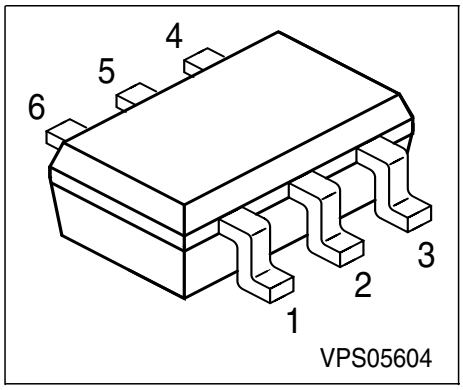
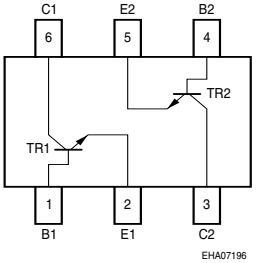
NPN Silicon RF Transistor



- For low-noise. high-gain broadband amplifiers at collector currents from 0.2 mA to 20 mA
- f_T = 8 GHz
  F = 1.2 dB at 900 MHz
- Two (galvanic) internal isolated Transistors in one package



ESD: **E**lectro**s**tatic **d**ischarge sensitive device, observe handling precaution!

Type	Marking	Pin Configuration						Package
BFS 482	RGs	1=B	2=E	3=C	4=B	5=E	6=C	SOT-363

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}	12	V
Collector-emitter voltage	V_{CES}	20	
Collector-base voltage	V_{CBO}	20	
Emitter-base voltage	V_{EBO}	2	
Collector current	I_C	35	mA
Base current	I_B	4	
Total power dissipation, $T_S \leq 81$ °C [1)]	P_{tot}	250	mW
Junction temperature	T_j	150	°C
Ambient temperature	T_A	-65 ... 150	
Storage temperature	T_{stg}	-65 ... 150	

Thermal Resistance

Junction - soldering point	R_{thJS}	≤ 275	K/W

[1] T_S is measured on the collector lead at the soldering point to the pcb

Electrical Characteristics at T_A = 25°C, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC characteristics					
Collector-emitter breakdown voltage I_C = 1 mA, I_B = 0	$V_{(BR)CEO}$	12	-	-	V
Collector-emitter cutoff current V_{CE} = 20 V, V_{BE} = 0	I_{CES}	-	-	100	µA
Collector-base cutoff current V_{CB} = 10 V, I_E = 0	I_{CBO}	-	-	100	nA
Emitter-base cutoff current V_{EB} = 1 V, I_C = 0	I_{EBO}	-	-	1	µA
DC current gain I_C = 10 mA, V_{CE} = 8 V	h_{FE}	50	100	200	-

Electrical Characteristics at T_A = 25°C, unless otherwise specified.

