

isc Silicon NPN RF Transistor

BFG193

DESCRIPTION

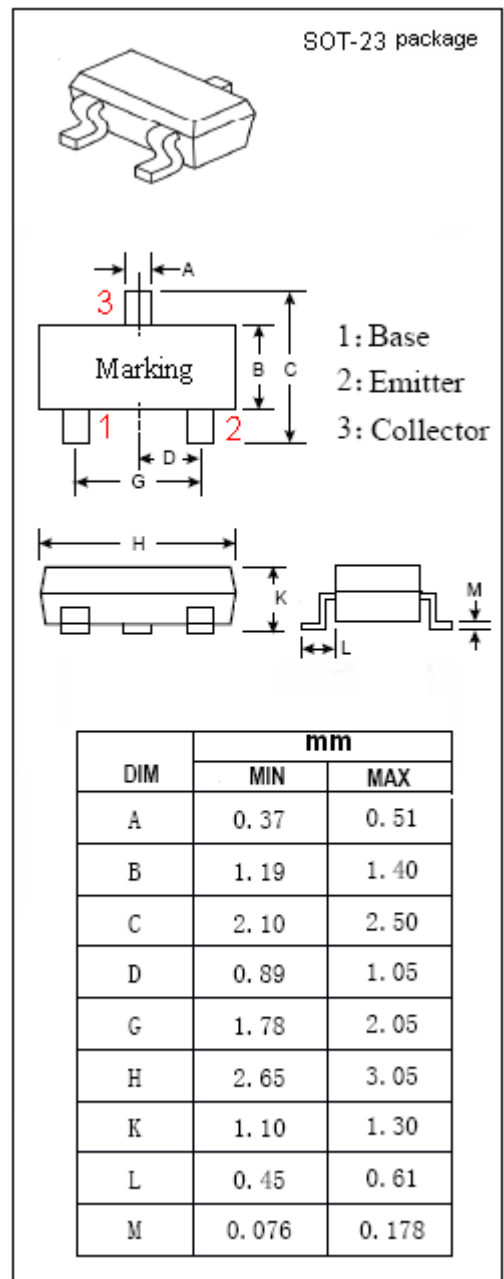
- Low Noise Figure
 $NF = 1.3 \text{ dB TYP. @} V_{CE} = 8 \text{ V, } I_C = 10 \text{ mA, } f = 900 \text{ MHz}$
- High Gain
 $|S_{21e}|^2 = 13.5 \text{ dB TYP. @} V_{CE} = 8 \text{ V, } I_C = 30 \text{ mA, } f = 900 \text{ MHz}$

APPLICATIONS

- Designed for use in low noise ,high-gain amplifiers and linear broadband amplifiers.

ABSOLUTE MAXIMUM RATINGS($T_a=25^\circ\text{C}$)

SYMBOL	PARAMETER	VALUE	UNIT
V_{CBO}	Collector-Base Voltage	20	V
V_{CES}	Collector-Emitter Voltage	20	V
V_{CEO}	Collector-Emitter Voltage	12	V
V_{EBO}	Emitter-Base Voltage	2	V
I_C	Collector Current-Continuous	80	mA
I_B	Base Current-Continuous	10	mA
P_C	Collector Power Dissipation @ $T_c=25^\circ\text{C}$	0.6	W
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{stg}	Storage Temperature Range	-65~150	$^\circ\text{C}$



