1.3 GHz Prescaler for PLL's in TV, CATV and SAT TV Tuners

Technology: Bipolar

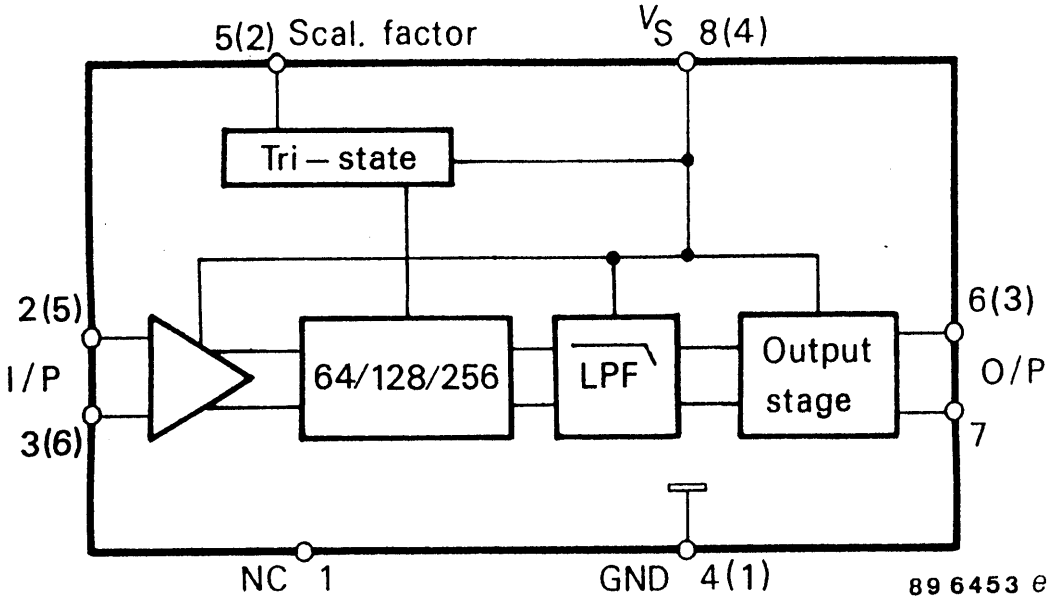
Features

- Extrem 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 according to MIL–STD. 883
- Pin compatible to U833BSE

Case

8 pin dual inline plastic	(U893BSE)
8 pin SO plastic	(U893BSE-FP)
6 pin SIP plastic	(U893BSE-SP)

Block Diagram



Pin Configuration

Pin	Function (DIP8, SO8)
1	n.c.
2, 3	Input
4	Ground
5	Switch 64/128/256
6, 7	Output
8	V_S

Pin	Function (SIP6)
1	Ground
2	Switch 64/128/256
3	Output
4	V_S
5, 6	Input

Absolute Maximum Ratings

Reference point Pin 4 (1), unless otherwise specified

Parameters		Symbol	Value	Unit
Supply voltage	Pin 8 (4)	V_S	6	V
Input voltage range	Pin 2, 3, 5 (2, 5, 6)	V_i	0 to V_S	V
Junction temperature		T_j	125	°C
Ambient temperature range		T_{amb}	–25 to +85	°C
Storage temperature range		T_{stg}	–40 to +125	°C

Thermal Resistance

Parameters		Symbol	Maximum	Unit
Junction ambient	DIP8	R_{thJA}	100	K/W
	SIP6	R_{thJA}	100	K/W
	SO8	R_{thJA}	175	K/W

