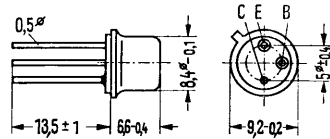


BF 111

NPN-Transistor für Luminanz- und RGB-Endstufen in Farbfernsehempfängern

BF 111 ist ein doppeltdiffundierter NPN-Silizium-Hochfrequenz-Transistor in Plantechnik im Gehäuse 5 C 3 DIN 41873 (TO-39). Der Kollektor ist mit dem Gehäuse elektrisch verbunden.

Typ	Bestellnummer
BF 111	Q62702-F153



Gewicht etwa 1,5 g

Maße in mm

Grenzdaten

Kollektor-Emitter-Spannung ($R_{BE} \leq 1 \text{ k}\Omega$)	U_{CER}	200	V
Emitter-Basis-Spannung	U_{EBO}	5	V
Kollektorstrom	I_C	80	mA
Sperrschichttemperatur	T_j	175	°C
Lagertemperatur	T_s	-30 bis +175	°C
Gesamtverlustleistung ($T_G \leq 100 \text{ °C}$)	P_{tot}	3	W ¹⁾

Wärmewiderstand

Kollektorsperrschicht – Luft	R_{thJU}	≤ 200	°C/W
Kollektorsperrschicht – Transistorgehäuse	R_{thJG}	≤ 25	°C/W

¹⁾ Wenn $U_{CE} \leq 100 \text{ V}$ und $R_L \geq 2,5 \text{ k}\Omega$ ist, kann P_{tot} kurzzeitig (Einschaltmoment) bis 3,5 W betragen, wenn die übrigen Grenzdaten eingehalten werden.

Statische Kenndaten ($T_U = 25^\circ\text{C}$)

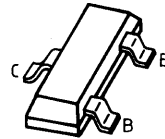
Kollektor-Emitter-Reststrom ($U_{\text{CES}} = 160\text{ V}$)	I_{CES}	< 200	nA
Stromverstärkung ($I_C = 60\text{ mA}$; $U_{\text{CE}} = 20\text{ V}$)	B	> 20	

Dynamische Kenndaten ($T_U = 25^\circ\text{C}$)

Transitfrequenz ($I_C = 20\text{ mA}$; $U_{\text{CE}} = 20\text{ V}$)	f_T	120	MHz
Rückwirkungskapazität ($I_C = 1\text{ mA}$; $U_{\text{CE}} = 20\text{ V}$; $f = 1\text{ MHz}$)	$-C_{12e}$	1,8	pF
Rückwirkungszeitkonstante ($I_C = 10\text{ mA}$; $U_{\text{CE}} = 20\text{ V}$; $f = 2,5\text{ MHz}$)	$r_{bb'}C_{b'c}$	< 100	psec
Hochfrequenz-Kollektor-Emitter-Sättigungsspannung ($I_C = 60\text{ mA}$; $T_G = 100^\circ\text{C}$; $f = 0,5\text{ MHz}$; $R_L = 3\text{ k}\Omega$)	$U_{\text{CEsat HF}}$	20	V ¹⁾

¹⁾ Die Hochfrequenz-Kollektor-Emitter-Sättigungsspannung ist die Spannung, bei der die Kleinsignalverstärkung entlang der Widerstandsgeraden auf 80% des Maximalwertes abgesunken ist.

- Für Breitbandverstärker bis 1 GHz und für Oszillatoranwendungen



Typ	Stempel	Schüttgut-Bestell-Nr.	8-mm-Gurt-Bestell-Nr.	Gehäuse
BF 517	LR	Q62702-F988	Q62702-F78	SOT 23

Grenzwerte

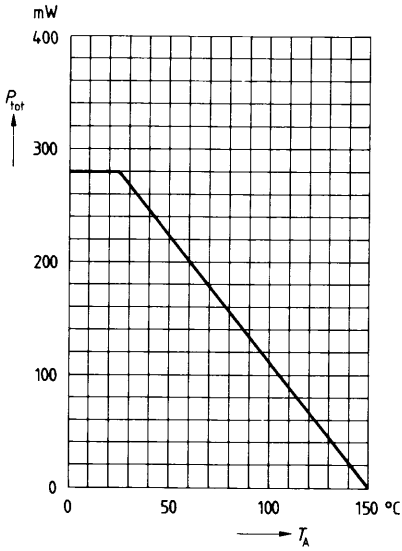
Bezeichnung	Symbol	Wert	Einheit
Kollektor-Emitter-Spannung	V_{CE0}	15	V
Kollektor-Basis-Spannung	V_{CB0}	20	V
Emitter-Basis-Spannung	V_{EB0}	3	V
Kollektorstrom	I_C	25	mA
Basisstrom	I_B	5	mA
Gesamtverlustleistung $T_A = 25^\circ\text{C}$	P_{tot}	280	mW
Sperrschichttemperatur	T_j	150	$^\circ\text{C}$
Lagertemperatur	T_{stg}	-65 ... +150	$^\circ\text{C}$
Wärmewiderstand Sperrschicht-Umgebung bei Montage auf Al_2O_3 - Keramiksubstrat 15 mm x 16,7 mm x 0,7 mm	R_{thJA}	≤ 450	K/W

Kennwertebei $T_A = 25^\circ\text{C}$, wenn nicht anders angegeben

Statische Kennwerte	Symbol	min	typ	max	Einheit
Kollektor-Emitter-Durchbruchspannung $I_C = 1\text{ mA}, I_B = 0$	$V_{(BR)CE0}$	15	–	–	V
Kollektor-Basis-Reststrom $V_{CB} = 15\text{ V}, I_E = 0$	I_{CB0}	–	–	50	nA
Stromverstärkung $I_C = 5\text{ mA}, V_{CE} = 10\text{ V}$	h_{FE}	25	–	250	–
Kollektor-Emitter-Sättigungsspannung $I_C = 10\text{ mA}, I_B = 1\text{ mA}$	V_{CEsat}	–	0,1	0,5	V
Basis-Emitter-Sättigungsspannung $I_C = 10\text{ mA}, I_B = 1\text{ mA}$	V_{BEsat}	–	–	0,95	V