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ELECTRICAL CHARACTERISTICS

T_c=25°C unless otherwise specified

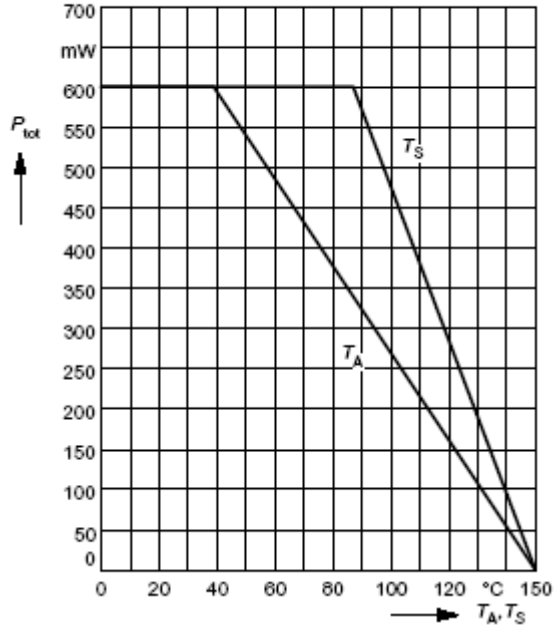
SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V _{(BR)CEO}	Collector-Emitter Breakdown Voltage	I _C = 1mA ; I _B = 0	12			V
I _{CES}	Collector Cutoff Current	V _{CE} = 20V; V _{BE} = 0			100	μ A
I _{CBO}	Collector Cutoff Current	V _{CB} = 10V; I _E = 0			0.1	μ A
I _{EBO}	Emitter Cutoff Current	V _{EB} = 1V; I _C = 0			1	μ A
h _{FE}	DC Current Gain	I _C = 30mA ; V _{CE} = 8V	50		200	
f _T	Current-Gain—Bandwidth Product	I _C = 50mA ; V _{CE} = 8V; f= 500MHz	6	8		GHz
C _{OB}	Output Capacitance	I _E = 0 ; V _{CB} = 10V; f= 1MHz		0.6	0.9	pF
PG	Power Gain	I _C = 30mA ; V _{CE} = 8V; f= 900MHz		15.5		dB
PG	Power Gain	I _C = 30mA ; V _{CE} = 8V; f= 1.8GHz		10		dB
S _{21e} ²	Insertion Power Gain	I _C = 30mA ; V _{CE} = 8V; f= 900MHz		13.5		dB
S _{21e} ²	Insertion Power Gain	I _C = 30mA ; V _{CE} = 8V; f= 1.8GHz		8		dB
NF	Noise Figure	I _C = 10mA ; V _{CE} = 8V; f= 900MHz		1.3		dB
NF	Noise Figure	I _C = 10mA ; V _{CE} = 8V; f= 1.8GHz		2.1		dB

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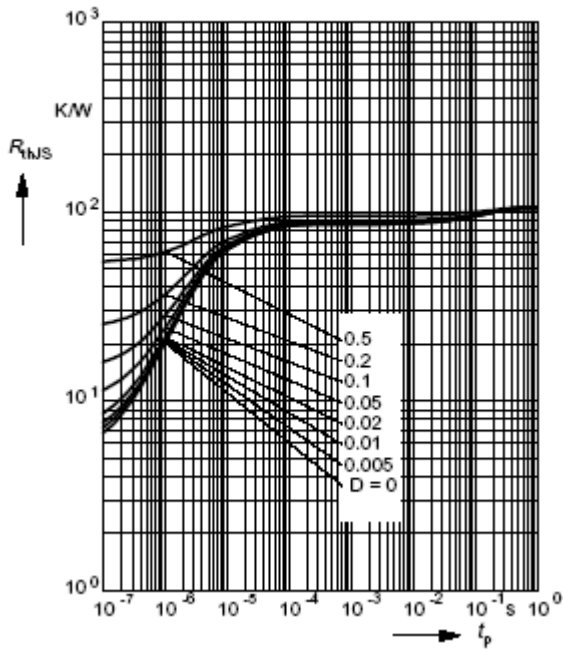
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Total power dissipation $P_{tot} = f(T_A^*, T_S)$

