

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage $I_C = 1\text{ mA}$, $I_B = 0$	$V_{(BR)CEO}$	4.5	5	-	V
Collector-emitter cutoff current $V_{CE} = 15\text{ V}$, $V_{BE} = 0$	I_{CES}	-	-	10	μA
Collector-base cutoff current $V_{CB} = 5\text{ V}$, $I_E = 0$	I_{CBO}	-	-	100	nA
Emitter-base cutoff current $V_{EB} = 0.5\text{ V}$, $I_C = 0$	I_{EBO}	-	-	3	μA
DC current gain $I_C = 20\text{ mA}$, $V_{CE} = 4\text{ V}$, pulse measured	h_{FE}	60	95	130	-

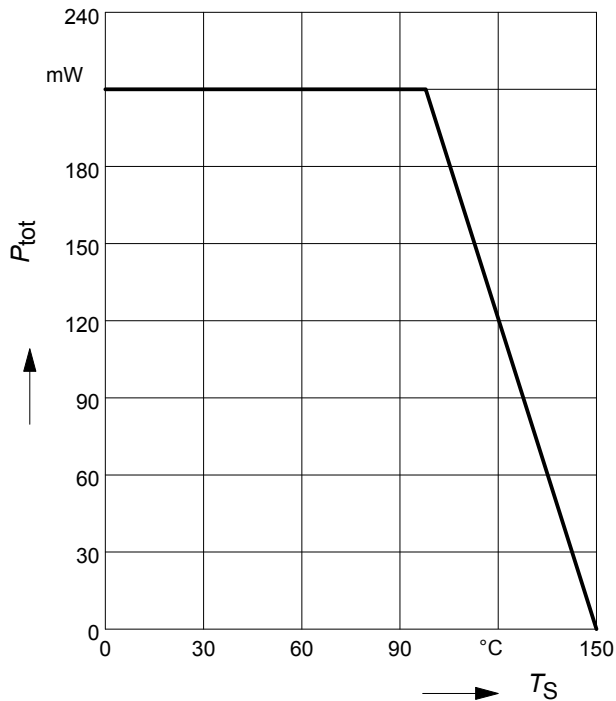
¹For the definition of R_{thJS} please refer to Application Note AN077 (Thermal Resistance Calculation)

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

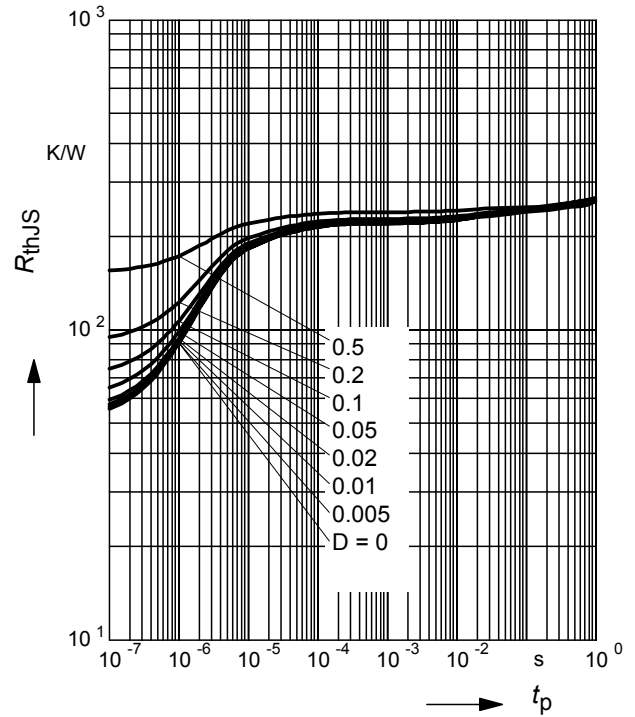
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics (verified by random sampling)					
Transition frequency $I_C = 30\text{ mA}$, $V_{CE} = 3\text{ V}$, $f = 2\text{ GHz}$	f_T	18	25	-	GHz
Collector-base capacitance $V_{CB} = 2\text{ V}$, $f = 1\text{ MHz}$, $V_{BE} = 0$, emitter grounded	C_{cb}	-	0.15	0.3	pF
Collector emitter capacitance $V_{CE} = 2\text{ V}$, $f = 1\text{ MHz}$, $V_{BE} = 0$, base grounded	C_{ce}	-	0.37	-	
Emitter-base capacitance $V_{EB} = 0.5\text{ V}$, $f = 1\text{ MHz}$, $V_{CB} = 0$, collector grounded	C_{eb}	-	0.55	-	
Minimum noise figure $I_C = 5\text{ mA}$, $V_{CE} = 2\text{ V}$, $f = 1.8\text{ GHz}$, $Z_S = Z_{Sopt}$	NF_{min}	-	1.1	-	dB
Power gain, maximum stable ¹⁾ $I_C = 20\text{ mA}$, $V_{CE} = 2\text{ V}$, $Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$, $f = 1.8\text{ GHz}$	G_{ms}	-	21	-	dB
Insertion power gain $V_{CE} = 2\text{ V}$, $I_C = 20\text{ mA}$, $f = 1.8\text{ GHz}$, $Z_S = Z_L = 50\text{ }\Omega$	$ S_{21} ^2$	14	17	-	
Third order intercept point at output ²⁾ $V_{CE} = 2\text{ V}$, $I_C = 20\text{ mA}$, $f = 1.8\text{ GHz}$, $Z_S = Z_L = 50\text{ }\Omega$	$IP3$	-	22	-	dBm
1dB compression point at output $I_C = 20\text{ mA}$, $V_{CE} = 2\text{ V}$, $Z_S = Z_L = 50\text{ }\Omega$, $f = 1.8\text{ GHz}$	P_{-1dB}	-	12	-	

