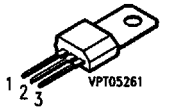
SIEMENS SIEMENS AKTIENGESELLSCHAF

T-33-05

NPN Silicon Transistors with High Reverse Voltage

BF 869
... BF 881

- High breakdown voltage
- Low collector-emitter saturation voltage
- Low capacitance
- Complementary types: BF 870, BF 872 (PNP)



Type	Marking	Ordering Code	Pin Configuration 1	2	3	Package[1]
BF 869 BF 871 BF 881	–	Q62702-F683 Q62702-F676 Q62702-F794	E	C	B	TO-202

Maximum Ratings

Parameter	Symbol	Values BF 869	BF 871	BF 881	Unit
Collector-emitter voltage	V_{CEO}	250	–	–	V
Collector-emitter voltage, R_{BE} = 2.7 kΩ	V_{CER}	–	300	400	
Collector-base voltage	V_{CBO}	250	300	400	
Emitter-base voltage	V_{EBO}	5			
Collector current	I_C	50			mA
Peak base current	I_{BM}	100			
Total power dissipation T_A = 40 °C T_C = 110 °C	P_{tot}	 1.6 1.6			W
Junction temperature	T_j	150			°C
Storage temperature range	T_{stg}	– 65 ... + 150			

Thermal Resistance

Junction - ambient	$R_{th\,JA}$	≤ 70	K/W
Junction - case	$R_{th\,JC}$	≤ 25	

1) For detailed information see chapter Package Outlines.

T-33-05

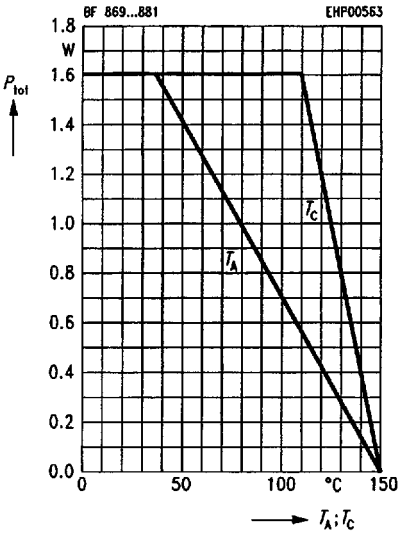
Electrical Characteristics
at T_A = 25 °C, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC characteristics					
Collector-emitter breakdown voltage I_C = 1 mA BF 869	$V_{(BR)CE0}$	250	–	–	V
Collector-emitter breakdown voltage I_C = 10 µA BF 871 BF 881	$V_{(BR)CER}$	300 400	– –	– –	
Collector-base breakdown voltage I_C = 10 µA BF 869 BF 871 BF 881	$V_{(BR)CB0}$	250 300 400	– – –	– – –	
Emitter-base breakdown voltage I_E = 10 µA	$V_{(BR)EB0}$	5	–	–	
Collector-base cutoff current V_{CB} = 200 V BF 869, BF 871 V_{CB} = 350 V BF 881	I_{CB0}	– –	– –	10 100	nA
Collector cutoff current V_{CE} = 200 V, R_{BE} = 2.7 kΩ, T_A = 150 °C BF 869, BF 871 V_{CE} = 350 V, R_{BE} = 2.7 kΩ, T_A = 150 °C BF 881	I_{CER}	– –	– –	10 10	µA
Emitter-base cutoff current V_{EB} = 5 V	I_{EB0}	–	–	10	
DC current gain I_C = 25 mA, V_{CE} = 20 V BF 869 BF 871, BF 881	h_{FE}	50 40	– –	– –	–
Collector-emitter saturation voltage [1] I_C = 25 mA, T_j = 150 °C	$V_{CEsatRF}$	–	–	20	V
AC characteristics					
Transition frequency I_C = 10 mA, V_{CE} = 10 V, f = 20 MHz	f_T	–	100	–	MHz
Output capacitance V_{CB} = 30 V, f = 1 MHz	C_{obo}	–	1.2	–	pF

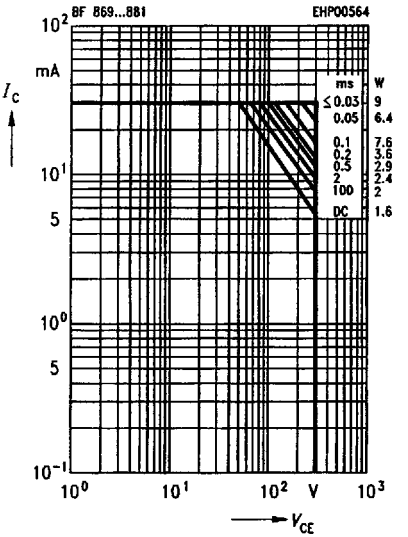
[1] Pulse test conditions: $t \leq 300$ µs, $D \leq 2$ %.