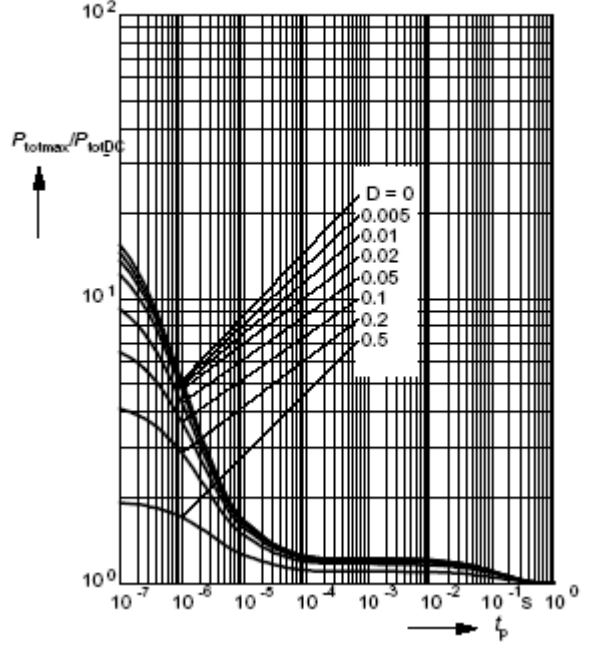
* Package mounted on epoxy



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



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

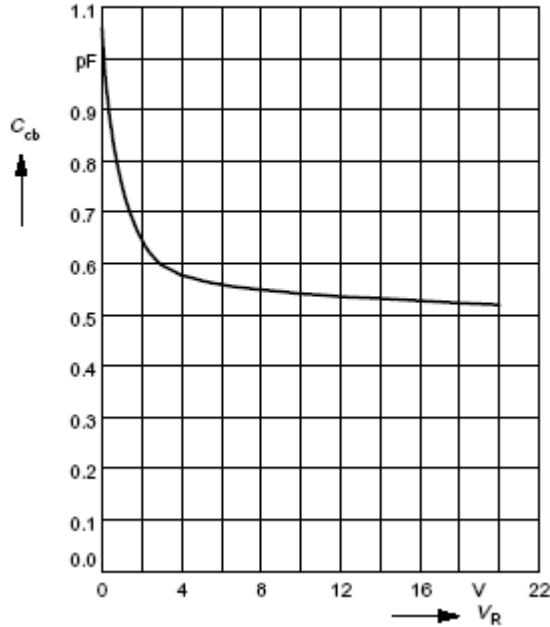


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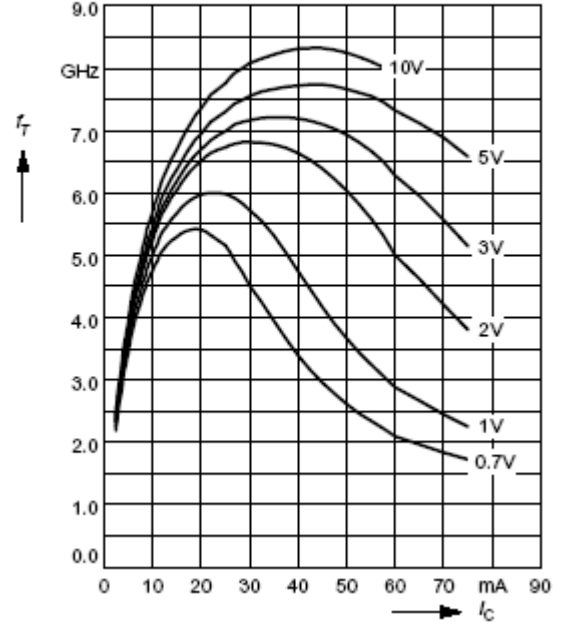
Collector-base capacitance $C_{cb} = f(V_{CB})$

