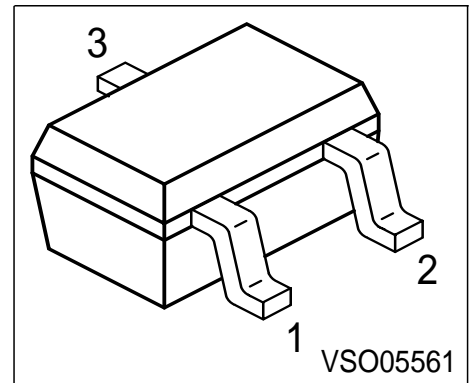


**NPN Silicon RF Transistor**

- 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 <sup>1)</sup>	$P_{tot}$	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 <sup>2)</sup>	$R_{thJS}$	$\leq 205$	K/W
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<sup>1</sup>  $T_S$  is measured on the collector lead at the soldering point to the pcb

<sup>2</sup>For calculation of  $R_{thJA}$  please refer to Application Note Thermal Resistance

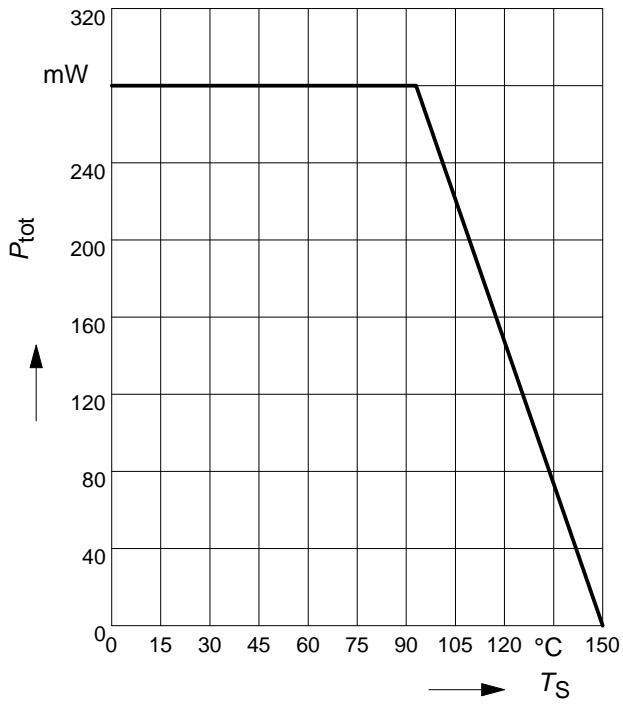
**Electrical Characteristics** at  $T_A = 25^\circ\text{C}$ , unless otherwise specified.

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

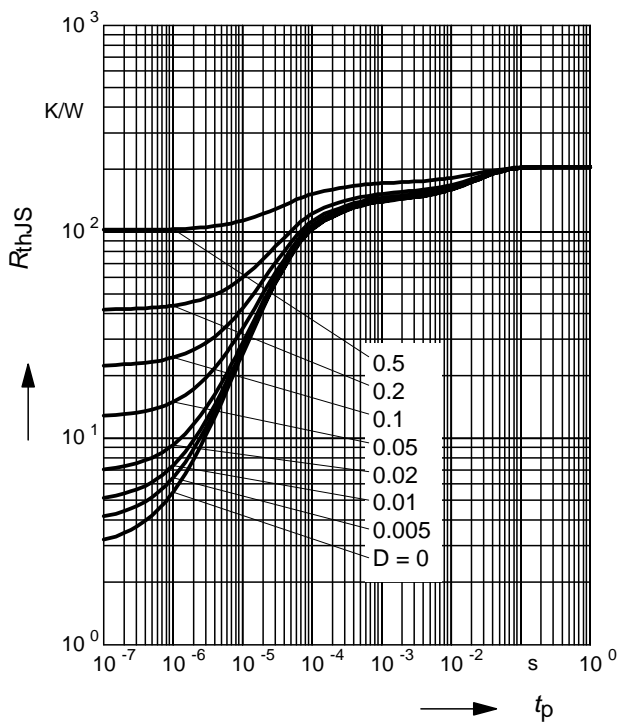
**Electrical Characteristics** at  $T_A = 25^\circ\text{C}$ , unless otherwise specified.

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

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

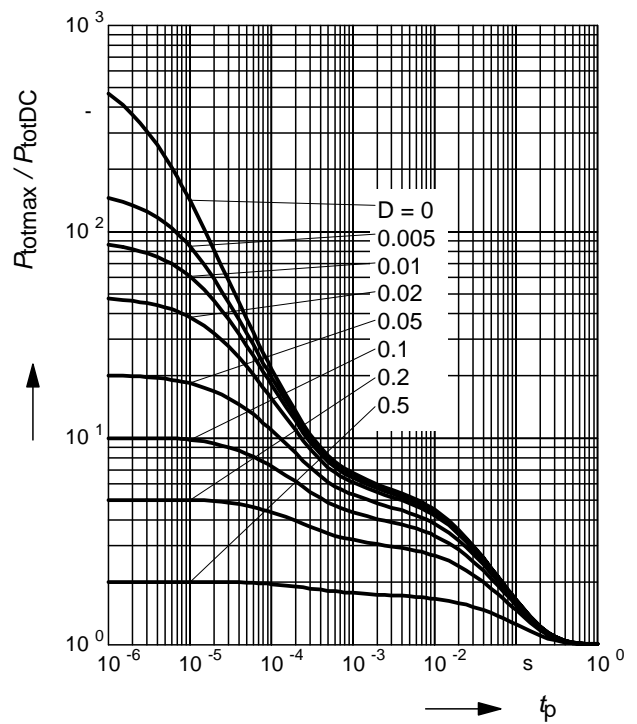


**Permissible Pulse Load  $R_{thJS} = f(t_p)$**

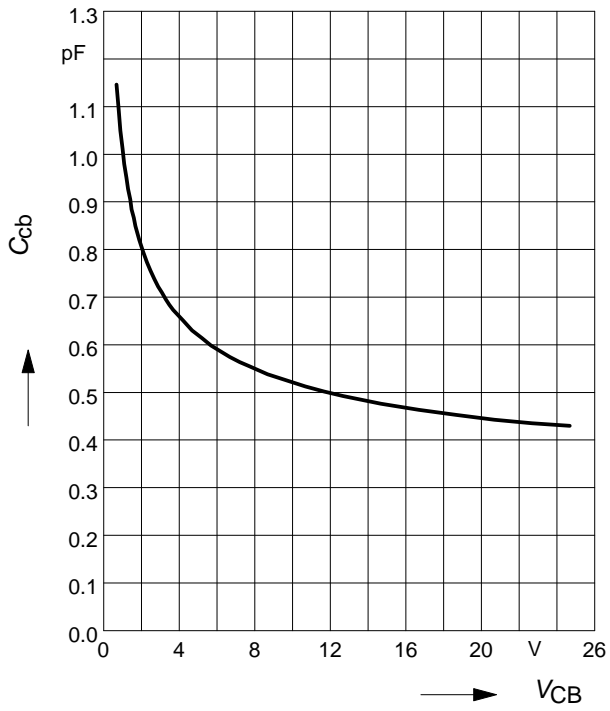


**Permissible Pulse Load**

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



Collector-base capacitance  $C_{cb} = f(V_{CB})$   
 $f = 1\text{MHz}$



Transition frequency  $f_T = f(I_C)$

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