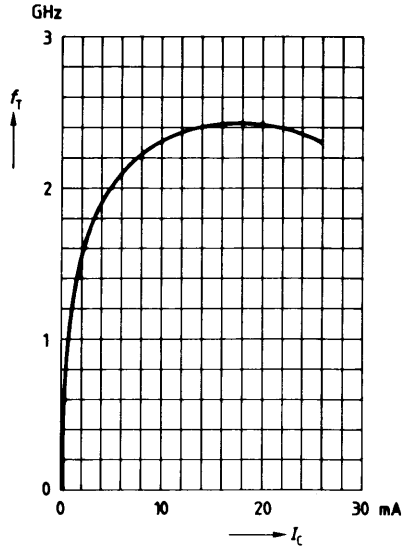
Dynamische Kennwerte	Symbol	min	typ	max	Einheit
Transitfrequenz $I_C = 5\text{ mA}, V_{CE} = 10\text{ V}, f = 200\text{ MHz}$	f_T	1	2	–	GHz
Kollektor-Basis-Kapazität $V_{CB} = 10\text{ V}, V_{BE} = 0, f = 1\text{ MHz}$	C_{cb}	0,3	0,5	0,75	pF
Kollektor-Emitter-Kapazität $V_{CB} = 10\text{ V}, V_{BE} = 0, f = 1\text{ MHz}$	C_{ce}	–	0,26	0,4	pF
Rauschzahl $I_C = 5\text{ mA}, V_{CE} = 10\text{ V}, f = 100\text{ MHz}$ $I_C = 5\text{ mA}, V_{CE} = 10\text{ V}, f = 800\text{ MHz}$	F	– –	2,5 5,0	– –	dB dB

Gesamtverlustleistung $P_{\text{tot}} = f(T_A)$



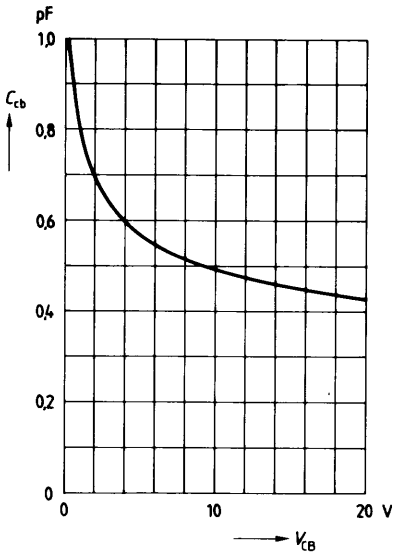
Transitfrequenz $f_T = f(I_C)$

$V_{\text{CE}} = 10 \text{ V}, f = 100 \text{ MHz}$



Kollektor-Basis-Kapazität $C_{cb} = f(V_{\text{CB}})$

$f = 1 \text{ MHz}$

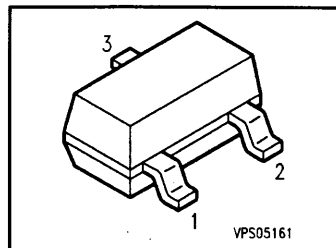


Silicon N Channel MOS FET Triode

BF 543

Preliminary Data

- For RF stages up to 300 MHz preferably in FM applications
- $I_{DSS} = 4 \text{ mA}$, $g_{fs} = 12 \text{ mS}$



ESD: Electrostatic discharge sensitive device, observe handling precautions!

Type	Marking	Ordering Code (tape and reel)	Pin Configuration			Package ¹⁾
			1	2	3	
BF 543	LDs	Q62702-F1372	G	D	S	SOT-23

Maximum Ratings

Parameter	Symbol	Values	Unit
Drain-source voltage	V_{DS}	20	V
Drain current	I_D	30	mA
Gate-source peak current	$\pm I_{GSM}$	10	
Total power dissipation, $T_A \leq 60 \text{ }^\circ\text{C}$	P_{tot}	200	mW
Storage temperature range	T_{stg}	- 55 ... + 150	$^\circ\text{C}$
Channel temperature	T_{ch}	150	
Ambient temperature range	T_A	- 55 ... + 150	

Thermal Resistance

Junction - ambient ²⁾	$R_{th JA}$	≤ 450	K/W
----------------------------------	-------------	------------	-----

¹⁾ For detailed information see chapter Package Outlines.

²⁾ Package mounted on alumina 15 mm x 16.7 mm x 0.7 mm.

Electrical Characteristics

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

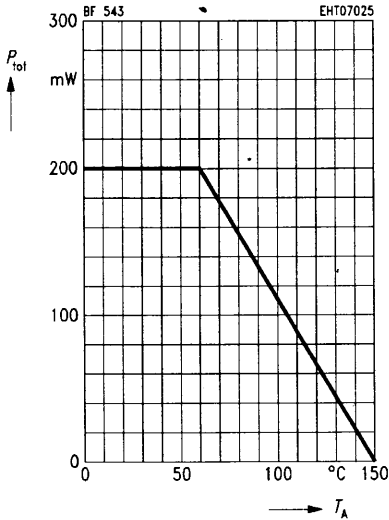
DC Characteristics

Drain-source breakdown voltage $I_D = 10\text{ }\mu\text{A}$, $-V_{GS} = 4\text{ V}$	$V_{(BR)DS}$	20	–	–	V
Gate-source breakdown voltage $\pm I_{GS} = 10\text{ mA}$, $V_{DS} = 0$	$\pm V_{(BR)GSS}$	7	–	12	
Gate cutoff current $\pm V_{GS} = 6\text{ V}$, $V_{DS} = 0$	$\pm I_{GSS}$	–	–	50	nA
Drain current $V_{DS} = 10\text{ V}$, $V_{GS} = 0$	I_{DSS}	2.0	4	6.0	mA
Gate-source pinch-off voltage $V_{DS} = 10\text{ V}$, $I_D = 20\text{ }\mu\text{A}$	$-V_{GS(p)}$	–	0.7	1.5	V

