

CAN – Controller Area Network

Vortragsreihe “Chaos Seminar”

Veranstalter: CCC Erfa-Kreis Ulm

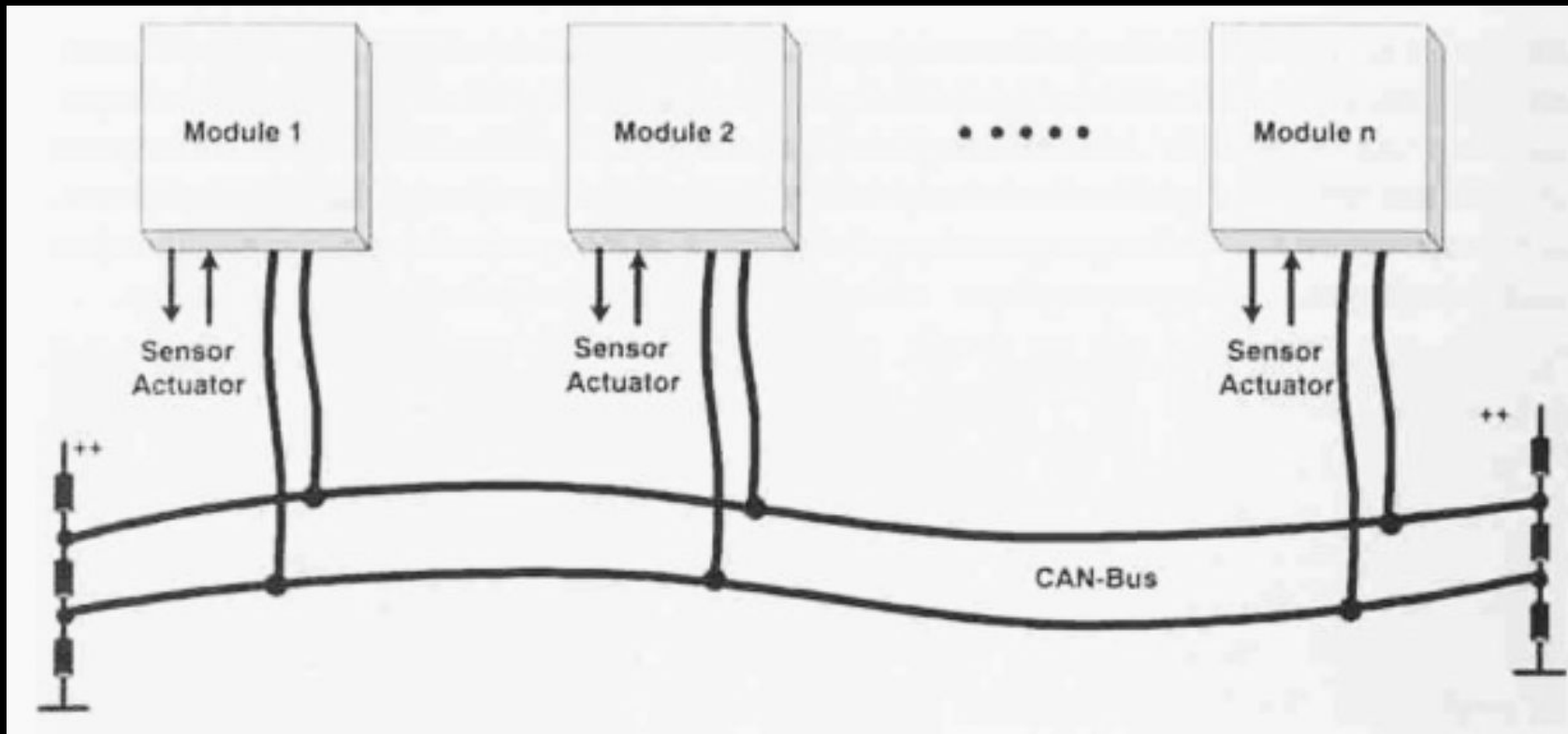
<http://ulm.ccc.de>

mail.ulm.ccc.de

Vortragender: Alexander Bernauer

<http://copton.korrektes.net>

ab21@informatik.uni-ulm.de

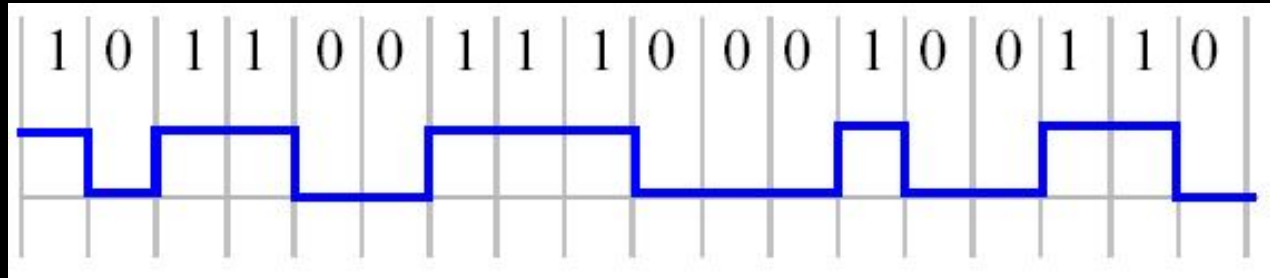


max. 32 Teilnehmer

bis zu 1 Mbit/s (576 kbit/s netto)

