

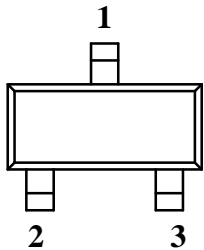
Silicon NPN Planar RF Transistor

Applications

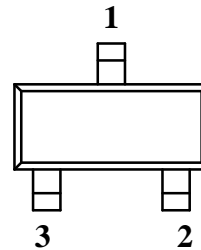
For broadband amplifiers up to 1 GHz.

Features

- High power gain
- SMD-package



94 9280



95 10527

BFS17 Marking: E1
 Plastic case (SOT 23)
 1= Collector; 2= Base; 3= Emitter

BFS17R Marking: E4
 Plastic case (SOT 23R)
 1= Collector; 2= Base; 3= Emitter

Absolute Maximum Ratings

Parameters	Symbol	Value	Unit
Collector-base voltage	V_{CB0}	25	V
Collector-emitter voltage	V_{CEO}	15	V
Emitter-base voltage	V_{EBO}	2.5	V
Collector current	I_C	25	mA
Collector peak current $f \geq 1$ MHz	I_{CM}	50	mA
Base current $f \geq 1$ MHz	I_B	3	mA
Total power dissipation $T_{amb} \leq 60^\circ\text{C}$	P_{tot}	200	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55 to +150	$^\circ\text{C}$

Maximum Thermal Resistance

Parameters	Symbol	Value	Unit
Junction ambient on glass fibre printed board (25 x 20 x 1.5) mm ³ plated with 35 μm Cu	R_{thJA}	450	K/W

Electrical DC Characteristics

 $T_{amb} = 25^{\circ}\text{C}$

Parameters / Test Conditions	Symbol	Min.	Typ.	Max.	Unit
Collector-base cut-off current $V_{CB} = 10\text{ V}, I_E = 0\text{ A}$ $V_{CB} = 10\text{ V}, I_E = 0\text{ A}, T_j = 100^{\circ}\text{C}$	I_{CBO} I_{CBO}			10 10	nA μA
Collector-base breakdown voltage $I_C = 10\text{ }\mu\text{A}$	$V_{(BR)CBO}$	25			V
Collector-emitter breakdown voltage $I_C = 3\text{ mA}, I_B = 0\text{ A}$	$V_{(BR)CEO}$	15			V
Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}$	$V_{(BR)EBO}$	2.5			V
Collector saturation voltage $V_{CE} = 1\text{ V}, I_C = 20\text{ mA}$	V_{CEsat}			750	mV
DC forward current transfer ratio $V_{CE} = 1\text{ V}, I_C = 2\text{ mA}$ $V_{CE} = 1\text{ V}, I_C = 25\text{ mA}$	h_{FE} h_{FE}	20 20		150	

Electrical AC Characteristics

 $T_{amb} = 25^{\circ}\text{C}$

Parameters / Test Conditions	Symbol	Min.	Typ.	Max.	Unit
Gain bandwidth product $V_{CE} = 5\text{ V}, f = 300\text{ MHz}, I_C = 14\text{ mA}$ $V_{CE} = 5\text{ V}, f = 300\text{ MHz}, I_C = 2\text{ mA}$ $V_{CE} = 5\text{ V}, f = 300\text{ MHz}, I_C = 25\text{ mA}$	f_T f_T f_T		2.4 1.5 2.1		GHz GHz GHz
Collector-emitter capacitance $V_{CE} = 5\text{ V}, f = 1\text{ MHz}$	C_{ce}		0.2		pF
Collector-base capacitance $V_{CB} = 5\text{ V}, f = 1\text{ MHz}$	C_{cb}		0.45		pF
Emitter-base capacitance $V_{EB} = 0.5\text{ V}, f = 1\text{ MHz}$	C_{eb}		0.8		pF
Noise figure $V_{CE} = 5\text{ V}, I_C = 2\text{ mA}, R_G = 50\text{ }\Omega, f = 800\text{ MHz}$	F		3.5	5	dB
Power gain $V_{CE} = 5\text{ V}, I_C = 2\text{ mA}, R_G = 50\text{ }\Omega,$ $f = 200\text{ MHz}$ $f = 800\text{ MHz}$	G_{pe} G_{pe}		23 11		dB dB
Linear output voltage – two tone intermodulation $V_{CE} = 5\text{ V}, I_C = 14\text{ mA}, d_{IM} = 60\text{ dB},$ $f_1 = 806\text{ MHz}, f_2 = 810\text{ MHz}, R_G = R_L = 50\text{ }\Omega$	$V_1 = V_2$		100		mV
Third order intercept point $V_{CE} = 5\text{ V}, I_C = 14\text{ mA}, f = 800\text{ MHz}$	IP_3		23		dBm

