Baseband Delay Line (64 µs)

Description

The U3660M is an integrated baseband delay line circuit. It provides a delay of 64 µs for the color difference signals, ±(R-Y) and ±(B-Y), in multi-standard TVs.

Features

- One line delay time, addition of delayed and non-delayed output signals
- Adjustment-free application, VCO without external components
- Handles negative or positive colour-difference input signals
- Clamping of ac-coupled input signals [±(R-Y) and ±(B-Y)]
- Line-locked by the sandcastle pulse
- No crosstalk between SECAM colour carriers (diaphoty)
- Comb filtering functions for NTSC colour-difference signals
- Correction of phase errors in the PAL system

Block Diagram

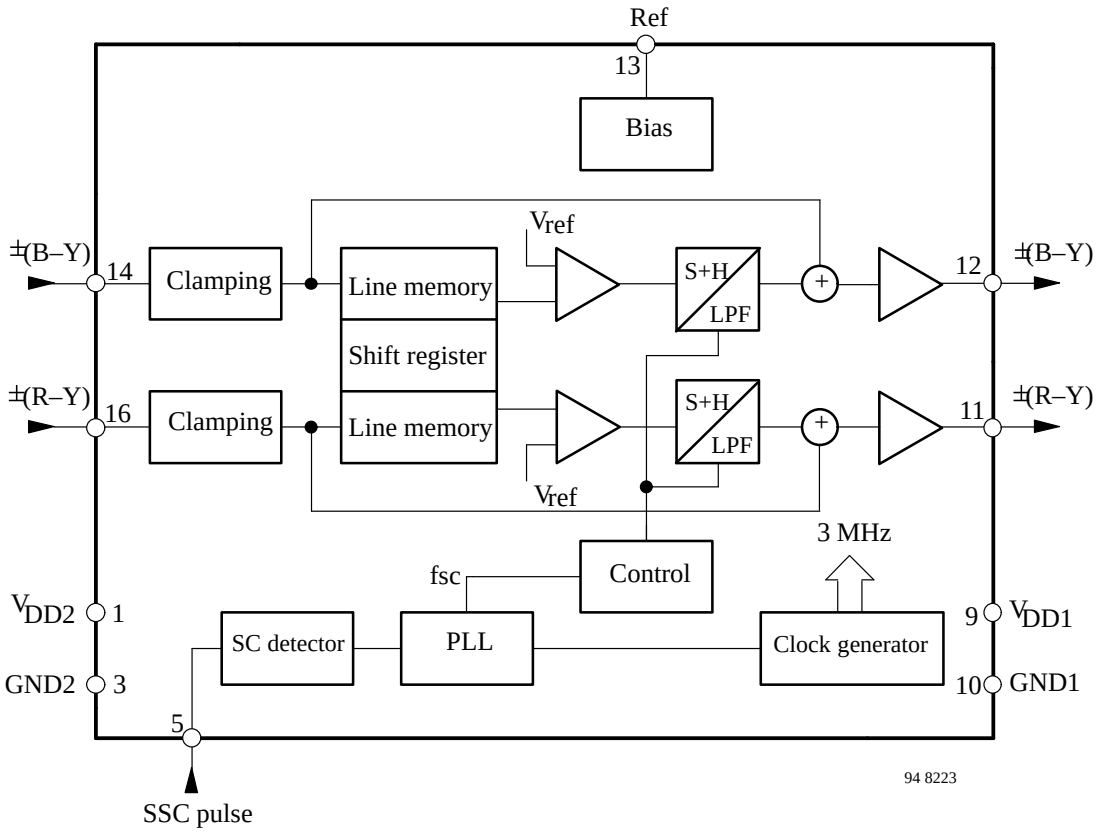


Figure 1. Block diagram

Pin Description

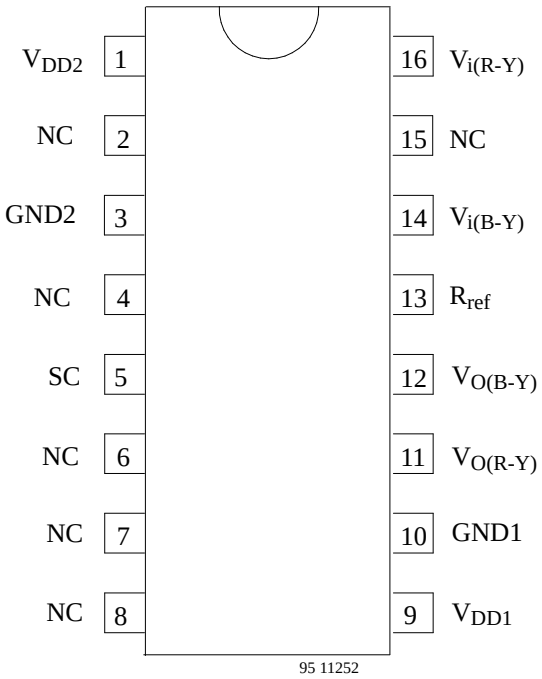


Figure 2. Connection diagram

Pin	Symbol	Function
1	V_{DD2}	Supply voltage for digital part
2	NC	Not connected
3	GND2	Ground for digital part
4	NC	Not connected
5	SC	Sandcastle pulse input
6	NC	Not connected
7	NC	Not connected
8	NC	Not connected
9	V_{DD1}	Supply voltage for analog part
10	GND1	Ground for analog part
11	$V_{O(R-Y)}$	±(R-Y) output signal
12	$V_{O(B-Y)}$	±(B-Y) output signal
13	R_{ref}	Resistor for internal reference
14	$V_{i(B-Y)}$	±(B-Y) input signal
15	NC	Not connected
16	$V_{i(R-Y)}$	±(R-B) input signal

Absolute Maximum Ratings

Parameters	Symbol	Value	Unit
Supply voltage (Pin 9)	V_{DD1}	–0.5 to +7	V
Supply voltage (Pin 1)	V_{DD2}	–0.5 to +7	V
Voltage at Pins 5, 11, 12, 14 and 16	V_n	–0.5 to V_S	V
Output current, Pins 11 and 12	I_{out}	20	mA
Max. power dissipation	P	1.1	W
Storage temperature range	T_{stg}	–25 to +150	°C
Electrostatic protection* for input/output pins		±200	V

* MIL standard 883D, method 3015.7 machine model (all power pins connected together).

Operating Range

Parameters	Symbol	Value	Unit
Supply voltage range (Pins 1 and 9)	V_S	4.5 to 6.0	V
Ambient temperature range	T_{amb}	0 to +70	°C

