
$U_{CB} = 20\text{ V}, t_{amb} = 150^\circ\text{C}$			
BC 107, BC 108, BC 109	I_{CBO}	15	μA
$U_{CB} = 20\text{ V}, t_{amb} = 125^\circ\text{C}$			
BC 147, BC 148, BC 149	I_{CBO}	5	μA
Kollektor-Emitter-Durchbruchspannung			
$I_C = 2\text{ mA}$			
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			
$I_E = 1\text{ }\mu\text{A}$			
BC 107, BC 147	$U_{(BR)EBO}$	8	V
BC 108, BC 109, BC 148, BC 149	$U_{(BR)EBO}$	5	V

1) $t_p = 0,01, t_p = 0,3\text{ ms}$

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

	Min.	Typ.	Max.
Kollektor-Sättigungsspannung			
$I_C = 10\text{ mA}, I_B = 0,5\text{ mA}$	U_{CEsat}	90	250 mV
$I_C = 10\text{ mA}, (U_{CE} = 1\text{ V}, I_C = 11\text{ mA})$	$U_{CEsat}^{2)}$	300	600 mV
$I_C = 100\text{ mA}, I_B = 5\text{ mA}$	$U_{CEsat}^{1)}$	200	mV
Basis-Sättigungsspannung			
$I_C = 10\text{ mA}, I_B = 0,5\text{ mA}$	U_{BEsat}	700	mV
$I_C = 100\text{ mA}, I_B = 5\text{ mA}$	$U_{BEsat}^{1)}$	900	mV
Basis-Emitterspannung			
$U_{CE} = 5\text{ V}, I_C = 0,1\text{ mA}$	U_{BE}	550	mV
$U_{CE} = 5\text{ V}, I_C = 2\text{ mA}$	U_{BE}	620	700 mV
$U_{CE} = 5\text{ V}, I_C = 10\text{ mA}$	U_{BE}	675	mV
Kollektor-Basis-Gleichstromverhältnis			
$U_{CE} = 5\text{ V}, I_C = 10\text{ }\mu\text{A}$			
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	
$U_{CE} = 5\text{ V}, I_C = 2\text{ mA}$			
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 $t_{amb} = 25^\circ\text{C}$

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

1) $t_p = 0,01, t_p = 0,3\text{ ms}$

2) siehe Seite A 67
see page

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

Min. Typ. Max.

Rauschmaß

$U_{CE} = 5 \text{ V}$, $I_C = 200 \text{ } \mu\text{A}$, $R_G = 2 \text{ k}\Omega$,
 $f = 1 \text{ kHz}$, $\Delta f = 200 \text{ Hz}$

BC 107, BC 108, BC 147, BC 148

F

3

10

dB

BC 109, BC 149

F

4

dB

$U_{CE} = 5 \text{ V}$, $I_C = 200 \text{ } \mu\text{A}$, $R_G = 2 \text{ k}\Omega$,
 $f = 30 \text{ Hz} \dots 15 \text{ kHz}$

BC 109, BC 149

F

4

dB

Kurzschluß-Stromverstärkung

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

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 $t_{amb} = 25^\circ\text{C}$