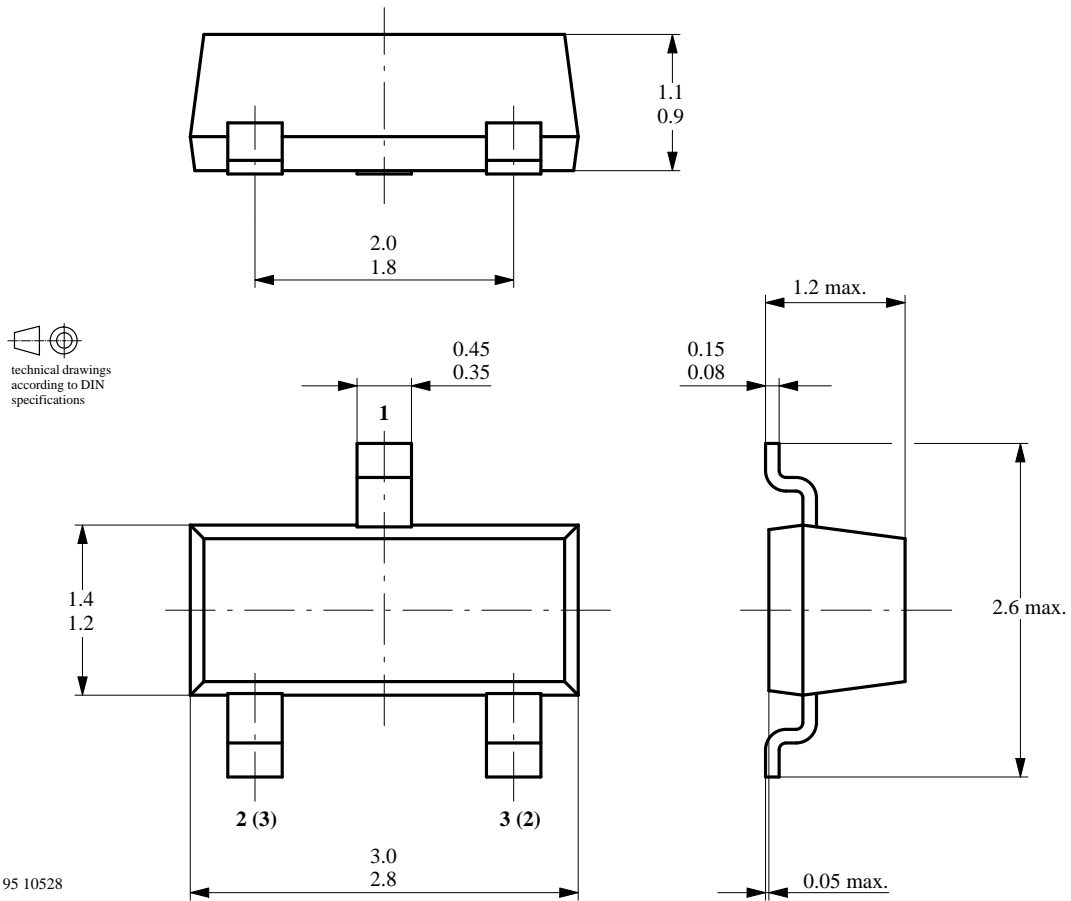
Common Emitter S-Parameters

 $Z_0 = 50 \Omega$

V_{CE}/V	I_C/mA	f/MHz	S_{11}		S_{21}		S_{12}		S_{22}		
			LIN MAG	ANG	LIN MAG	ANG	LIN MAG	ANG	LIN MAG	ANG	
				deg		deg		deg		deg	
5	2	100	0.89	-30.1	5.92	155.7	0.03	73.7	0.95	-9.2	
		300	0.67	-77.7	4.35	121.5	0.06	53.5	0.80	-18.5	
		500	0.52	-110.1	3.12	100.8	0.08	47.4	0.71	-20.3	
		800	0.42	-141.1	2.13	82.4	0.09	48.7	0.67	-21.6	
		1000	0.40	-155.6	1.77	73.5	0.10	51.3	0.67	-23.9	
		1200	0.40	-167.6	1.51	66.1	0.11	54.3	0.67	-27.1	
		1500	0.41	176.3	1.27	56.0	0.13	59.6	0.66	-32.4	
		1800	0.43	162.8	1.09	48.6	0.15	65.5	0.66	-37.3	
	2000	0.44	153.6	0.98	45.8	0.18	71.6	0.68	-41.0		
	5		100	0.75	-49.0	11.55	142.9	0.02	66.8	0.88	-14.3
			300	0.48	-106.9	6.36	106.6	0.05	55.0	0.67	-18.9
			500	0.39	-137.3	4.09	90.5	0.06	56.9	0.61	-17.4
			800	0.36	-162.5	2.65	76.0	0.08	61.2	0.60	-17.6
			1000	0.35	-173.1	2.16	68.6	0.10	63.2	0.61	-20.1
			1200	0.37	178.1	1.84	62.2	0.11	65.2	0.61	-23.4
			1500	0.40	165.0	1.51	53.2	0.14	68.1	0.61	-28.9
			1800	0.42	153.7	1.28	46.4	0.16	71.8	0.61	-33.7
	2000	0.43	146.0	1.16	44.2	0.19	76.1	0.64	-37.5		
	10		100	0.58	-70.1	16.31	130.8	0.02	62.7	0.79	-17.5
			300	0.39	-129.4	7.28	98.3	0.04	61.2	0.59	-16.5
			500	0.36	-154.4	4.52	85.2	0.05	64.9	0.56	-14.2
			800	0.36	-174.1	2.88	72.6	0.08	67.6	0.57	-14.8
			1000	0.36	176.8	2.33	65.9	0.10	68.7	0.58	-17.5
			1200	0.38	169.3	1.97	59.8	0.11	70.2	0.59	-21.3
			1500	0.41	159.0	1.61	51.7	0.14	72.7	0.59	-26.7
			1800	0.44	148.4	1.36	45.4	0.17	75.6	0.60	-31.8
	2000	0.46	140.9	1.23	43.0	0.20	79.6	0.62	-35.7		
	15		100	0.49	-84.8	18.25	124.3	0.01	62.8	0.73	-18.0
			300	0.37	-140.9	7.49	94.8	0.03	65.1	0.57	-14.7
			500	0.36	-162.3	4.59	82.8	0.05	68.3	0.55	-12.7
			800	0.37	-179.6	2.91	71.0	0.08	70.4	0.56	-13.5
			1000	0.38	173.1	2.34	64.5	0.09	71.4	0.58	-16.5
			1200	0.40	166.1	1.98	58.8	0.11	72.8	0.58	-20.4