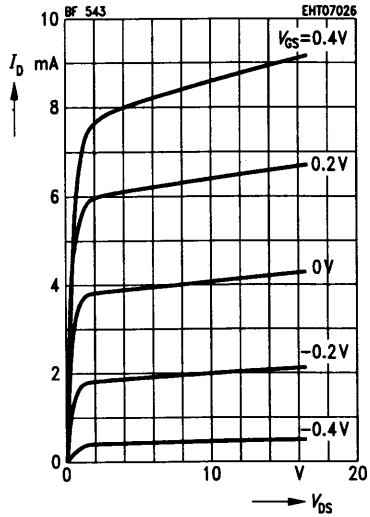
AC Characteristics

Forward transconductance $V_{DS} = 10\text{ V}$, $I_D = 4\text{ mA}$, $f = 1\text{ kHz}$	g_{fs}	9.5	12	–	mS
Gate-1 input capacitance $V_{DS} = 10\text{ V}$, $I_D = 4\text{ mA}$, $f = 1\text{ MHz}$	C_{gs}	–	2.7	–	pF
Reverse transfer capacitance $V_{DS} = 10\text{ V}$, $I_D = 4\text{ mA}$, $f = 1\text{ MHz}$	C_{dg}	–	18	–	fF
Output capacitance $V_{DS} = 10\text{ V}$, $I_D = 4\text{ mA}$, $f = 1\text{ MHz}$	C_{dss}	–	0.9	–	pF
Power gain (test circuit) $V_{DS} = 10\text{ V}$, $I_D = 4\text{ mA}$, $f = 200\text{ MHz}$ $G_G = 2\text{ mS}$, $G_L = 0.5\text{ mS}$	G_p	–	22	–	dB
Noise figure (test circuit) $V_{DS} = 10\text{ V}$, $I_D = 4\text{ mA}$, $f = 200\text{ MHz}$ $G_G = 2\text{ mS}$, $G_L = 0.5\text{ mS}$	F	–	1	–	

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

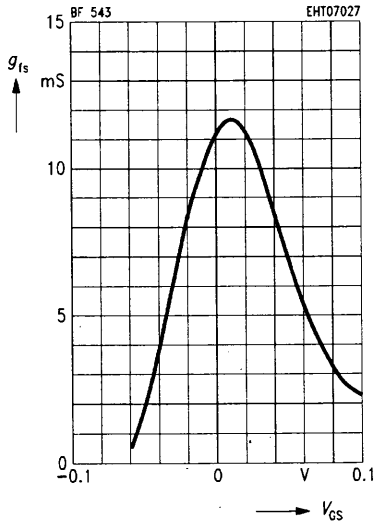


Typ. output characteristics $I_D = f(V_{DS})$



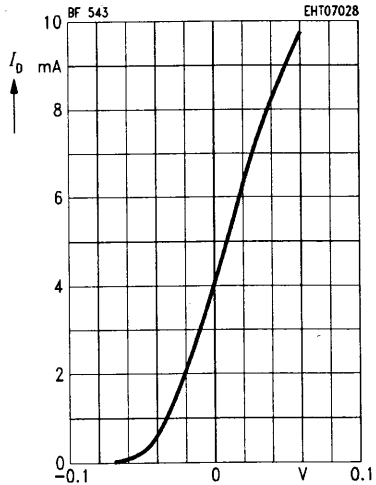
Gate transconductance $g_{fs} = f(V_{GS})$

$V_{DS} = 10\text{ V}, I_{DSS} = 4\text{ mA}, f = 1\text{ kHz}$



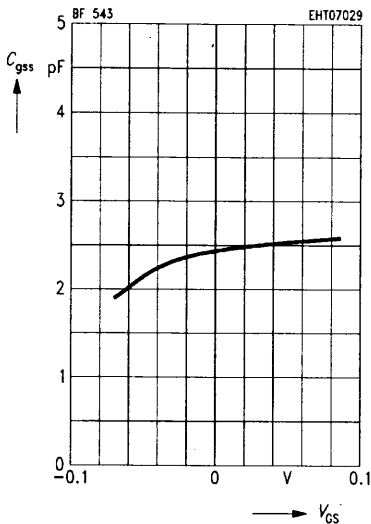
Drain current $I_D = f(V_{GS})$

$V_{DS} = 10\text{ V}$



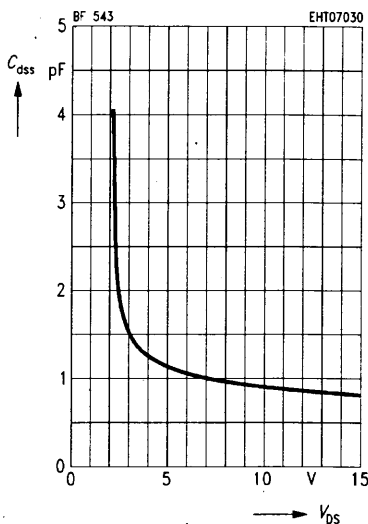
Gate input capacitance $C_{gss} = f(V_{GS})$

$V_{DS} = 10\text{ V}$, $I_{DSS} = 4\text{ mA}$, $f = 1\text{ MHz}$



Output capacitance $C_{dss} = f(V_{DS})$

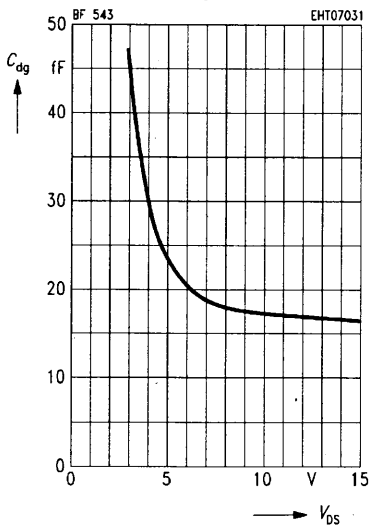
$V_{GS} = 0$, $I_{DSS} = 4\text{ mA}$, $f = 1\text{ MHz}$



Reverse transfer capacitance $C_{dg} = f(V_{DS})$

$C_{dg} = f(V_{DS})$

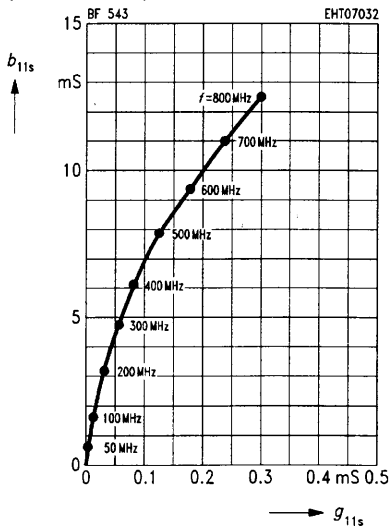
$V_{GS} = 0$, $I_{DSS} = 4\text{ mA}$, $f = 1\text{ MHz}$



Gate 1 input admittance y_{11s}

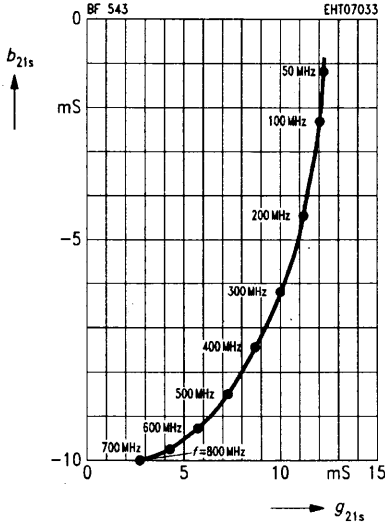
$V_{DS} = 10\text{ V}$, $I_{DSS} = 4\text{ mA}$, $V_{GS} = 0$

