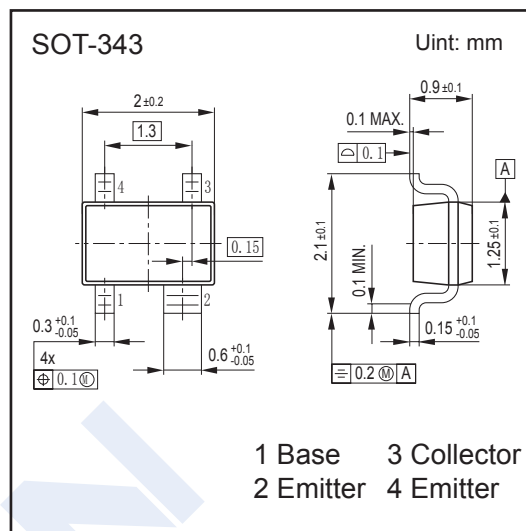


NPN Transistors

BFP740 (KFP740)

■ Features

- High gain ultra low noise RF transistor
- High maximum stable gain
- Gold metallization for extra high reliability
- 150 GHz fr-Silicon Germanium technology
- Outstanding noise figure $F = 0.5$ dB at 1.8 GHz
Outstanding noise figure $F = 0.85$ dB at 6 GHz

■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CB0}	13	V
Collector - Emitter Voltage	V_{CES}	13	
Collector - Emitter Voltage	V_{CEO}	4	
		3.5	
Emitter - Base Voltage	V_{EBO}	1.2	mA
Collector Current - Continuous	I_C	30	
Base Current	I_B	3	
Collector Power Dissipation	P_C	160	mW
Junction - soldering point	R_{thJS}	≤ 380	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Ambient temperature	T_A	-65 to 150	
Storage Temperature Range	T_{stg}	-65 to 150	

NPN Transistors

BFP740 (KFP740)

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	V _{CB0}	I _C = 100 uA, I _E = 0	13			V
Collector- emitter breakdown voltage	V _{CE0}	I _C = 1 mA, I _B = 0	4	4.7		
Emitter - base breakdown voltage	V _{EB0}	I _E = 100 uA, I _C = 0	1.2			
Collector-base cut-off current	I _{CB0}	V _{CB} = 5 V, I _E = 0			0.1	uA
Collector- emitter cut-off current	I _{CES}	V _{CE} = 13 V, V _{EBE} = 0			30	
Emitter cut-off current	I _{EB0}	V _{EB} = 1.2V, I _C =0			3	
DC current gain	h _{FE}	V _{CE} = 3V, I _C = 25mA	160		400	
Power gain, maximum stable	G _{ms}	I _C = 25 mA, V _{CE} = 3 V, Z _S = Z _{Sopt} , Z _L = Z _{Lopt} , f = 1.8 GHz (Note.1)		27		dB
Power gain, maximum available	G _{ma}	I _C = 25 mA, V _{CE} = 3 V, Z _S = Z _{Sopt} , Z _L = Z _{Lopt} , f = 6 GHz (Note.1)		17		
Noise figure	F	I _C = 8 mA, V _{CE} = 3 V, f = 1.8 GHz, Z _S = Z _{Sopt}		0.5		
		I _C = 8 mA, V _{CE} = 3 V, f = 6 GHz, Z _S = Z _{Sopt}		0.85		
Transducer gain	S _{21e} ²	I _C =25 mA, V _{CE} =3 V, Z _S = Z _L =50 Ω, f=1.8GHz		24.5		
		I _C =25 mA, V _{CE} =3 V, Z _S = Z _L =50 Ω, f=6GHz		13.5		
Third order intercept point at output	IP ₃	V _{CE} =3 V, I _C = 25 mA, Z _S =Z _L =50 Ω, f=1.8GHz		25		dBm
1dB Compression point at output	P _{-1dB}	I _C = 25 mA, V _{CE} = 3 V, Z _S =Z _L =50 Ω, f = 1.8GHz		11		
Collector-base capacitance	C _{cb}	V _{CB} = 3V, V _{BE} = 0, f=1MHz		0.08	0.14	pF
Collector-emitter capacitance	C _{ce}	V _{CE} = 3V, V _{BE} = 0, f=1MHz		0.24		
Emitter-base capacitance	C _{eb}	V _{EB} = 0.5V, V _{CB} = 0, f=1MHz		0.44		
Transition frequency	f _T	V _{CE} = 3V, I _C = 25mA, f=2GHz		42		GHz