bis zu 1000m Buslänge (@40 kbit/s)

NRZ



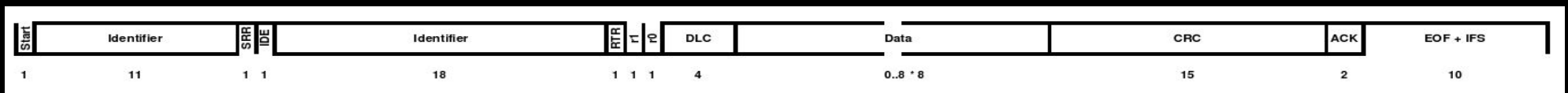
Bit
Stuffing

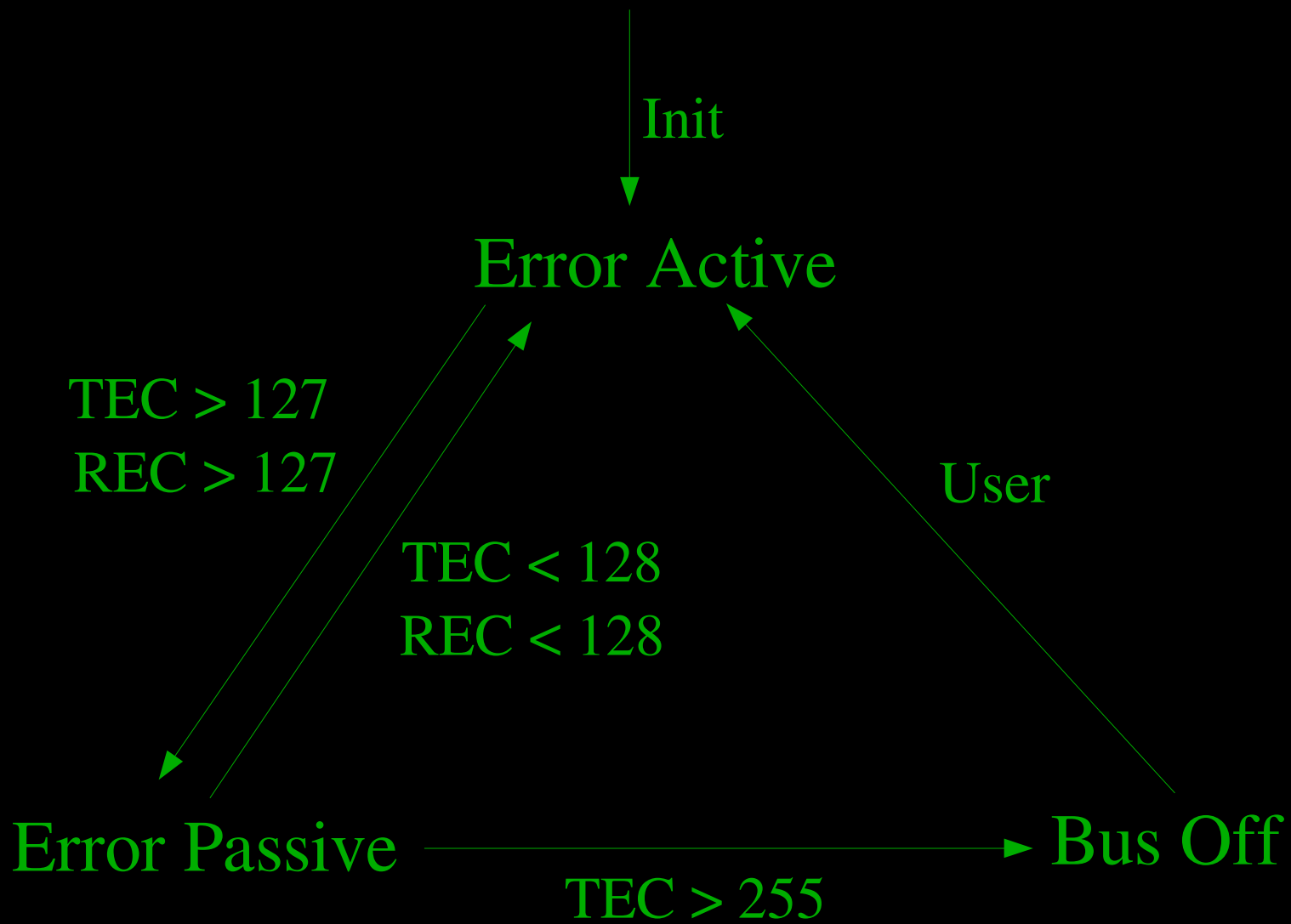
$10000001 \Rightarrow 100000101$