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



Transition frequency $f_T = f(I_C)$

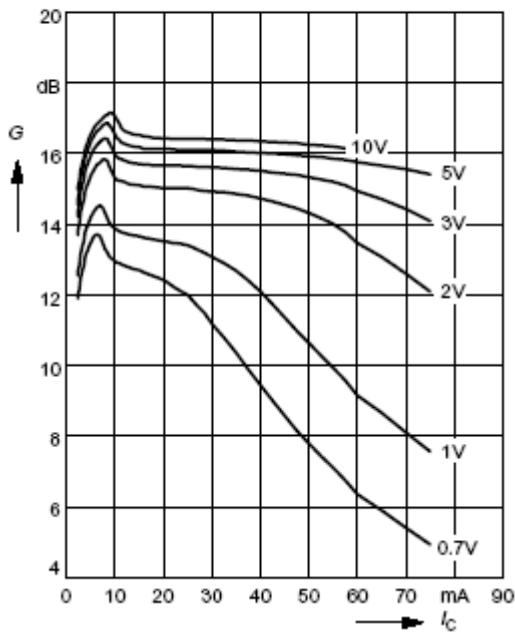
$V_{CE} = \text{Parameter}$



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

$f = 0.9\text{GHz}$

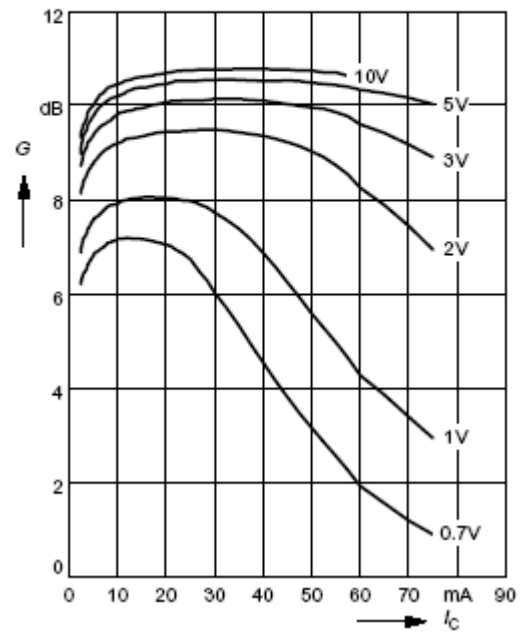
$V_{CE} = \text{Parameter}$



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

$f = 1.8\text{GHz}$

$V_{CE} = \text{Parameter}$

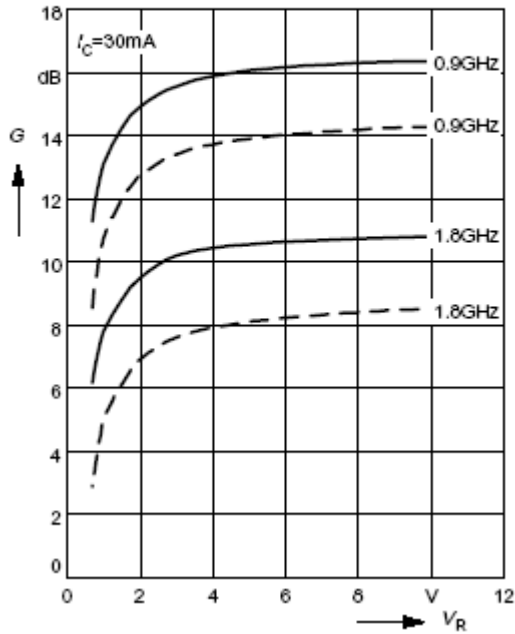


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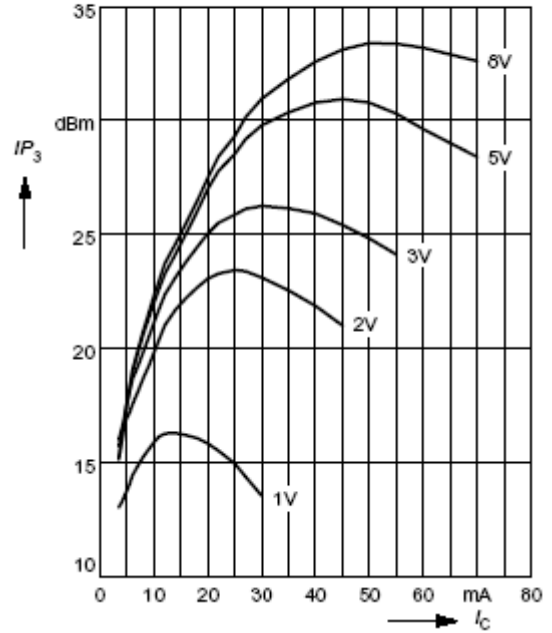
Power Gain $G_{ma}, G_{ms} = f(V_{CE})$: _____
 $|S_{21}|^2 = f(V_{CE})$: _____

$f =$ Parameter

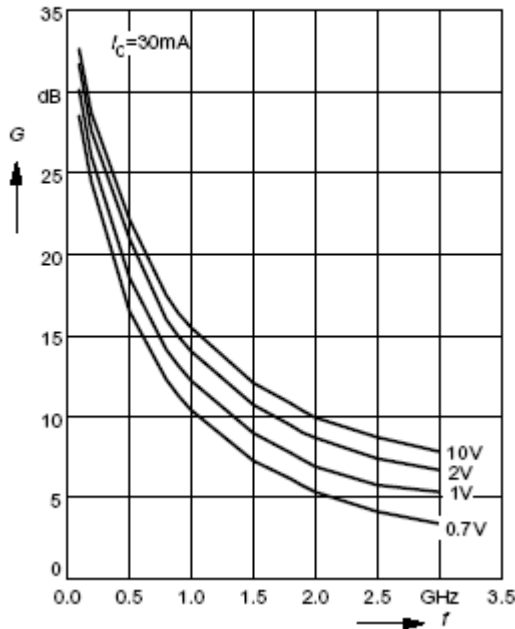


Intermodulation Intercept Point $IP_3 = f(I_C)$
 (3rd order, Output, $Z_S = Z_L = 50\Omega$)

$V_{CE} =$ Parameter, $f = 900MHz$



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



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