Note.1: $G_{ma} = |S_{21e} / S_{12e}| (k - (k^2 - 1)^{1/2})$, $G_{ms} = |S_{21e} / S_{12e}|$

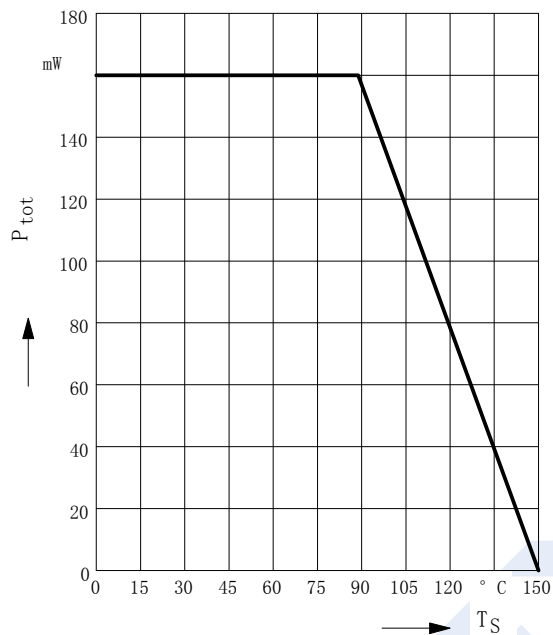
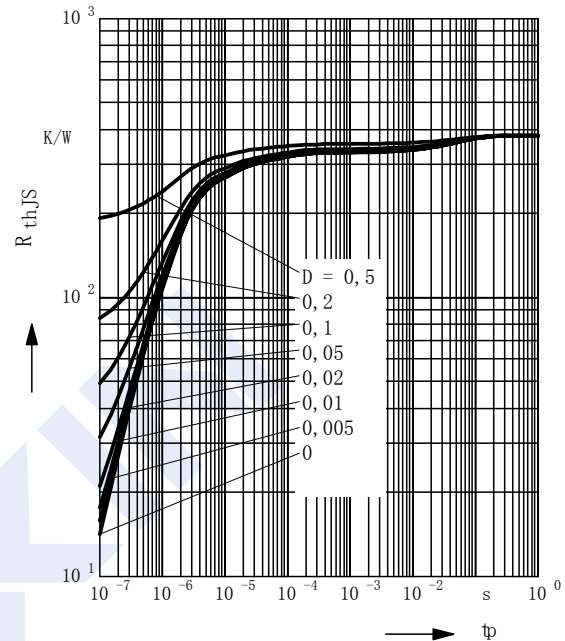
■ Marking

Marking	R7s
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NPN Transistors

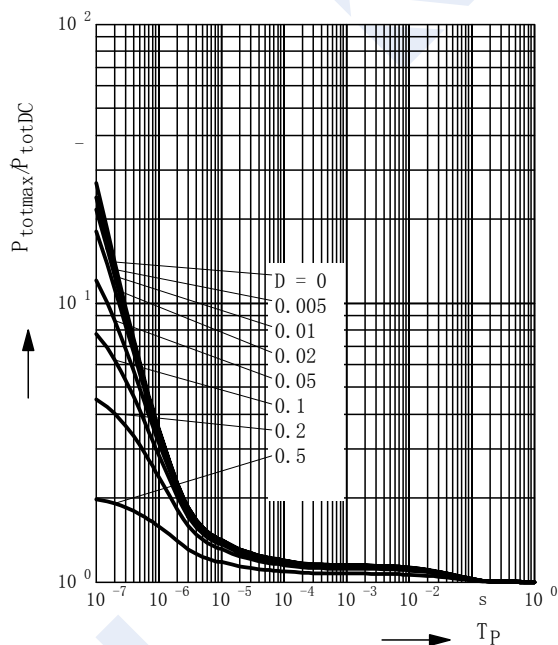
BFP740 (KFP740)

