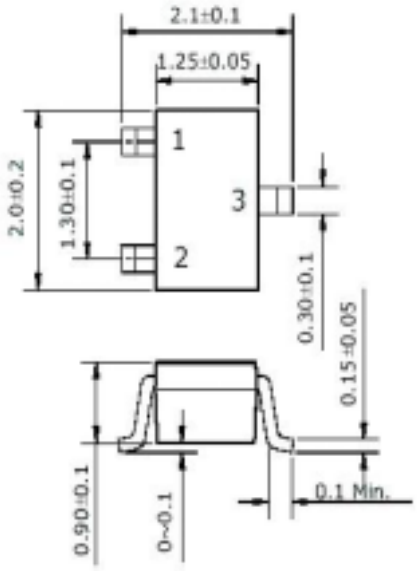
BFS520

NPN Planer RF TRANSISTOR

FEATURES

- Low Noise Figure
  NF = 1.1dB TYP. @ f=1GHz, V_{CE}=8V, Ic=5mA
- High Gain
  MAG = 17dB TYP. @ f=1GHz, V_{CE}=8V, Ic=15mA
- High Transition Frequency
  f_T = 10GHz TYP. @ f=1GHz, V_{CE}=8V, Ic=15mA

unit : mm



SOT−323

1. Base
2. Emitter
3. Collector

MAXIMUM RATINGS

SYMBOL	PARAMETER	CONDITION	VALUE	Unit
V_{CBO}	Collector-Base Voltage	Open Emitter	25	V
V_{CEO}	Collector-Emitter Voltage	Open Base	12	V
V_{EBO}	Emitter-Base Voltage	Open Collector	2.5	V
Ic	Collector Current (DC)		65	mA
P_T	Total Power Dissipation	Ts = 60℃	150	mW
T_{STG}	Storage Temperature		-65 ~ 150	℃
T_J	Operating Junction Temperature		150	℃

Electrical Characteristics (T_A = 25 ℃)

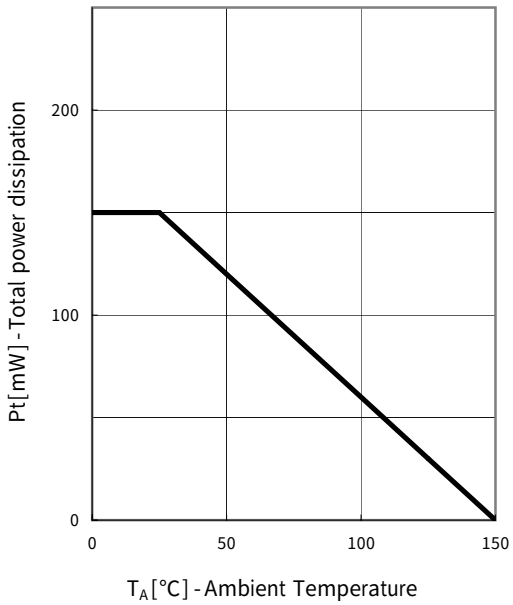
SYMBOL	PARAMETER	CONDITION	VALUE			Unit
			min	typ	max	
V_{CBO}	Collector-Base Voltage	I_{CE} = 100uA, I_E = 0	20	25		V
V_{CEO}	Collector-Emitter Voltage	I_{CE} = 100uA, I_B = 0	12	14		V
I_{CBO}	Collector-Cut-off current	V_{CB} = 10V, I_E = 0			100	n A
I_{EBO}	Emitter-Cut-off current	V_{EB} = 1V, I_C = 0			100	n A
hfe	D.C current Gain	V_{CE} = 8V, Ic = 15mA	100	200	300	
f_T	Transition Frequency	V_{CE} = 8V, Ic = 15mA		10		GHz
C_{CB}	Collector-Base Capacitance	V_{CB} = 10V, f = 1MHz		0.55		pF

