BIPMIC® – Cascadable Silicon Bipolar Amplifier

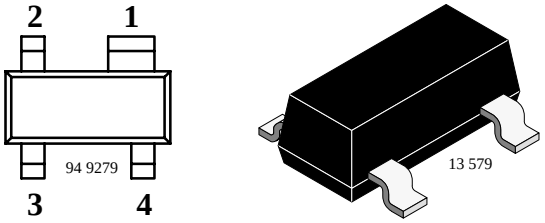
Electrostatic sensitive device.
Observe precautions for handling.

Applications

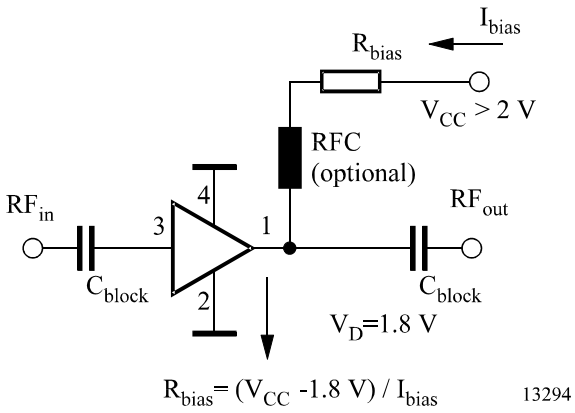
General purpose for narrow and broad band IF and RF amplifiers in commercial and industrial applications with low power consumption. This allows to build amplifiers with minimal external circuitry, thus providing a simple, cost effective way to achieve low level amplification, for example in cordless phones.

Features

- Broadband amplification
- Low operating voltage (3 V)
- Low operating current
- High gain (8.5 dB @900 MHz and 50 Ω)
- Low cost surface mount plastic package
- Few external components



S860T Marking: 860
Plastic case (SOT 143)
1 = RF-output, 2 = Ground,
3 = RF-input, 4 = Ground



Typical biasing configuration

Absolute Maximum Ratings

T_{amb} = 25°C, unless otherwise specified

Parameter	Test Conditions	Symbol	Value	Unit
Device current		I_{bias}	4	mA
RF input power		P_{in}	0	dBm
Total power dissipation	$T_{amb} \leq 146$ °C	P_{tot}	8	mW
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	–65 to +150	°C

Maximum Thermal Resistance

T_{amb} = 25°C, unless otherwise specified

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

Electrical AC Characteristics

I_{bias} = 3 mA , Z_0 = 50 Ω, T_{amb} = 25°C, unless otherwise specified

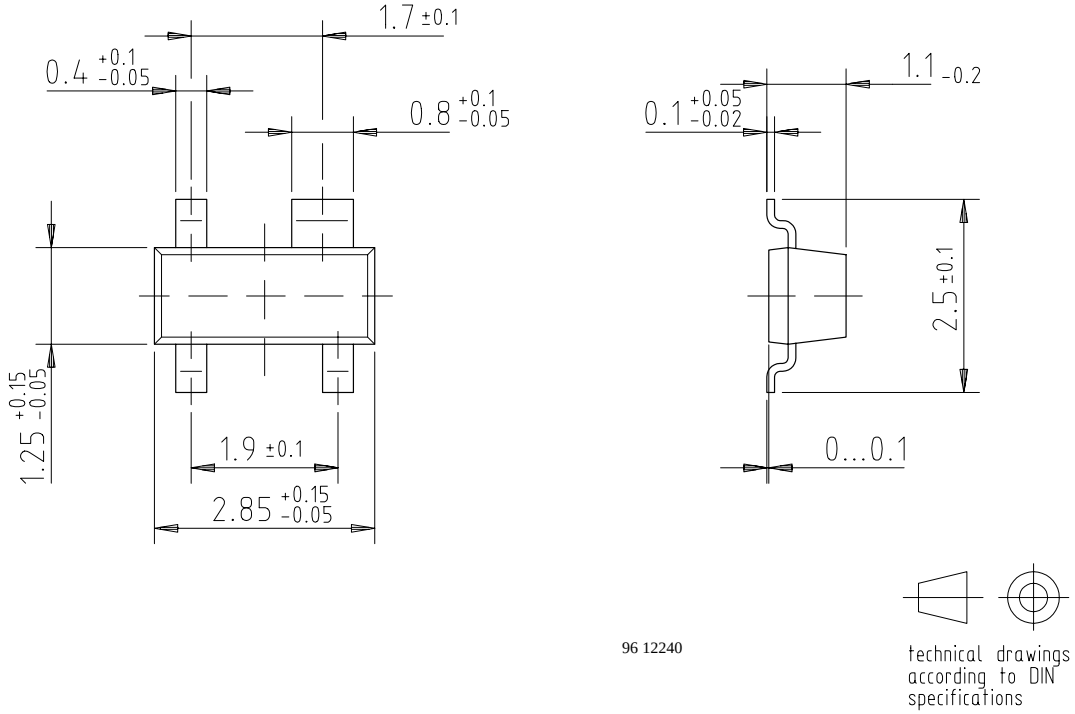
Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Power gain	f = 900 MHz	G_p	6	8.5		dB
	f = 1.9 GHz	G_p	5	7.5		dB
3 dB bandwidth		f_{3dB}		2.5		GHz
Noise figure	f = 900 MHz	F		5.5		dB
	f = 1.9 GHz	F		6.5		dB
Intermodulation distortion	7 mV input voltage, f = 900 MHz	IM_3		40		dB
	7 mV input voltage, f = 1.9 GHz	IM_3		45		dB
Device voltage		V_d		1.8		V