■ Typical Characteristics

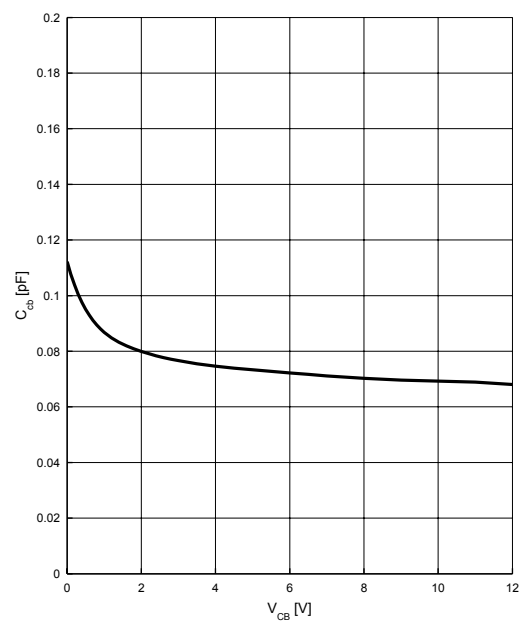
Total power dissipation $P_{\text{tot}} = f(T_S)$ Permissible Pulse Load $R_{\text{thJS}} = f(t_p)$ 

Permissible Pulse Load

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

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

f = 1 MHz

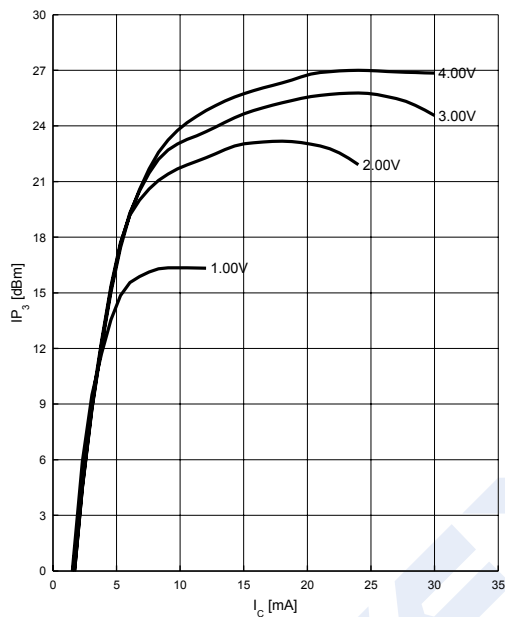


NPN Transistors

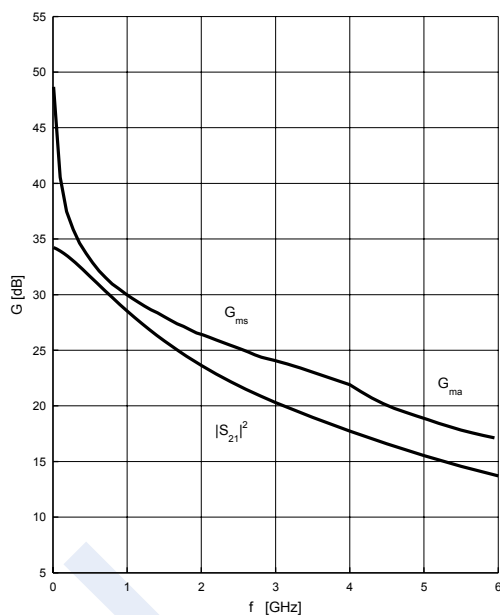
BFP740 (KFP740)

