ZODIAC

Description of the Tonetransceiver TT-75314

The tonetransceiver consists of a integrated circuit, IC1 which contains 5-tone sequence-decoder/encoder for selective calling systems using international CCIR or ZVEI frequency standards. The integrated circuit incorporates tone filters and tone generators, and is preprogrammed to the 11 tone frequencies specified by the appropriate standard. A 12th frequency is included which allows group calling functions using groups of 10, 100, and 1000 receivers. Also included are all the logic, timing and gating functions required for encoding or decoding a 5-tone code sequence.

Code programming is performed by external pin linking and an analog switch IC2 so thus it is possible to change between the receivercode which is fixed, and the transmittercode where the first two tones are fixed, and the last three variable which causes that there may be programmed 1000 codings.

By means of external components it is possible to stipulate tonelength and tone-delay.

The 5-tone combination which is received is applied to "tone in" (pin 4), and to the base of transistor Q1 where the signal is applied. The amplitude of the signal is limitted by the diodes D14 and D15 after that the signal is fed to "tone in", pin 31, IC1. If the transceiver is equipped with group-calling function, the AF-signal is fed to the group-calling module via pin 1. If the received 5-tone combination corresponds to the programmed receivercode, there will be a signal at "Address out". This signal is fed to a switch with the positions REPLY → and RECALL ↠. The signal is also applied to the input of the call Flip Flop, set up by two NOR-gates which is set and activates the alarm generator consisting of two NOR-gates.

The alarm generator controls a transistor Q2 which obtains the "call LED" placed in the collector stage, to blink.

In the position "REPLY" the signal is fed via D10 and R25 to the transistor Q5 which can drive on external connected alarm. At the same time the signal is fed to an astable multivibrator built up of NAND-gates IC3 c and d, which works as a tone generator. The signal from the tone generator is fed to pin 19 "Alarm after switch", and also fed to a NAND-gate IC3 a. The output from this NAND-gate is connected to "TX out" which via R13 and pin 2 is connected to the microphone amplifier, and modulates the transmitter so that the respond-tone can be sent out. The NAND-gate changes the phase of the tonesignal, and applies it to pin 20 "Alarm before switch". The alarm-tone cannot be heard on the speaker. The reason why the NAND-gate IC3 is used is to obtain the same intensity of the tone with and without selective calling.

Via the diode D9 the signal from "Address out" goes to the base of transistor Q3 which gives a low-potential to "Mike bloc", and to the base of transistor Q4 which gives a low-potential to "T/R".

If the switch is in the position "RECALL", the signal goes from "Address out" via the diode D12, and controls the analog switch, at the same time the signal is fed to "Tx-enable", and via the diode D8 to the base of the transistors Q3 and Q4. If the potential of "Tx-enable" goes to high, the sequence starts, the same occurs if a high-potential is applied to pin 18 "call".

If after a call the unit has to go back in its original state, a high-potential is fed via pin 13 "Reset" to the input of the NOR-gate IC4b, the call F.F. resets, the blink-generator stops, and the "Call LED" turns off.