standard frame (CAN 2.0A) 11 Bit Identifier

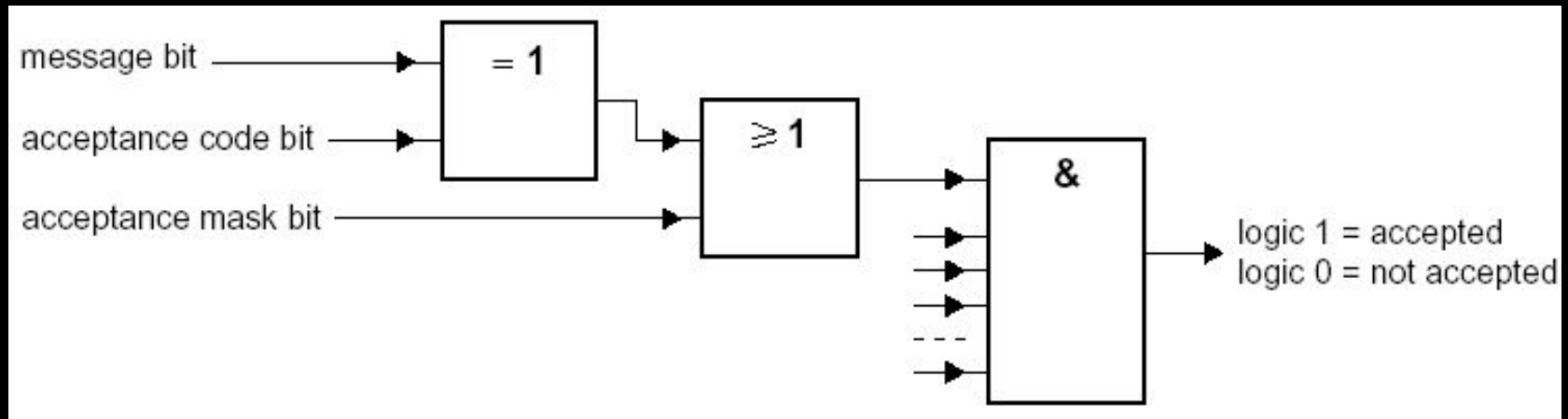


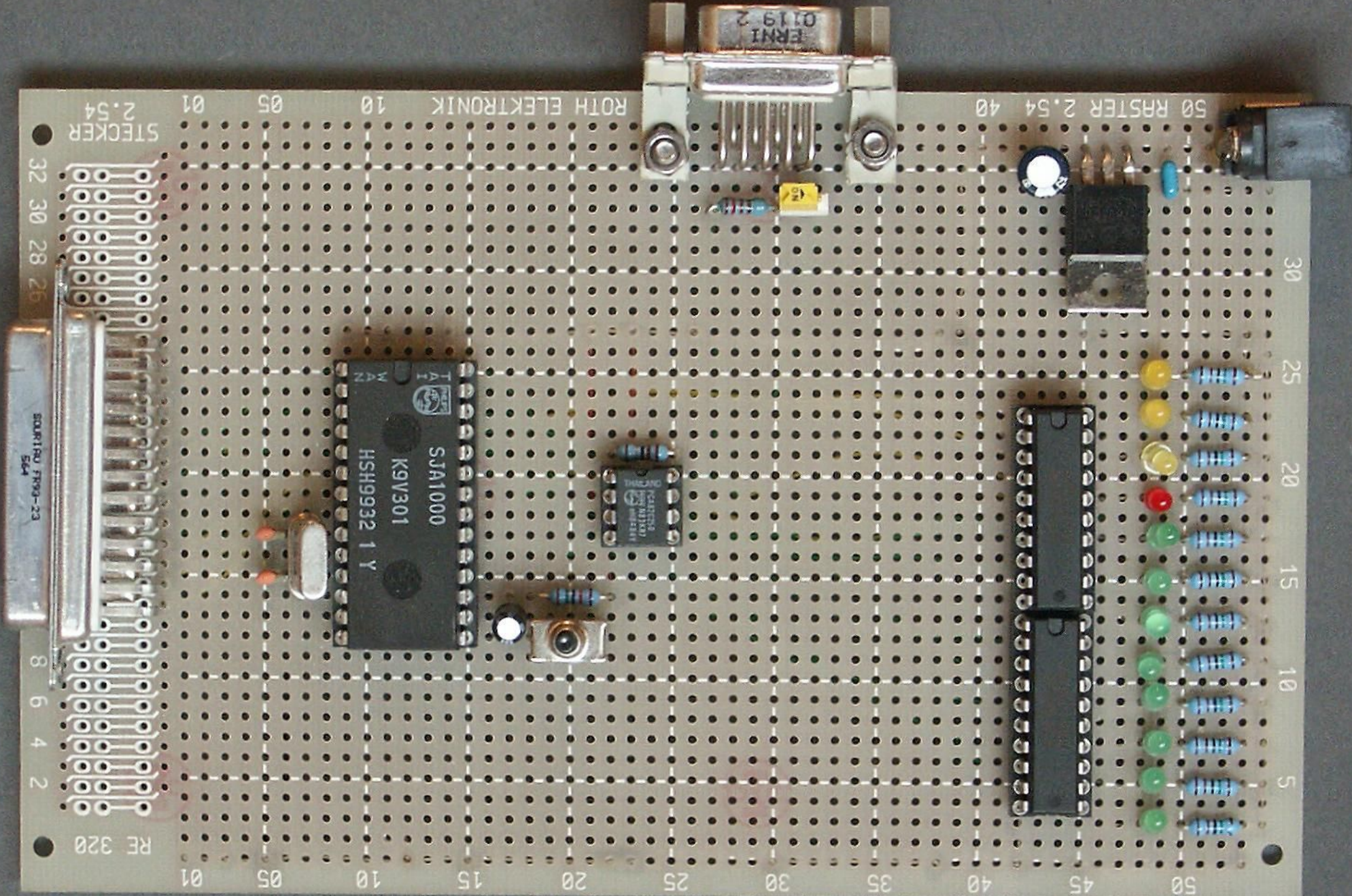
extended frame (CAN 2.0B) 29 Bit Identifier





