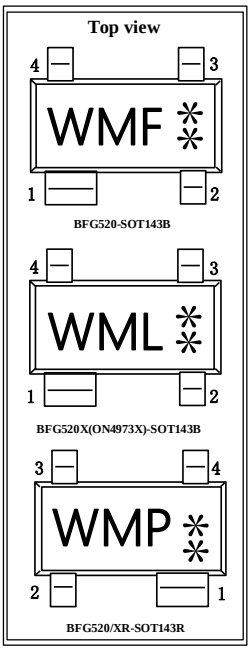
THE DATASHEET OF

BFG520/XR

1. Brief Description：

- The chip is manufactured with the silicon epitaxy process, with characteristics such as high power gain, broadband, low noise, low leakage current and small junction capacity; in addition, it has relatively large dynamic ranges and ideal current linear features;
- It is mainly applied to ultrahigh-frequency microwave, VHF, UHF and CATV high-frequency broad-band low-noise amplifiers, such as satellite television tuners, CATV amplifiers, analog digital cordless telephones, high-frequency amplifiers in radio frequency modules and optical modules;
- Collector-emitter breakdown voltage: BVCEO=15V, maximum collector current: IC=70mA, collector power dissipation: PC=300mW, characteristic frequency: fT=9GHz;
- The SOT143B or SOT143R surface of the pins (the wide collector pin and the dual-emitter pin) is pasted with plastic package;
- ON4973/X and BFG520/X have the same performance, package and silk screen printing, with only difference in models on tags.



2. Mode of Package and Definition of Pins:

Model	BFG520	BFG520/X(ON4973/X)	BFG520/XR
Package	SOT143B	SOT143B	SOT143R
Silk screen printing（Marking）	WMF	WML	WMP
Pin 1	collector	collector	collector
Pin 2	base	emitter	emitter
Pin 3	emitter	base	base
Pin 4	emitter	emitter	emitter

3. Absolute parameters (Tamb=25℃)

Name of parameter	Symbol	Rated value	Unit
Collector-base breakdown voltage	BV_{CBO}	20	V
Collector-emitter breakdown voltage	BV_{CEO}	15	V
Emitter-base breakdown voltage	BV_{EBO}	2.5	V
Collector current	I_C	70	mA
Power dissipation	P_T	300	mW
Maximum junction temperature	T_J	150	℃
Storage temperature	T_{stg}	-65～+150	℃

4. Electric Parameters and Specifications (Tamb=25℃)

Name of parameter	Symbol	Testing condition	Minimum value	Typical value	Maximum value	Unit
Collector cutoff current	I_{CBO}	V_{CB}=6V,I_E=0	-	0.05	-	μA
Direct current amplifying coefficient	h_{FE}	V_{CE}=6V,I_C=20mA	60	120	250	
Characteristic frequency	f_T	V_{CE}=6V,I_C=20mA	-	9	-	GHz

Feedback capacity	Cre	$I_C=i_C=0,V_{CB}=6V,f=1MHz$	-	0.3	-	pF
Collector capacity	Cc	$I_E=i_e=0,V_{CB}=6V,f=1MHz$	-	0.6	-	pF
Emitter capacity	Ce	$I_C=i_C=0,V_{EB}=0.5V,f=1MHz$	-	1.0	-	pF
Inserted power gain	$\|S_{21}\|^2$	$I_C=20mA,V_{CE}=6V,f=900MHz$	17	18	-	
Noise coefficient	NF	$V_{CE}=6V,I_C=5mA,f=900MHz$	-	1.1	1.6	dB
		$V_{CE}=6V,I_C=20mA,f=900MHz$	-	1.6	2.1	dB
		$V_{CE}=8V,I_C=5mA,f=2GHz$	-	1.9	-	dB
Maximum unilateral power gain	G_{UM}	$I_C=20mA,V_{CE}=6V,f=900MHz$	-	19	-	dB
		$I_C=20mA,V_{CE}=6V,f=2GHz$	-	13	-	dB
Output voltage	V_O			270		mV
Gain compression of the output power at 1dB	P_{L1}	$I_C=20mA,V_{CE}=6V,V_O=75mV,$ $f=810MHz$	-	-50	-	dB