T-33-05

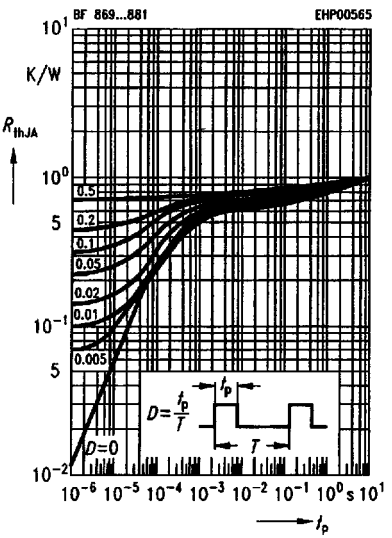
Total power dissipation $P_{tot} = f(T_A; T_C)$



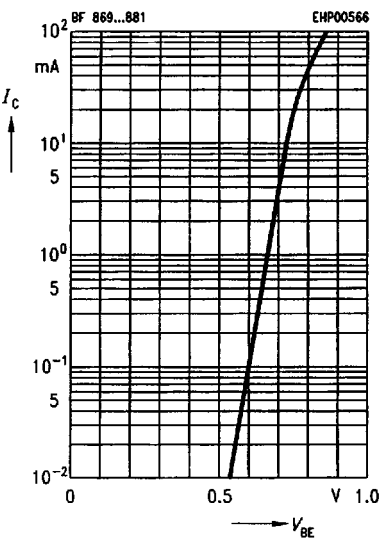
Operating range $I_C = f(V_{CE})$
$T_A \leq 110$ °C, $D = 0.01$



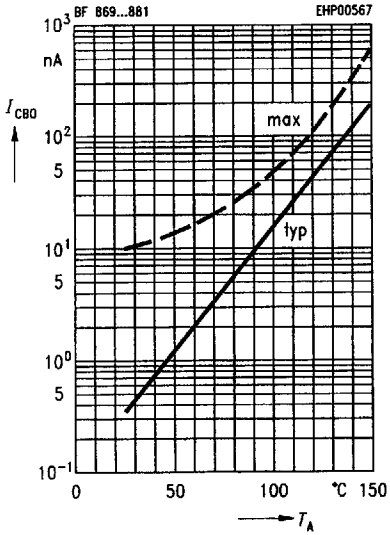
Permissible pulse load $R_{thJA} = f(t_p)$



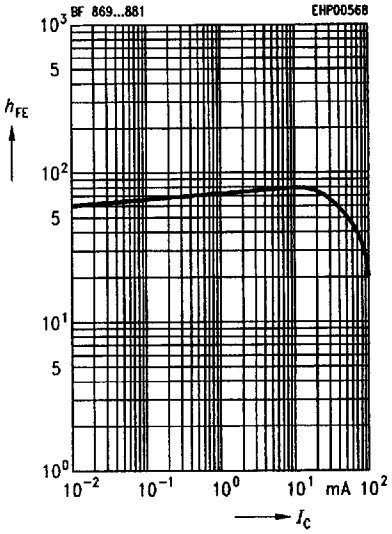
Collector current $I_C = f(V_{BE})$
$V_{CE} = 20$ V



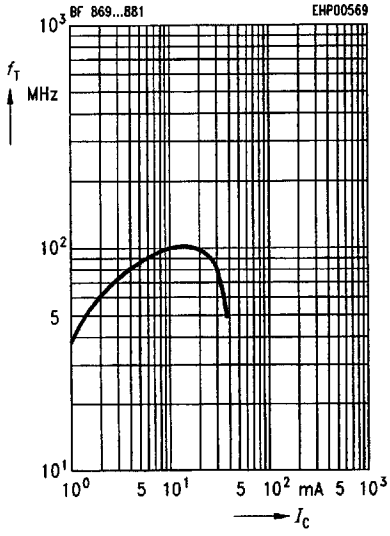
Collector cutoff current $I_{CBO} = f(T_A)$
V_{CB} = 200 V, 350 V



DC current gain $h_{FE} = f(I_C)$
V_{CE} = 20 V, T_A = 25 °C



Transition frequency $f_T = f(I_C)$
V_{CE} = 10 V, f = 20 MHz



Output capacitance $C_{obo} = f(V_{CB})$
I_C = 0, f = 1 MHz