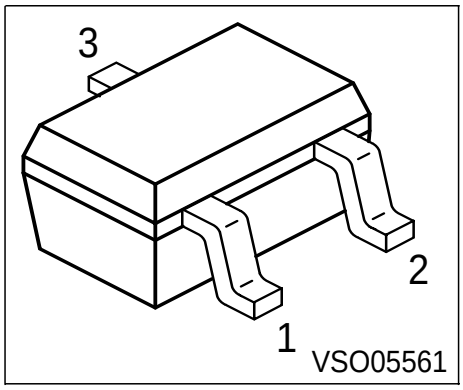
NPN Silicon RF Transistor

- For broadband amplifiers up to 1 GHz at collector currents from 1 mA to 20 mA



Type	Marking	Pin Configuration			Package
BFS17W	MCs	1 = B	2 = E	3 = C	SOT323

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}	15	V
Collector-base voltage	V_{CBO}	25	
Emitter-base voltage	V_{EBO}	2.5	
Collector current	I_C	25	mA
Peak collector current, f = 10 MHz	I_{CM}	50	
Total power dissipation $T_S \leq 93$ °C [1)]	P_{tot}	280	mW
Junction temperature	T_j	150	°C
Ambient temperature	T_A	-65 ... 150	
Storage temperature	T_{stg}	-65 ... 150	

Thermal Resistance

Junction - soldering point[2)]	R_{thJS}	≤ 205	K/W

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

[2] For calculation of R_{thJA} please refer to Application Note Thermal Resistance

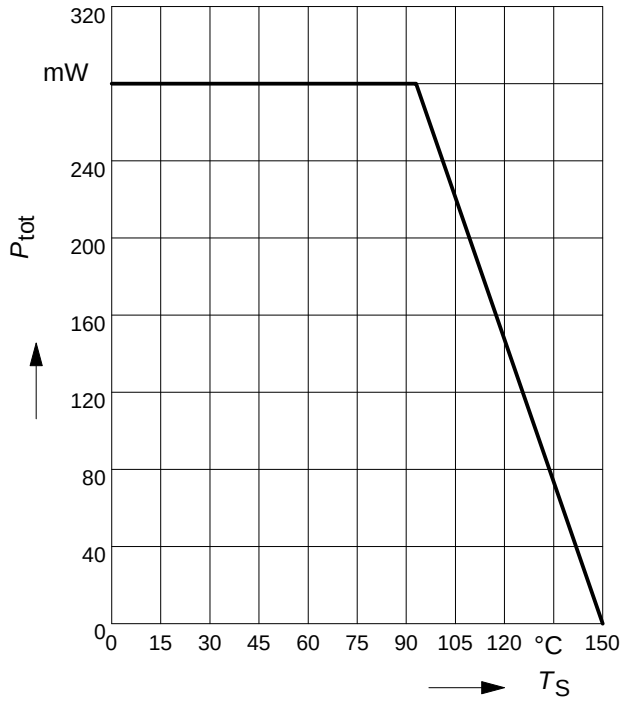
Electrical Characteristics a T_A = 25°C, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC characteristics					
Collector-emitter breakdown voltage I_C = 1 mA, I_B = 0	$V_{(BR)CEO}$	15	-	-	V
Collector-base cutoff current V_{CB} = 10 V, I_E = 0 V_{CB} = 25 V, I_E = 0	I_{CBO}	 - -	 - -	 0.05 10	µA
Emitter-base cutoff current V_{EB} = 2.5 V, I_C = 0	I_{EBO}	-	-	100	
DC current gain I_C = 2 mA, V_{CE} = 1 V I_C = 25 mA, V_{CE} = 1 V	h_{FE}	 20 20	 - 70	 150 -	-
Collector-emitter saturation voltage I_C = 10 mA, I_B = 1 mA	V_{CEsat}	-	0.1	0.4	V

