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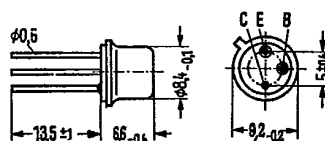
NPN Silicon RF Broadband Transistor

BFW 16 A

SIEMENS AKTIENGESELLSCHAFT *D-7-31-23*

BFW 16 A is an epitaxial NPN silicon planar RF transistor in TO 39 metal case (5 C 3 DIN 41873) intended for general applications up to the GHz range, e.g. for driver and output stages of channel and range antenna amplifiers up to band V, as well as for vertical amplifier output stages in broadband oscillographs. The collector is conductively connected to the case.

Type	Ordering code
BFW 16 A	Q62702-F319



Approx. weight 1.6 g Dimensions in mm

Maximum ratings

Collector-base voltage
 Collector-emitter voltage ($R_{BE} \leq 50 \Omega$)
 Collector-emitter voltage
 Emitter-base voltage
 Collector current
 Collector peak current ($f \geq 1 \text{ MHz}$)
 Junction temperature
 Storage temperature range
 Total power dissipation ($T_{\text{case}} = 125^\circ\text{C}$)

V_{CBO}	40	V
V_{CER}	40	V
V_{CEO}	25	V
V_{EBO}	2	V
I_C	150	mA
I_{CM}	300	mA
T_j	200	$^\circ\text{C}$
T_{stg}	-65 to +200	$^\circ\text{C}$
P_{tot}	1.5	W

Thermal resistance

Junction to ambient air
 Junction to case

R_{thJA}	≤ 250	K/W
R_{thJC}	≤ 50	K/W

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

Collector cutoff current

($V_{CBO} = 20\text{ V}$; $T_{amb} = 125^{\circ}\text{C}$) $I_{CBO} \leq 20 \mu\text{A}$ Collector-emitter saturation voltage¹⁾($I_C = 100\text{ mA}$) $V_{CEsat} \leq 0.75\text{ V}$

DC current gain

($I_C = 50\text{ mA}$; $V_{CE} = 5\text{ V}$) $h_{FE} \geq 25$ ($I_C = 150\text{ mA}$; $V_{CE} = 5\text{ V}$) $h_{FE} \geq 25$ Dynamic characteristics ($T_{amb} = 25^{\circ}\text{C}$)

Transition frequency

($I_C = 150\text{ mA}$; $V_{CE} = 15\text{ V}$; $f = 200\text{ MHz}$) $f_T 1.2\text{ GHz}$

Reverse transfer capacitance

($I_C = 10\text{ mA}$; $V_{CE} = 15\text{ V}$; $f = 1\text{ MHz}$) $C_{12e} 1.7\text{ pF}$

Collector-base capacitance

($V_{CBO} = 15\text{ V}$; $f = 1\text{ MHz}$) $C_{CBO} \leq 4\text{ pF}$

Power gain

($I_C = 70\text{ mA}$; $V_{CE} = 18\text{ V}$; $f = 200\text{ MHz}$; $R_g = 60\ \Omega$) $G_{pe} 16\text{ dB}$ ($I_C = 70\text{ mA}$; $V_{CE} = 18\text{ V}$; $f = 800\text{ MHz}$; $R_g = 60\ \Omega$) $G_{pe} 6.5\text{ dB}$

Noise figure

($I_C = 30\text{ mA}$; $V_{CE} = 15\text{ V}$; $f = 200\text{ MHz}$; $R_g = 75\ \Omega$) $NF \leq 6\text{ dB}$ Output voltage²⁾($I_C = 70\text{ mA}$; $V_{CE} = 18\text{ V}$; $R_L = R_g = 75\ \Omega$; $V_0 600\text{ mV}$ $d_{IM} = 60\text{ dB}$)

S parameter

Operating point: $I_C = 70\text{ mA}$, $V_{CE} = 18\text{ V}$; $Z_o = 50\ \Omega$

f (GHz)	S_{11}	φ	S_{21}	φ	S_{12}	φ	S_{22}	φ	G_{max} (dB)
0,2	0,547	-178	5,537	78	0,061	70	0,259	- 58	16,7
0,3	0,540	172	3,750	69	0,088	72	0,283	- 65	13,3
0,4	0,551	165	2,803	61	0,115	74	0,309	- 72	11,0
0,5	0,568	159	2,179	55	0,140	74	0,336	- 81	9,0
0,6	0,583	155	1,822	47	0,162	73	0,379	- 91	7,7
0,7	0,585	151	1,547	41	0,192	71	0,441	- 99	6,6
0,8	0,579	146	1,356	35	0,219	71	0,505	-103	5,7
0,9	0,572	141	1,181	30	0,248	69	0,556	-106	4,8
1,0	0,568	136	1,075	26	0,273	68	0,581	-109	4,1

1) Applicable to that characteristic passing through $I_C = 110\text{ mA}$, $V_{CE} = 1\text{ V}$ at constant I_B .2) Measured with three tone modulation f approx. 800 MHz

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