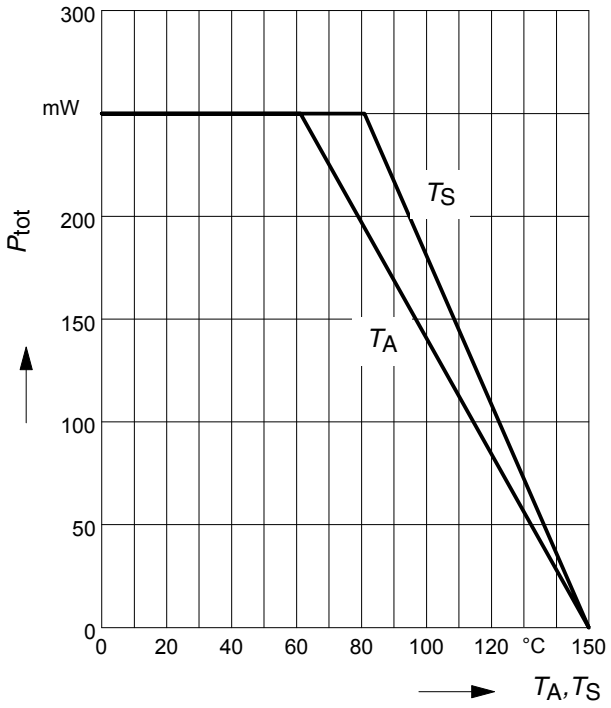
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC characteristics (verified by random sampling)					
Transition frequency I_C = 15 mA, V_{CE} = 8 V, f = 500 MHz	f_T	6	8	-	GHz
Collector-base capacitance V_{CB} = 10 V, f = 1 MHz	C_{cb}	-	0.3	0.45	pF
Collector-emitter capacitance V_{CE} = 10 V, f = 1 MHz	C_{ce}	-	0.12	-	
Emitter-base capacitance V_{EB} = 0.5 V, f = 1 MHz	C_{eb}	-	0.65	-	
Noise figure I_C = 3 mA, V_{CE} = 8 V, Z_S = Z_{Sopt} , f = 900 MHz f = 1.8 GHz	F	 - -	 1.2 1.9	 - -	dB
Power gain, maximum stable [F)] I_C = 10 mA, V_{CE} = 8 V, Z_S = Z_{Sopt}, Z_L = Z_{Lopt} , f = 900 MHz	G_{ms}	-	19.5	-	
Power gain, maximum available [F)] I_C = 10 mA, V_{CE} = 8 V, Z_S = Z_{Sopt}, Z_L = Z_{Lopt} , f = 1.8 GHz	G_{ma}	-	13	-	
Transducer gain I_C = 10 mA, V_{CE} = 8 V, Z_S = Z_L = 50Ω , f = 900 MHz f = 1.8 GHz	$\lvert S_{21e}\rvert^2$	 - -	 15.5 10	 - -	

[1] $G_{ms} = |S_{21} / S_{12}|$

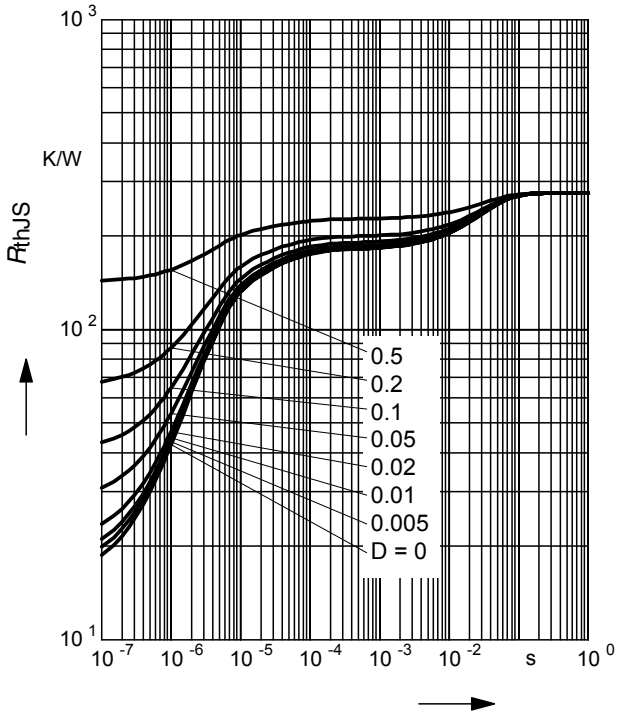
[2] $G_{ma} = |S_{21} / S_{12}| \, (k-(k^2-1)^{1/2})$

