

NPN Silicon RF Transistor

- For low distortion broadband amplifiers and oscillators up to 2GHz at collector currents from 0.5mA to 20mA



ESD: Electrostatic discharge sensitive device, observe handling precaution!

Type	Marking	Ordering Code	Pin Configuration			Package
BFR 35AP	GEs	Q62702-F938	1 = B	2 = E	3 = C	SOT-23

Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-emitter voltage	V_{CEO}	15	V
Collector-emitter voltage	V_{CES}	20	
Collector-base voltage	V_{CBO}	20	
Emitter-base voltage	V_{EBO}	2.5	
Collector current	I_C	30	mA
Base current	I_B	4	
Total power dissipation $T_S \leq 48\text{ °C}$	P_{tot}	280	mW
Junction temperature	T_j	150	
Ambient temperature	T_A	- 65 ... + 150	°C
Storage temperature	T_{stg}	- 65 ... + 150	

Thermal Resistance

Junction - soldering point ¹⁾	R_{thJS}	≤ 365	K/W
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1) T_S is measured on the collector lead at the soldering point to the pcb.

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 $I_C = 1 \text{ mA}, I_B = 0$	$V_{(BR)CEO}$	15	-	-	V
Collector-emitter cutoff current $V_{CE} = 20 \text{ V}, V_{BE} = 0$	I_{CES}	-	-	10	μA
Collector-base cutoff current $V_{CB} = 10 \text{ V}, I_E = 0$	I_{CBO}	-	-	100	nA
Emitter-base cutoff current $V_{EB} = 2.5 \text{ V}, I_C = 0$	I_{EBO}	-	-	100	μA
DC current gain $I_C = 15 \text{ mA}, V_{CE} = 8 \text{ V}$	h_{FE}	40	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 $I_C = 15 \text{ mA}$, $V_{CE} = 8 \text{ V}$, $f = 500 \text{ MHz}$	f_T	3.5	5	-	GHz
Collector-base capacitance $V_{CB} = 10 \text{ V}$, $f = 1 \text{ MHz}$	C_{cb}	-	0.38	0.6	pF
Collector-emitter capacitance $V_{CE} = 10 \text{ V}$, $f = 1 \text{ MHz}$	C_{ce}	-	0.2	-	
Emitter-base capacitance $V_{EB} = 0.5 \text{ V}$, $f = 1 \text{ MHz}$	C_{eb}	-	0.7	-	
Noise figure $I_C = 2 \text{ mA}$, $V_{CE} = 6 \text{ V}$, $Z_S = Z_{Sopt}$ $f = 900 \text{ MHz}$ $f = 1.8 \text{ GHz}$	F	-	1.8 2.9	-	dB
Power gain ²⁾ $I_C = 15 \text{ mA}$, $V_{CE} = 8 \text{ V}$, $Z_S = Z_{Sopt}$ $Z_L = Z_{Lopt}$ $f = 900 \text{ MHz}$ $f = 1.8 \text{ GHz}$	G_{ma}	-	15 9.5	-	
Transducer gain $I_C = 15 \text{ mA}$, $V_{CE} = 8 \text{ V}$, $Z_S = Z_L = 50 \Omega$ $f = 900 \text{ MHz}$ $f = 1.8 \text{ GHz}$	$ S_{21e} ^2$	-	12.5 7	-	

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