¹⁾ $G_{ms} = |S_{21}| / |S_{12}|$
²⁾ $IP3$ value depends on termination of all intermodulation frequency components.
Termination used for this measurement is $50\text{ }\Omega$ from 0.1 MHz to 6 GHz

Total power dissipation $P_{\text{tot}} = f(T_S)$

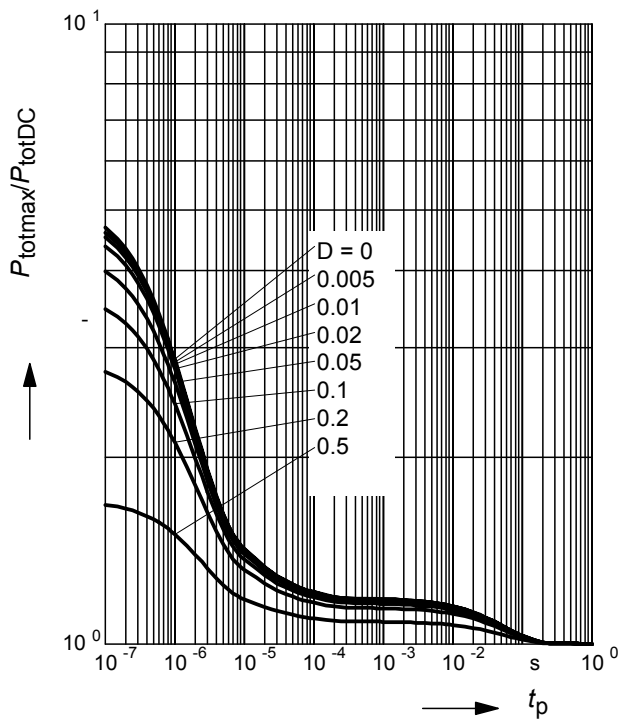


Permissible Pulse Load $R_{\text{thJS}} = f(t_p)$



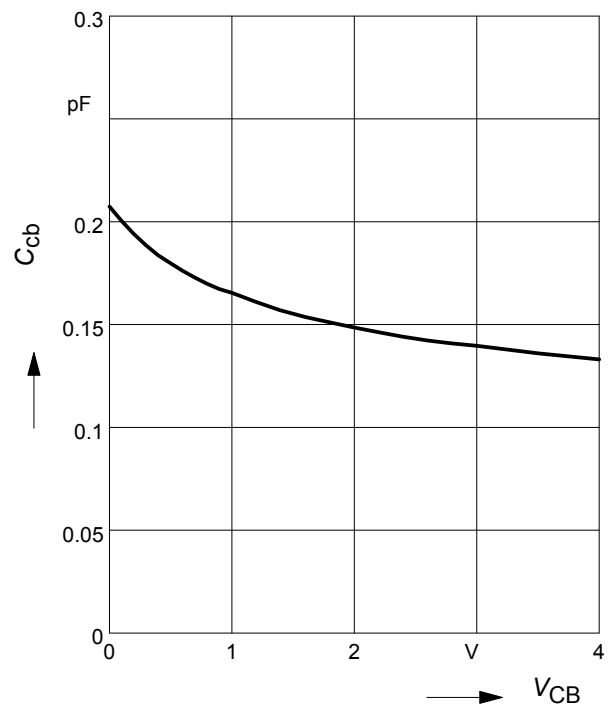
Permissible Pulse Load

