1.3-GHz Prescaler for PLLs in TV, CATV and SAT TV Tuners

Technology: Bipolar

Features

- U833BS ECL output stage
- U833BSE emitter follower output stage
- 3 scaling factors 64/128/256 programmable at Pin 5
- High input sensitivity
- Low output impedance
- Low power consumption
- Pin-compatible to the U6xxB series except Pin 5
- Electrostatic protection according to MIL-STD. 883

Block Diagram

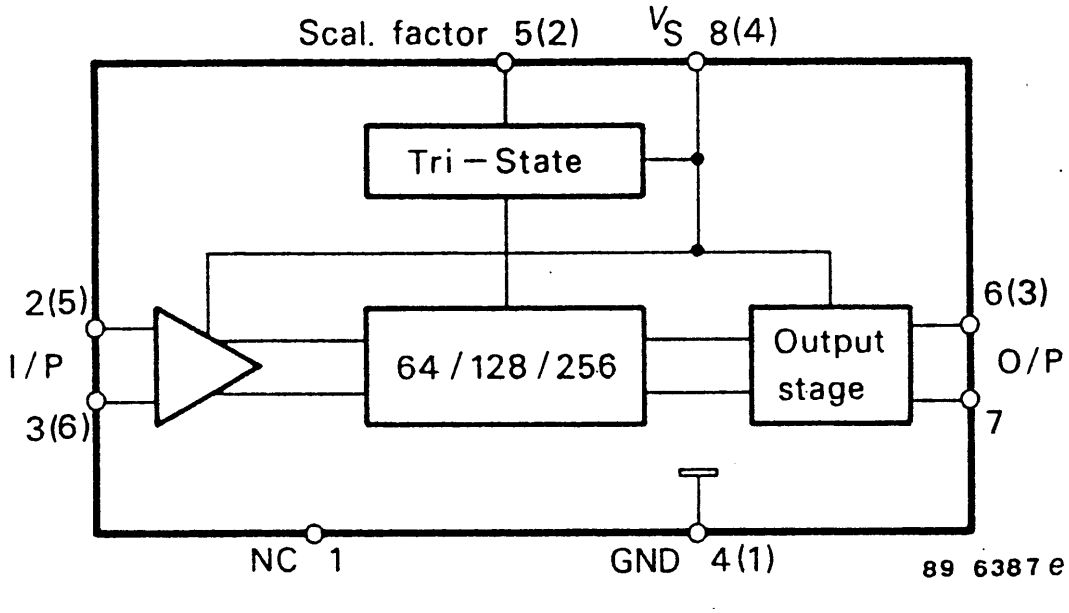


Figure 1. Block diagram

Ordering Information

Extended Type Number	Package	Remarks
U833BS, U833BSE	8-pin dual-inline plastic	
U833BS-FP, U833BSE-FP	8-pin SO plastic	
U833BS-SP, U833BSE-SP	6-pin SIP plastic	

Pin Connection (DIP8, SO8)

Pin	Function
1	Not connected
2, 3	Input
4	Ground
5	Switch 64/128/256
6, 7	Output
8	V_S

Pin Connection (SIP6)

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

Note:

Pin numbers without brackets apply to DIP8 and SO8 package,
Pin numbers with brackets to SIP6

RMS voltage calculated from the available power measured

Absolute Maximum Ratings

Reference point Pin 4 (1)

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
Storage-temperature range		T_{stg}	–40 to +125	°C
Ambient-temperature range		T_{amb}	–25 to +70	°C

Maximum 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

Note:

The device is self-oscillating without input signal**.**

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 current [1]	V_S = 5 V Pin 8 (4)	I_S		40	50	mA
Input sensitivity [2]	R_G = 50 Ω					
	f_i = 70 to 1000 MHz Pin 2, 3 (5, 6)	V_i			10	mV
	f_i = 1000 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
Frequency range		f_{imin}			70	MHz
		f_{imax}	1300			MHz
Output stage						
a. Balanced ECL output						
Voltage swing each output	R_L = 10 k//13 pF Pin 6, 7 (3)	V_O	0.8			V_{pp}
Output impedance	Pin 6, 7 (3)	Z_O		500		Ω
b. Emitter follower						
Voltage swing each output	R_L = 10 k//13 pF Pin 6, 7 (3)	V_O	1			V_{pp}
Output impedance	Pin 6, 7 (3)	Z_O		200		Ω
Switching voltage for	./. 64 Pin 5 (2)	V_{SF}		open		
	./. 128 Pin 5 (2)	V_{SF}	V_S –0.5			V
	./. 256 Pin 5 (2)	V_{SF}		0	0.5	V