■ Typical Characteristics

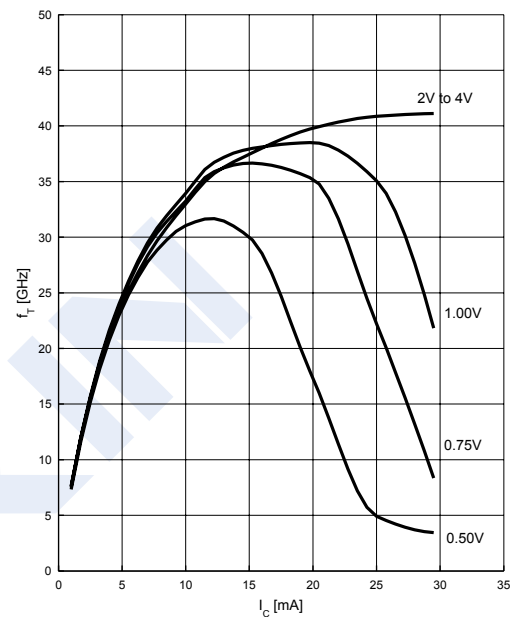
Third order Intercept Point $IP_3 = f(I_C)$
 (Output, $Z_S = Z_L = 50 \Omega$)
 $V_{CE} = \text{parameter}$, $f = 1.8 \text{ GHz}$



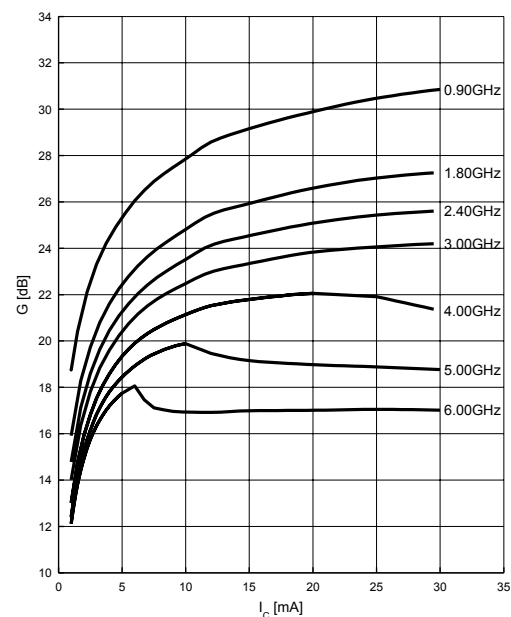
Power gain $G_{ma}, G_{ms} = f(f)$
 $V_{CE} = 3 \text{ V}$, $I_C = 25 \text{ mA}$



Transition frequency $f_T = f(I_C)$
 $f = 2 \text{ GHz}$
 $V_{CE} = \text{parameter}$



