

Frequency Synthesizer for TV Tuner

Description

The U6358B is a single chip PLL frequency synthesizer with 3-wire bus control. This IC contains an integrated preamplifier, a high frequency prescaler, a reference

frequency divider, a crystal oscillator, a phase/frequency detector together with a charge pump, a tuning voltage amplifier and 4 output ports.

Features

- Integrated prescaler $\div 8$ with preamplifier
- Input frequency max. 1000 MHz
- Tuning frequency steps 50 kHz with 3.2 MHz crystal
- 15 bit programmable counter
- Phase detector (reference frequency 6.25 kHz)
- 4 programmable port driver
- Lock signal output
- Micro computer controlled via 3-wire bus
- SO20 package

Block Diagram

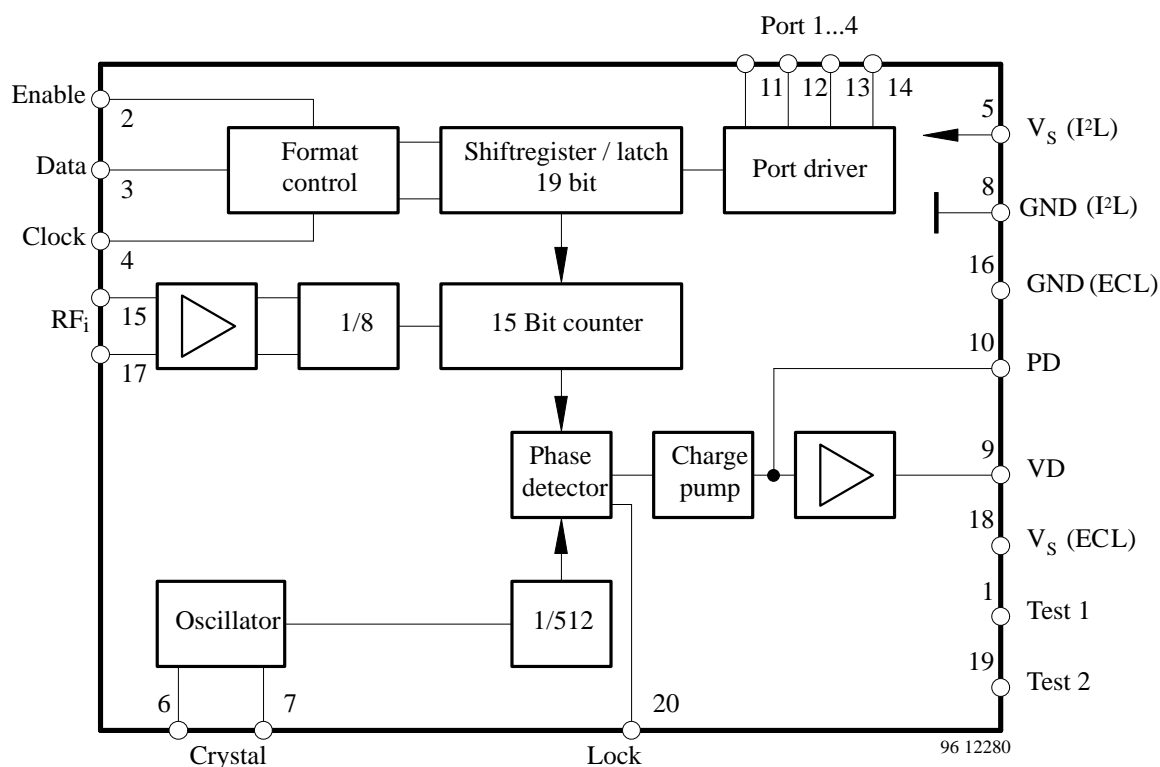


Figure 1. Block diagram

Ordering Information

Extended Type Number	Package	Remarks
U6358B-BFLG3	SO20	Taped and reeled

Absolute Maximum Ratings

Reference point Pins 8 and 16

Parameters	Symbol	Value	Unit
Supply voltage Pins 5 and 18	V_S	6	V
Input voltage Pins 15 and 17	V_{RFi}	0 to V_S	V
Junction temperature	T_j	125	°C
Ambient temperature range	T_{amb}	-10 to + 65	°C
Storage temperature range	T_{stg}	-40 to + 125	°C