In which：

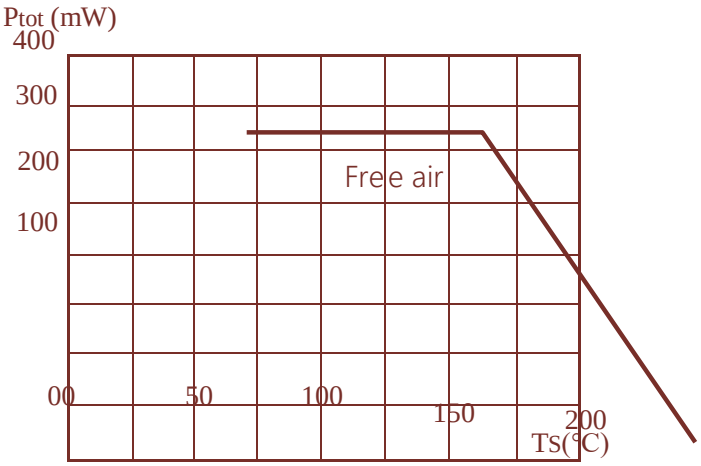
$$G_{UM}=10\log\frac{|S_{21}|^2}{(1-S_{11})^2(1-S_{22})^2}dB$$

5. Typical Characteristic Curves：

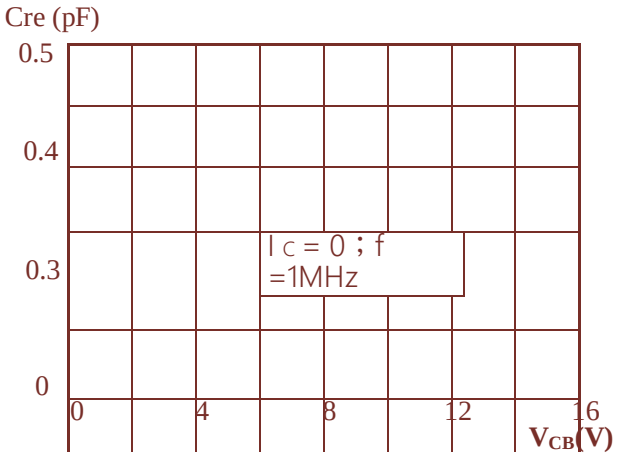
TYPICAL CHARACTERISTICS

(T_A=25°C, unless otherwise specified)

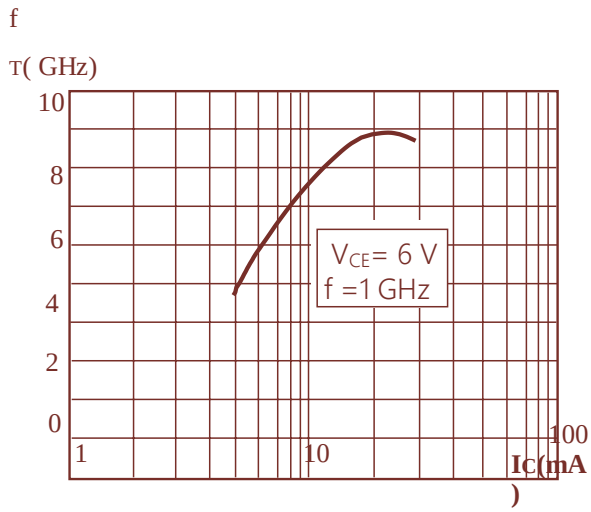
TOTAL POWER DISSIPATION VS. AMBIENT TEMPERATTURE



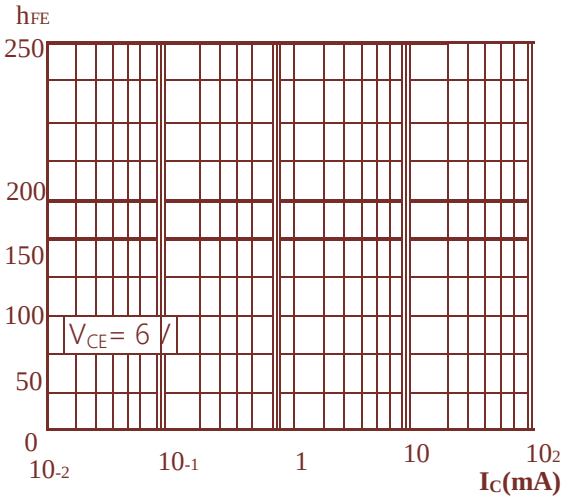
REVERSE TRANSFER CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE



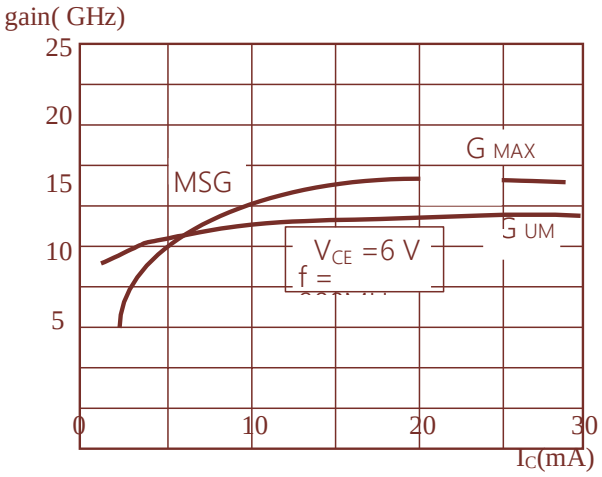
FREQUENCY vs. COLLECTOR CURRENT



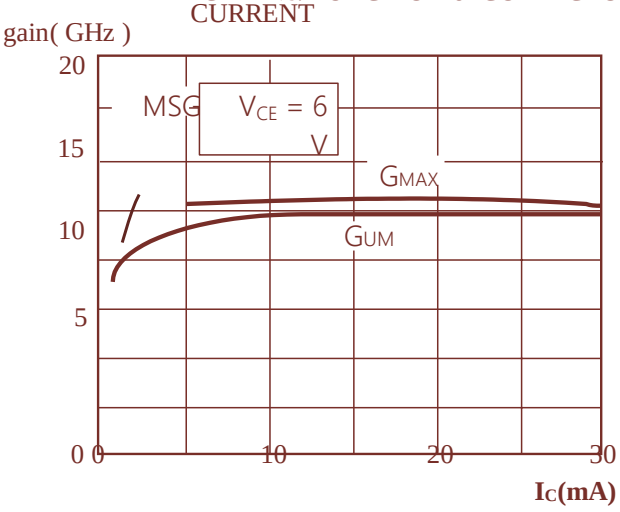
DC CURRENT vs. COLLECTOR CURRENT



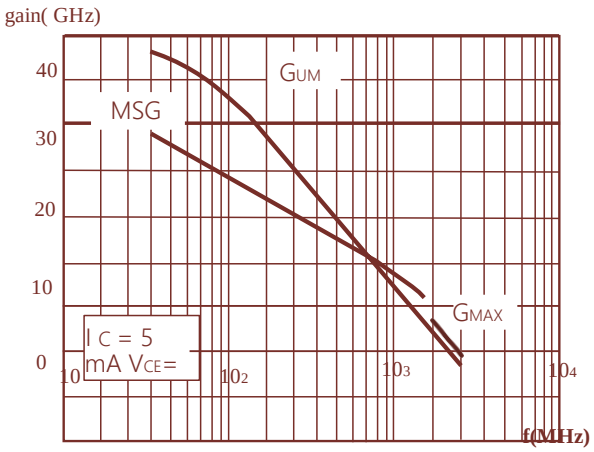
GAIN vs. FUNCTION of COLLECTOR CURRENT



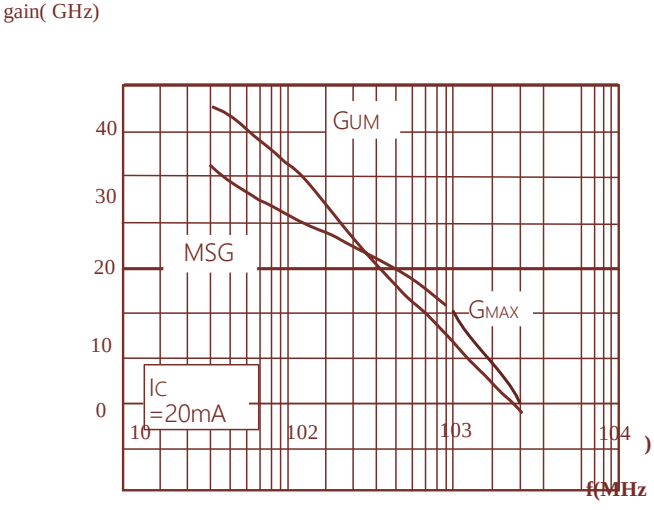
GAIN vs. FUNCTION of COLLECTOR CURRENT



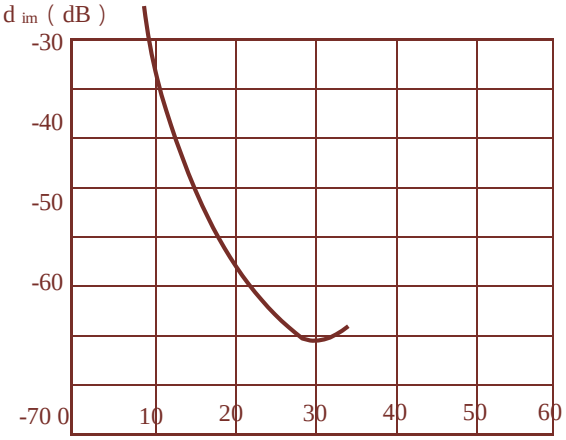
GAIN vs. .FUNCTION of FREQUENCY



GAIN vs. FUNCTION of FREQUENCY