$$P_{\text{totmax}}/P_{\text{totDC}} = f(t_p)$$



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

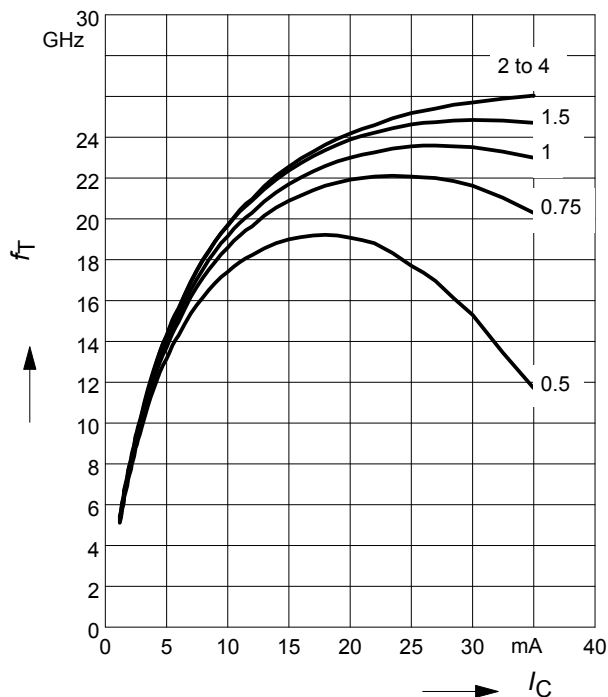
$f = 1\text{MHz}$



Transition frequency $f_T = f(I_C)$

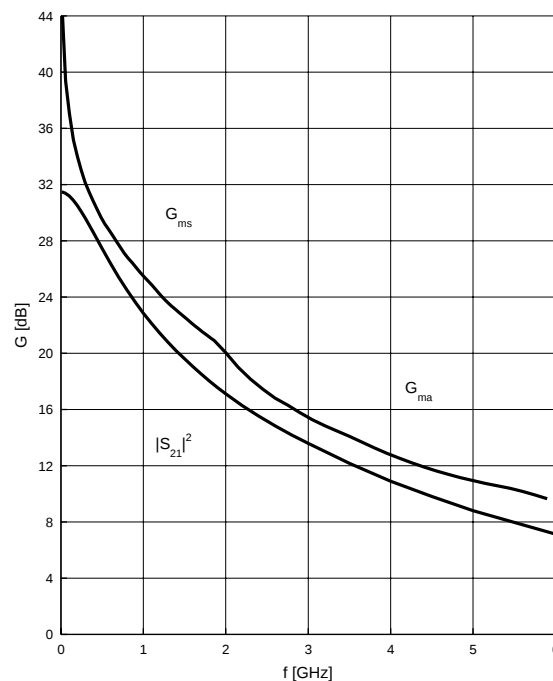
$f = 2 \text{ GHz}$

$V_{CE} = \text{parameter in V}$



Power gain $G_{ma}, G_{ms}, |S_{21}|^2 = f(f)$

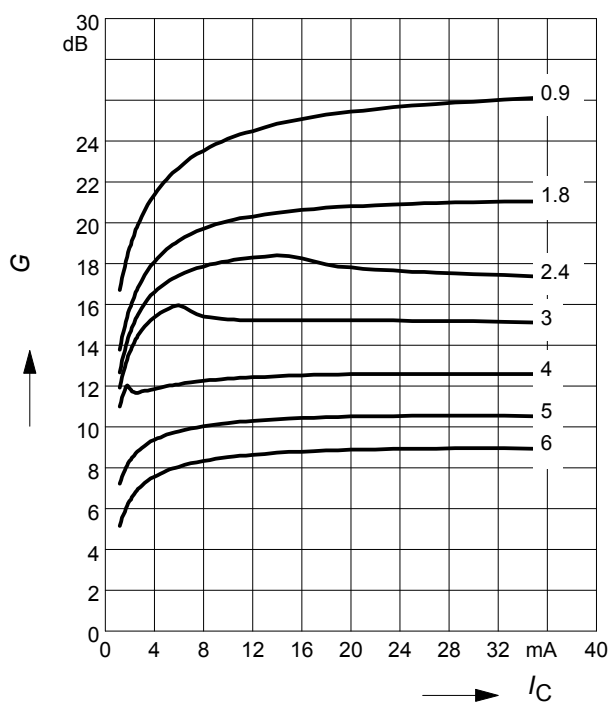
$V_{CE} = 2 \text{ V}, I_C = 20 \text{ mA}$