Pin Description

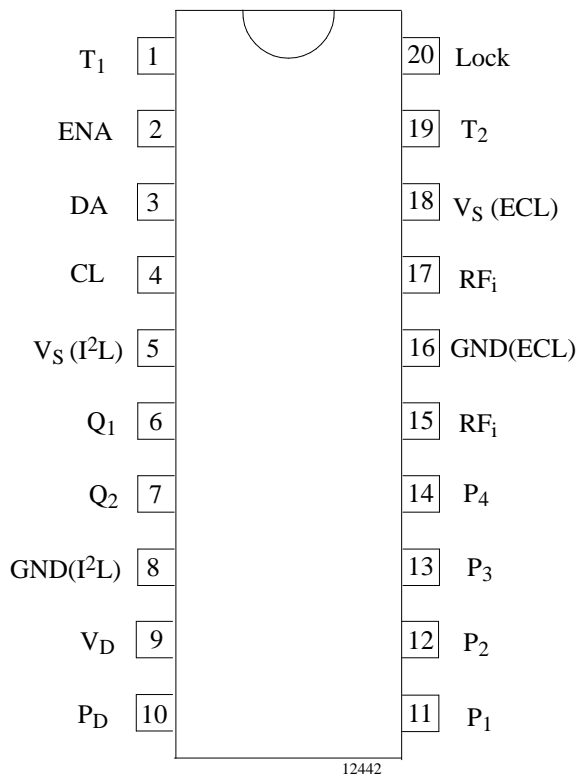


Figure 2. Pinning

Pin	Symbol	Function
1	T_1	Test 1
2	ENA	Enable input
3	DA	Data input
4	CL	Clock input
5	$V_S (I^2L)$	Supply voltage (I^2L)
6	Q_1	Crystal
7	Q_2	Crystal
8	GND(I^2L)	Ground (I^2L)
9	V_D	Active filter output
10	P_D	Charge pump output
11	P_1	Port 1
12	P_2	Port 2
13	P_3	Port 3
14	P_4	Port 4
15	RF_i	RF input
16	GND(ECL)	Ground (ECL)
17	RF_i	RF input
18	$V_S (ECL)$	Supply voltage (ECL)
19	T_2	Test 2
20	Lock	Lock output

Electrical Characteristics

$V_S = 5\text{ V}$, $T_{\text{amb}} = 25^\circ\text{C}$, reference point Pins 8 and 16, unless otherwise specified

Parameters	Test Conditions / Pins	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	ECL Pin 18	V_{S1}	4.5	5	5.5	V
	I^2L Pin 5	V_{S2}	4.5	5	5.5	V
Supply current	ECL Pin 18	I_{S1}		45		mA
	I^2L Pin 5	I_{S2}		20		mA
Input sensitivity	Pin 15	V_i		10		mV
Large signal compatibility	Pin 15	V_i	300			mV
Progr. scaling factor		T	1024		32767	
Maximum voltage band switch outputs	Pins 11 to 14	V_{max}	12			V
Input level						
Data, Clock, Enable, Test 1, Test 2		V_{IH}	3.0			V
		V_{IL}			0.8	V
Output level (test mode)						
Data, Clock		V_{OH}	3.8			V
		V_{OL}			0.5	V

Calculation of the Oscillator Frequency

$$f_{\text{OSC}} = f_{\text{ref}} \times 8 \times T$$

f_{OSC} :Locked oscillator frequency

f_{ref} :Reference frequency $3.2\text{ MHz} / 512 = 6.25\text{ kHz}$

T :Programmable scaling factor

Bus Data Format

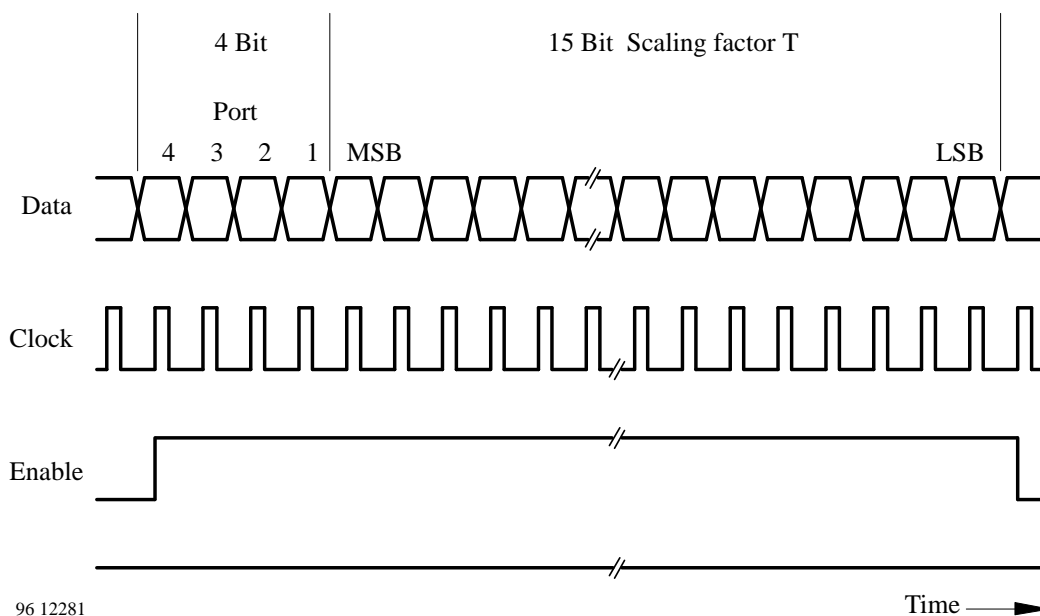


Figure 3.