(source circuit)



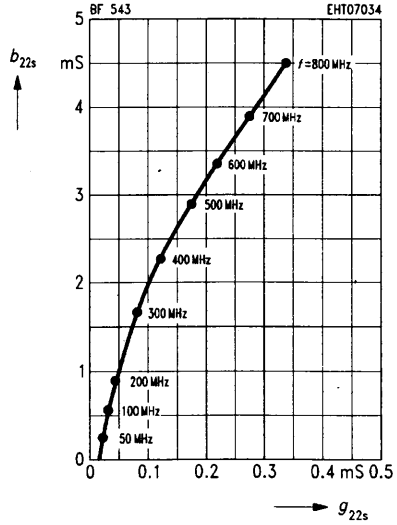
Gate 1 transconductance y_{21s}

$V_{DS} = 10\text{ V}$, $I_{DSS} = 4\text{ mA}$, $V_{GS} = 0$
(source circuit)



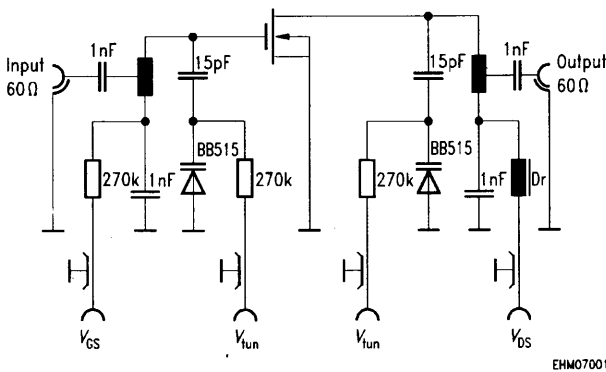
Output admittance y_{22s}

$V_{DS} = 10\text{ V}$, $I_{DSS} = 10\text{ mA}$, $V_{GS} = 0$
(source circuit)

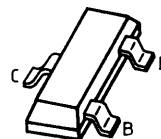


Test circuit for power gain G_p and noise figure F

$f = 200\text{ MHz}$, $G_G = 2\text{ mS}$, $G_L = 0.5\text{ mS}$



- Rauscharmer Breitbandtransistor im Frequenzbereich bis 2 GHz bei Kollektorströmen bis 30 mA
- Speziell geeignet für ZF-Verstärker in TV-Sat-Tunern und für VCR-Modulatoren



Typ	Stempel	Schüttgut-Bestell-Nr.	8-mm-Gurt-Bestell-Nr.	Gehäuse
BF 770 A	LS	Q62702-F1068	Q62702-F1080	SOT 23

Grenzwerte

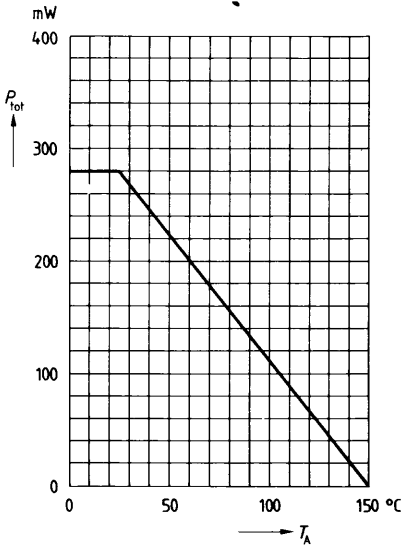
Bezeichnung	Symbol	Wert	Einheit
Kollektor-Emitter-Spannung	V_{CE0}	12	V
Kollektor-Basis-Spannung	V_{CB0}	15	V
Emitter-Basis-Spannung	V_{EB0}	2	V
Kollektorstrom	I_C	50	mA
Basisstrom	I_B	10	mA
Gesamtverlustleistung $T_A = 25^\circ\text{C}$	P_{tot}	280	mW
Sperrschichttemperatur	T_j	150	$^\circ\text{C}$
Lagertemperatur	T_{stg}	-65 ... +150	$^\circ\text{C}$
Wärmewiderstand Sperrschicht-Umgebung bei Montage auf Al_2O_3 - Keramiksubstrat 15 mm × 16,7 mm × 0,7 mm	R_{thJA}	≤ 450	K/W

Kennwertebei $T_A = 25^\circ\text{C}$, wenn nicht anders angegeben

Statische Kennwerte	Symbol	min	typ	max	Einheit
Kollektor-Emitter-Durchbruchspannung $I_C = 1\text{ mA}$, $I_B = 0$	$V_{(BR)CE0}$	12	–	–	V
Kollektor-Basis-Reststrom $V_{CB} = 5\text{ V}$, $I_E = 0$	I_{CB0}	–	–	50	nA
Stromverstärkung $I_C = 30\text{ mA}$, $V_{CE} = 5\text{ V}$	h_{FE}	40	90	–	–
Kollektor-Emitter-Sättigungsspannung $I_C = 50\text{ mA}$, $I_B = 5\text{ mA}$	V_{CEsat}	–	0,13	0,5	V

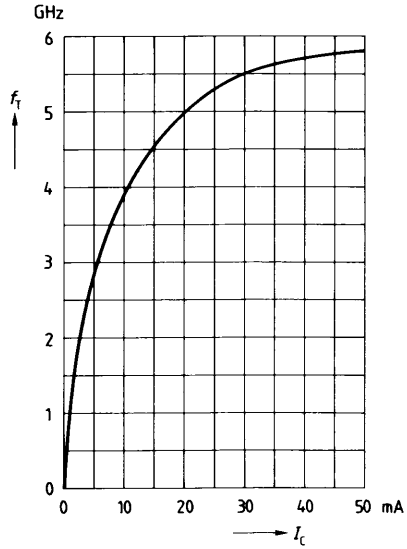
Dynamische Kennwerte	Symbol	min	typ	max	Einheit
Transitfrequenz $I_C = 30\text{ mA}$, $V_{CE} = 5\text{ V}$, $f = 200\text{ MHz}$	f_T	–	5,5	–	GHz
Kollektor-Basis-Kapazität $V_{CB} = 5\text{ V}$, $V_{BE} = 0$, $f = 1\text{ MHz}$	C_{cb}	–	0,6	–	pF
Kollektor-Emitter-Kapazität $V_{CB} = 5\text{ V}$, $V_{BE} = 0$, $f = 1\text{ MHz}$	C_{ce}	–	0,3	–	pF
Rauschzahl $I_C = 10\text{ mA}$, $V_{CE} = 5\text{ V}$, $f = 800\text{ MHz}$	F	–	2	–	dB
Leistungsverstärkung $I_C = 30\text{ mA}$, $V_{CB} = 5\text{ V}$, $f = 800\text{ MHz}$	G_p	–	13	–	dB