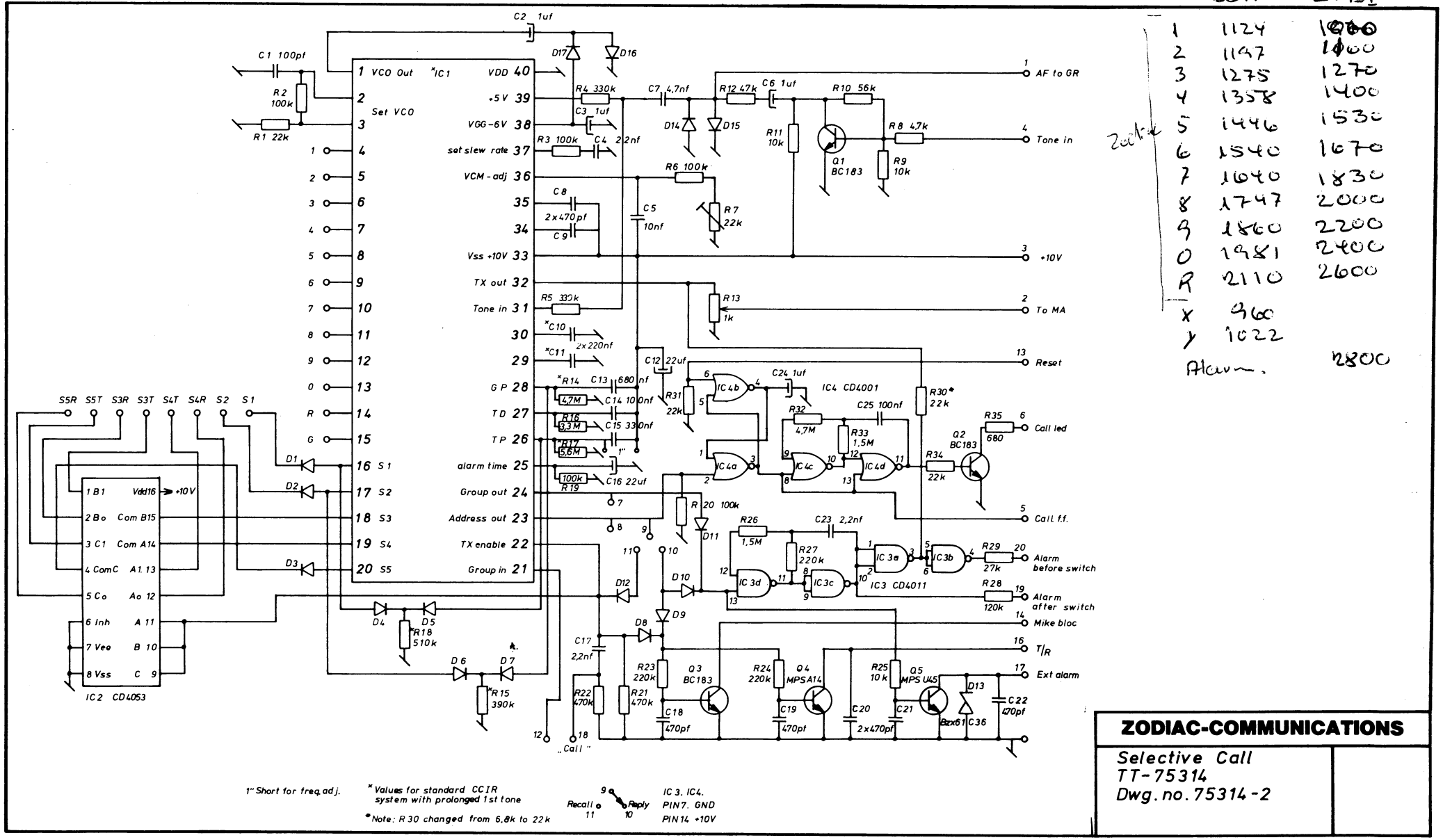
The diodes D4, D5, and D6, D7 have the purpose by means of the first two tones to prolonge the tone period, and the gate period so that a long call-tone is accepted.

If a 5-tone code has to be sent by the tone-generators S1-S5, the first two tones S1 and S2 will be fixed, i.e. they can be choosen among the tones 1-0 but are fixed to two tone of these, the remaining 3 tones are variable, and are fed via the analog-switch, and a switch to the tone-inputs. The 5-tone code which is sent is passed from the "Tx out" to "To MA". At the same time the tone code is fed via R30 to the NAND-gate IC3b, and via this to "Alarm before switch" so that the tone code can be heard in the speaker.

There are also possibilities of performing a group-call by applying a signal from the group-call unit to pin 12, and further to "Group in". In this case a signal from "Group out" via the diode D11 is applied to the astable multivibrator which activates and generates an alarm-tone.

There are also possibilities of coding by less than 5 tones.