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

$V_{CE} = 2 \text{ V}$

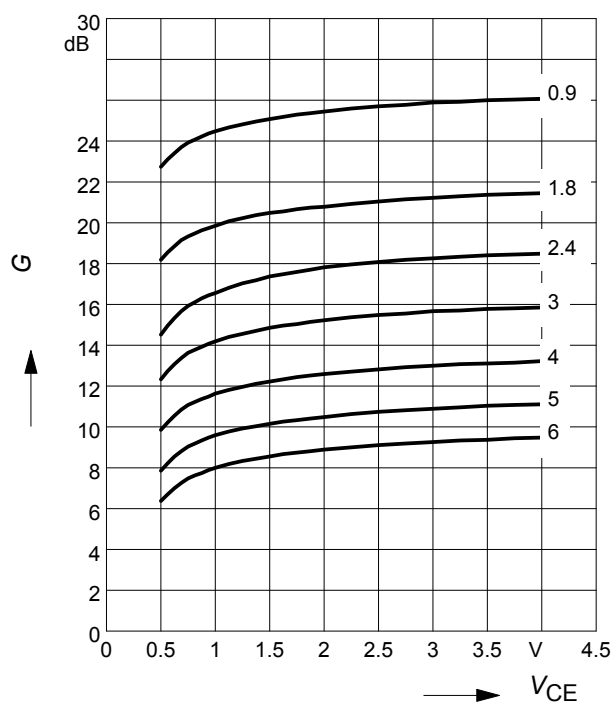
$f = \text{parameter in GHz}$



Power gain $G_{ma}, G_{ms} = f(V_{CE})$

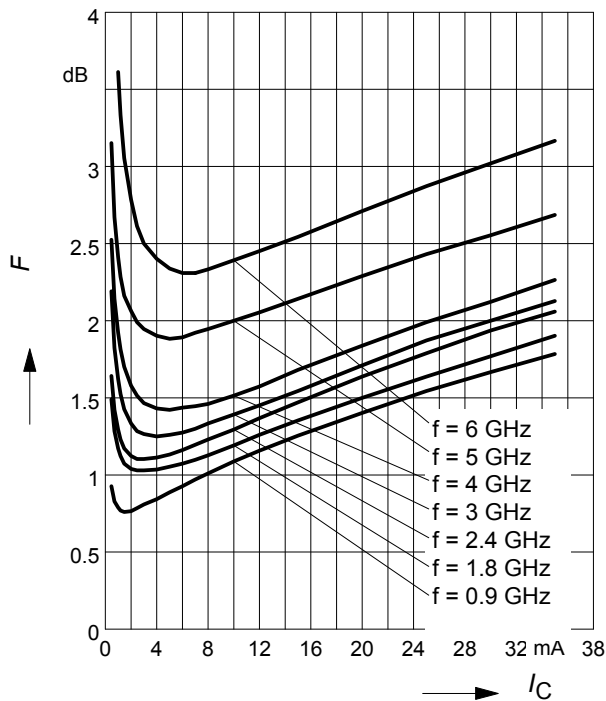
$I_C = 20 \text{ mA}$

$f = \text{parameter in GHz}$



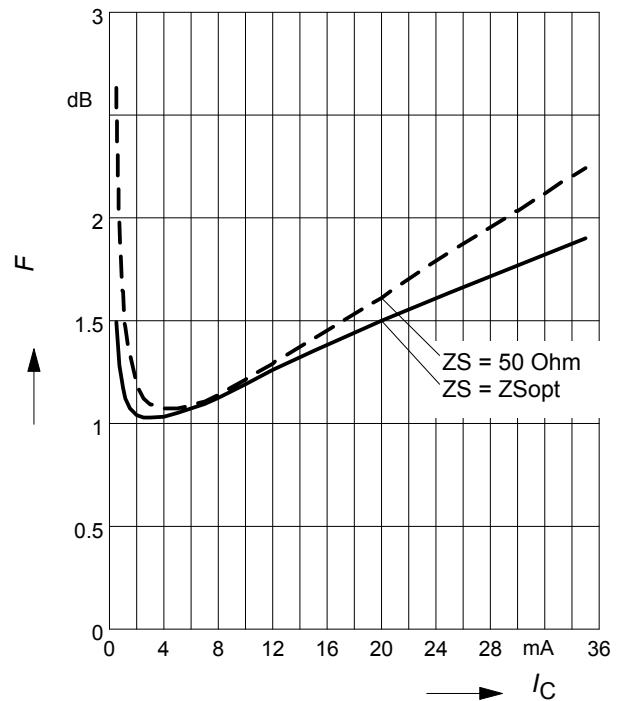
Noise figure $F = f(I_C)$

$V_{CE} = 2 \text{ V}$, $Z_S = Z_{Sopt}$



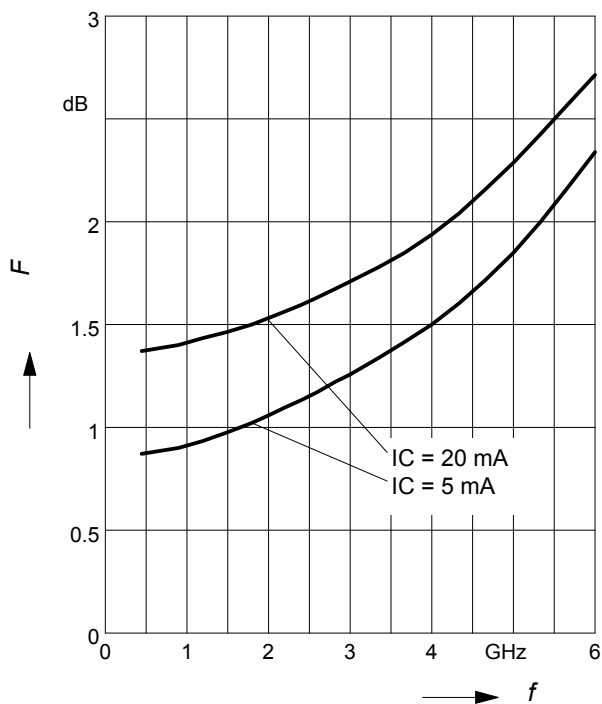
Noise figure $F = f(I_C)$

$V_{CE} = 2 \text{ V}$, $f = 1.8 \text{ GHz}$



Noise figure $F = f(f)$

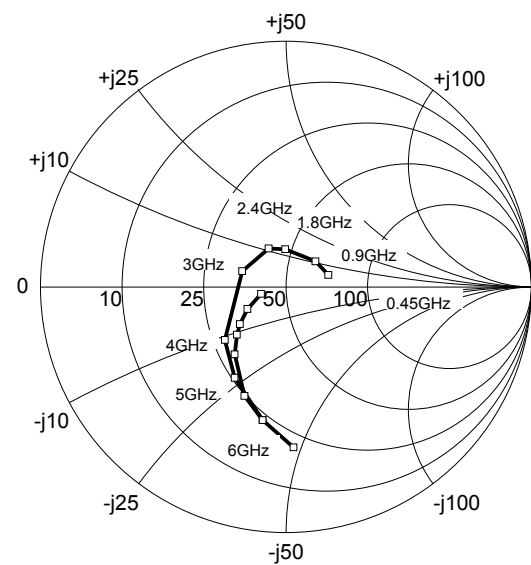
$V_{CE} = 2 \text{ V}$, $Z_S = Z_{Sopt}$



Source impedance for min.

noise figure vs. frequency

$V_{CE} = 2 \text{ V}$, $I_C = 5 \text{ mA} / 20 \text{ mA}$