Common Emitter S–Parameters

V_{CC} = 2.4 V , R_{bias} = 200 Ω , Z_0 = 50 Ω, T_{amb} = 25°C, unless otherwise specified

f/MHz	S11		S21		S12		S22	
	LOG MAG	ANG	LOG MAG	ANG	LOG MAG	ANG	LOG MAG	ANG
	dB	deg	dB	deg	dB	deg	dB	deg
100	–2.28	–2.7	7.78	174.9	–20.37	19.2	–2.06	–11.3
200	–2.34	–5.4	7.72	170.2	–20.00	15.3	–2.54	–10.6
300	–2.40	–8.1	7.69	165.6	–19.49	16.1	–2.86	–12.4
400	–2.46	–10.3	7.64	160.4	–19.28	18.9	–2.88	–14.5
500	–2.57	–13.0	7.63	155.7	–18.93	22.0	–2.84	–17.6
600	–2.66	–15.5	7.59	150.7	–18.39	25.4	–2.84	–21.4
700	–2.71	–17.7	7.49	146.6	–17.63	27.0	–3.01	–25.7
800	–2.75	–20.2	7.41	141.9	–16.93	27.1	–3.40	–29.7
900	–2.85	–22.5	7.38	137.2	–17.21	26.0	–3.45	–26.4
1000	–2.93	–24.9	7.33	132.9	–16.42	27.6	–3.62	–32.3
1100	–3.05	–27.1	7.24	128.6	–15.89	29.2	–3.55	–36.3
1200	–3.18	–29.7	7.10	124.4	–15.36	29.2	–3.67	–39.9
1300	–3.28	–32.6	7.08	120.1	–14.63	30.4	–3.53	–45.5
1400	–3.37	–35.0	7.03	116.4	–14.18	27.5	–4.22	–49.1
1500	–3.54	–37.4	6.87	112.1	–13.88	26.0	–4.62	–51.5
1600	–3.63	–40.4	6.91	108.2	–13.64	24.4	–5.03	–53.6
1700	–3.75	–43.1	6.82	104.5	–13.36	23.4	–5.24	–55.4
1800	–3.90	–46.1	6.76	100.8	–13.03	23.0	–5.26	–58.0
1900	–4.10	–49.0	6.78	96.5	–12.66	22.3	–5.40	–61.9
2000	–4.24	–52.2	6.73	93.0	–12.35	20.6	–5.75	–65.3
2100	–4.35	–55.7	6.65	89.1	–12.14	19.0	–6.09	–67.7
2200	–4.54	–59.1	6.64	85.4	–11.98	17.7	–6.34	–69.9
2300	–4.81	–62.2	6.46	81.8	–11.79	17.1	–6.40	–72.0
2400	–4.75	–65.7	6.61	78.5	–11.35	16.6	–6.31	–76.7
2400	–5.02	–72.4	6.74	74.4	–10.86	13.3	–6.69	–82.9
2600	–5.61	–75.7	6.61	69.5	–10.64	10.7	–7.13	–87.0
2700	–6.05	–80.4	6.54	65.3	–10.54	8.6	–7.60	–89.9
2800	–6.50	–84.4	6.56	61.8	–10.48	6.3	–8.10	–92.8
2900	–7.02	–89.6	6.33	57.3	–10.42	3.9	–8.60	–96.0
3000	–7.45	–94.6	6.31	53.0	–10.38	1.8	–9.11	–99.0

Dimensions of S860T in mm



Ozone Depleting Substances Policy Statement

It is the policy of **Vishay Semiconductor 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.

Vishay Semiconductor GmbH 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.

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

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