U 833 BS / U 833 BSE

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

Technology: Bipolar

Features

- U 833 BS ECL output stage
- U 833 BSE 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 U 6.. B-series except pin 5
- Electrostatic protection according to MIL-STD. 883

Case

8-pin dual inline plastic	(U 833 BS, U 833 BSE)
8-pin SO plastic	(U 833 BS-FP, U 833 BSE-FP)
6-pin SIP plastic	(U 833 BS-SP, U 833 BSE-SP)

Absolute Maximum Ratings

Reference point pin 4 (1) [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 ... V_S	V
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	–40 ... +125	°C
Ambient temperature range		T_{amb}	–25 ... +70	°C

Maximum Thermal Resistance

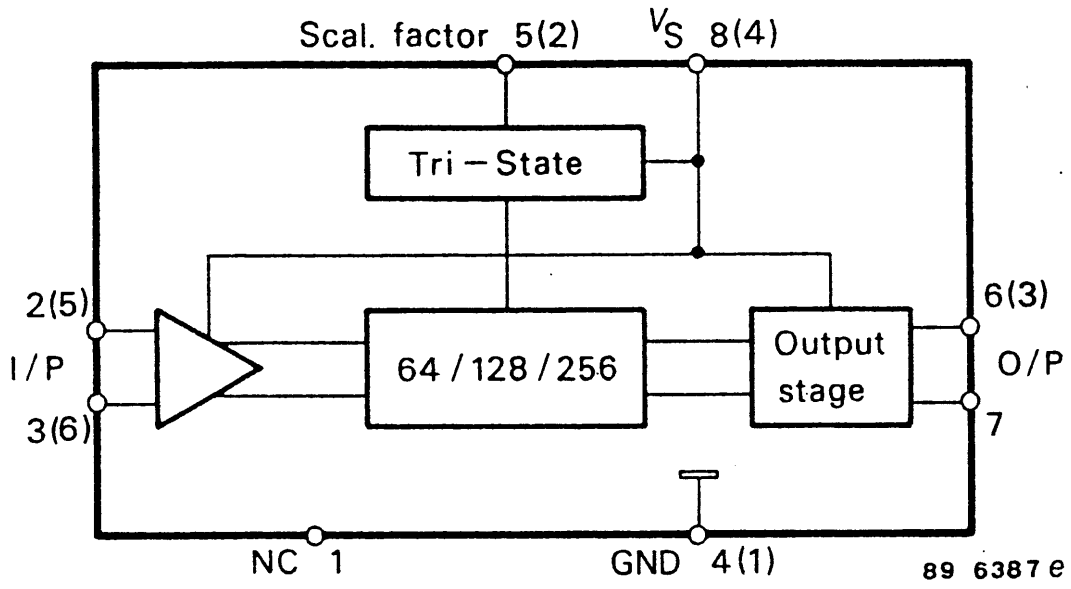
Parameters		Symbol	Maximum	Unit
Junction ambient	DIP 8	R_{thJA}	100	K/W
	SIP 6	R_{thJA}	100	K/W
	SO 8	R_{thJA}	175	K/W

Note

The device is self oscillating without input signal

Preliminary Information

Block diagram



Pin Connection (DIP 8, SO 8)

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

Pin Connection (DIP 8, SO 8)

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

Notes

1) Pin numbers without brackets apply to DIP 8 and SO 8 package
Pin numbers with brackets to SIP 6

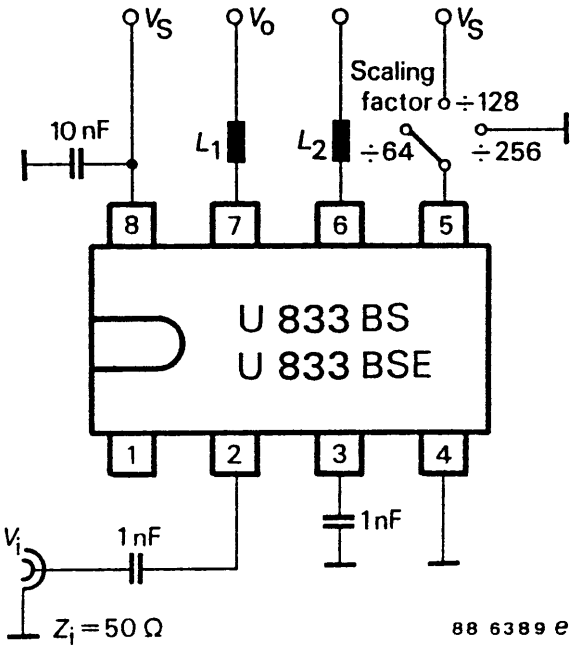
2) RMS-voltage calculated from the measured available power

