1.3 GHz Prescaler with Scaling Factors 64, 128 and 256

Description

This prescaler requires a power supply of 5 V and has a scaling factor of 64, 128 and 256. The scaling factors are programmed via Pin 5. If this pin is not connected, a scaling factor of 64 is programmed. Scaling factor 256 is programmed by connecting Pin 5 to ground and scaling factor 128 is programmed by connecting Pin 5 to +5 V.

Features

- Low current consumption (typ. 18 mA)
- Output harmonics strongly reduced
- 3 scaling factors 64/128/256 programmable at Pin 5
- High input sensitivity
- Emitter follower output stage
- Electrostatic protection

Block Diagram

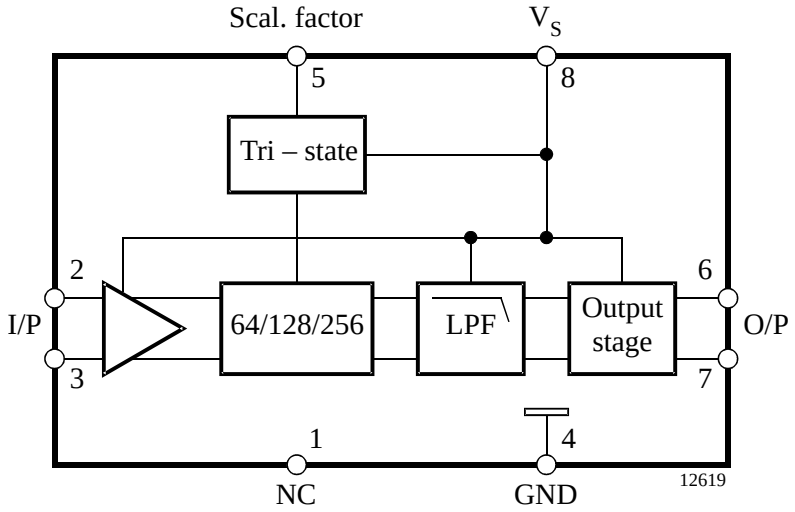


Figure 1. Block diagram

Ordering Information

Extended Type Number	Package	Remarks
U893BSE-AFPG3	SO8 plastic package	Taped and reeled

Pin Description

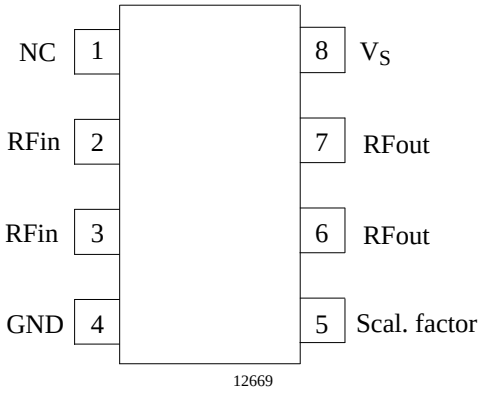


Figure 2. Pinning

Pin	Symbol	Function
1	NC	Not connected
2	RFin	RF input
3	RFin	RF input
4	GND	Ground
5	Scal. factor	Scaling factor programming pin
6	RFout	RF output
7	RFout	RF output
8	V_S	Supply voltage

Absolute Maximum Ratings

All voltages are refferred to GND, Pin 4

Parameters		Symbol	Min.	Max.	Unit
Supply voltage	Pin 8	V_S		6	V
Input voltage range	Pins 2, 3 and 5	V_i	0	V_S	V
Junction temperature		T_{jmax}		125	°C
Storage temperature range		T_{stg}	–40	+125	°C

Operating Range

All voltages are refferred to GND, Pin 4

Parameters		Symbol	Min.	Typ.	Max.	Unit
Supply voltage	Pin 8	V_S	4.5	5.0	5.5	V
Ambient temperature		T_{amb}	–25		+85	°C

Thermal Resistance

Parameters		Symbol	Maximum	Unit
Junction ambient	Package SO8 soldered to PCB	R_{thJA}	175	K/W

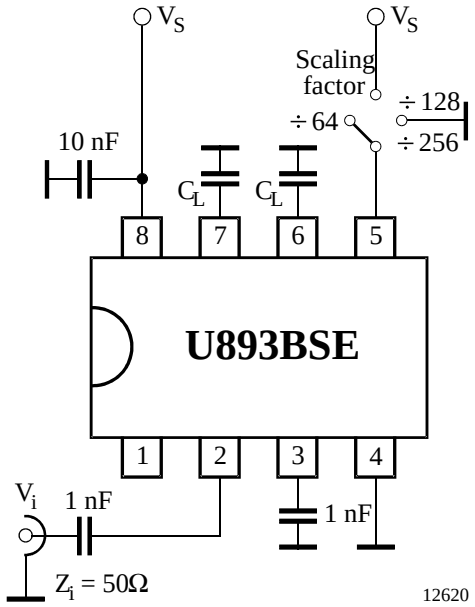
Electrical Characteristics

Test conditions: V_S = 4.5 to 5.5 V, T_{amb} = 0 to 70°C, referred to test circuit, unless otherwise specified