Emitterschaltung

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

Kurzschluß-Eingangswiderstand

Gruppe A h_{ie}
B h_{ie}
C h_{ie}

1,8

2,7

4,5

k Ω

3,2

4,5

8,5

k Ω

6

8,7

15

k Ω

Leerlauf-Spannungsrückwirkung

Gruppe A h_{re}
B h_{re}
C h_{re}

$1,5 \cdot 10^{-4}$

$2 \cdot 10^{-4}$

$3 \cdot 10^{-4}$

Leerlauf-Ausgangsleitwert

Gruppe A h_{oe}
B h_{oe}
C h_{oe}

18

30

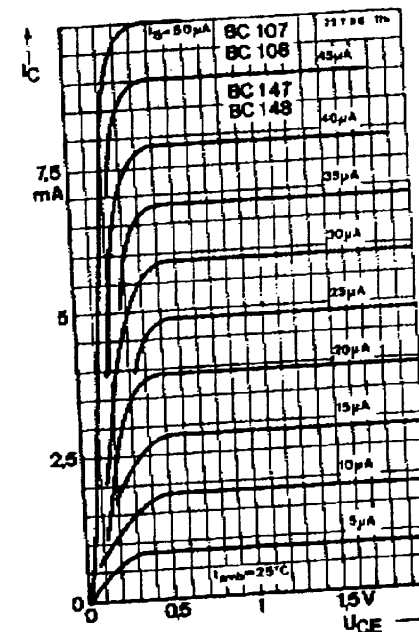
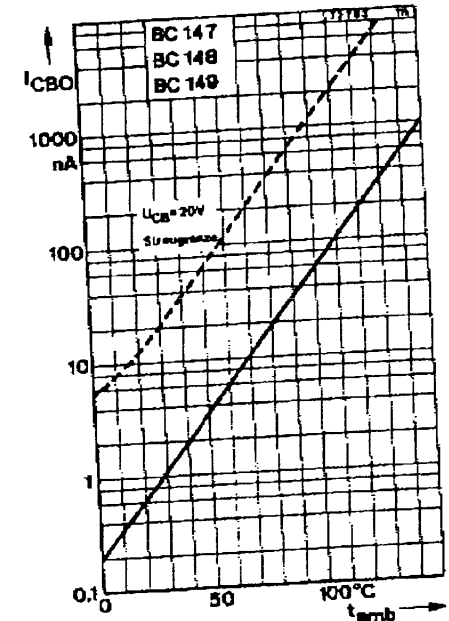
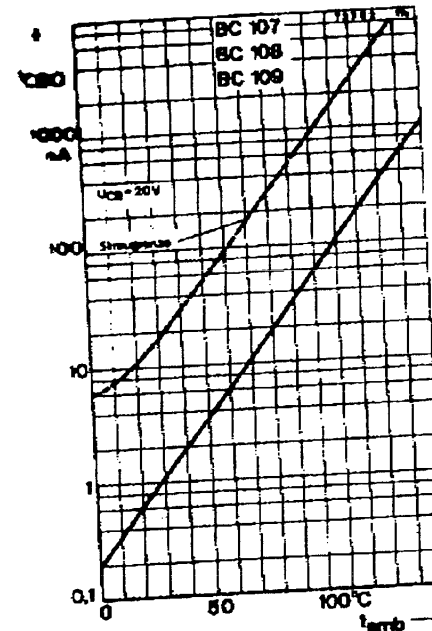
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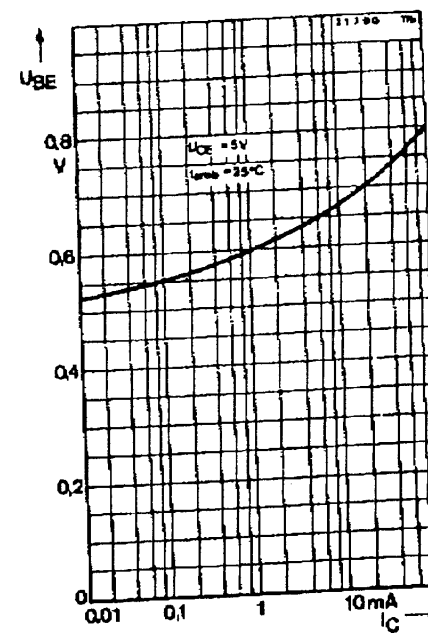
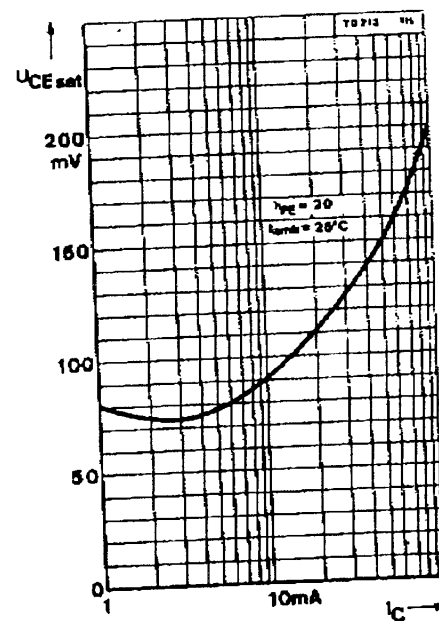
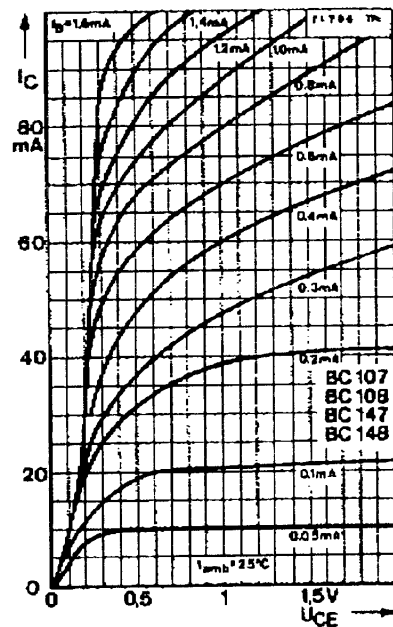
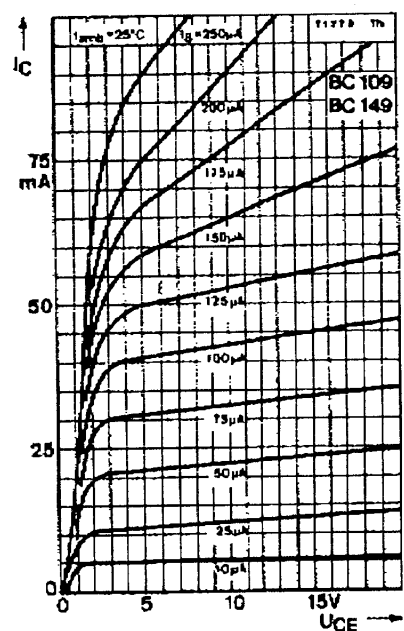
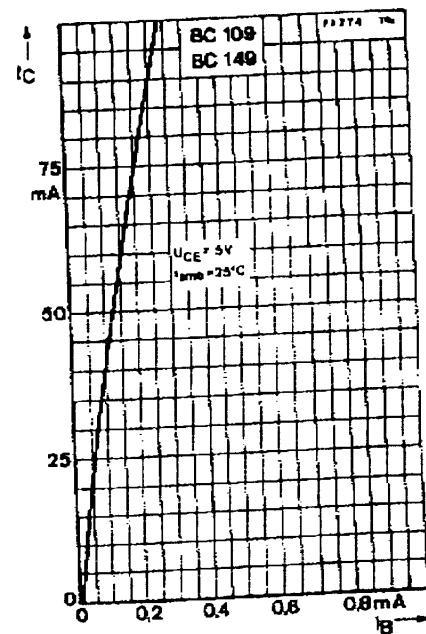
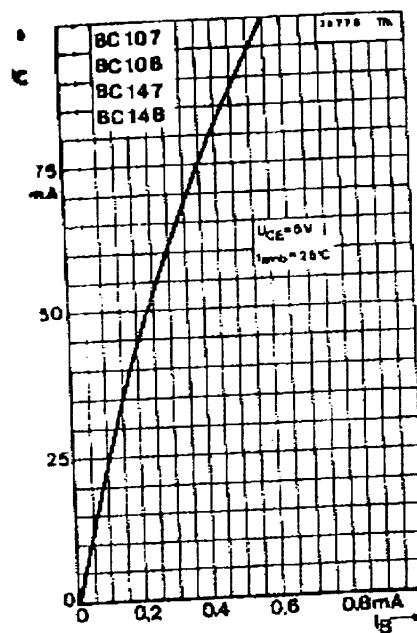
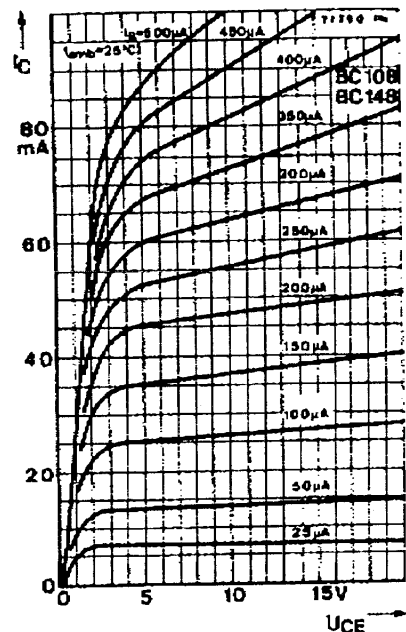
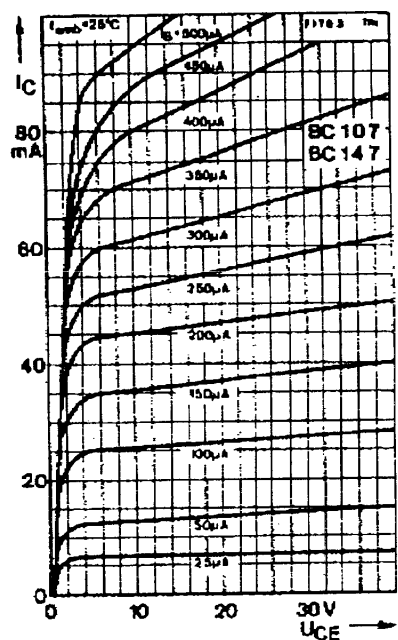
μS

