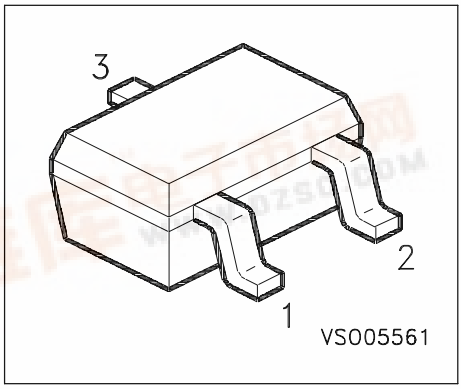
SIEMENS

BFT 92W

PNP Silicon RF Transistor

- For broadband amplifiers up to 2GHz at collector currents up to 20mA
- Complementary type: BFR 92W (NPN)



ESD: **E**lectro**s**tatic **d**ischarge sensitive device, observe handling precaution!

Type	Marking	Ordering Code	Pin Configuration			Package
BFT 92W	W1s	Q62702-F1681	1 = B	2 = E	3 = C	SOT-323

Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-emitter voltage	V_{CEO}	15	V
Collector-base voltage	V_{CBO}	20	
Emitter-base voltage	V_{EBO}	2	
Collector current	I_C	25	mA
Base current	I_B	3	
Total power dissipation $T_S \leq 105$ °C	P_{tot}	200	mW
Junction temperature	T_j	150	°C
Ambient temperature	T_A	- 65 ... + 150	
Storage temperature	T_{stg}	- 65 ... + 150	

Thermal Resistance

Junction - soldering point 1)	R_{thJS}	≤ 225	K/W

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

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, I_B = 0	$V_{(BR)CEO}$	15	-	-	V
Collector-base cutoff current V_{CB} = 10 V, I_E = 0	I_{CBO}	-	-	100	nA
Emitter-base cutoff current V_{EB} = 2 V, I_C = 0	I_{EBO}	-	-	10	µA
DC current gain I_C = 15 mA, V_{CE} = 8 V	h_{FE}	15	50	-	-

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics					
Transition frequency I_C = 15 mA, V_{CE} = 8 V, f = 500 MHz	f_T	3.5	5	-	GHz
Collector-base capacitance V_{CB} = 10 V, f = 1 MHz	C_{cb}	-	0.58	0.9	pF
Collector-emitter capacitance V_{CE} = 10 V, f = 1 MHz	C_{ce}	-	0.3	-	
Emitter-base capacitance V_{EB} = 0.5 V, f = 1 MHz	C_{eb}	-	0.77	-	
Noise figure I_C = 2 mA, V_{CE} = 8 V, Z_S = Z_{Sopt} f = 900 MHz f = 1.8 GHz	F	 - -	 2 3.2	 - -	dB
Power gain [2)] I_C = 15 mA, V_{CE} = 8 V, Z_S = Z_{Sopt} Z_L = Z_{Lopt} f = 900 MHz f = 1.8 GHz	G_{ma}	 - -	 14 8.5	 - -	
Transducer gain I_C = 15 mA, V_{CE} = 8 V, Z_S =Z_L= 50 Ω f = 900 MHz f = 1.8 GHz	$\lvert S_{21e}\rvert^2$	 - -	 11.5 6	 - -	

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

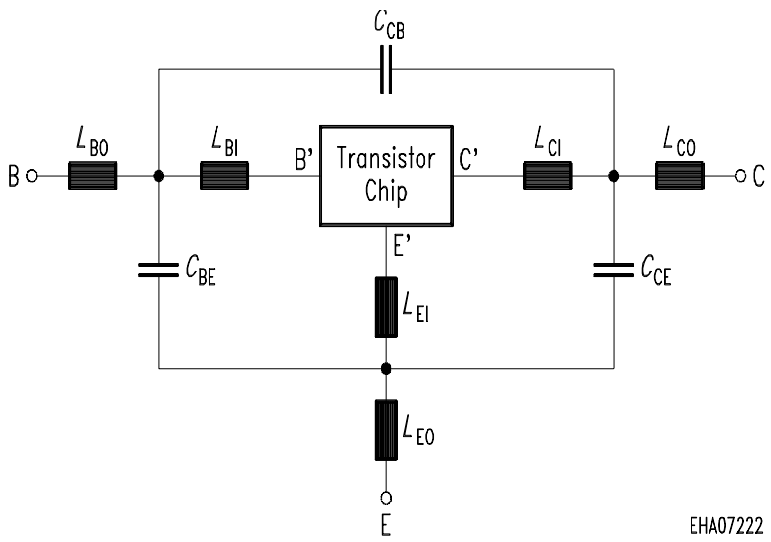
SPICE Parameters (Gummel-Poon Model, Berkeley-SPICE 2G.6 Syntax) :