Thermal Resistance

Parameters	Symbol	Value	Unit
Junction ambient	R_{thJA}	80	K/W

Electrical Characteristics

V_{DD} = 5.0 V, T_{amb} = +25°C, reference point Pin 3 and Pin 10 connected together, super-sandcastle frequency of 15.625 kHz; unless otherwise specified.

Parameters	Test Conditions / Pins	Symbol	Min.	Typ.	Max.	Unit
DC-supply	**Pins 1 and 9**					
Supply voltage (analog part)	Pin 9	V_{DD1}	4.5	5.0	6.0	V
Supply voltage (digital part)	Pin 1	V_{DD2}	4.5	5.0	6.0	V
Supply current (analog part)	Pin 9	I_{S1}		3.5	8.0	mA
Supply current (digital part)	Pin 1	I_{S2}		1	2	mA
Power dissipation		P		30	60	mW
Colour-difference input signals	**Pins 14 and 16**					
Input signal (peak-to-peak value)						
±(R-Y) PAL and NTSC	Pin 16	V_i		0.525	1.0	V
±(B-Y) PAL and NTSC	Pin 14	V_i		0.665	1.0	V
±(R-Y) SECAM	Pin 16	V_i		1.05	2.0	V
±(B-Y) SECAM	Pin 14	V_i		1.33	2.0	V
Input resistance	Pins 14 and 16	$R_{14, 16}$			40	kΩ
Input capacitance	Pins 14 and 16	$C_{14, 16}$			10	pF
Input clamping voltage	non color input level during clamping, Pins 14 and 16	$V_{14, 16}$		1.45		V
Colour-difference output signals	**Pins 11 and 12**					
Output signal (peak-to-peak value)						
±(R-Y) at Pin 11	all standards	V_O		1.05		V
±(B-Y) at Pin 12	all standards	V_O		1.33		V
Ratio of output amplitudes at equal input signals		$\frac{V11}{V12}$	–0.4	0	+0.4	dB
DC output voltage	Pins 11 and 12	$V_{11, 12}$		3.0		V
Output resistance	Pins 11 and 12	$R_{11, 12}$			400	Ω
Gain for PAL and NTSC	ratio V_O/V_i	G_v	5.5	6.0	6.5	dB
Gain for SECAM	ratio V_O/V_i	G_v	–1.0	0	+1.0	dB
Ratio of output signals on Pins 11 and 12 for adjacent time samples at constant input signals	$V_{i\ 14,16}$ = 1.33 V (peak-to-peak value) SECAM signals	$\frac{V_{(n)}}{V_{(n+1)}}$	–0.1		+0.1	dB
Noise voltage (RMS value, Pins 11 and 12)	$V_{i\ 14,16}$ = 0 R_{Gen} < 300 Ω f = 10 kHz to 1 MHz	V_{noise}			1.2	mV
Delay of delayed signals		t_d	63.94	64.0	64.06	µs
Delay of non-delayed signals		t_d		85		ns