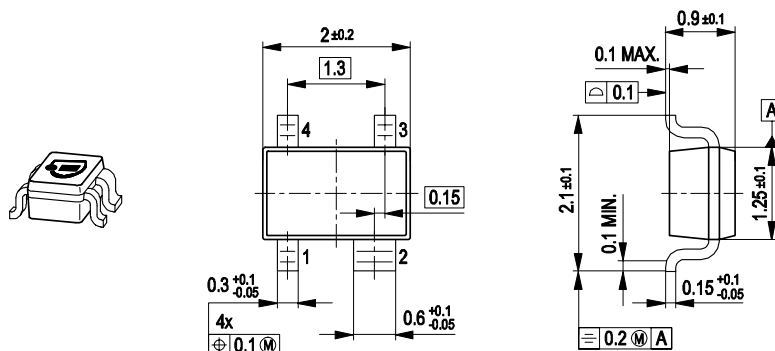
SPICE GP Model

For the SPICE Gummel Poon (GP) model as well as for the S-parameters (including noise parameters) please refer to our internet website

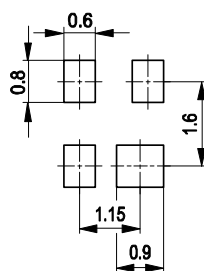
www.infineon.com/rf.models.

Please consult our website and download the latest versions before actually starting your design. You find the BFP420 SPICE GP model in the internet in MWO- and ADS-format, which you can import into these circuit simulation tools very quickly and conveniently. The model already contains the package parasitics and is ready to use for DC and high frequency simulations. The terminals of the model circuit correspond to the pin configuration of the device. The model parameters have been