ZODIAC-COMMUNICATIONS APS, DENMARK

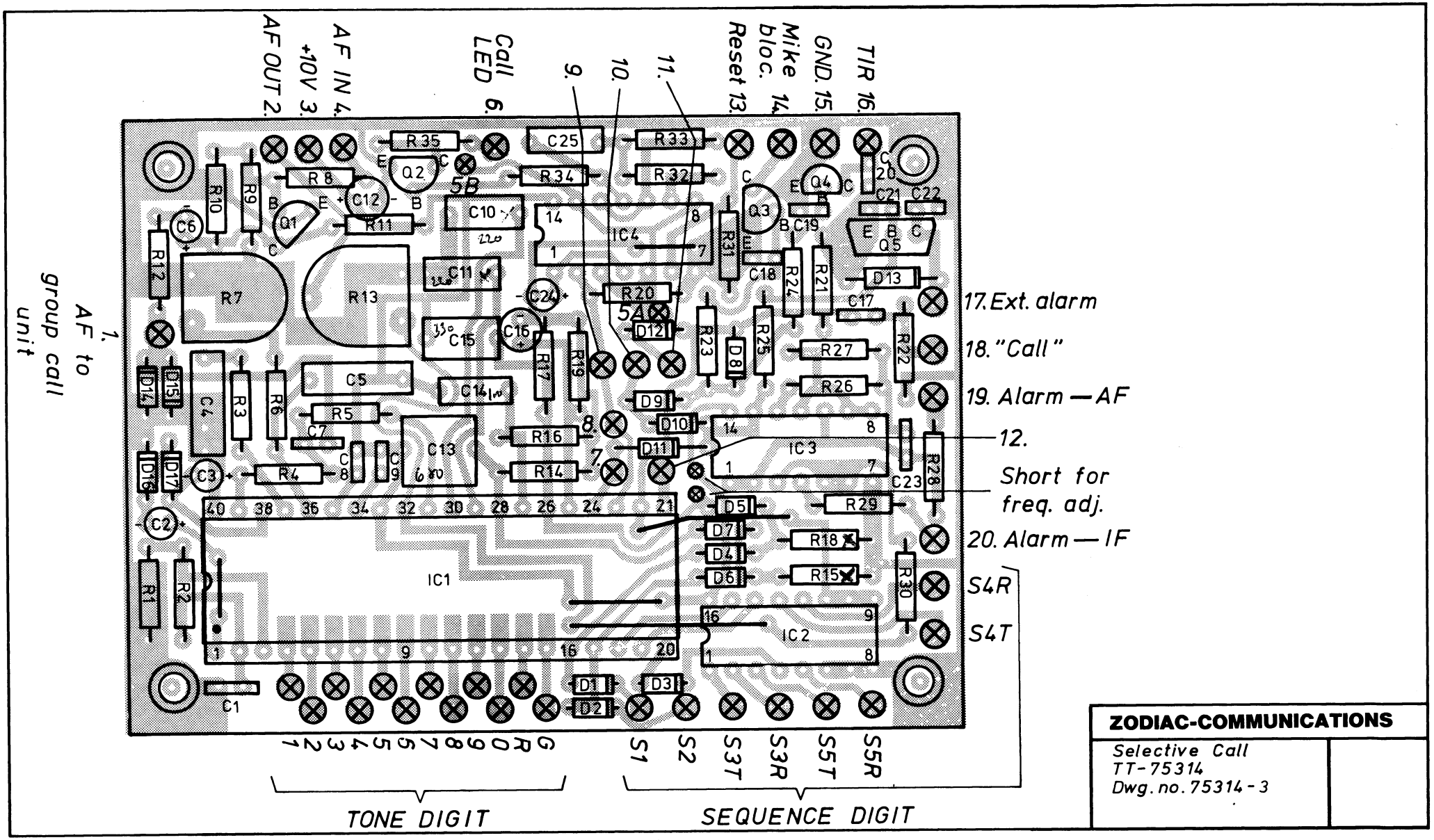


	CCIR	ZVEI
1	1124	1200
2	1197	1400
3	1275	1270
4	1358	1400
5	1446	1530
6	1540	1670
7	1640	1830
8	1747	2000
9	1860	2200
0	1981	2400
R	2110	2600
x	960	
y	1022	
Alarm.		2800