Performance Characteristics

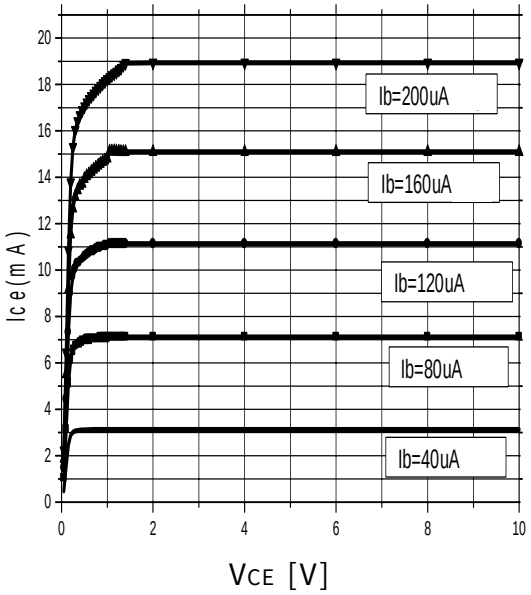
SYMBOL	PARAMETER	CONDITION	VALUE			Unit
			min	typ	max	
VCE	Insertion Power Gain	V_{CE}=8V, Ic=5mA,f=1GHz		11.5		dB
		V_{CE}=8V, Ic=15mA,f=1GHz		13.5		
MSG	Maximum Stable Gain	V_{CE}=8V, Ic=5mA,f=1GHz		16		dB
		V_{CE}=8V, Ic=15mA,f=1GHz		17		
NFmin	Minimum Noise Figure	V_{CE}=8V, Ic=5mA,f=1GHz		1.1		dB
rn	Noise Resistance	V_{CE}=8V, Ic=5mA,f=1GHz		0.055		Ω
G_A	Associated Gain	V_{CE}=8V, Ic=5mA,f=1GHz		14.5		dB
		V_{CE}=8V, Ic=15mA,f=1GHz		15		
OIP_3	Output 3rd Intercept	V_{CE}=8V, Ic=15mA,f=1GHz		27		dBm

Total power dissipation *Pt = f(T A)*

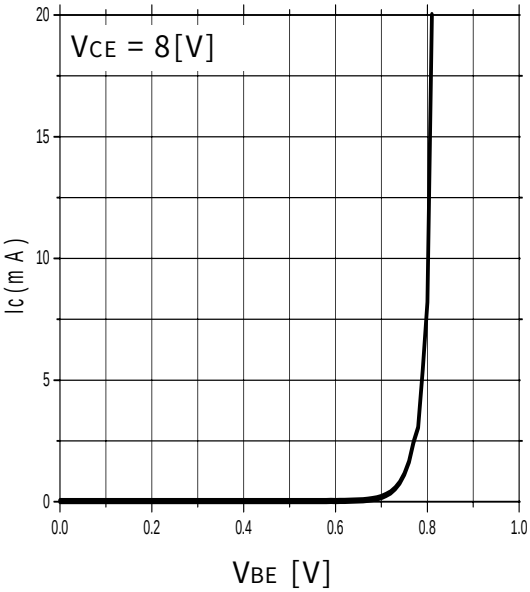
(T_A = 25 °C)