Electrical Characteristics

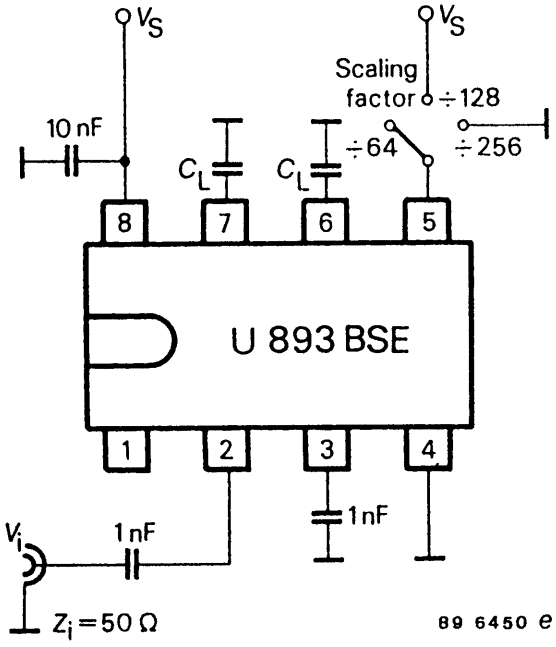
V_S = 4.5 to 5.5 V, T_{amb} = 0 to 70 °C, referred to test circuit, unless otherwise specified

Parameters	Test Conditions / Pin	Symbol	Min.	Typ.	Max.	Unit
Supply voltage range	Pin 8 (4)	V_S	4.5		5.5	V
Supply current	V_S = 5 V Pin 8 (4)	I_S		21	25	mA
Input sensitivity [1]	R_G = 50 Ω f_i = 70 to 1100 MHz Pin 2, 3 (5, 6)	v_i			10	mV
	f_i = 1100 to 1200 MHz Pin 2, 3 (5, 6)	v_i			15	mV
	f_i = 1200 to 1300 MHz Pin 2, 3 (5, 6)	v_i			20	mV
Large signal compatibility	R_G = 50 Ω Pin 2, 3 (5, 6)	V_i	300			mV

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

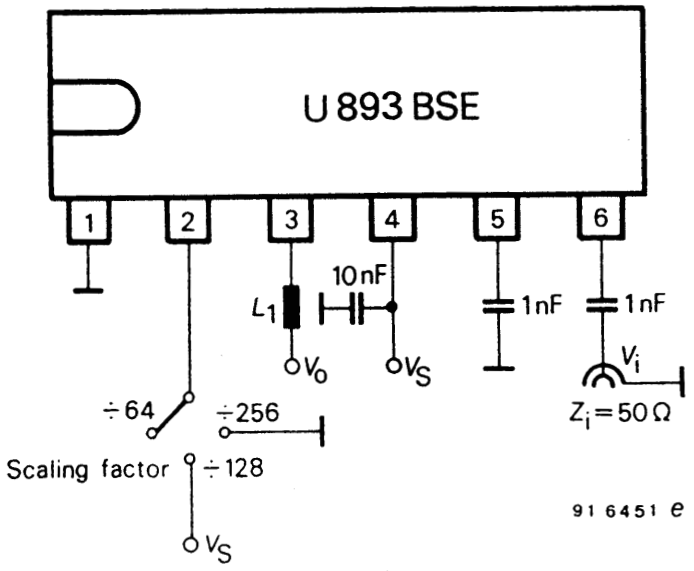
Parameters	Test Conditions / Pin	Symbol	Min	Typ	Max	Unit
Frequency range		f_{imin}			70	MHz
		f_{imax}	1300			MHz
Emitter follower output Voltage swing each output	$f_i \leq 1000$ MHz, C_L = 13 pF, SF = 1:64 Pin 6, 7 (3)	V_O	0.6	0.7		V_{pp}
Output impedance	Pin 6, 7 (3)	Z_O		200		Ω
3rd order harmonics suppression	f_i = 700 to 900 MHz, C_L = 13 pF, SF = 1:64 Pin 6, 7 (3)	$20 \times \log \frac{V_{O3f}}{V_{O1f}}$		–30		dB
Switching voltage for scaling factor (SF)	1:64 Pin 5 (2)	V_{SF}		open		
	1:128	V_{SF}	$V_S - 0.5$			V
	1:256	V_{SF}		0	0.3	V
Switching current	V_S = 5 V Pin 5 (2)					
	1:128 V_{SF} = 5 V	I_{SF}		150		µA
	1:256 V_{SF} = 0 V	I_{SF}		–150		µA