Transistor Chip Data

IS =	4.5354	fA	BF =	98.533	-	NF =	0.90551	-
VAF =	10.983	V	IKF =	0.016123	A	ISE =	12.196	fA
NE =	1.1172	-	BR =	10.297	-	NR =	1.2703	-
VAR =	47.577	V	IKR =	0.019729	A	ISC =	0.024709	fA
NC =	1.206	-	RB =	7.9562	Ω	IRB =	0.79584	mA
RBM =	1.5939	Ω	RE =	1.5119	Ω	RC =	0.66749	Ω
CJE =	1.7785	fF	VJE =	0.79082	V	MJE =	0.32167	-
TF =	32.171	ps	XTF =	0.30227	-	VTF =	0.21451	V
ITF =	0.013277	mA	PTF =	0	deg	CJC =	922.07	fF
VJC =	1.2	V	MJC =	0.3	-	XCJC =	0.3	-
TR =	2.0779	ns	CJS =	0	fF	VJS =	0.75	V
MJS =	0	-	XTB =	0	-	EG =	1.11	eV
XTI =	3	-	FC =	0.75167	-	TNOM	300	K

All parameters are ready to use, no scalling is necessary.
Extracted on behalf of SIEMENS Small Signal Semiconductors by:
Institut für Mobil-und Satellitenfunktechnik (IMST)

Package Equivalent Circuit:



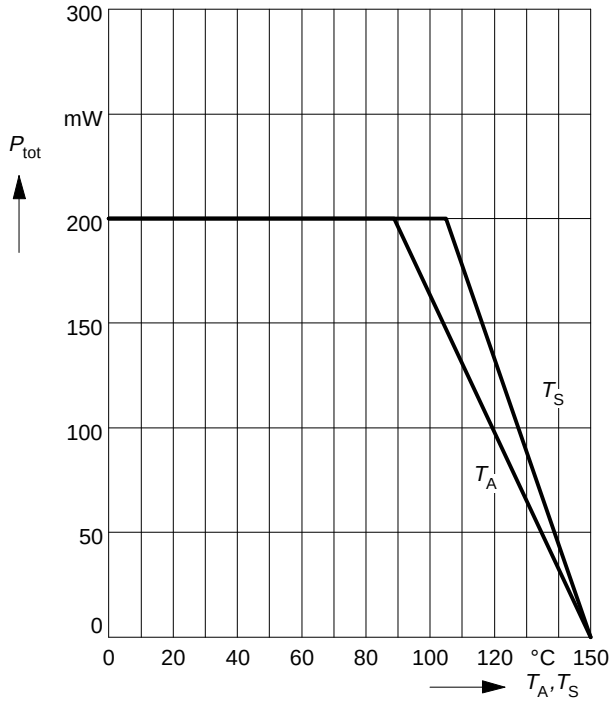
LBI =	0.57	nH
LBO =	0.4	nH
LEI =	0.43	nH
LEO =	0.5	nH
LCI =	0	nH
LCO =	0.41	nH
CBE =	61	fF
CCB =	101	fF
CCE =	175	fF

Valid up to 6 GHz

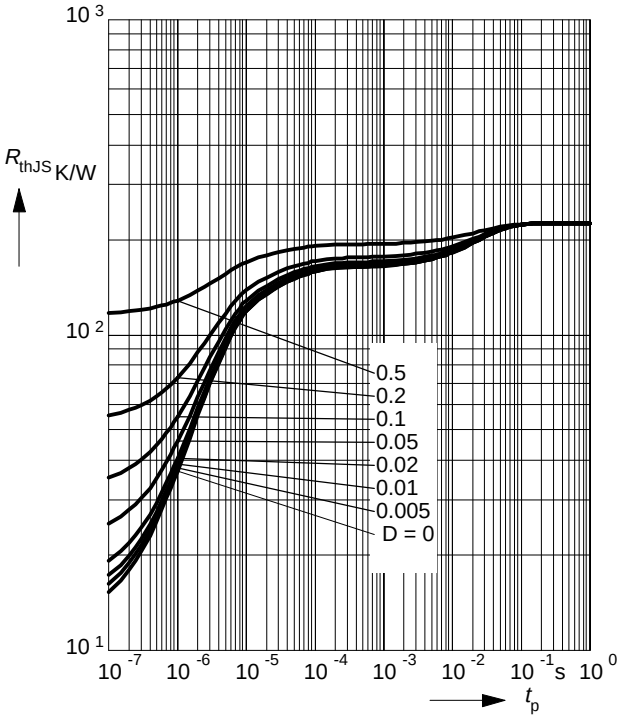
For examples and ready to use parameters please contact your local Siemens distributor or sales office to obtain a Siemens CD-ROM or see Internet: http://www.siemens.de/Semiconductor/products/35/35.htm