Electrical Characteristics

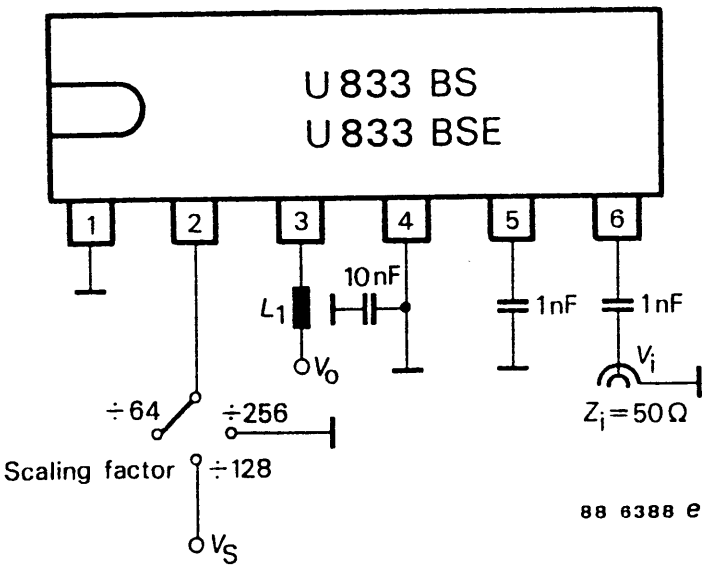
V_S = 4.5 ... 5.5 V, T_{amb} = 0 ... +70 °C, referred to test circuit, unless otherwise specified

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 ... 1000 MHz Pin 2, 3 (5, 6)	V_i			10	mV
	f_i = 1000 ... 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