Gesamtverlustleistung $P_{tot} = f(T_A)$



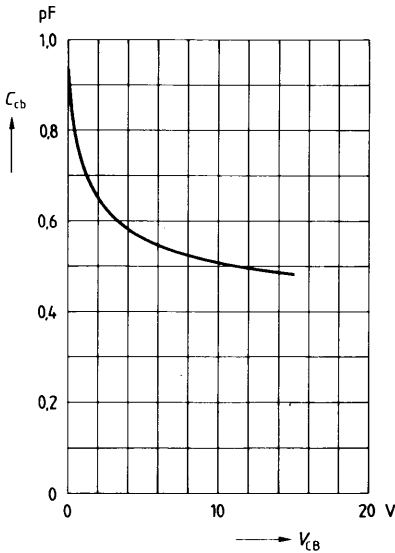
Transitfrequenz $f_T = f(I_C)$

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



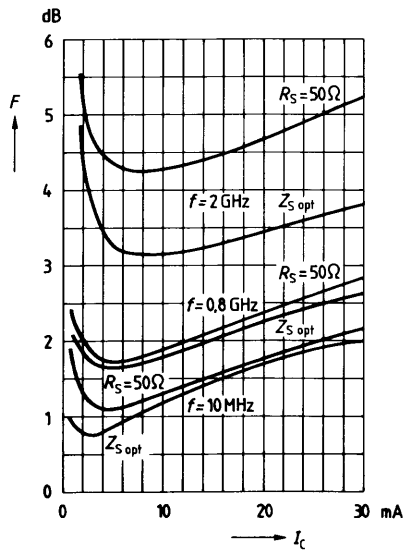
Kollektor-Basis-Kapazität $C_{cb} = f(V_{CB})$

$f = 1\text{ MHz}$



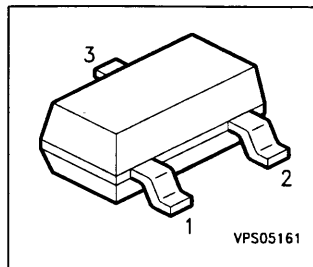
Rauschzahl $F = f(I_C)$

$V_{CE} = 8\text{ V}$



NPN Silicon RF Transistor

- For modulators and amplifiers in TV and VCR tuners



ESD: Electrostatic discharge sensitive device, observe handling precaution!

Type	Marking	Ordering Code	Pin Configuration			Package
BF 771	RBs	Q62702-F1225	1 = B	2 = E	3 = C	SOT-23

Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-emitter voltage	V_{CEO}	12	V
Collector-emitter voltage	V_{CES}	20	
Collector-base voltage	V_{CBO}	20	
Emitter-base voltage	V_{EBO}	2	
Collector current	I_C	80	mA
Base current	I_B	10	
Total power dissipation	P_{tot}	580	mW
$T_S \leq 69 \text{ }^\circ\text{C}$			
Junction temperature	T_j	150	$^\circ\text{C}$
Ambient temperature	T_A	- 65 ... + 150	
Storage temperature	T_{stg}	- 65 ... + 150	

Thermal Resistance

Junction - soldering point ¹⁾	R_{thJS}	≤ 140	K/W
--	------------	------------	-----

1) T_S is measured on the collector lead at the soldering point to the pcb.

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage $I_C = 1 \text{ mA}, I_B = 0$	$V_{(BR)CEO}$	12	-	-	V
Collector-emitter cutoff current $V_{CE} = 20 \text{ V}, V_{BE} = 0$	I_{CES}	-	-	100	μA
Collector-base cutoff current $V_{CB} = 10 \text{ V}, I_E = 0$	I_{CBO}	-	-	100	nA
Emitter-base cutoff current $V_{EB} = 1 \text{ V}, I_C = 0$	I_{EBO}	-	-	1	μA
DC current gain $I_C = 30 \text{ mA}, V_{CE} = 8 \text{ V}$	h_{FE}	50	100	200	-

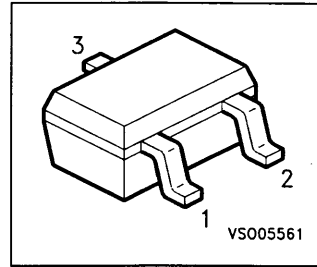
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics					
Transition frequency $I_C = 50 \text{ mA}$, $V_{CE} = 8 \text{ V}$, $f = 500 \text{ MHz}$	f_T	6	8	-	GHz
Collector-base capacitance $V_{CB} = 10 \text{ V}$, $f = 1 \text{ MHz}$	C_{cb}	-	0.68	1	pF
Collector-emitter capacitance $V_{CE} = 10 \text{ V}$, $f = 1 \text{ MHz}$	C_{ce}	-	0.24	-	
Emitter-base capacitance $V_{EB} = 0.5 \text{ V}$, $f = 1 \text{ MHz}$	C_{eb}	-	1.8	-	
Noise figure $I_C = 10 \text{ mA}$, $V_{CE} = 8 \text{ V}$, $Z_S = Z_{Sopt}$ $f = 900 \text{ MHz}$ $f = 1.8 \text{ GHz}$	F	-	1.3	-	dB
		-	2.1	-	
Power gain ²⁾ $I_C = 30 \text{ mA}$, $V_{CE} = 8 \text{ V}$, $Z_S = Z_{Sopt}$ $Z_L = Z_{Lopt}$ $f = 900 \text{ MHz}$ $f = 1.8 \text{ GHz}$	G_{ma}	-	14.5	-	
		-	9	-	
Transducer gain $I_C = 30 \text{ mA}$, $V_{CE} = 8 \text{ V}$, $Z_S = Z_L = 50 \Omega$ $f = 900 \text{ MHz}$ $f = 1.8 \text{ GHz}$	$ S_{21e} ^2$	-	12.5	-	
		-	7	-	

2) $G_{ma} = |S_{21}/S_{12}| (k - (k^2 - 1)^{1/2})$

NPN Silicon RF Transistor

- For modulators and amplifiers in TV and VCR tuners



ESD: Electrostatic discharge sensitive device, observe handling precaution!