Total power dissipation $P_{tot} = f(T_A^*, T_S)$

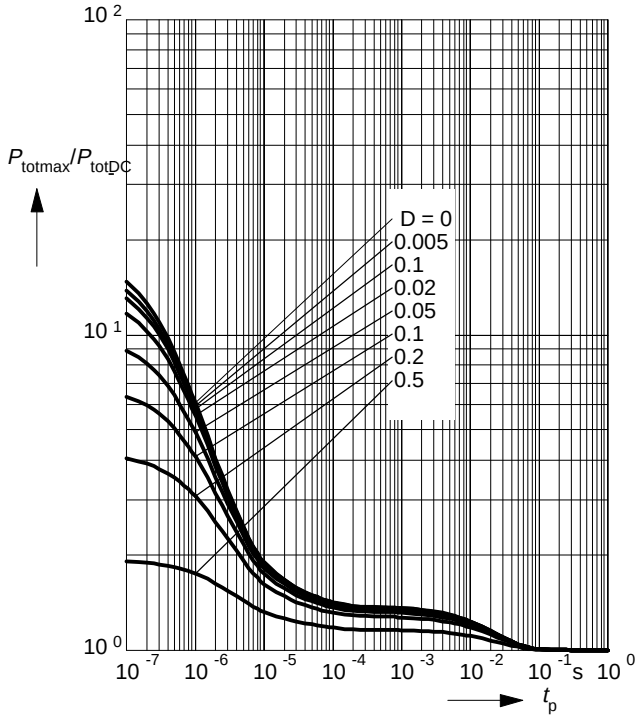
* Package mounted on epoxy



Permissible Pulse Load $R_{thJS} = f(t_p)$

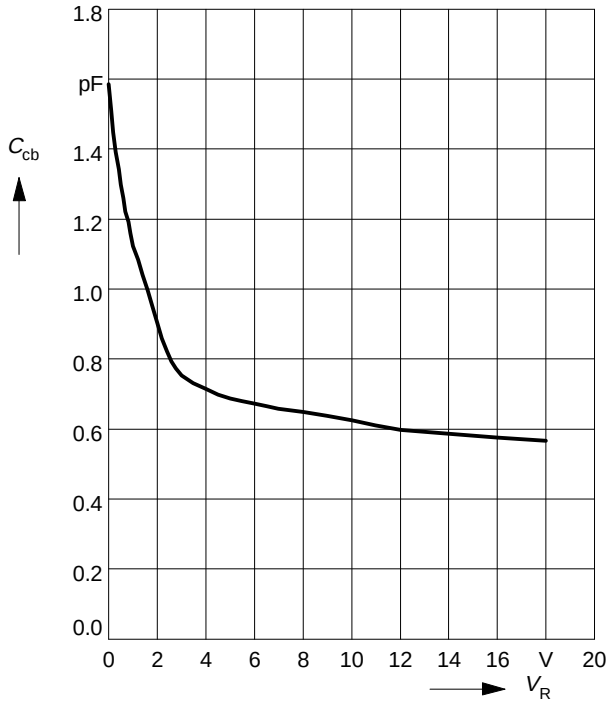


Permissible Pulse Load $P_{totmax}/P_{totDC} = f(t_p)$



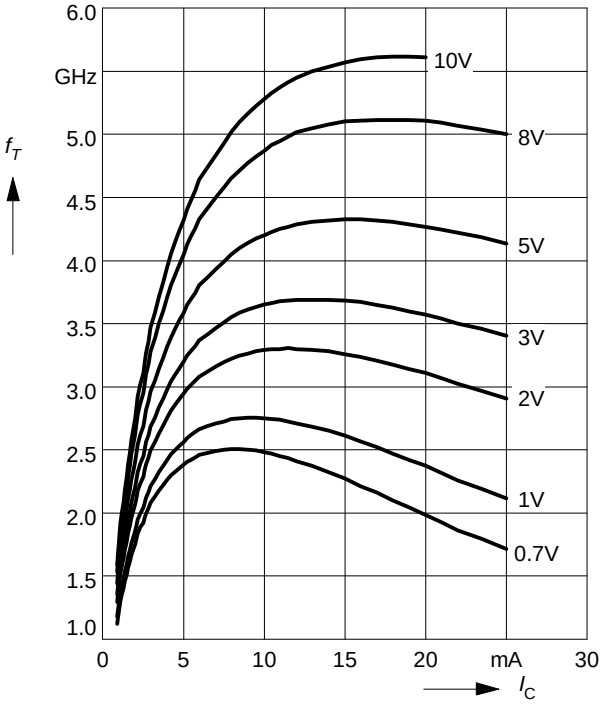
Collector-base capacitance $C_{cb} = f(V_{CB})$