Empfangsfilter Basic CAN





STECKER
2.54

50 RASTER 2.54

ROTH ELEKTRONIK

32 30 28 26
8 6 4 2

30
25
20
15
10
5

RE 320

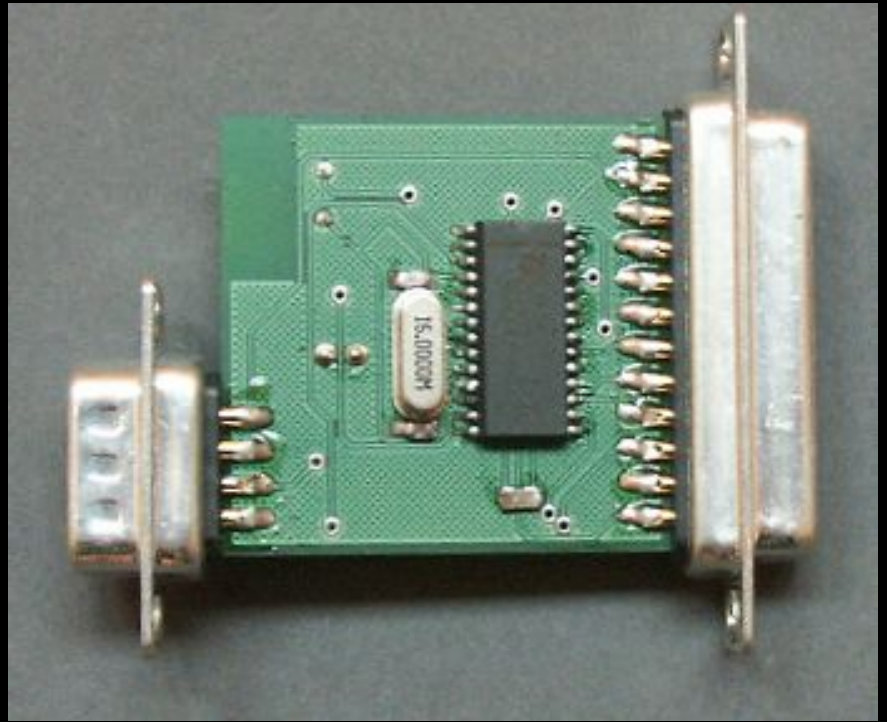
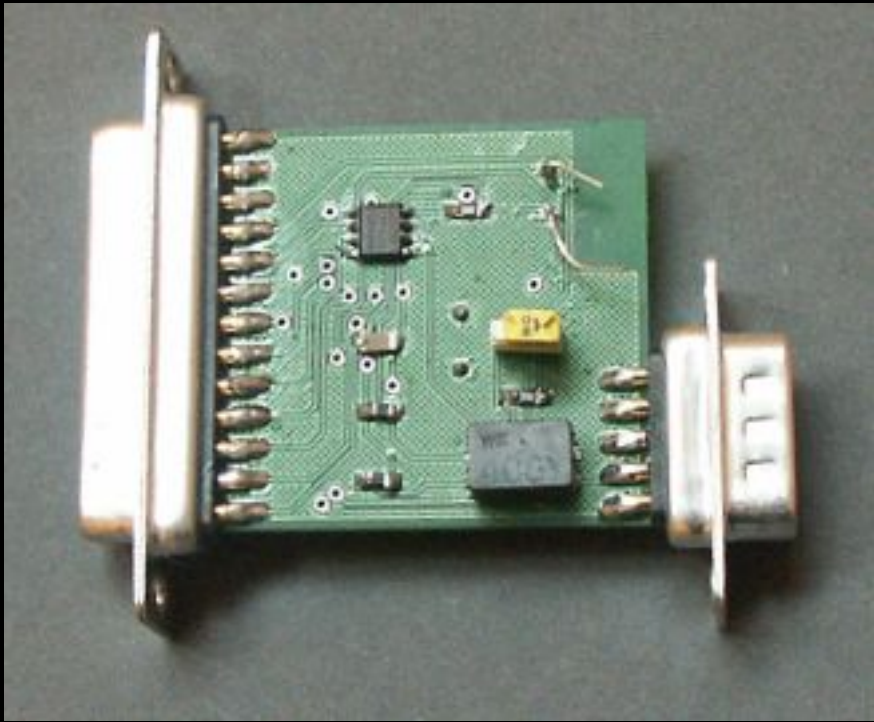
01 05 10 15 20 25 30 35 40 45 50