Test Circuits

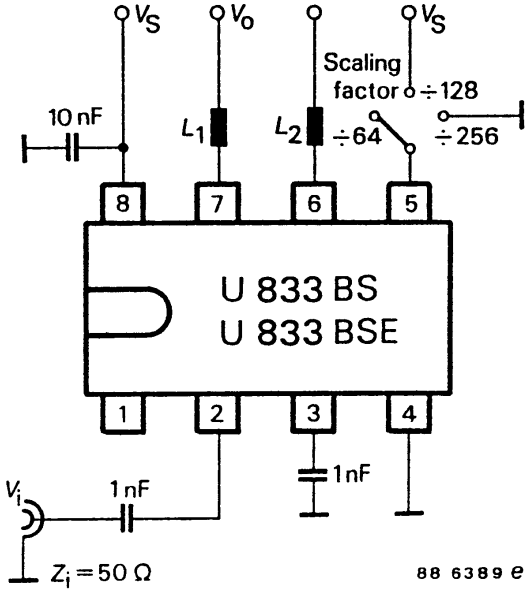
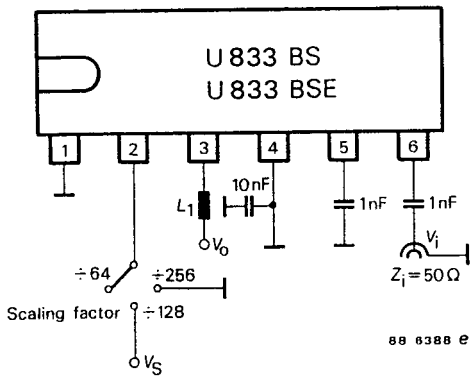


Figure 2. DIP8/ SO8



$L_1 = L_2$ = 150 nH (6 turns CuL 0.45 mm Ø on 4 mm Ø)

Figure 3. SIP6

Output Circuits

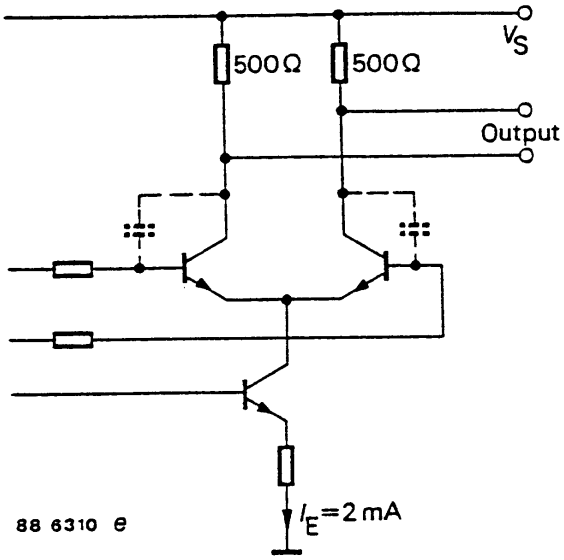


Figure 4. ECL output (U833BS)

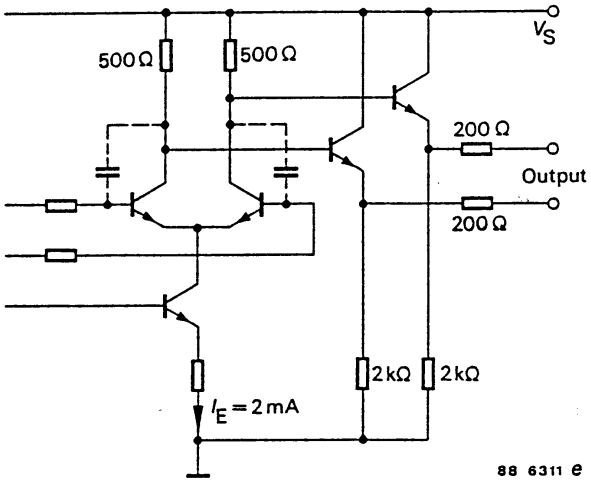
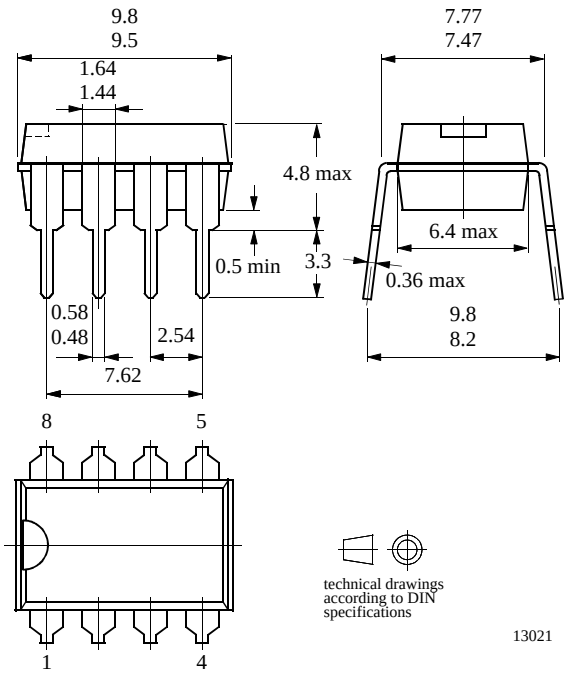