$V_{BE} = v_{be} = 0$, $f = 1$MHz



Transition frequency $f_T = f(I_C)$

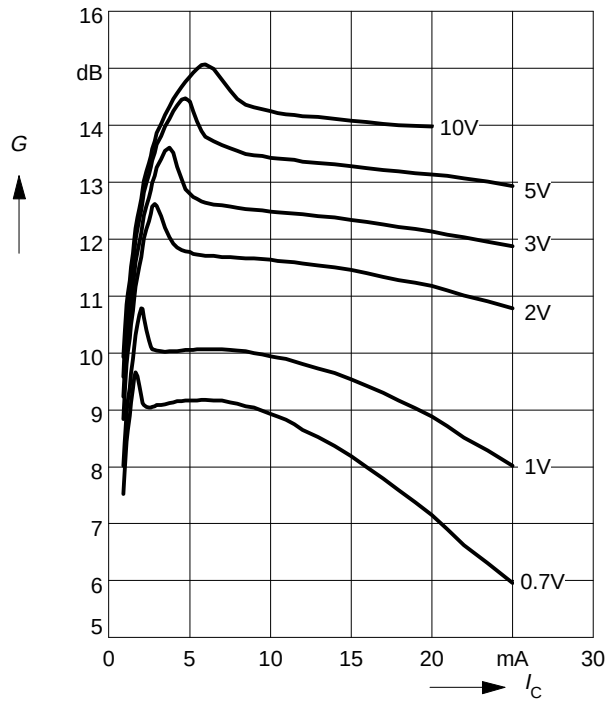
V_{CE} = Parameter



Power Gain G_{ma}, $G_{ms} = f(I_C)$

$f = 0.9$GHz

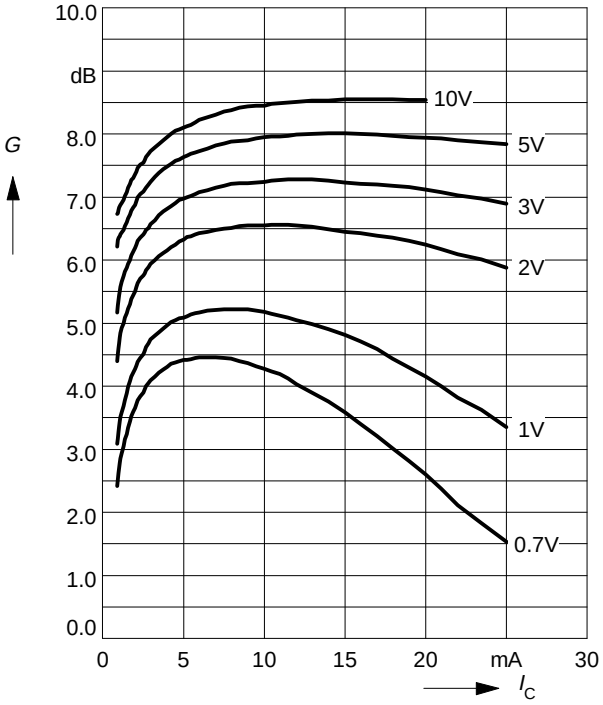
V_{CE} = Parameter



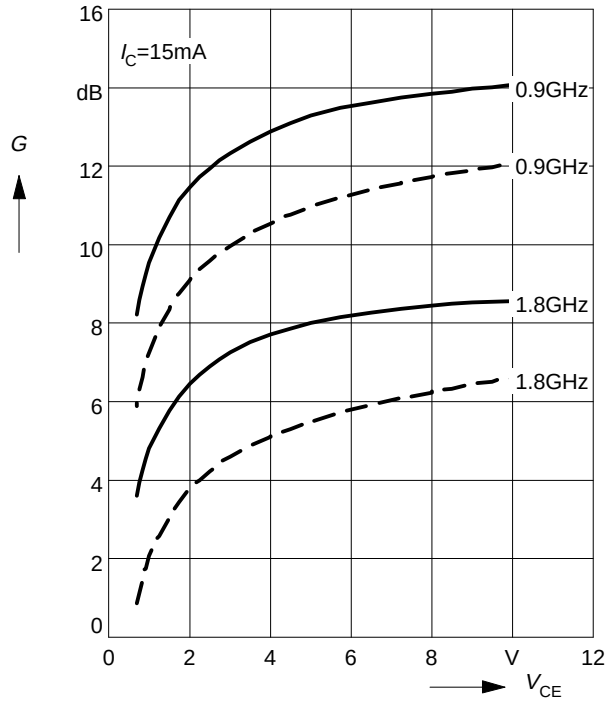
Power Gain G_{ma}, $G_{ms} = f(I_C)$

$f = 1.8$GHz

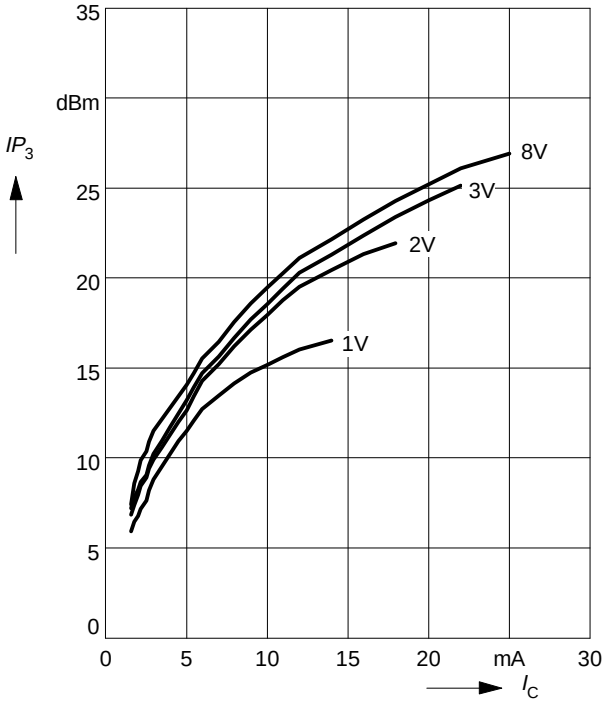