Type	Marking	Ordering Code	Pin Configuration			Package
BF 771W	RBs	Q62702-F1519	1 = B	2 = E	3 = C	SOT-323

Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-emitter voltage	V_{CEO}	12	V
Collector-emitter voltage	V_{CES}	20	
Collector-base voltage	V_{CBO}	20	
Emitter-base voltage	V_{EBO}	2	
Collector current	I_C	80	mA
Base current	I_B	10	
Total power dissipation	P_{tot}	580	mW
$T_S \leq 63 \text{ }^\circ\text{C}$			
Junction temperature	T_j	150	$^\circ\text{C}$
Ambient temperature	T_A	- 65 ... + 150	
Storage temperature	T_{stg}	- 65 ... + 150	

Thermal Resistance

Junction - soldering point ¹⁾	R_{thJS}	≤ 150	K/W
--	------------	------------	-----

1) T_S is measured on the collector lead at the soldering point to the pcb.

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage $I_C = 1 \text{ mA}, I_B = 0$	$V_{(BR)CEO}$	12	-	-	V
Collector-emitter cutoff current $V_{CE} = 20 \text{ V}, V_{BE} = 0$	I_{CES}	-	-	100	μA
Collector-base cutoff current $V_{CB} = 10 \text{ V}, I_E = 0$	I_{CBO}	-	-	100	nA
Emitter-base cutoff current $V_{EB} = 1 \text{ V}, I_C = 0$	I_{EBO}	-	-	1	μA
DC current gain $I_C = 30 \text{ mA}, V_{CE} = 8 \text{ V}$	h_{FE}	50	100	200	-

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

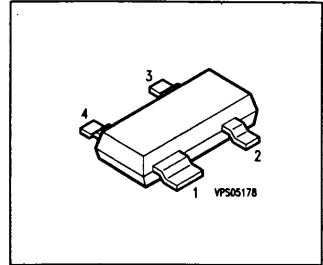
AC Characteristics

Transition frequency $I_C = 50 \text{ mA}$, $V_{CE} = 8 \text{ V}$, $f = 500 \text{ MHz}$	f_T	6	8	-	GHz
Collector-base capacitance $V_{CB} = 10 \text{ V}$, $f = 1 \text{ MHz}$	C_{cb}	-	0.74	0.1	pF
Collector-emitter capacitance $V_{CE} = 10 \text{ V}$, $f = 1 \text{ MHz}$	C_{ce}	-	0.28	-	
Emitter-base capacitance $V_{EB} = 0.5 \text{ V}$, $f = 1 \text{ MHz}$	C_{eb}	-	1.8	-	
Noise figure $I_C = 10 \text{ mA}$, $V_{CE} = 8 \text{ V}$, $Z_S = Z_{Sopt}$ $f = 900 \text{ MHz}$ $f = 1.8 \text{ GHz}$	F	-	1.3 2.1	-	dB
Power gain ²⁾ $I_C = 30 \text{ mA}$, $V_{CE} = 8 \text{ V}$, $Z_S = Z_{Sopt}$ $Z_L = Z_{Lopt}$ $f = 900 \text{ MHz}$ $f = 1.8 \text{ GHz}$	G_{ma}	-	15.5 10	-	
Transducer gain $I_C = 30 \text{ mA}$, $V_{CE} = 8 \text{ V}$, $Z_S = Z_L = 50 \Omega$ $f = 900 \text{ MHz}$ $f = 1.8 \text{ GHz}$	$ S_{21e} ^2$	-	13.5 7.5	-	

2) $G_{ma} = |S_{21}/S_{12}| (k - (k^2 - 1)^{1/2})$

NPN Silicon RF Transistor

- For application in TV-sat tuners



ESD: Electrostatic discharge sensitive device, observe handling precaution!

Type	Marking	Ordering Code	Pin Configuration				Package
BF 772	RA5	Q62702-F1222	1 = C	2 = E	3 = B	4 = E	SOT-143

Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-emitter voltage	V_{CEO}	12	V
Collector-emitter voltage	V_{CES}	20	
Collector-base voltage	V_{CBO}	20	
Emitter-base voltage	V_{EBO}	2	
Collector current	I_C	80	mA
Base current	I_B	10	
Total power dissipation $T_S \leq 72 \text{ }^\circ\text{C}$	P_{tot}	580	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Ambient temperature	T_A	- 65 ... + 150	
Storage temperature	T_{stg}	- 65 ... + 150	

Thermal Resistance

Junction - soldering point ¹⁾	R_{thJS}	≤ 135	K/W
--	------------	------------	-----

1) T_S is measured on the collector lead at the soldering point to the pcb.

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

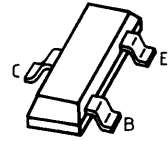
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage $I_C = 1 \text{ mA}, I_B = 0$	$V_{(BR)CEO}$	12	-	-	V
Collector-emitter cutoff current $V_{CE} = 20 \text{ V}, V_{BE} = 0$	I_{CES}	-	-	100	μA
Collector-base cutoff current $V_{CB} = 10 \text{ V}, I_E = 0$	I_{CBO}	-	-	100	nA
Emitter-base cutoff current $V_{EB} = 1 \text{ V}, I_C = 0$	I_{EBO}	-	-	1	μA
DC current gain $I_C = 30 \text{ mA}, V_{CE} = 8 \text{ V}$	h_{FE}	50	100	200	-

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics					
Transition frequency $I_C = 50 \text{ mA}$, $V_{CE} = 8 \text{ V}$, $f = 500 \text{ MHz}$	f_T	6	8	-	GHz
Collector-base capacitance $V_{CB} = 10 \text{ V}$, $f = 1 \text{ MHz}$	C_{cb}	-	0.6	0.9	pF
Collector-emitter capacitance $V_{CE} = 10 \text{ V}$, $f = 1 \text{ MHz}$	C_{ce}	-	0.3	-	
Emitter-base capacitance $V_{EB} = 0.5 \text{ V}$, $f = 1 \text{ MHz}$	C_{eb}	-	1.8	-	
Noise figure $I_C = 10 \text{ mA}$, $V_{CE} = 8 \text{ V}$, $Z_S = Z_{Sopt}$ $f = 900 \text{ MHz}$ $f = 1.8 \text{ GHz}$	F	-	1.3 2.1	-	dB
Power gain ²⁾ $I_C = 30 \text{ mA}$, $V_{CE} = 8 \text{ V}$, $Z_S = Z_{Sopt}$ $Z_L = Z_{Lopt}$ $f = 900 \text{ MHz}$ $f = 1.8 \text{ GHz}$	G_{ma}	-	17.5 11.5	-	
Transducer gain $I_C = 30 \text{ mA}$, $V_{CE} = 8 \text{ V}$, $Z_S = Z_L = 50 \Omega$ $f = 900 \text{ MHz}$ $f = 1.8 \text{ GHz}$	$ S_{21e} ^2$	-	14.5 8.5	-	