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

* Package mounted on epoxy

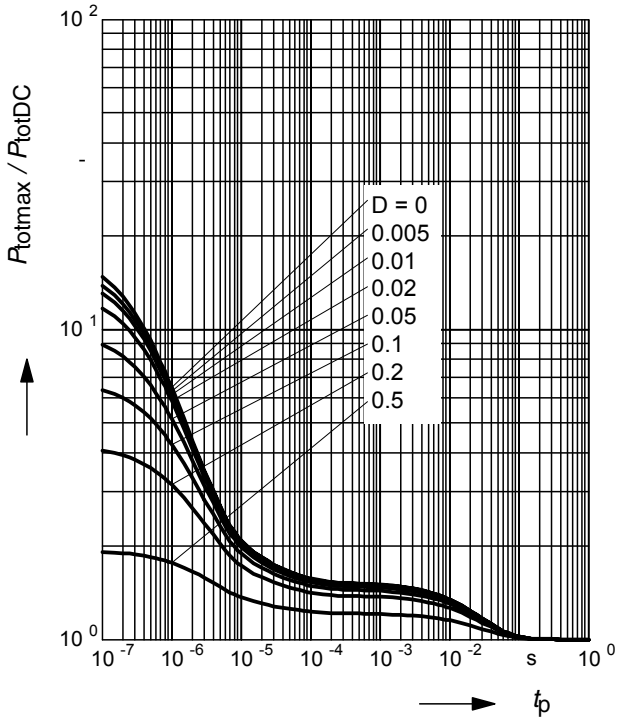


Permissible Pulse Load $R_{thJS} = f(t_p)$



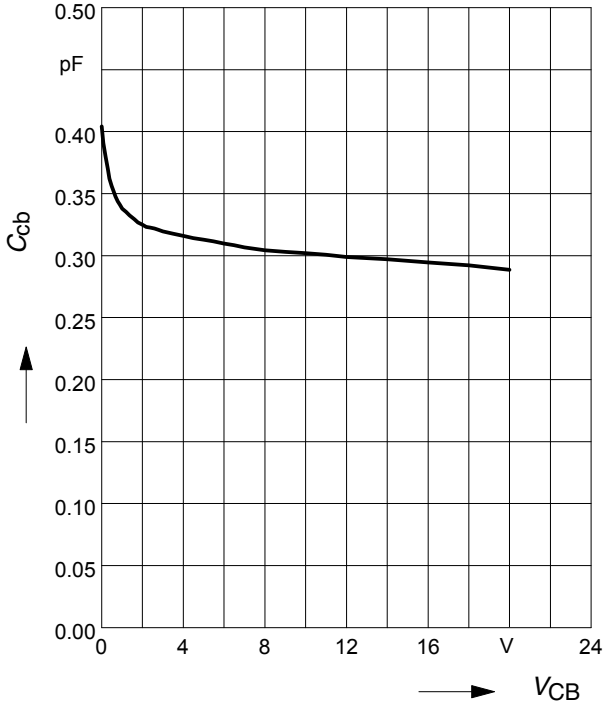
Permissible Pulse Load

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



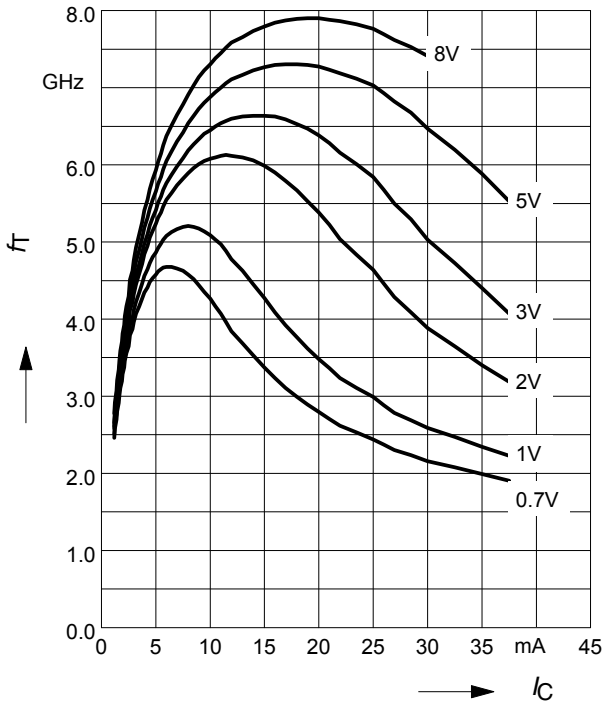
Collector-base capacitance $C_{cb} = f(V_{CB})$