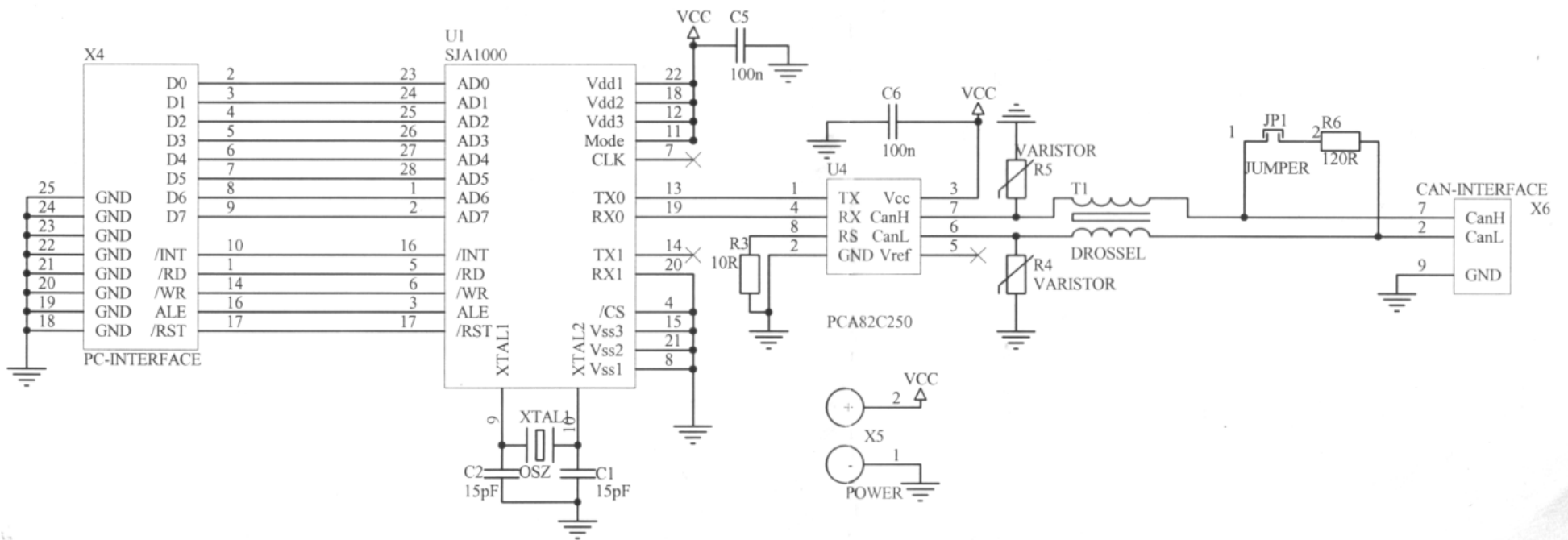
SJA1000
K9V301
HSH9932 1 Y

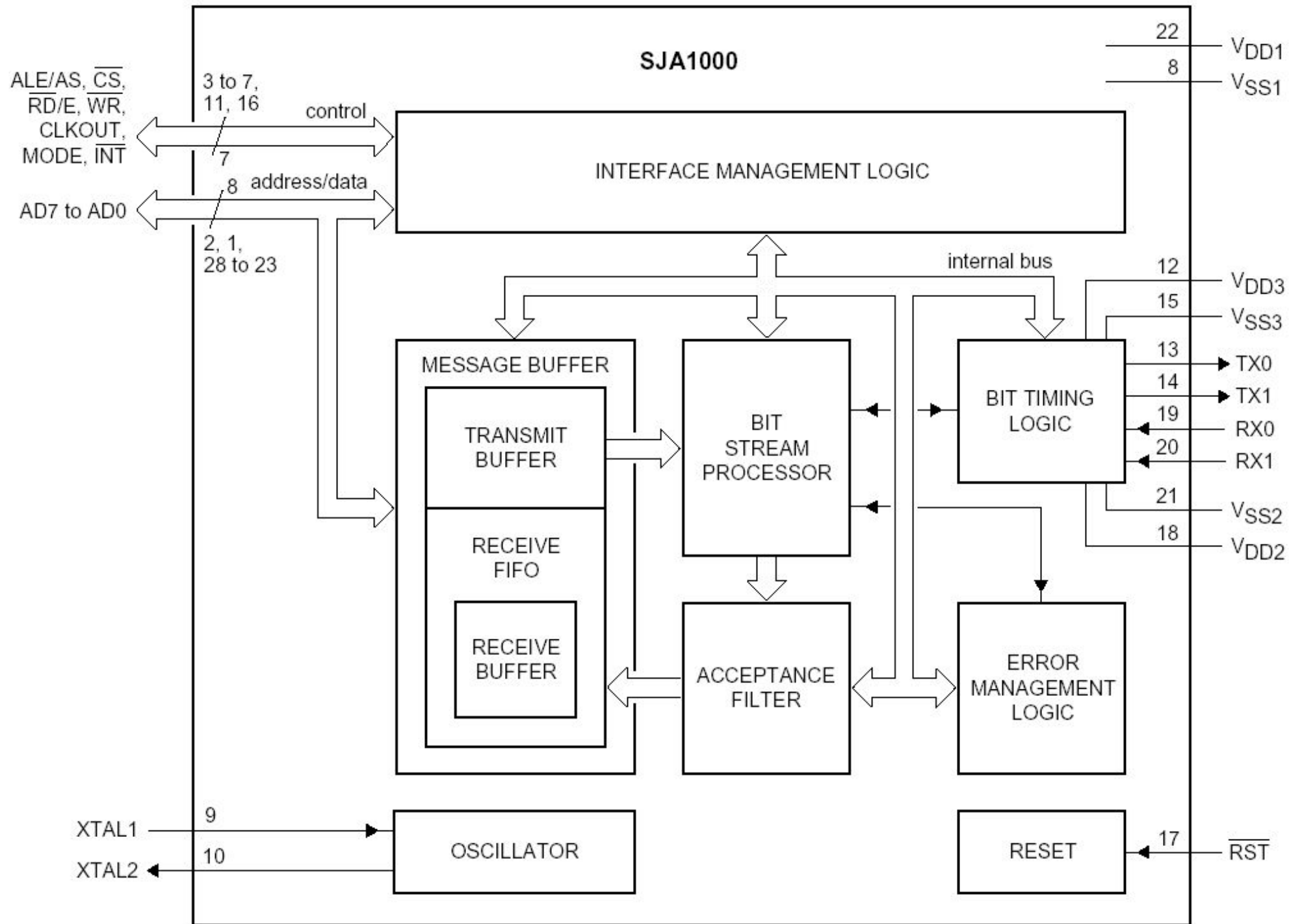
MAX4223E

SDQR19U 7909-23
564

ERNI
0119 2

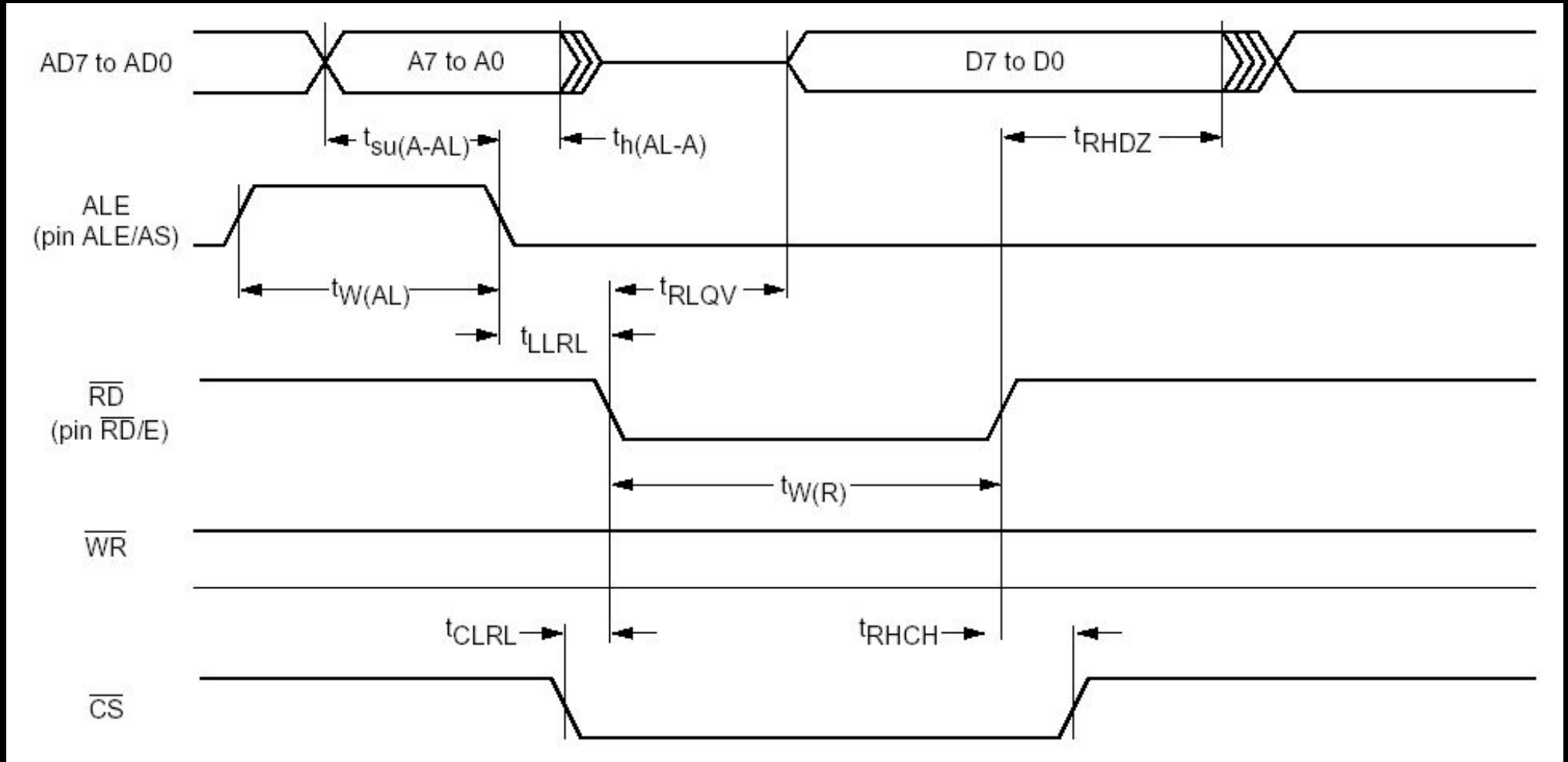






CAN ADDRESS	SEGMENT	OPERATING MODE		RESET MODE	
		READ	WRITE	READ	WRITE
0	control	control	control	control	control
1		(FFH)	command	(FFH)	command
2		status	–	status	–
3		interrupt	–	interrupt	–
4		(FFH)	–	acceptance code	acceptance code
5		(FFH)	–	acceptance mask	acceptance mask
6		(FFH)	–	bus timing 0	bus timing 0
7		(FFH)	–	bus timing 1	bus timing 1
8		(FFH)	–	output control	output control