2) $G_{ma} = |S_{21}/S_{12}| (k - (k^2 - 1)^{1/2})$

- Für Breitbandverstärker-, Mischer-, Oszillator- und Schaltungen bis 2 GHz
- Besondere Eignung in TV-Sat- und UHF-Fernsehtunern



Typ	Stempel	Schüttgut-Bestell-Nr.	8-mm-Gurt-Bestell-Nr.	Gehäuse
BF 775	LO	Q62702-F991	Q62702-F102	SOT 23

Grenzwerte

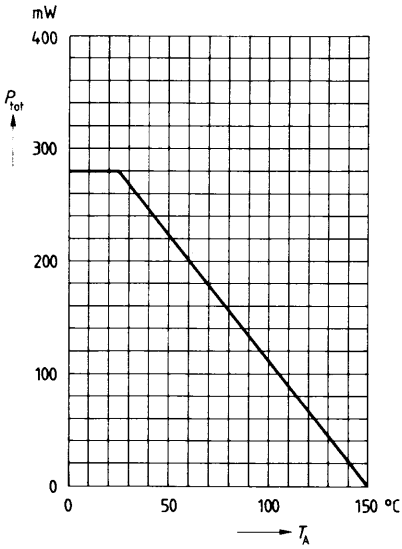
Bezeichnung	Symbol	Wert	Einheit
Kollektor-Emitter-Spannung	V_{CE0}	12	V
Kollektor-Basis-Spannung	V_{CB0}	20	V
Emitter-Basis-Spannung	V_{EB0}	2,5	V
Kollektorstrom	I_C	30	mA
Basisstrom	I_B	4	mA
Gesamtverlustleistung $T_A = 25^\circ\text{C}$	P_{tot}	280	mW
Sperrschichttemperatur	T_j	150	$^\circ\text{C}$
Lagertemperatur	T_{stg}	-65 ... +150	$^\circ\text{C}$
Wärmewiderstand Sperrschicht-Umgebung bei Montage auf Al_2O_3 - Keramiksubstrat 15 mm x 16,7 mm x 0,7 mm	R_{thJA}	≤ 450	K/W

Kennwertebei $T_A = 25^\circ\text{C}$, wenn nicht anders angegeben

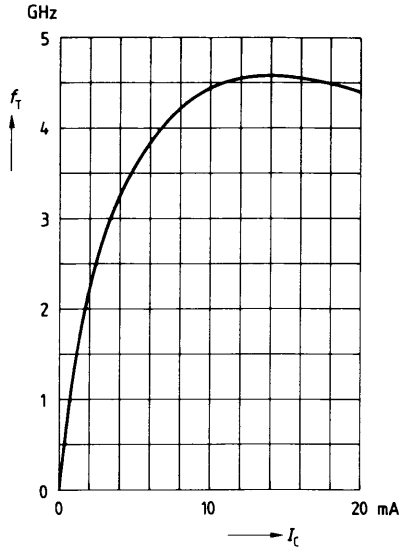
Statische Kennwerte	Symbol	min	typ	max	Einheit
Kollektor-Emitter-Durchbruchspannung $I_C = 1\text{ mA}$, $I_B = 0$	$V_{(BR)CE0}$	12	–	–	V
Kollektor-Basis-Reststrom $V_{CB} = 10\text{ V}$, $I_E = 0$	I_{CB0}	–	–	50	nA
Stromverstärkung $I_C = 5\text{ mA}$, $V_{CE} = 6\text{ V}$ $I_C = 20\text{ mA}$, $V_{CE} = 6\text{ V}$	h_{FE}	40 40	90 100	250 –	– –
Kollektor-Emitter-Sättigungsspannung $I_C = 20\text{ mA}$, $I_B = 2\text{ mA}$	V_{CEsat}	–	0,16	0,5	V

Dynamische Kennwerte	Symbol	min	typ	max	Einheit
Transitfrequenz $I_C = 5\text{ mA}$, $V_{CE} = 6\text{ V}$, $f = 200\text{ MHz}$ $I_C = 20\text{ mA}$, $V_{CE} = 6\text{ V}$, $f = 200\text{ MHz}$	f_T	– –	3,5 4,5	– –	GHz GHz
Kollektor-Basis-Kapazität $V_{CB} = 6\text{ V}$, $V_{BE} = 0$, $f = 1\text{ MHz}$	C_{cb}	–	0,58	–	pF
Kollektor-Emitter-Kapazität $V_{CB} = 10\text{ V}$, $V_{BE} = 0$, $f = 1\text{ MHz}$	C_{ce}	–	0,27	–	pF
Rauschzahl $I_C = 2\text{ mA}$, $V_{CE} = 6\text{ V}$, $f = 800\text{ MHz}$	F	–	2,1	–	dB

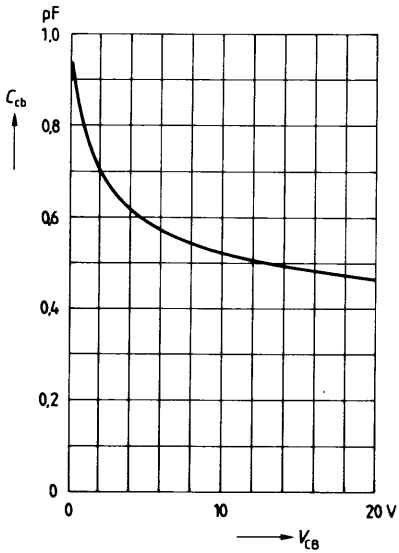
Gesamtverlustleistung $P_{tot} = f(T_A)$



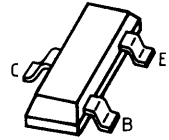
Transitfrequenz $f_T = f(I_C)$
 $V_{CE} = 6\text{ V}, f = 200\text{ MHz}$



Kollektor-Basis-Kapazität C_{cb}
 $f = 1\text{ MHz}$



- Für breitbandige Verstärkeranwendungen bis 500 MHz bei hoher Aussteuerung
- Speziell geeignet für die Ansteuerung von Oberflächenwellenfiltern, wie z. B. ZF-Filter in TV-Tunern