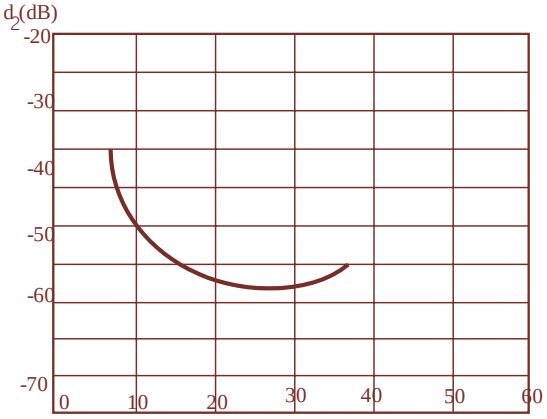


INTERMODULATION DISTORTION
vs. FUNCTION of COLLECTOR CURRENT



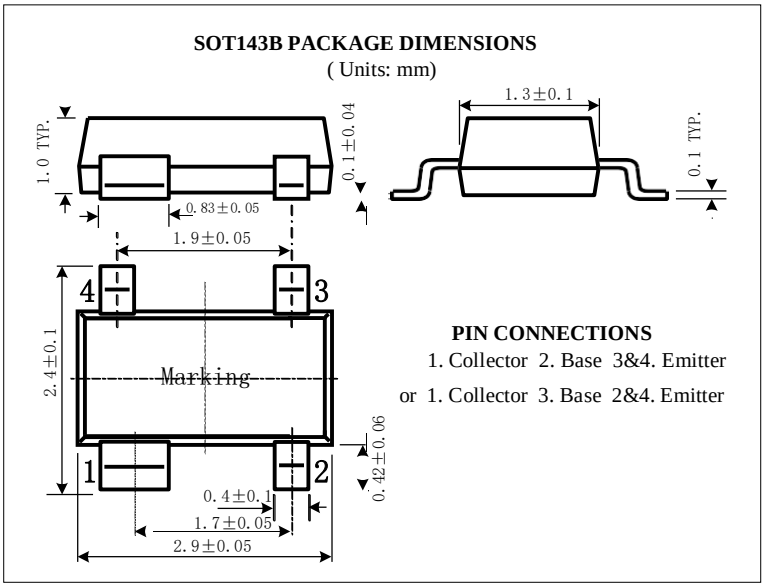
V_{CE}=6V,V_O=75mV,IC=20mA,f(p-q)=810MHz **I_C(mA)**

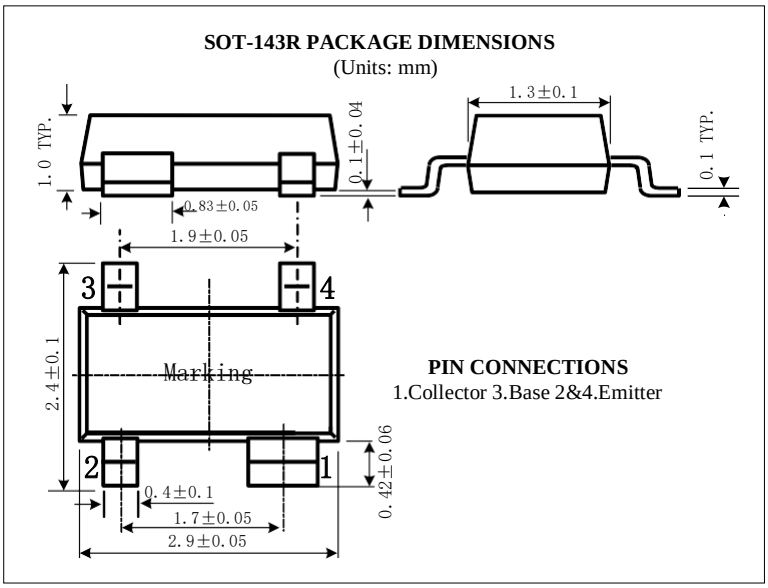
SECOND ORDER INTERMODULATION
DISTORTION vs. FUNCTION of
COLLECTOR CURRENT



V_{CE}=6V,V_O=75mV,IC=20mA,f(p-q)=810MHz **I_C(mA)**

6. Package Size Diagram:





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