f = 1MHz



Transition frequency $f_T = f(I_C)$

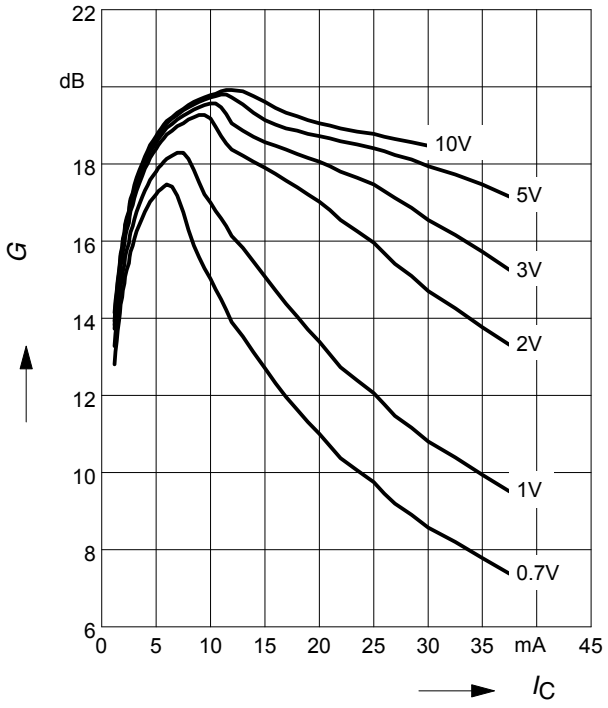
V_{CE} = Parameter



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

f = 0.9GHz

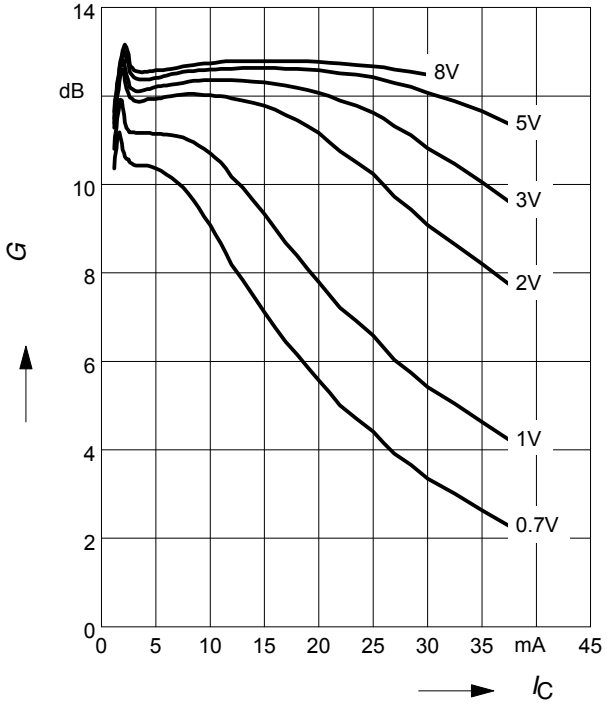
V_{CE} = Parameter



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

f = 1.8GHz

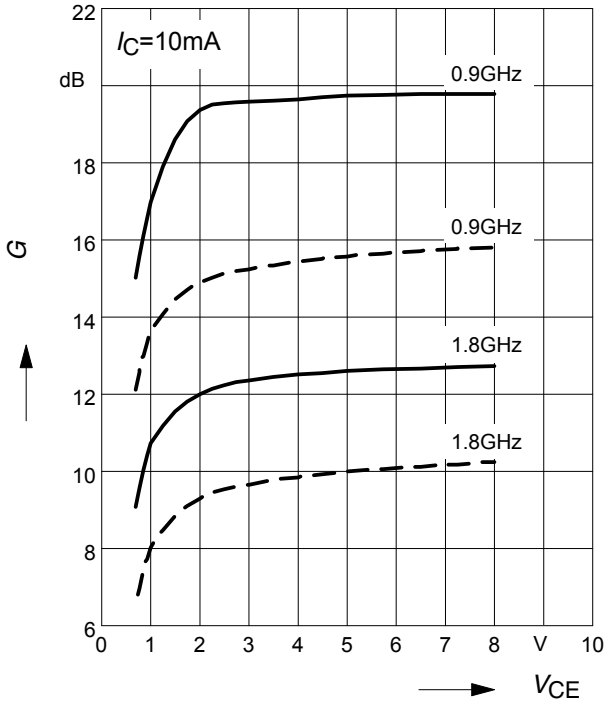