9		test	test; note 2	test	test; note 2
10	transmit buffer	identifier (10 to 3)	identifier (10 to 3)	(FFH)	–
11		identifier (2 to 0), RTR and DLC	identifier (2 to 0), RTR and DLC	(FFH)	–
12		data byte 1	data byte 1	(FFH)	–
13		data byte 2	data byte 2	(FFH)	–
14		data byte 3	data byte 3	(FFH)	–
15		data byte 4	data byte 4	(FFH)	–
16		data byte 5	data byte 5	(FFH)	–
17		data byte 6	data byte 6	(FFH)	–
18		data byte 7	data byte 7	(FFH)	–
19		data byte 8	data byte 8	(FFH)	–
20	receive buffer	identifier (10 to 3)	identifier (10 to 3)	identifier (10 to 3)	identifier (10 to 3)
21		identifier (2 to 0), RTR and DLC	identifier (2 to 0), RTR and DLC	identifier (2 to 0), RTR and DLC	identifier (2 to 0), RTR and DLC
22		data byte 1	data byte 1	data byte 1	data byte 1
23		data byte 2	data byte 2	data byte 2	data byte 2
24		data byte 3	data byte 3	data byte 3	data byte 3
25		data byte 4	data byte 4	data byte 4	data byte 4
26		data byte 5	data byte 5	data byte 5	data byte 5
27		data byte 6	data byte 6	data byte 6	data byte 6
28		data byte 7	data byte 7	data byte 7	data byte 7
29		data byte 8	data byte 8	data byte 8	data byte 8
30		(FFH)	–	(FFH)	–
31		clock divider	clock divider; note 3	clock divider	clock divider