Parameters	Test Conditions / Pin	Symbol	Min.	Typ.	Max.	Unit
Supply voltage range	Pin 8	V_S	4.5		5.5	V
Supply current	V_S = 5 V Pin 8	I_S		21	25	mA
Input sensitivity [1]	f_i = 70 to 1100 MHz Pins 2 and 3	v_i			10	mV
	f_i = 1100 to 1200 MHz Pins 2 and 3	v_i			15	mV
	f_i = 1200 to 1300 MHz Pins 2 and 3	v_i			20	mV
Large signal compatibility	R_G = 50 Ω Pins 2 and 3	V_i	300			mV
Frequency range	Pins 2 and 3	f_i	70		1300	MHz
Emitter follower output						
Voltage swing each output	$f_i \leq$ 1000 MHz, C_L = 13 pF, SF = 1:64 Pins 6 and 7	V_O	0.6	0.7		V_{pp}
Output impedance	Pins 6 and 7	Z_O		200		Ω
Third order harmonics suppression	f_i = 700 to 900 MHz, C_L = 13 pF, SF = 1:64 Pins 6 and 7	$20 \times \log \frac{V_{O3f}}{V_{O1f}}$		–30		dB
Scaling factor programming input						
Switching voltage for scaling factor 1:64 1:128 1:258	Pin 5	V_{SF} V_{SF} V_{SF}	 V_S – 0.5	Pin open 0	 0.3	 V
Switching current scaling factor 1:128 1:258	V_S = 5 V Pin 5 V_S = 0 V Pin 5	I_{SF} I_{SF}		150 –150		µA µA

[1] RMS-voltage calculated from the measured available power

Test Circuit



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C_L = Total capacitive output load including test fixture and test equipment capacitance

Figure 3.

Output Circuit

Emitter follower output

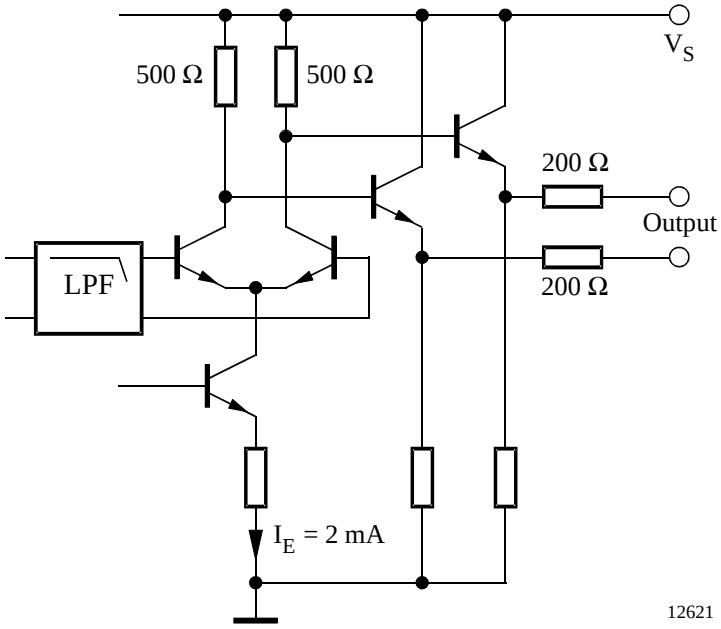


Figure 4.

Input Sensitivity

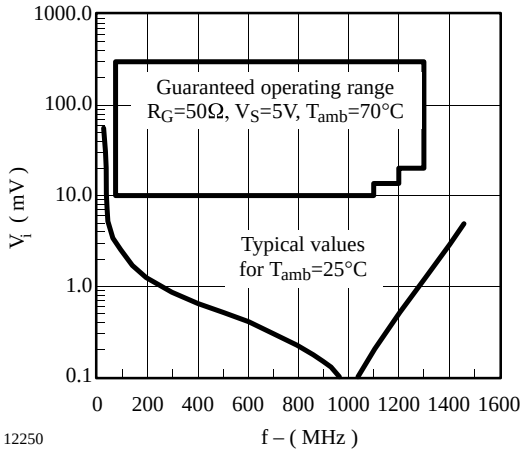
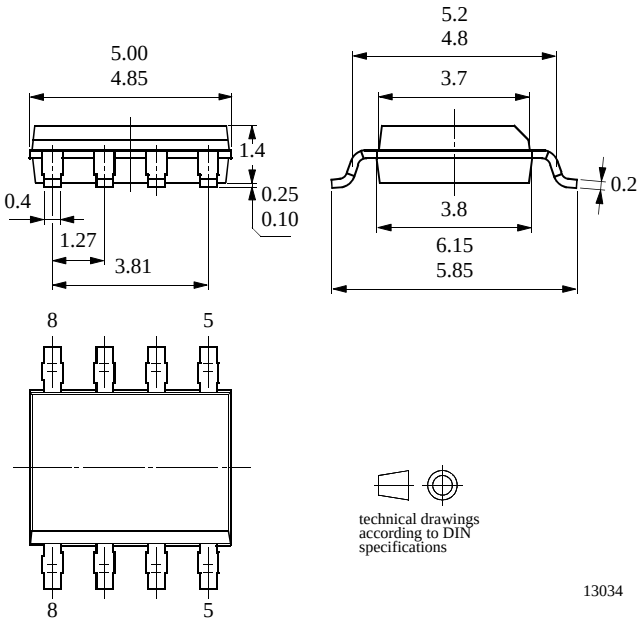


Figure 5.

Package Information

Package SO8
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.

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