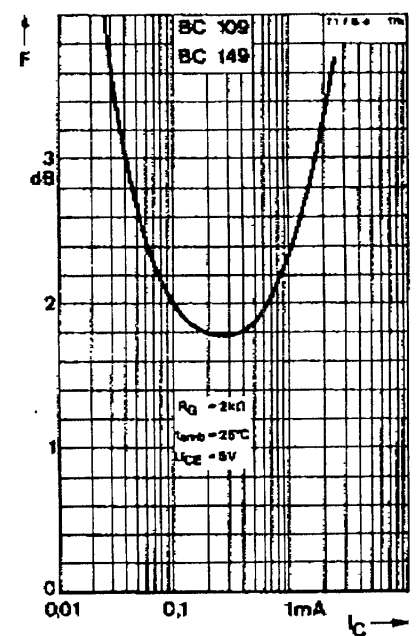
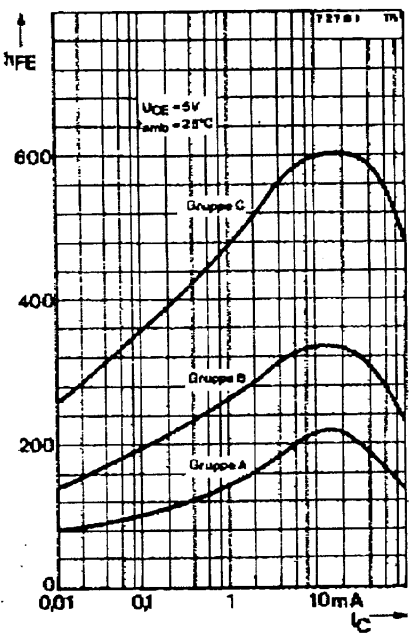
μS