V_{CE} = Parameter



Power Gain G_{ma}, G_{ms} = $f(V_{CE})$:_____
$|S_{21}|^2$ = $f(V_{CE})$:---------
f = Parameter

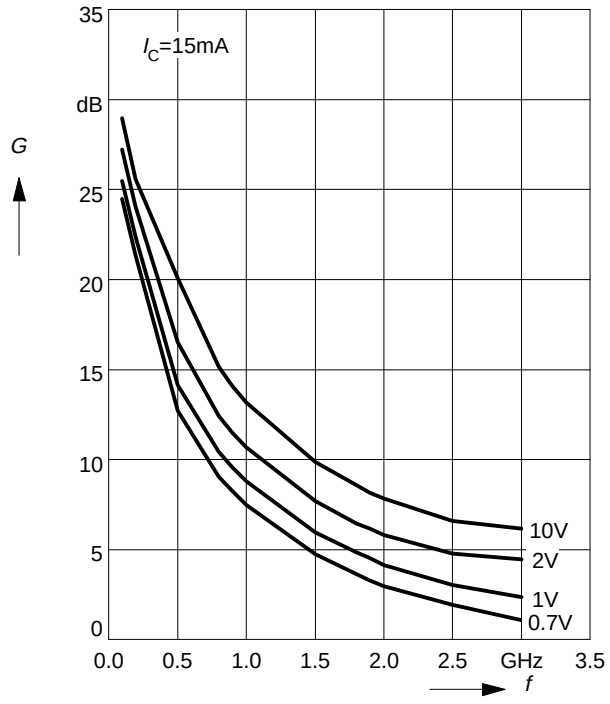


Intermodulation Intercept Point IP_3=$f(I_C)$
(3rd order, Output, Z_S=Z_L=50Ω)
V_{CE} = Parameter, f = 900MHz



Power Gain G_{ma}, G_{ms} = $f(f)$

V_{CE} = Parameter



Power Gain $|S_{21}|^2$= $f(f)$

V_{CE} = Parameter