ZODIAC-COMMUNICATIONS

Selective Call
TT-75314
Dwg.no. 75314-2

ZODIAC-COMMUNICATIONS APS, DENMARK



ZODIAC-COMMUNICATIONS

Selective Call
TT-75314
Dwg.no. 75314-3

ZODIAC

TYPE	NO.	CODE	DESCRIPTION	
TT-75314			Tone Transceiver	
	IC1		IC, FX 407 (CCIR), FX 507 (ZVEI)	
	IC2		IC, 4053	
	IC3		IC, 4011	
	IC4		IC, 4001	
	Q1		Transistor, BC 183	
	Q2		Transistor, BC 183	
	Q3		Transistor, BC 183	
	Q4		Transistor, MPS-A14	
	Q5		Transistor, MPS-U45	
	D1-		Diode, 1N4148	
	D12			
	D13		Zener Diode, BZX61C36	
	D14-		Diode, 1N4148	
	D17			
	R1		Resistor, 22 kohm, 5%, 1/8W	
	R2		Resistor, 100 kohm, 5%, 1/8W	
	R3		Resistor, 100 kohm, 5%, 1/8W	
	R4		Resistor, 330 kohm, 5%, 1/8W	
	R5		Resistor, 330 kohm, 5%, 1/8W	
	R6		Resistor, 100 kohm, 1%, metal film	
	R7		Trimmer, 22 kohm, cermet,	
	R8		Resistor, 4,7 kohm, 5%, 1/8W	
	R9		Resistor, 10 kohm, 5%, 1/8W	
	R10		Resistor, 56 kohm, 5%, 1/8W	
	R11		Resistor, 10 kohm, 5%, 1/8W	
	R12		Resistor, 47 kohm, 5%, 1/8W	
	R13		Trimmer, 1 kohm, 5%, carbon film	
	R14		Resistor, 4,7 Mohm, 5%, 1/8W	
	R15		Resistor, 390 kohm, 5%, 1/8W (CCIR)	

ZODIAC

TYPE	NO.	CODE	DESCRIPTION	
	R15		Resistor, 300 kohm, 5%, 1/8W (ZVEI)	
	R16		Resistor, 3,3 Mohm, 5%, 1/8W	
	R17		Resistor, 5,6 Mohm, 5%, 1/8W	
	R18		Resistor, 510 kohm, 5%, 1/8W (CCIR)	
			Resistor, 360 kohm, 5%, 1/8W (ZVEI)	
	R19		Resistor, 100 kohm, 5%, 1/8W	
	R20		Resistor, 100 kohm, 5%, 1/8W	
	R21		Resistor, 470 kohm, 5%, 1/8W	
	R22		Resistor, 470 kohm, 5%, 1/8W	
	R23		Resistor, 220 kohm, 5%, 1/8W	
	R24		Resistor, 220 kohm, 5%, 1/8W	
	R25		Resistor, 10 kohm, 5%, 1/8W	
	R26		Resistor, 1,5 Mohm, 5%, 1/8W	
	R27		Resistor, 220 kohm, 5%, 1/8W	
	R28		Resistor, 120 kohm, 5%, 1/8W	
	R29		Resistor, 27 kohm, 5%, 1/8W	
	R30		Resistor, 22 kohm, 5%, 1/8W	
	R31		Resistor, 22 kohm, 5%, 1/8W	
	R32		Resistor, 4,7 Mohm, 5%, 1/8W	
	R33		Resistor, 1,5 Mohm, 5%, 1/8W	
	R34		Resistor, 22 kohm, 5%, 1/8W	
	R35		Resistor, 680 ohm, 5%, 1/4W	
	C1		Capacitor, 100 pF, N150, ceramic	
	C2		Capacitor, 1µF/35V, tantal	
	C3		Capacitor, 1µF/35V, tantal	
	C4		Capacitor, 22 nF, polyester	
	C5		Capacitor, 10 nF, 5%, Wima FKC3-100V	
	C6		Capacitor, 1 µF/35V, tantal	
	C7		Capacitor, 4,7 nF, ceramic	

ZODIAC

TYPE	NO.	CODE	DESCRIPTION	
	C8		Capacitor,470 pF, ceramic	
	C9		Capacitor, 470 pF, ceramic	
	C10		Capacitor, 220 nF/100V, Siemens (CCIR)	
			Capacitor, 100 nF/100V, Siemens (ZVEI)	
	C11		Capacitor, 220 nF/100V, Siemens (CCIR)	
			Capacitor, 100 nF/100V, Siemens (ZVEI)	
	C12		Capacitor, 22 µF/16V, tantal	
	C13		Capacitor, 680 nF/100V, Siemens	
	C14		Capacitor, 100 nF/100V, Siemens	
	C15		Capacitor, 330 nF/100V, Siemens	
	C16		Capacitor, 22 µF/16V, tantal	
	C17		Capacitor, 2,2 nF, ceramic	
	C18-		Capacitor, 470 pF, ceramic	
	C22			
	C23		Capacitor, 2,2 nF, ceramic	
	C24		Capacitor, 1 µF/35V, tantal	
	C25		Capacitor, 100 nF/100V, Siemens	