μS

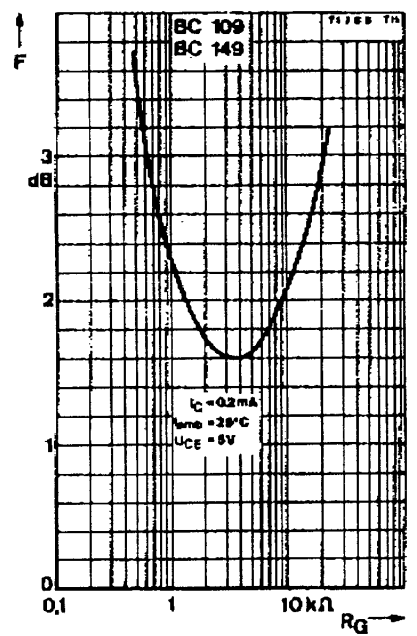
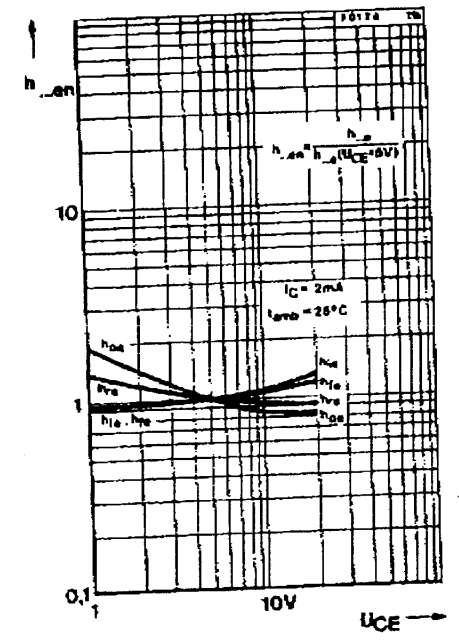
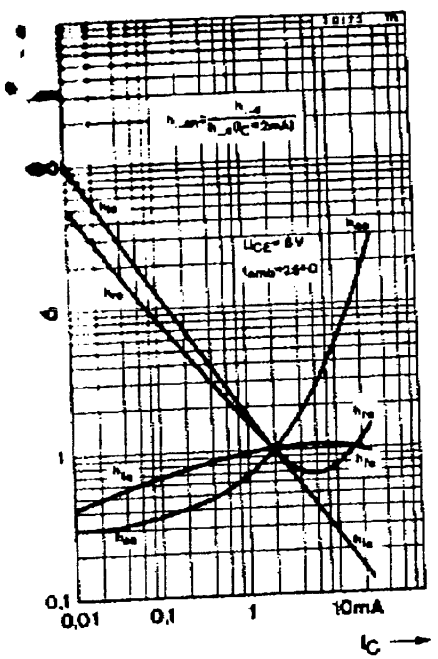
BC 107 · BC 108 · BC 109 · BC 147 · BC 148 · BC 149







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