extracted and verified up to 10 GHz using typical devices. The BFP420 SPICE GP model reflects the typical DC- and RF-performance within the limitations which are given by the SPICE GP model itself. Besides the DC characteristics all S-parameters in magnitude and phase, as well as noise figure (including optimum source impedance, equivalent noise resistance and flicker noise) and intermodulation have been extracted.

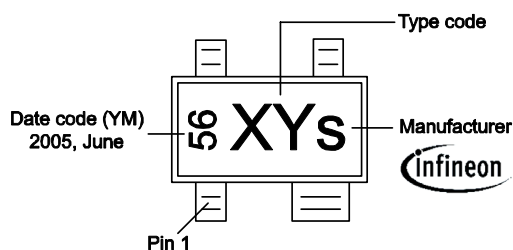
Package Outline



Foot Print

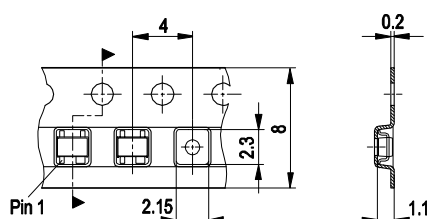


Marking Layout (Example)



Standard Packing

Reel $\varnothing 180 \text{ mm}$ = 3.000 Pieces/Reel
 Reel $\varnothing 330 \text{ mm}$ = 10.000 Pieces/Reel



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