V_{CE} = Parameter



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

$|S_{21}|^2$ = $f(V_{CE})$:---------

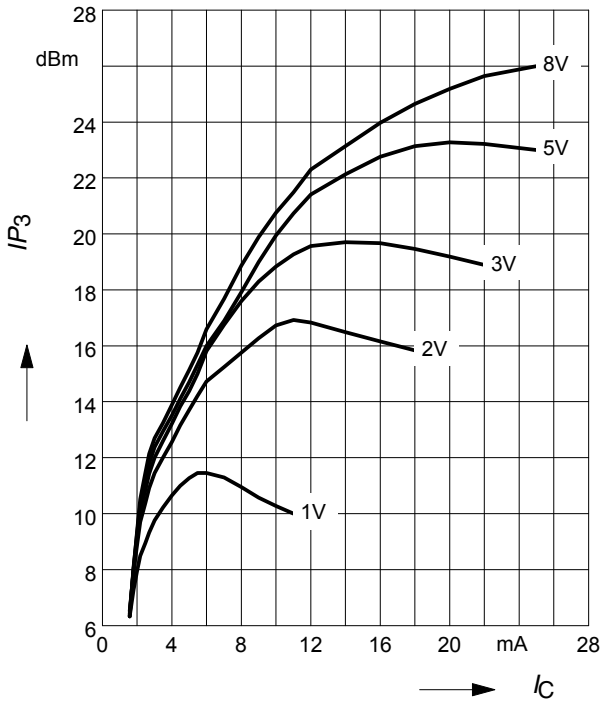
f = Parameter



Intermodulation Intercept Point IP_3=$f(I_C)$

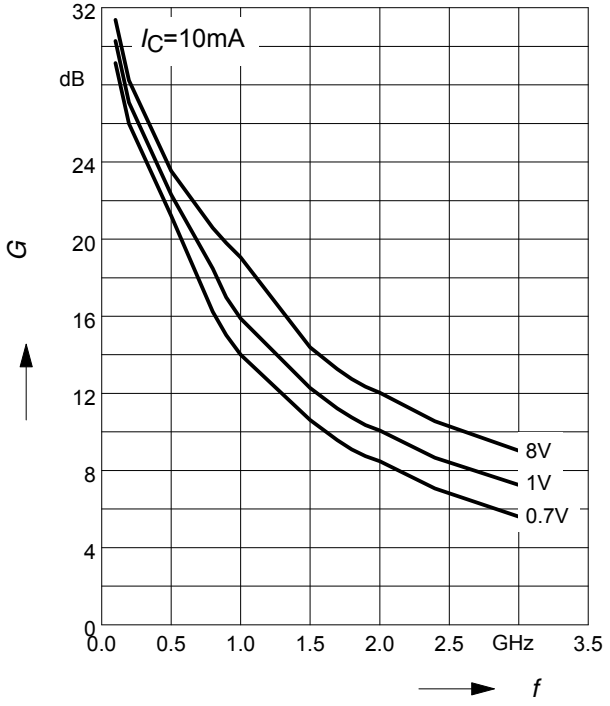
(3rd order, Output, Z_S=Z_L=50Ω)

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