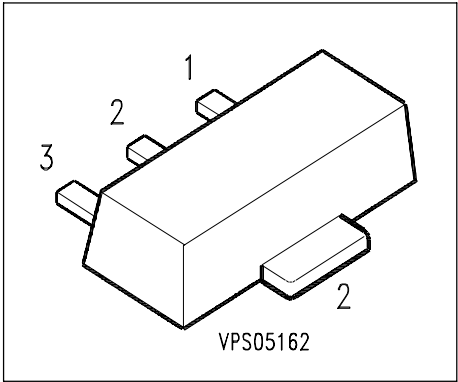


NPN Silicon RF Transistor

- For low noise, high-gain amplifiers up to 2GHz
- For linear broadband amplifiers
- $f_T = 7.5 \text{ GHz}$
 $F = 1.3 \text{ dB at } 900 \text{ MHz}$



ESD: Electrostatic discharge sensitive device, observe handling precaution!

Type	Marking	Ordering Code	Pin Configuration			Package
BFQ 193	RCs	Q62702-F1312	1 = B	2 = C	3 = E	SOT-89

Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-emitter voltage	V_{CEO}	12	V
Collector-base voltage	V_{CBO}	20	
Emitter-base voltage	V_{EBO}	2	
Collector current	I_C	80	mA
Base current	I_B	10	
Total power dissipation $T_S \leq 93 \text{ }^\circ\text{C}$	P_{tot}	600	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Ambient temperature	T_A	- 65 ... + 150	
Storage temperature	T_{stg}	- 65 ... + 150	

Thermal Resistance

Junction - soldering point ¹⁾	R_{thJS}	≤ 95	K/W
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Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified.

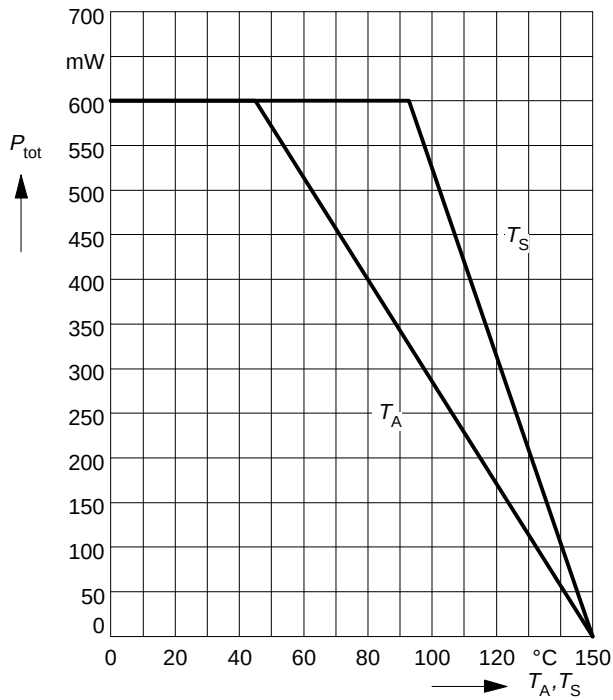
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage $I_C = 1\text{ mA}$, $I_B = 0$	$V_{(BR)CEO}$	12	-	-	V
Collector-emitter cutoff current $V_{CE} = 20\text{ V}$, $V_{BE} = 0$	I_{CES}	-	-	100	μA
Collector-base cutoff current $V_{CB} = 10\text{ V}$, $I_E = 0$	I_{CBO}	-	-	100	nA
Emitter-base cutoff current $V_{EB} = 1\text{ V}$, $I_C = 0$	I_{EBO}	-	-	1	μA
DC current gain $I_C = 30\text{ mA}$, $V_{CE} = 8\text{ V}$	h_{FE}	50	100	200	-

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

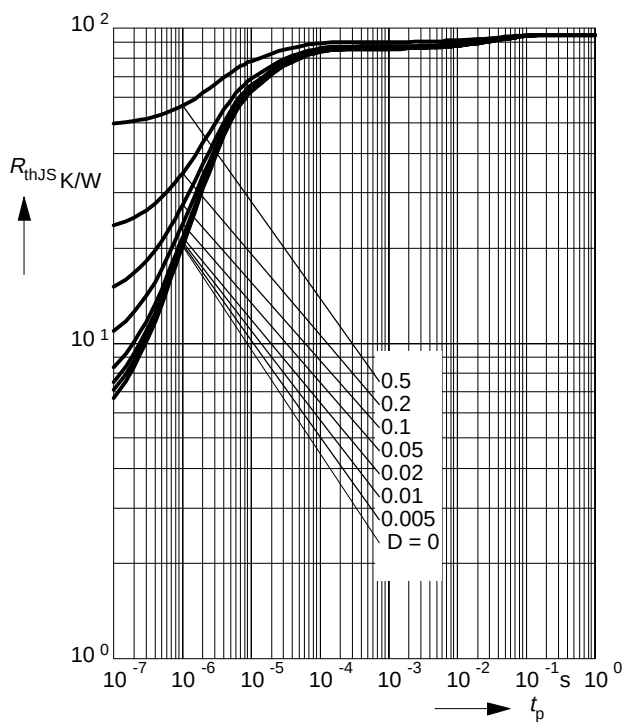
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics					
Transition frequency $I_C = 50\text{ mA}$, $V_{CE} = 8\text{ V}$, $f = 500\text{ MHz}$	f_T	5.5	7.5	-	GHz
Collector-base capacitance $V_{CB} = 10\text{ V}$, $f = 1\text{ MHz}$	C_{cb}	-	0.78	1.2	pF
Collector-emitter capacitance $V_{CE} = 10\text{ V}$, $f = 1\text{ MHz}$	C_{ce}	-	0.36	-	
Emitter-base capacitance $V_{EB} = 0.5\text{ V}$, $f = 1\text{ MHz}$	C_{eb}	-	2.1	-	
Noise figure $I_C = 10\text{ mA}$, $V_{CE} = 8\text{ V}$, $Z_S = Z_{Sopt}$ $f = 900\text{ MHz}$ $f = 1.8\text{ GHz}$	F	- -	1.3 2.1	- -	dB
Power gain 2) $I_C = 30\text{ mA}$, $V_{CE} = 8\text{ V}$, $Z_S = Z_{Sopt}$ $Z_L = Z_{Lopt}$ $f = 900\text{ MHz}$ $f = 1.8\text{ GHz}$	G_{ma}	- -	14 8	- -	
Transducer gain $I_C = 30\text{ mA}$, $V_{CE} = 8\text{ V}$, $Z_S = Z_L = 50\text{ }\Omega$ $f = 900\text{ MHz}$ $f = 1.8\text{ GHz}$	$ S_{21e} ^2$	- -	11.5 6	- -	

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

* Package mounted on epoxy



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



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