Test Circuits



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

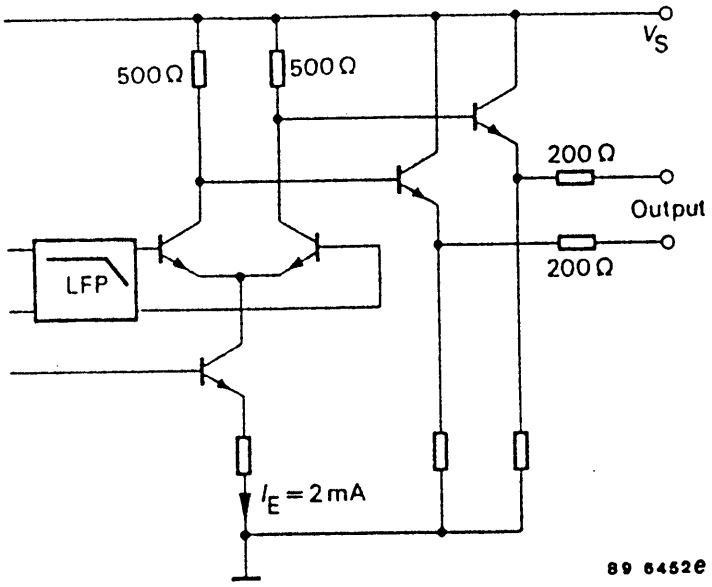
DIP 8/SO 8



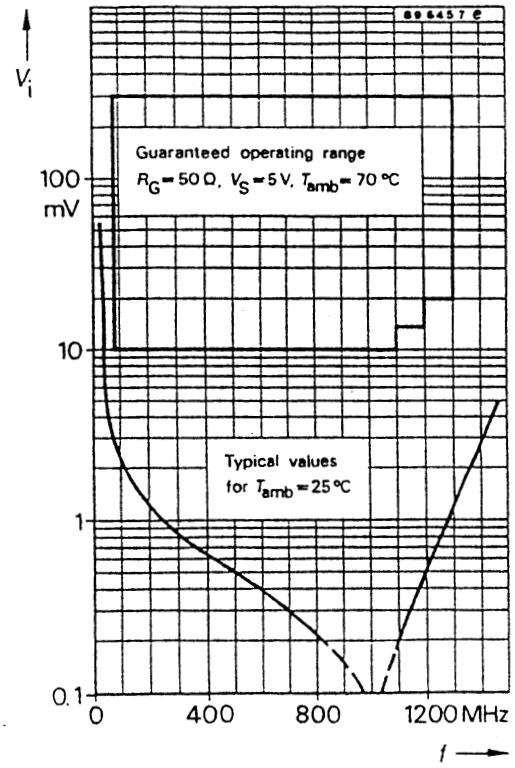
SIP 6

Output Circuit

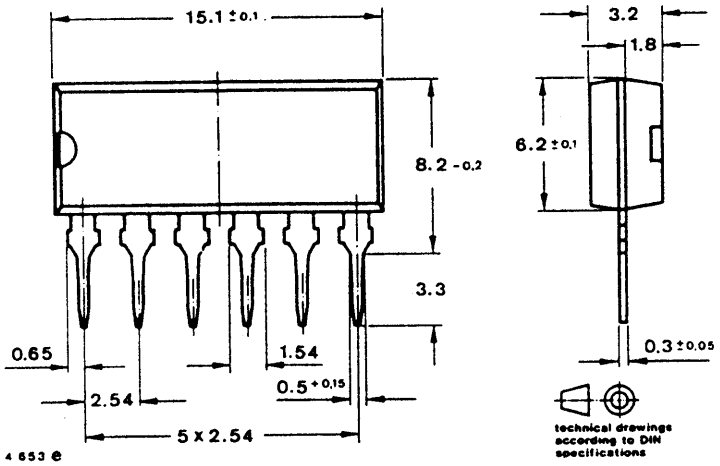
Emitter follower output



Input Sensitivity