Read Cycle



(Intel mode)

Interrupt Register

<u>Bit</u>	<u>Name</u>
7	-
6	-
5	-
4	Wake-Up Interrupt
3	Data Overrun Interrupt
2	Error Interrupt
1	Transmit Interrupt
0	Receive Interrupt

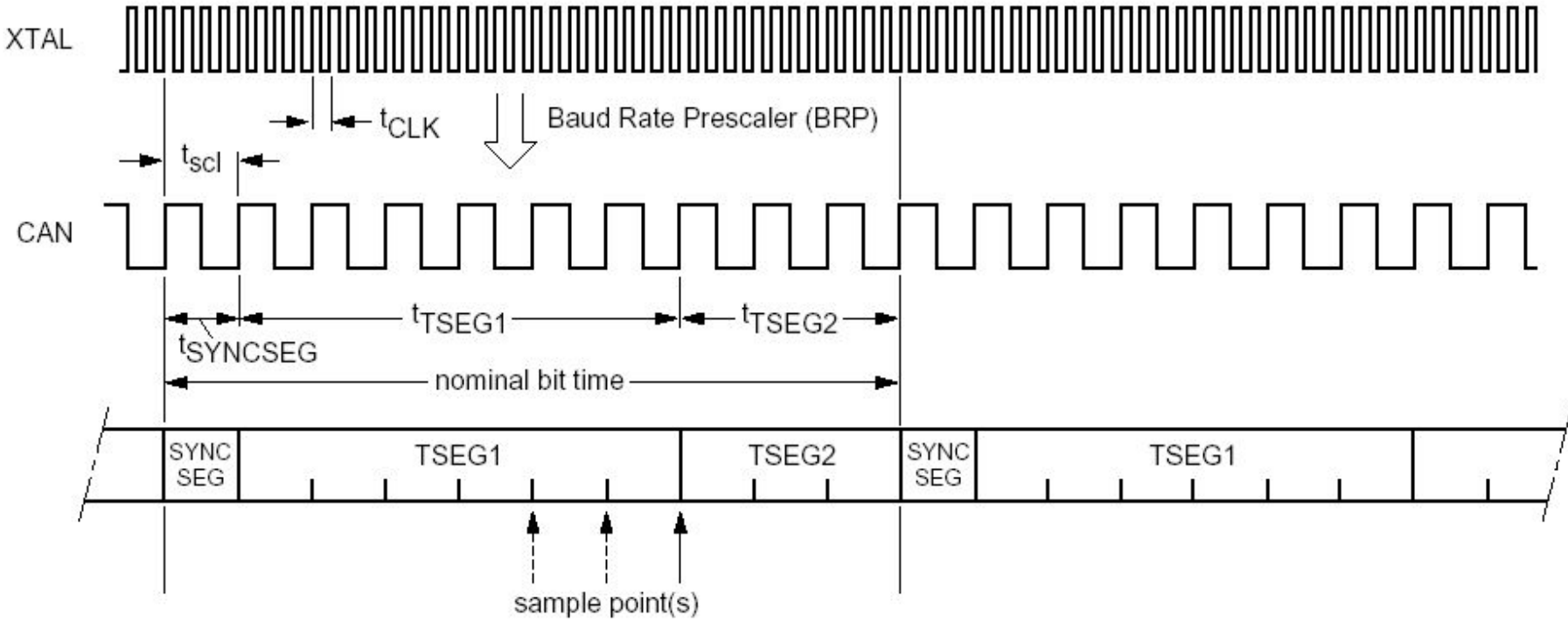
Status Register

<u>Bit</u>	<u>Name</u>
7	Bus Status
6	Error Status
5	Transmit Status
4	Receive Status
3	Transmission complete
2	Transmit Buffer Status
1	Data Overrun Status
0	Receive Buffer Status

Command Register

<u>Bit</u>	<u>Name</u>
7	-
6	-
5	-
4	Go To Sleep
3	Clear Data Overrun
2	Release Receive Buffer
1	Abort Transmission
0	Transmission Request

Bit Timing



Quellen:

Wolfgang Lawrenz: CAN - Grundlagen und Praxis

<http://semiconductors.philips.com/pip/SJA1000.html>

Verwendete Software:

Debian Linux

OpenOffice

Gimp