Parameters	Test Conditions / Pins	Symbol	Min.	Typ.	Max.	Unit
Transient time of delayed signal at Pin 11 respectively Pin 12	300 ns transient of SECAM input signal, C_{load} = 22 pF	t_{tr}		550		ns
Transient time of non-delayed signal at Pin 11 respectively Pin 12	300 ns transient of SECAM input signal, C_{load} = 22 pF	t_{tr}		350		ns
Sandcastle pulse input	**Pin 5**					
Sandcastle frequency		f_{SC}	14.0	15.625	17.0	kHz
Top pulse voltage	the leading edge of the burst-key pulse is used for timing	V_5	3		7	V
Internal slicing level		V_{slice}	V_5 –2.0	V_5 –1.5	V_5 –1.0	V
Input current		I_5			10	µA
Input capacitance		C_5			10	pF

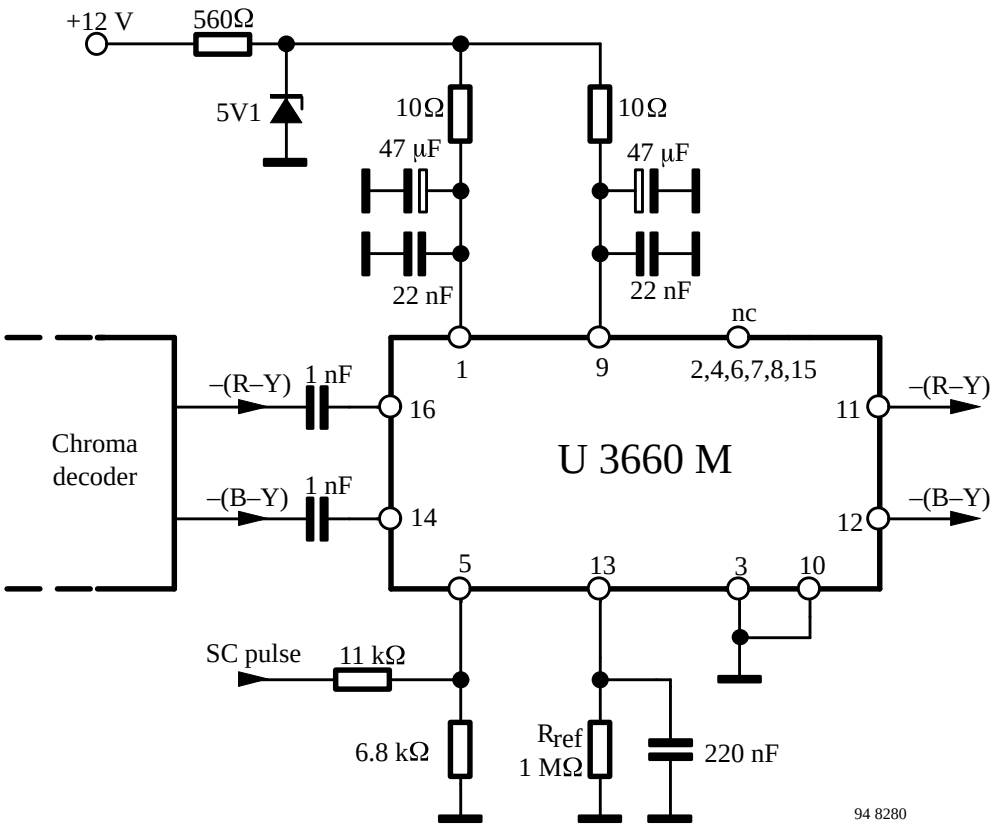


Figure 3. Typical application circuit

Internal Pin Circuits

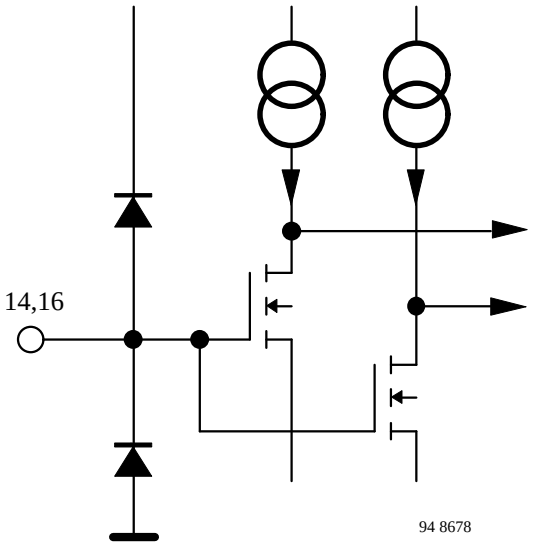


Figure 4. Colour difference signal inputs

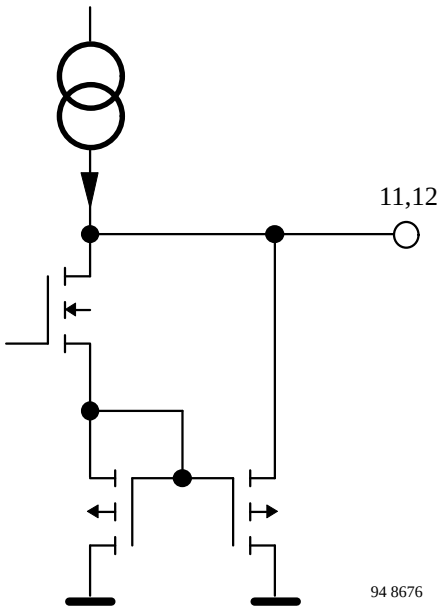


Figure 5. Colour difference signal outputs

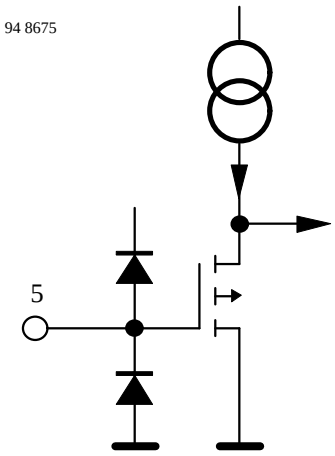


Figure 6. Sandcastle pulse input

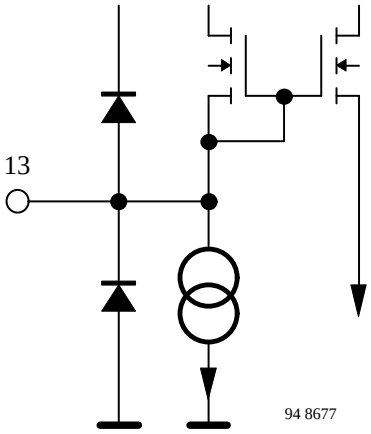
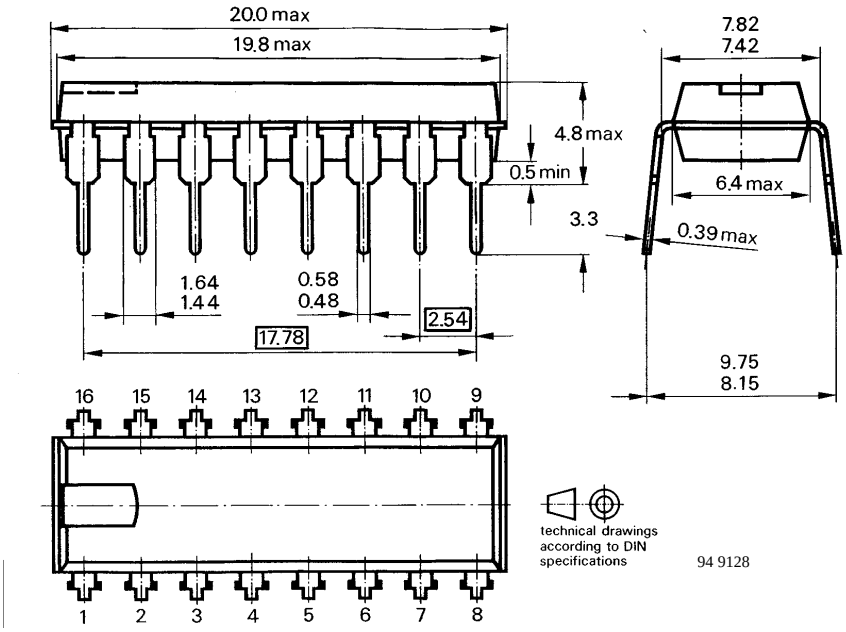


Figure 7. Internal reference voltage

Dimensions in mm

Package: DIP16



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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