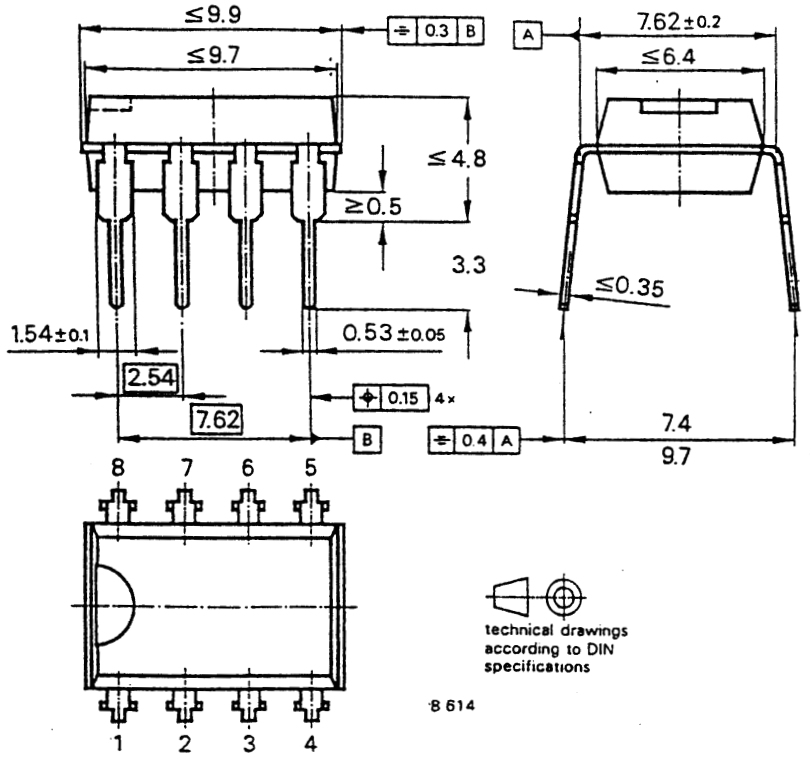


Dimensions in mm

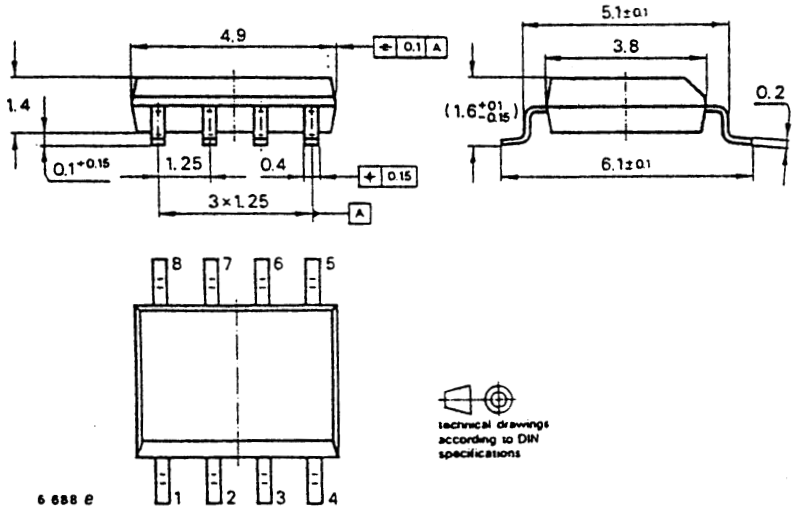


Case
SIP 6
6-leads

Dimensions in mm



Case
DIP 8-leads



Case
SO 8
(SOT 96 A)

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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