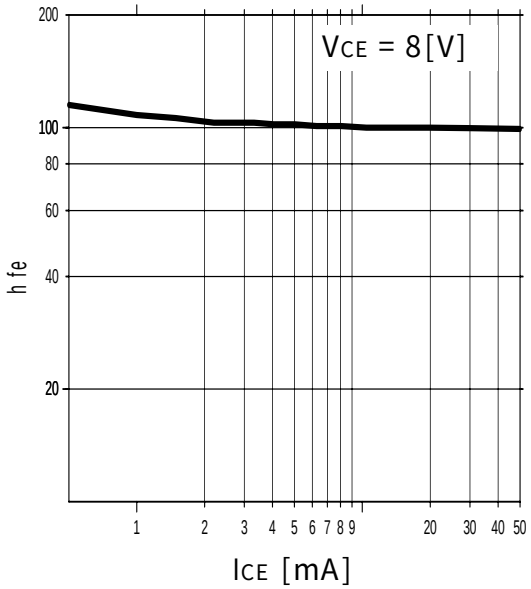
Icc vs. VCE



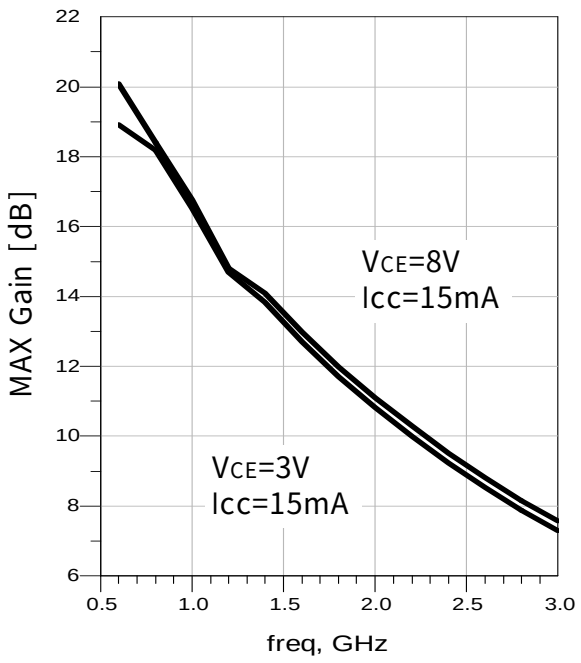
Icc vs. VBE



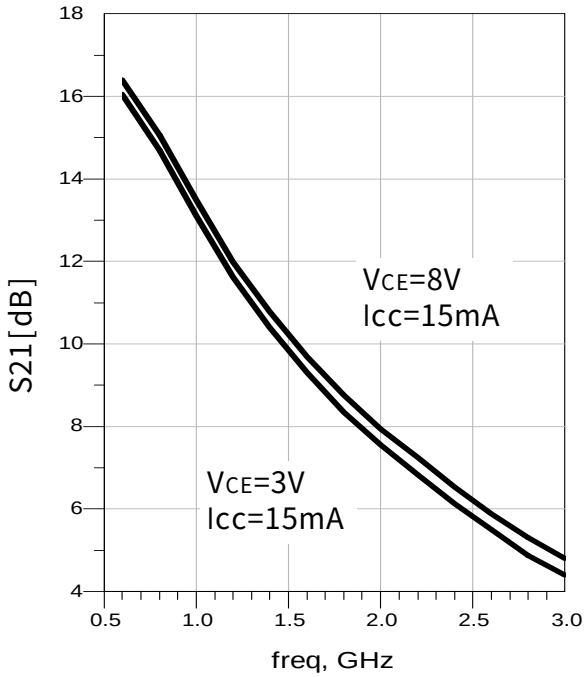
hfe vs. Icc



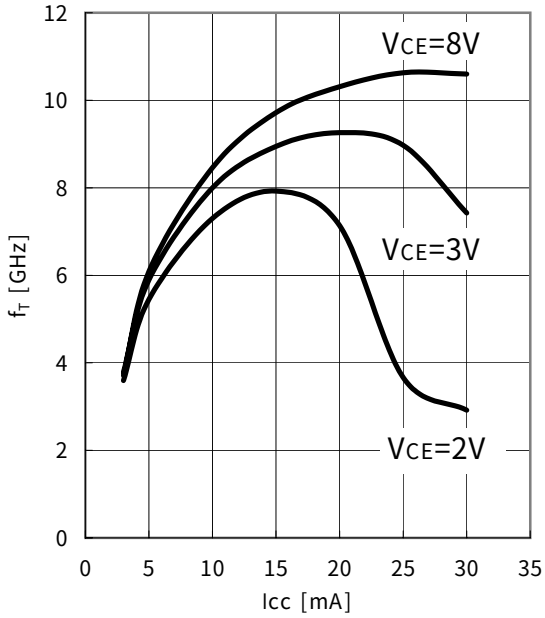
Power Gain : MSG vs. Frequency



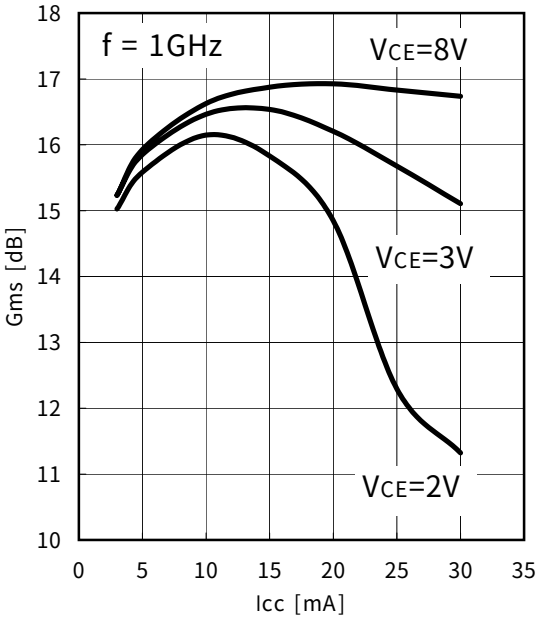
Power Gain : S_{21} vs. Frequency



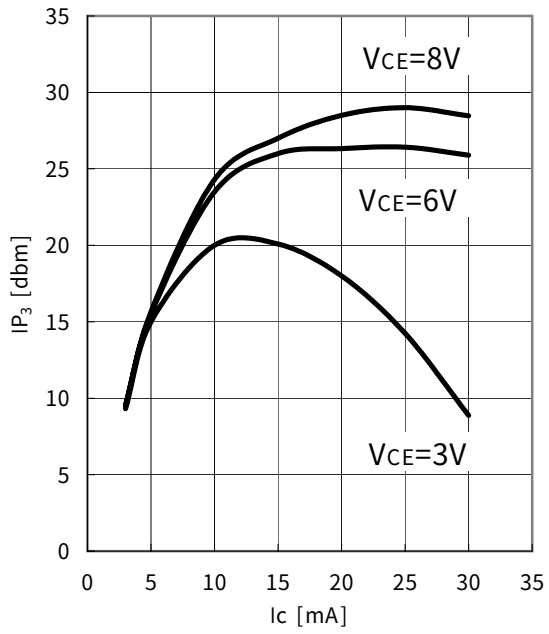