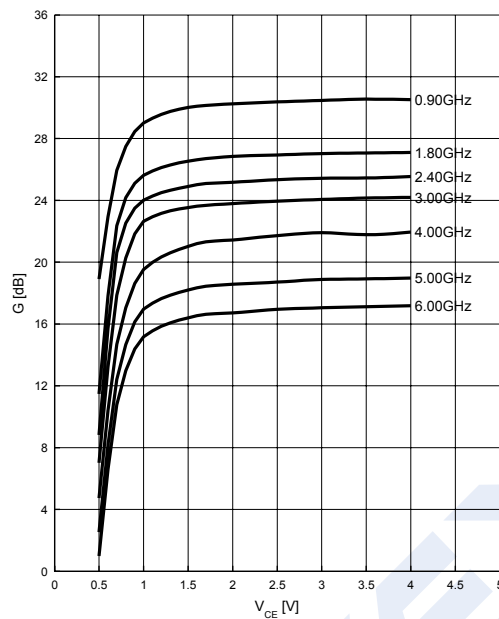
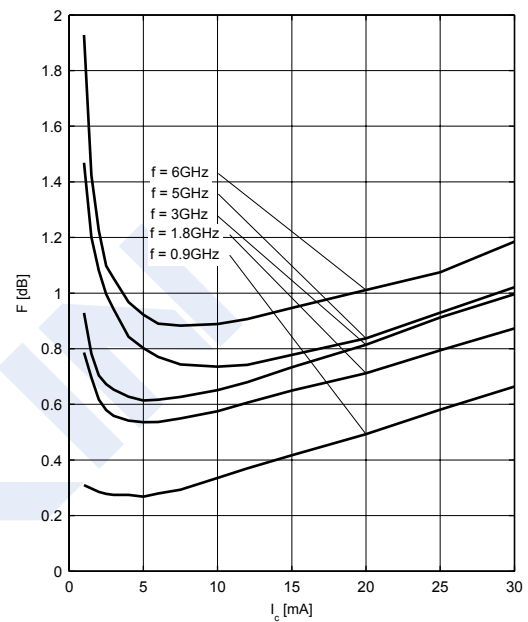
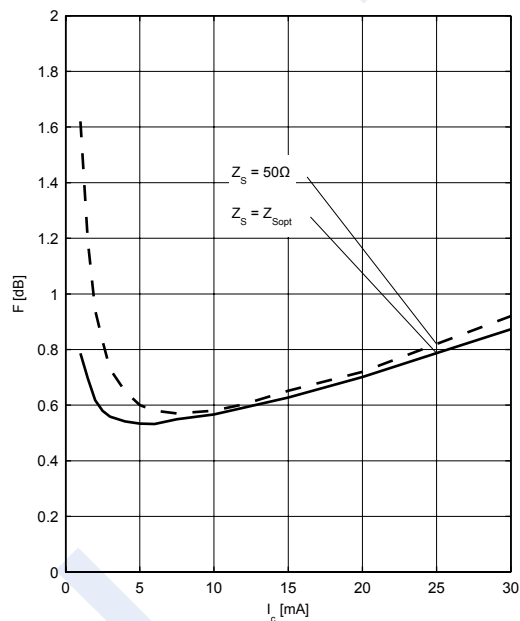
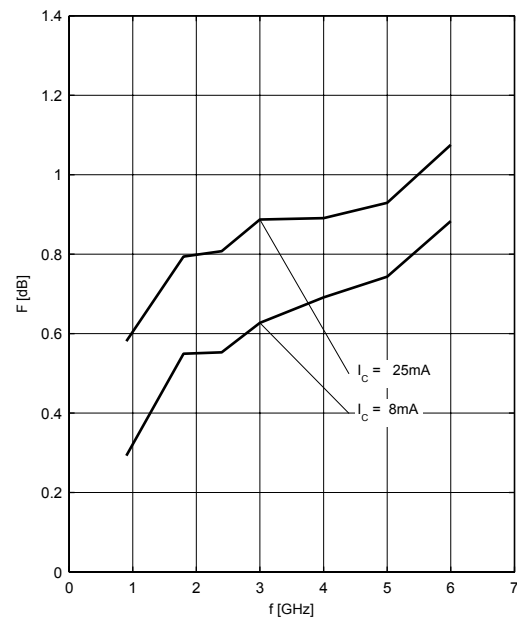
Power gain $G_{ma}, G_{ms} = f(I_C)$
 $V_{CE} = 3 \text{ V}$
 $f = \text{parameter}$



NPN Transistors

BFP740 (KFP740)

■ Typical Characteristics

Power gain $G_{ma}, G_{ms} = f(V_{CE})$ $I_C = 25 \text{ mA}$ $f = \text{parameter}$ Noise figure $F = f(I_C)$ $V_{CE} = 3 \text{ V}, f = \text{parameter}$ $Z_S = Z_{Sopt}$ Noise figure $F = f(I_C)$ $V_{CE} = 3 \text{ V}, f = 1.8 \text{ GHz}$ Noise figure $F = f(f)$ $V_{CE} = 3 \text{ V}, Z_S = Z_{Sopt}$ 

NPN Transistors**BFP740 (KFP740)**

■ Typical Characteristics

Source impedance for min.

noise figure vs. frequency

 $V_{CE} = 3\text{ V}$, $I_C = 8\text{ mA} / 25\text{ mA}$ 