Figure 5. Emitter follower output (U833BSE)

Package Information

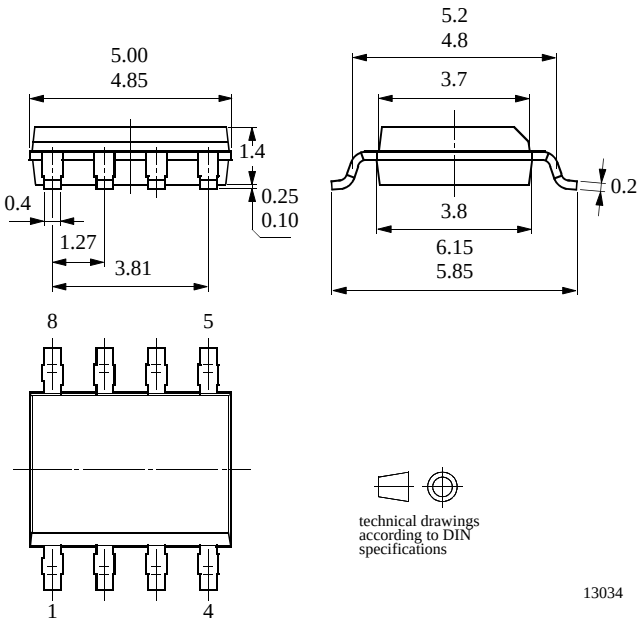
Package DIP8

Dimensions in mm

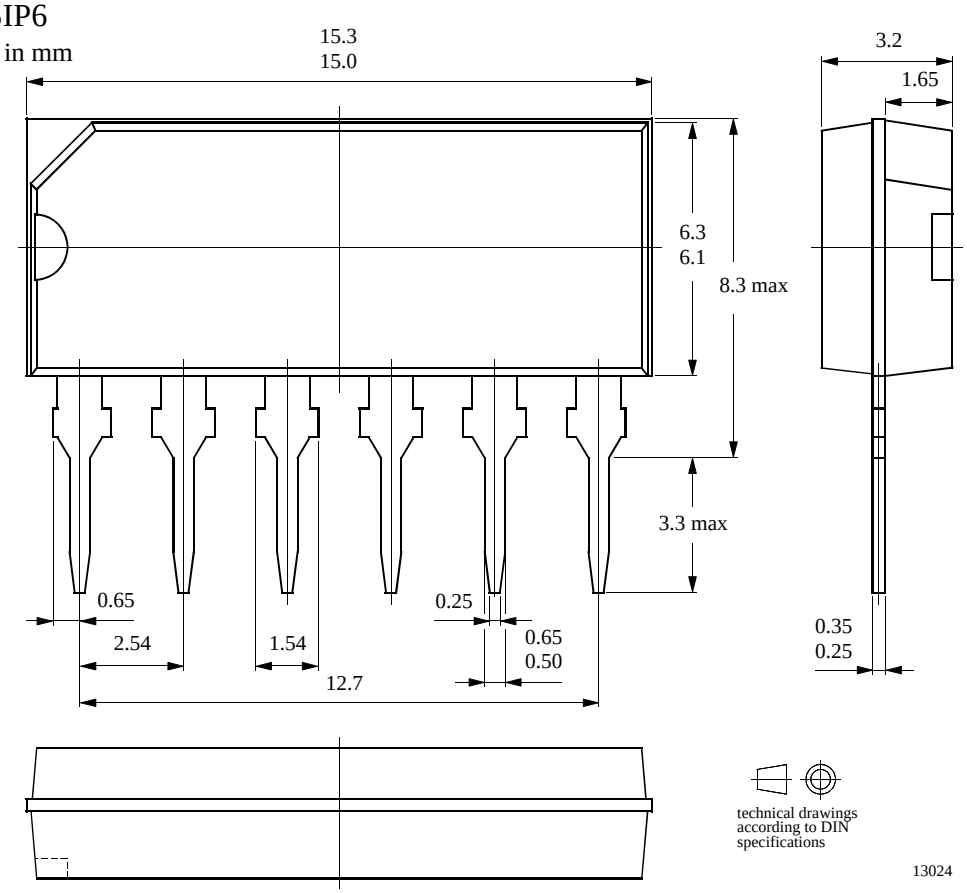


Package Information

Package SO8
Dimensions in mm



Package SIP6
Dimensions in mm



Ozone Depleting Substances Policy Statement

It is the policy of **TEMIC 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.

TEMIC 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.

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

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