Bus Timing

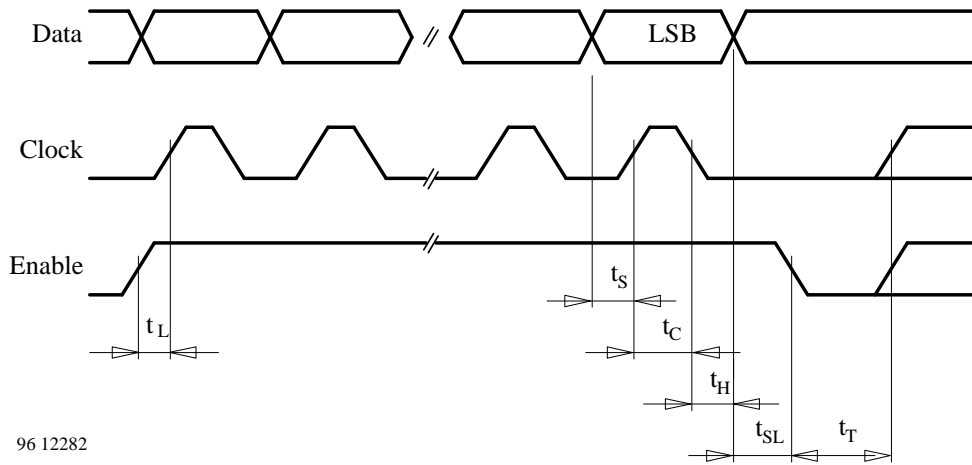
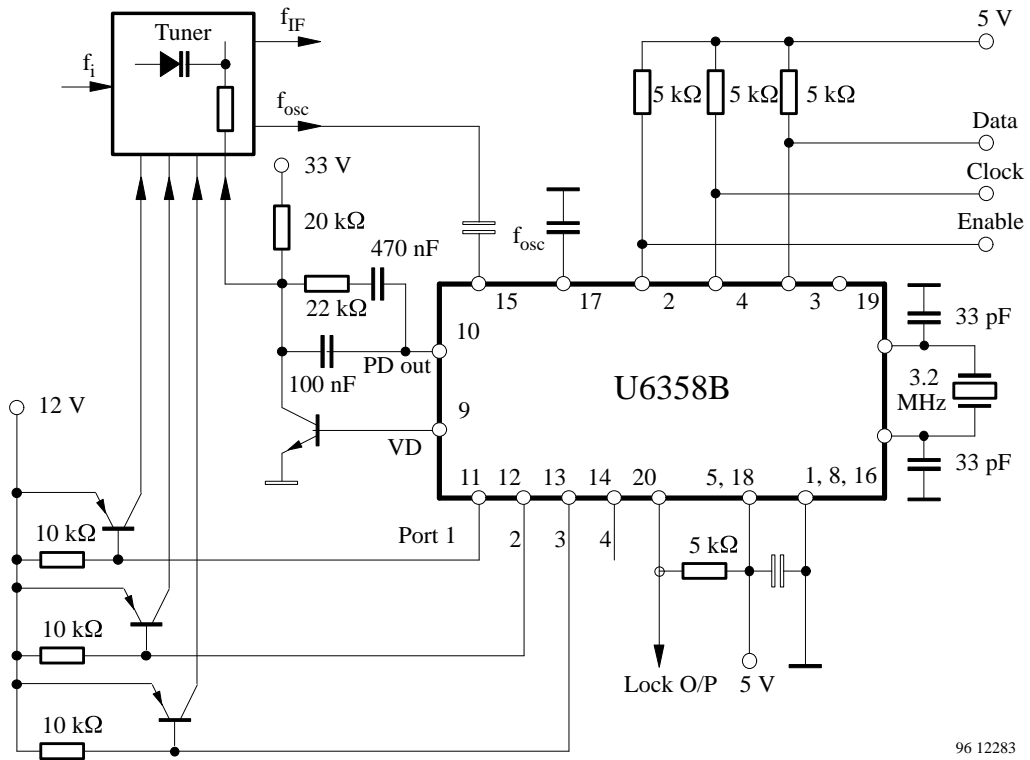


Figure 4.

Parameter	Symbol	Min.	Unit
Set up time	T_S	2	μs
Enable hold time	T_{SL}	2	μs
Clock "H" -pulse width	T_C	2	μs
Enable set up time	T_L	10	μs
Enable between two	T_T	10	μs
Data hold time	T_H	2	μs

Application Circuit

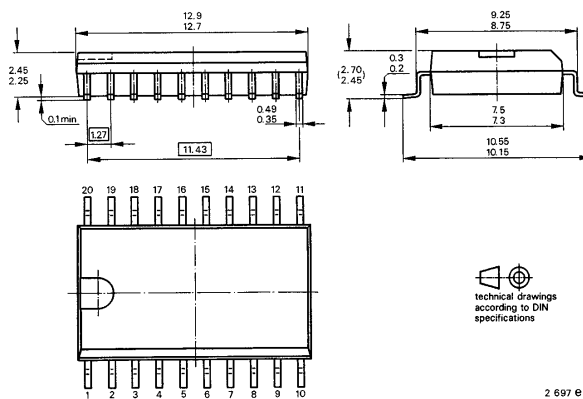


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Figure 5.

Package Dimensions

Small outline plastic package, 20 pin – SO20
Dimensions in mm



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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.

We reserve the right to make changes to improve technical design and may do so without further notice.

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