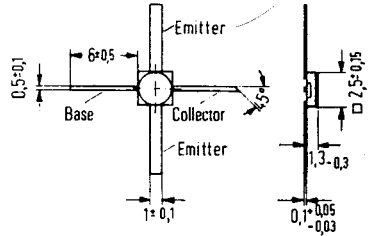


NPN Silicon Microwave Transistor for Application up to 4 GHz

BFQ 57

BFQ 57 is a bipolar silicon NPN microwave transistor in hermetically sealed metal ceramic 100 mil package similar to TO 120. State-of-the-art manufacturing methods such as ion implantation technique, titanium-platinum-gold metallization as well as a glass-passivated chip surface ensure very high reliability. The transistor is particularly suitable for low noise amplifiers and oscillators up to 4 GHz. It is marked on its package with the short designation "57".

Type	Mark	Ordering code
BFQ 57	57	Q62702-F652



Approx. weight 0.05 g

Dimensions in mm

Maximum ratings

Collector-emitter voltage	V_{CE0}	16	V
Collector-emitter voltage ($R_{BE} = 0$)	V_{CES}	30	V
Collector-base voltage	V_{CBO}	25	V
Emitter-base voltage	V_{EBO}	1	V
Collector current	I_C	35	mA
Storage temperature range	T_{stg}	-65 to +175	°C
Junction temperature	T_j	200	°C
Total power dissipation ($T_{amb} < 87^\circ\text{C}$)	P_{tot}	450	mW

Thermal resistance

Junction to ambient air (when mounted on AL_2O_3 ceramics or glass-fiber reinforced Teflon 40x25x1.5 mm)	R_{thJA}	≤ 250	K/W
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Static characteristics ($T_{amb} = 25^\circ\text{C}$)

Collector-emitter breakdown voltage ($I_C = 100 \mu\text{A}$)	$V_{(BR)CES}$	30	V
Collector cutoff current ($V_{CBO} = 15 \text{ V}$)	I_{CBO}	100	nA
Collector cutoff current ($V_{CEO} = 15 \text{ V}$)	I_{CEO}	500	nA
DC current gain ($V_{CE} = 15 \text{ V}; I_C = 15 \text{ mA}$)	h_{FE}	120	-

Dynamic characteristics ($T_{amb} = 25^{\circ}\text{C}$)

Transition frequency ($V_{CE} = 15\text{ V}; I_C = 25\text{ mA}$)	f_T	6.5	GHz
Power gain ($V_{CE} = 10\text{ V}; I_C = 25\text{ mA}; f = 4\text{ GHz}$)	G_{popt}	10.5	dB
Output power ($G_{popt} - 1\text{ dB}$) ($V_{CE} = 15\text{ V}; I_C = 25\text{ mA}; f = 4\text{ GHz}$)	P_{1dB}	18.5	dBm
Reverse transfer capacitance ($V_{CE} = 10\text{ V}; I_C = 1\text{ mA}; f = 1\text{ MHz}$)	C_{12e}	0.33	pF

BFQ 57

Sparameter

Operating point: $V_{CE} = 10\text{ V}, I_C = 15\text{ mA}, Z_o = 50\ \Omega$

f (GHz)	S_{11}	φ	S_{21}	φ	S_{12}	φ	S_{22}	φ
0,1	0,544	- 52	27,77	148	0,012	67	0,896	- 17
0,2	0,502	- 92	22,07	126	0,020	55	0,729	- 28
0,3	0,478	-118	16,87	114	0,025	52	0,623	- 32
0,4	0,461	-135	13,38	104	0,028	50	0,553	- 33
0,5	0,452	-148	11,10	97	0,030	49	0,506	- 33
0,6	0,450	-159	9,53	91	0,034	51	0,483	- 34
0,7	0,442	-167	8,35	86	0,038	50	0,482	- 35
0,8	0,455	-176	7,35	82	0,041	52	0,456	- 34
0,9	0,454	177	6,57	78	0,044	53	0,441	- 36
1,0	0,465	170	5,88	74	0,048	53	0,438	- 37
1,1	0,473	166	5,31	71	0,050	53	0,415	- 37
1,2	0,468	162	4,90	67	0,054	54	0,414	- 42
1,3	0,478	156	4,50	64	0,057	52	0,421	- 41
1,4	0,469	155	4,19	60	0,061	52	0,407	- 43
1,5	0,461	147	3,91	58	0,062	54	0,401	- 43
1,6	0,482	145	3,68	56	0,067	54	0,410	- 47
1,7	0,487	141	3,44	53	0,071	53	0,429	- 47
1,8	0,499	138	3,24	49	0,075	52	0,419	- 47
1,9	0,486	135	3,08	47	0,078	52	0,402	- 49
2,0	0,518	156	3,10	49	0,077	52	0,372	- 59
2,5	0,538	148	2,54	36	0,095	48	0,359	- 74
3,0	0,536	139	2,21	25	0,115	45	0,368	- 87
3,5	0,570	128	1,91	12	0,135	40	0,354	-107
4,0	0,565	119	1,69	0	0,154	34	0,391	-121
4,5	0,596	106	1,53	-11	0,177	28	0,385	-140
5,0	0,622	99	1,35	-22	0,196	22	0,434	-157
5,5	0,636	89	1,20	-33	0,214	15	0,472	-172
6,0	0,659	84	1,03	-46	0,222	6	0,515	168