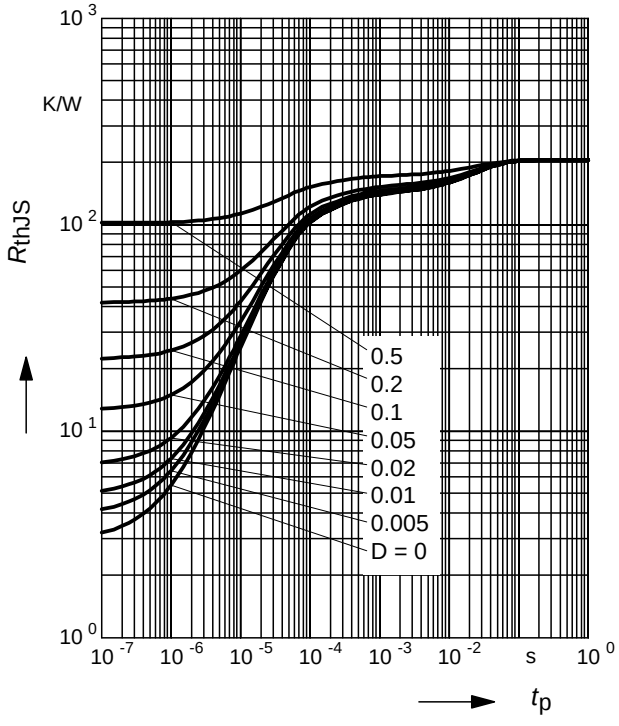
Electrical Characteristics at T_A = 25°C, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC characteristics					
Transition frequency I_C = 2 mA, V_{CE} = 5 V, f = 200 MHz I_C = 25 mA, V_{CE} = 5 V, f = 200 MHz	f_T	 1 1.3	 1.4 2.5	 - -	GHz
Collector-base capacitance V_{CB} = 5 V, f = 1 MHz	C_{cb}	-	0.6	0.8	pF
Collector-emitter capacitance V_{CE} = 5 V, f = 1 MHz	C_{ce}	-	0.26	-	
Input capacitance V_{EB} = 0.5 V, I_C = 0 , f = 1 MHz	C_{ibo}	-	1.45	-	
Output capacitance V_{CE} = 5 V, V_{BE} = 0 , f = 1 MHz	C_{obs}	-	-	1.5	
Noise figure I_C = 2 mA, V_{CE} = 5 V, f = 800 MHz, Z_S = 0 Ω	F	-	3.5	5	dB
Transducer gain I_C = 20 mA, V_{CE} = 5 V, Z_S = Z_L = 50Ω , f = 500 MHz	$\lvert S_{21e}\rvert^2$	-	12.7	-	
Linear output voltage I_C = 14 mA, V_{CE} = 5 V, d_{im} = 60 dB, f_1 = 806 MHz, f_2 = 810 MHz, Z_S = Z_L = 50Ω	V_{01}=V_{02}	-	100	-	mV
Third order intercept point I_C = 14 mA, V_{CE} = 5 V, Z_S = Z_L = 50Ω , f = 800 MHz	IP_3	-	23	-	dBm

Total power dissipation $P_{tot} = f(T_S)$

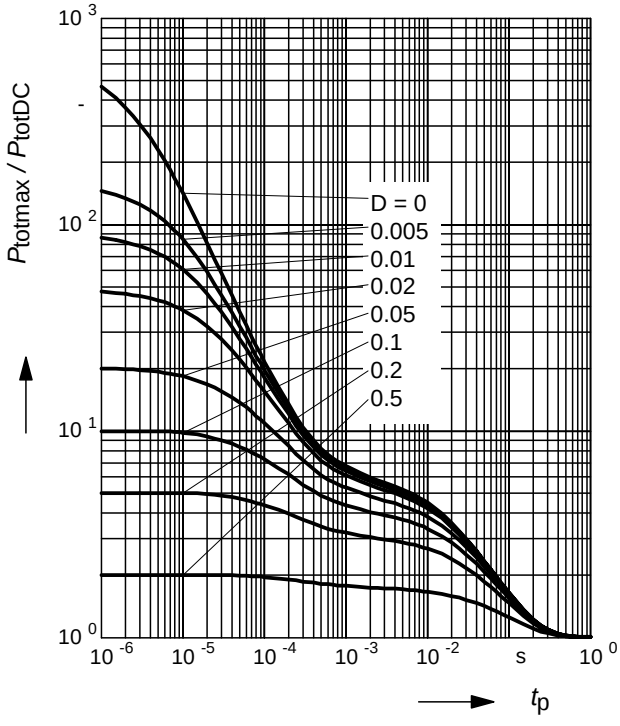


Permissible Pulse Load $R_{thJS} = f(t_p)$



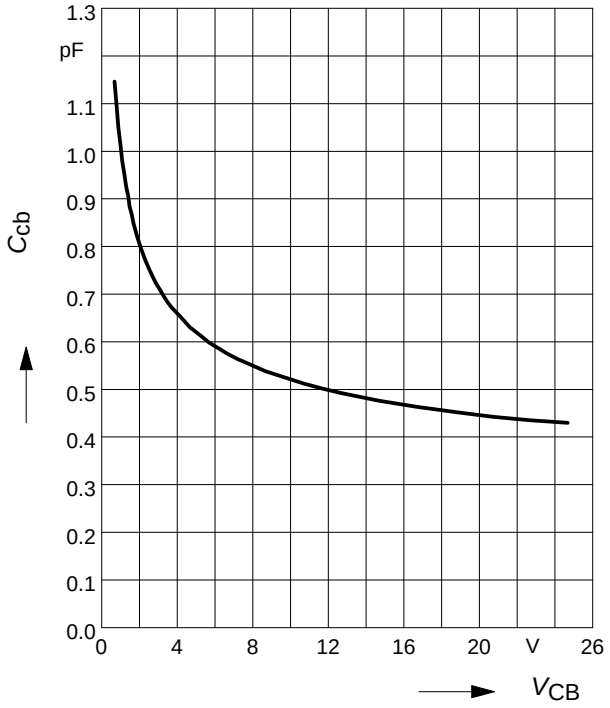
Permissible Pulse Load

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



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

f = 1MHz



Transition frequency $f_T = f(I_C)$

V_{CE} = Parameter