Transition Frequency : fT vs. Icc



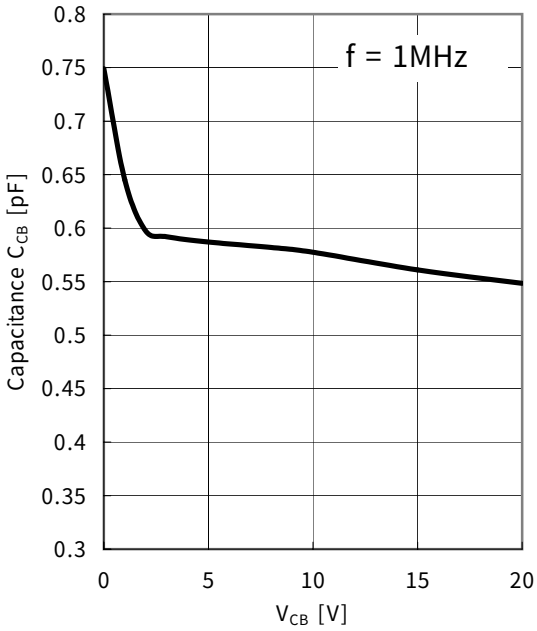
Power Gain : MSG vs. Icc



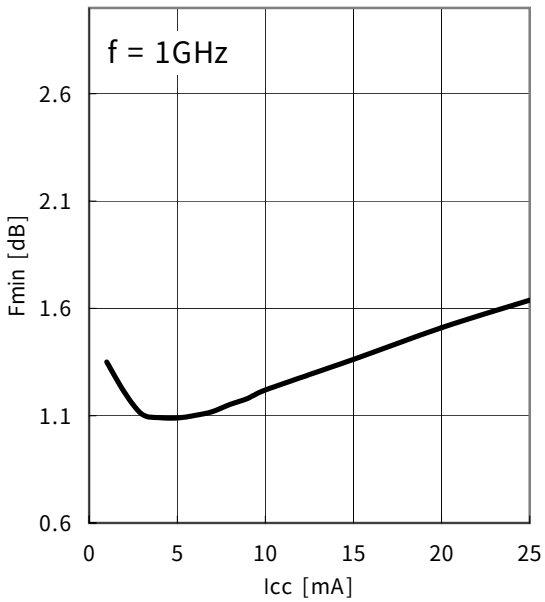
Intermodulation Intercept Point *IP3=f(Ic)*
(Z_S =Z_L= 50 Ω)



CCB vs. VCB



Fmin vs. Icc
VCE = 8V, Icc = parameter, Zs = Zsopt



Noise Figure Contours & Constant Gain
f = 1 GHz, VCE = 8V, Icc = 5mA