

NPN Silicon RF Broadband Transistor

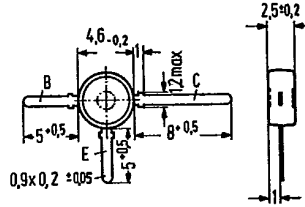
BFW 93

SIEMENS AKTIENGESELLSCHAFT **D-T-31-15**

Not for new design

BFW 93 is an epitaxial NPN silicon planar RF transistor in a plastic package of low capacitance, similar to TO 119 (50 B 3 DIN 41867). The transistor is particularly suitable for use as RF amplifiers up to the GHz range.

Type	Ordering code
BFW 93	Q62702-F365



Approx. weight 0.3 g Dimensions in mm

Maximum ratings

Collector-base voltage	V_{CBO}	18	V
Collector-emitter voltage	V_{CEO}	10	V
Emitter-base voltage	V_{BEO}	2.5	V
Collector current	I_C	50	mA
Collector peak current ($f > 1$ MHz)	I_{CM}	100	mA
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	-55 to +125	°C
Total power dissipation ($T_{amb} \leq 70^\circ\text{C}$)	P_{tot}	200	mW

Thermal resistance

Junction to ambient air (mounted on glass fiber epoxy resin PCB 40 mm x 25 mm x 1 mm)	R_{thJA}	≤ 400	K/W
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Static characteristics ($T_{amb} = 25^{\circ}\text{C}$)

Collector cutoff current ($V_{CBO} = 10\text{ V}$)	I_{CBO}	≤ 50	nA
DC current gain ($I_C = 25\text{ mA}$; $V_{CE} = 5\text{ V}$)	h_{FE}	≥ 25	-
($I_C = 50\text{ mA}$; $V_{CE} = 5\text{ V}$)	h_{FE}	≥ 25	-

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

Transition frequency ($I_C = 50\text{ mA}$; $V_{CE} = 5\text{ V}$; $f = 200\text{ MHz}$)	f_T	1.6	GHz
Reverse transfer capacitance ($I_C = 2\text{ mA}$; $V_{CE} = 5\text{ V}$; $f = 1\text{ MHz}$)	C_{12e}	0.6	pF
Collector-base capacitance ($V_{CBO} = 5\text{ V}$; $f = 1\text{ MHz}$)	C_{CBO}	1.5	pF
Power gain ($I_C = 30\text{ mA}$; $V_{CE} = 5\text{ V}$; $f = 200\text{ MHz}$; $R_g = 60\ \Omega$)	G_{pe}	23	dB
($I_C = 30\text{ mA}$; $V_{CE} = 5\text{ V}$; $f = 800\text{ MHz}$; $R_g = 60\ \Omega$)	G_{pb}	11	dB
Noise figure ($I_C = 2\text{ mA}$; $V_{CE} = 5\text{ V}$; $f = 500\text{ MHz}$; $R_g = 60\ \Omega$)	NF	≤ 5	dB
Output voltage ¹⁾ ($I_C = 30\text{ mA}$; $V_{CE} = 5\text{ V}$; $d_{IM} = 60\text{ dB}$; $R_g = R_{L,} = 75\ \Omega$)	V_o	350	mV

S parameter: Operating point: $I_C = 30\text{ mA}$, $V_{CE} = 5\text{ V}$, $Z_o = 50\ \Omega$

f (GHz)	S ₁₁	φ	S ₂₁	φ	S ₁₂	φ	S ₂₂	φ	G _{max} (dB)
0,1	0,346	-134	17,385	115	0,015	60	0,680	-20	28,1
0,2	0,372	-158	9,549	97	0,024	68	0,596	-17	22,2
0,3	0,384	-168	6,519	88	0,034	69	0,555	-15	18,6
0,4	0,396	-175	5,001	83	0,044	72	0,528	-17	16,1
0,5	0,422	-179	3,978	79	0,053	73	0,540	-22	14,3
0,6	0,431	177	3,322	73	0,062	73	0,556	-23	12,9
0,7	0,445	173	2,888	70	0,072	74	0,527	-26	11,6
0,8	0,447	169	2,534	66	0,081	75	0,547	-31	10,6
0,9	0,466	166	2,222	63	0,088	76	0,537	-33	9,5
1,0	0,468	163	1,981	59	0,098	75	0,542	-37	8,5
1,1	0,484	160	1,818	55	0,107	75	0,532	-40	7,8
1,2	0,491	156	1,681	52	0,117	75	0,534	-44	7,2
1,3	0,515	154	1,560	50	0,128	76	0,533	-48	6,6
1,4	0,521	152	1,443	47	0,138	77	0,531	-53	6,0
1,5	0,541	151	1,333	45	0,147	78	0,544	-54	5,5
1,6	0,534	149	1,260	41	0,157	77	0,538	-57	5,0
1,7	0,560	146	1,192	39	0,170	76	0,526	-64	4,6
1,8	0,559	145	1,120	36	0,181	76	0,546	-67	4,1
1,9	0,580	143	1,058	34	0,192	75	0,518	-71	3,6
2,0	0,583	142	1,013	32	0,206	74	0,537	-75	3,4

1) Three tone modulation f approx. 800 MHz

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