			1500	0.44	155.8	1.61	50.7	0.14	75.2	0.59	-26.2
			1800	0.46	145.8	1.36	44.6	0.17	78.2	0.60	-31.4
	2000	0.48	137.7	1.23	42.4	0.20	81.9	0.62	-35.2		
	20		100	0.44	-96.6	19.07	120.0	0.01	62.0	0.70	-17.6
			300	0.36	-148.7	7.46	92.6	0.03	67.9	0.57	-13.3
			500	0.38	-167.0	4.55	81.4	0.05	70.5	0.55	-11.6
			800	0.39	177.5	2.87	69.9	0.07	72.3	0.57	-13.2
1000			0.40	169.8	2.31	63.5	0.09	73.3	0.58	-16.3	
1200			0.42	163.8	1.95	57.9	0.11	74.9	0.59	-20.3	
1500			0.46	153.8	1.58	50.1	0.13	77.5	0.59	-26.2	
1800			0.49	143.7	1.34	43.9	0.17	80.4	0.60	-31.4	
2000	0.49	136.1	1.21	41.9	0.20	83.7	0.62	-35.4			

BFS 17 / BFS 17 R

Dimensions in mm



Ozone Depleting Substances Policy Statement

It is the policy of **TEMIC TELEFUNKEN microelectronic GmbH** to

1. Meet all present and future national and international statutory requirements.
2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

TEMIC TELEFUNKEN microelectronic GmbH semiconductor division has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively
2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA
3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

TEMIC can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

We reserve the right to make changes without further notice to improve technical design.

Parameters can vary in different applications. All operating parameters must be validated for each customer application by customer. Should Buyer use TEMIC products for any unintended or unauthorized application, Buyer shall indemnify TEMIC against all claims, costs, damages, and expenses, arising out of, directly or indirectly, any claim of personal damage, injury or death associated with such unintended or unauthorized use.

TEMIC TELEFUNKEN microelectronic GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany
Telephone: 49 (0)7131 67 2831, Fax Number: 49 (0)7131 67 2423