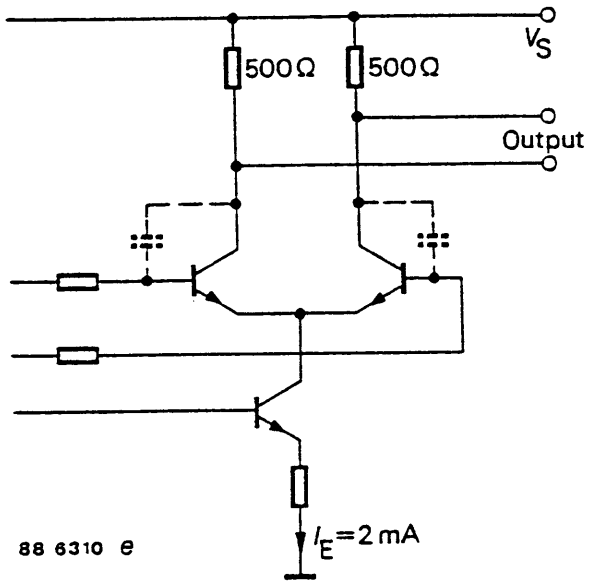
DIP 8/SO 8



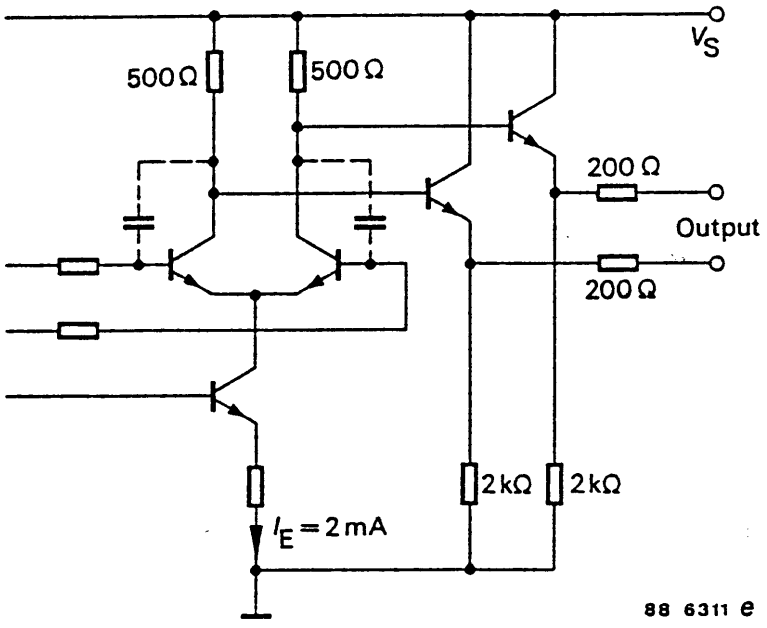
SIP 8

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

Output Circuits

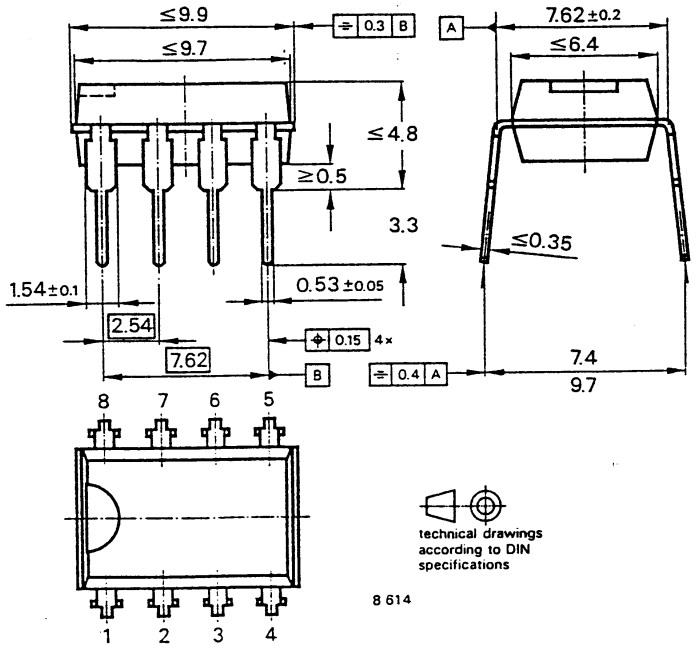


ECL output (U 833 BS)

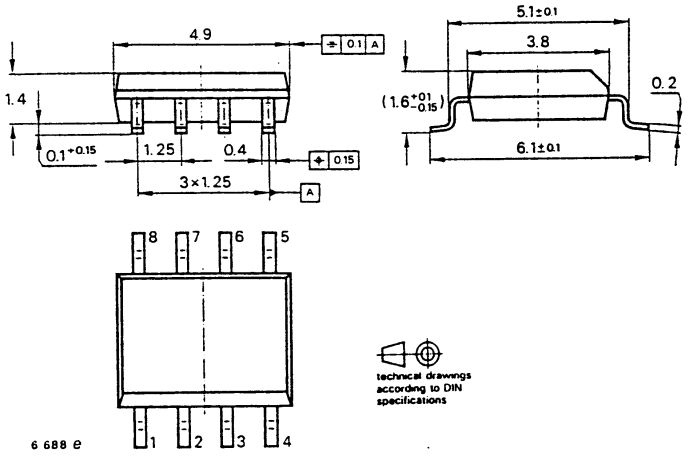


Emitter follower output (U 833 BSE)

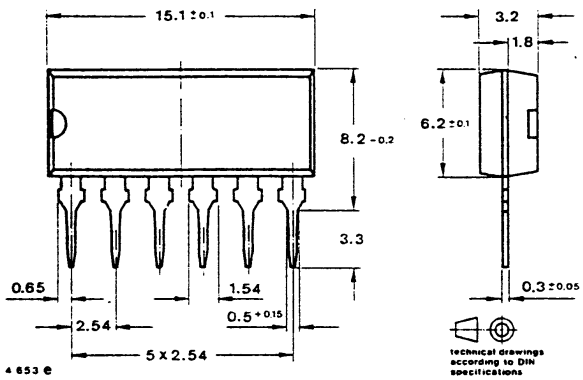
Dimensions in mm



Case
DIP 8-leads



Case
SO 8
(SOT 96 A)



Case
SIP 6
6-leads

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 and

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.

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

The Montreal Protocol (1987) and its London Amendments (1990) will soon 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 any 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 and

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 and do not contain ozone depleting substances.

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