Typ	Stempel	Schüttgut-Bestell-Nr.	8-mm-Gurt-Bestell-Nr.	Gehäuse
BF 799	LK	Q62702-F788	Q62702-F935	SOT 23

Grenzwerte

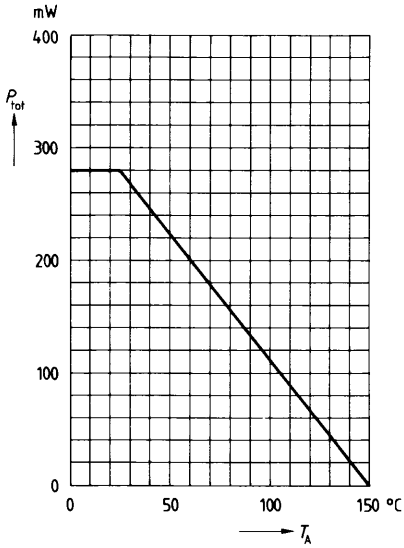
Bezeichnung	Symbol	Wert	Einheit
Kollektor-Emitter-Spannung	V_{CE0}	20	V
Kollektor-Basis-Spannung	V_{CB0}	30	V
Kollektor-Emitter-Sperrspannung	V_{CER}	30	V
Emitter-Basis-Spannung	V_{EB0}	3	V
Kollektorstrom	I_C	35	mA
Kollektorspitzenstrom	I_{CM}	50	mA
Basisspitzenstrom	I_{BM}	15	mA
Gesamtverlustleistung	P_{tot}	280	mW
$T_A = 25^\circ\text{C}$			
Sperrschichttemperatur	T_j	150	$^\circ\text{C}$
Lagertemperatur	T_{stg}	$-65 \dots +150$	$^\circ\text{C}$
Wärmewiderstand			
Sperrschicht-Umgebung bei Montage auf Al_2O_3 -Keramiksubstrat 15 mm × 16,7 mm × 0,7 mm	R_{thJA}	≤ 450	K/W

Kennwertebei $T_A = 25^\circ\text{C}$, wenn nicht anders angegeben

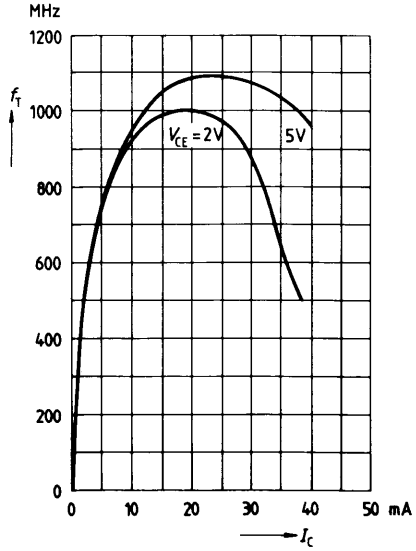
Statische Kennwerte	Symbol	min	typ	max	Einheit
Kollektor-Emitter-Durchbruchspannung $I_C = 1\text{ mA}$, $I_B = 0$	$V_{(BR)CE0}$	20	–	–	V
Kollektor-Basis-Durchbruchspannung $I_C = 10\text{ }\mu\text{A}$, $I_E = 0$	$V_{(BR)CB0}$	30	–	–	V
Emitter-Basis-Durchbruchspannung $I_E = 10\text{ }\mu\text{A}$	$V_{(BR)EB0}$	3	–	–	V
Kollektor-Basis-Reststrom $V_{CB} = 20\text{ V}$	I_{CB0}	–	–	100	nA
Stromverstärkung $I_C = 5\text{ mA}$, $V_{CE} = 10\text{ V}$ $I_C = 20\text{ mA}$, $V_{CE} = 10\text{ V}$	h_{FE}	35 40	95 100	– 250	– –
Kollektor-Emitter-Sättigungsspannung $I_C = 20\text{ mA}$, $I_B = 2\text{ mA}$	V_{CEsat}	–	0,15	0,5	V
Basis-Emitter-Sättigungsspannung $I_C = 20\text{ mA}$, $I_B = 2\text{ mA}$	V_{BEsat}	–	–	0,95	V

Dynamische Kennwerte	Symbol	min	typ	max	Einheit
Transitfrequenz $I_C = 5\text{ mA}$, $V_{CE} = 10\text{ V}$, $f = 100\text{ MHz}$ $I_C = 20\text{ mA}$, $V_{CE} = 8\text{ V}$, $f = 100\text{ MHz}$	f_T	– –	800 1100	– –	MHz MHz
Ausgangskapazität $V_{CB} = 10\text{ V}$, $f = 1\text{ MHz}$, $I_E = 0$	C_{ob}	–	0,96	–	pF
Kollektor-Basis-Kapazität $V_{CB} = 10\text{ V}$, $V_{BE} = 0$, $f = 1\text{ MHz}$	C_{cb}	–	0,7	–	pF
Kollektor-Emitter-Kapazität $V_{CE} = 10\text{ V}$, $V_{BE} = 0$, $f = 1\text{ MHz}$	C_{ce}	–	0,28	–	pF
Rauschzahl $I_C = 5\text{ mA}$, $V_{CE} = 10\text{ V}$, $f = 100\text{ MHz}$ $R_S = 50\text{ }\Omega$	F	–	3	–	dB
Ausgangsleitwert $I_C = 20\text{ mA}$, $V_{CE} = 10\text{ V}$, $f = 35\text{ MHz}$	g_{22e}	–	60	–	μS

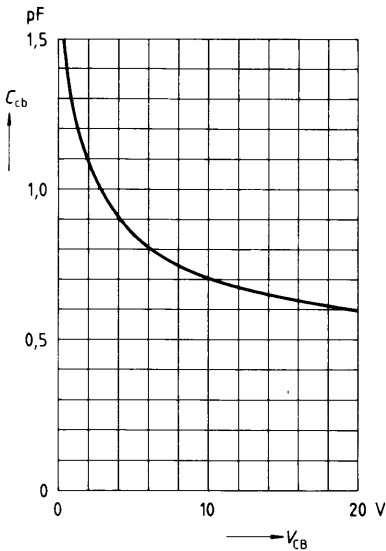
Gesamtverlustleistung $P_{tot} = f(T_A)$



Transitfrequenz $f_T = f(I_C)$
 $f = 100$ MHz



Kollektor-Basis-Kapazität $C_{cb} = f(V_{CB})$
 $f = 1$ MHz



Kurzschluß-Vorwärtssteilheit $|Y_{21e}| = f(I_C)$
 $f = 35$ MHz

