RICHARD
WÖHR®
GMBH

Erstellt: 27.01.2011
Freigegeben: 04.05.2011

SPECIFICATION

USB /RS232 Combo CONTROL CHIP
FOR 4/5-WIRE TOUCH SCREEN

ITEM NO.:TC-R4/5-RS/U-IC01
VERSION:1.1
DATE: 27.01.2011

RICHARD WÖHR® GMBH

CONTENT

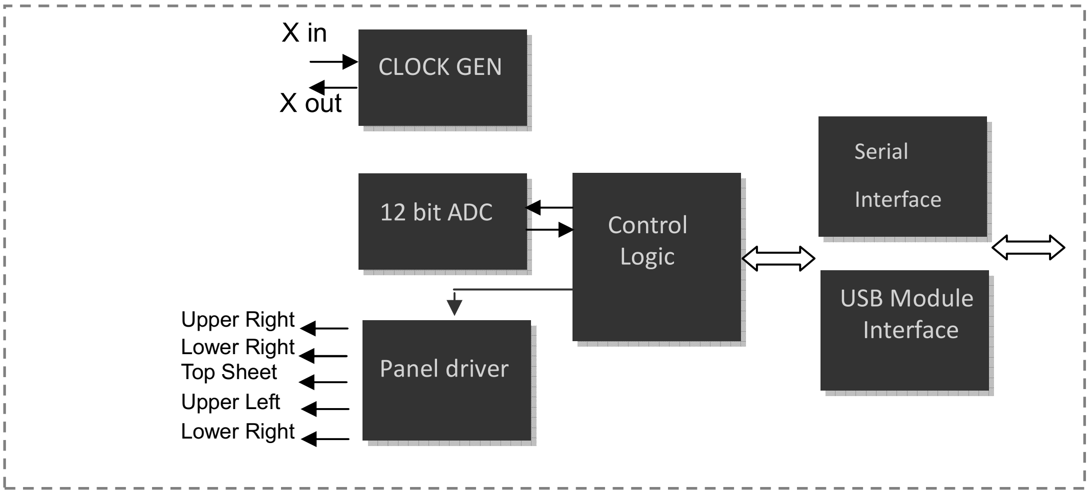
1. GENERAL DESCRIPTION

The control IC is designed for fully integrated 4/ 5-wire touch screen application and supports both USB and RS232 interface. It provides 12 bit ADC resolution. It is good for pen-touch with low-power application. It can work with standard mouse driver and apply to most of the resistive touch screen.

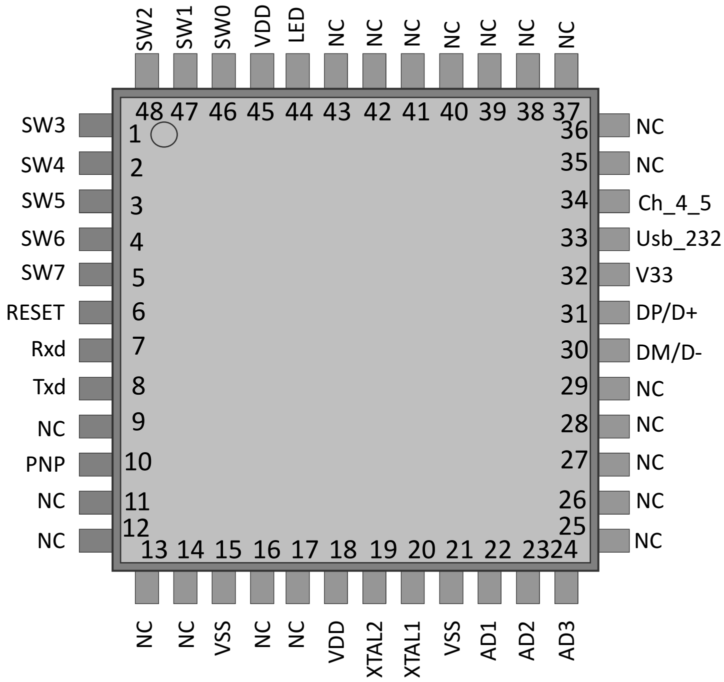
2. FEATURES

- Fully integrated pen touch processor
- W ide voltage operating range from 3.0 to 5.5V
- Watchdog timer
- A/D converter module
- Support USB1.1 interface
- Support Serial (RS232) interface
- Compatible witch Microsoft mouse driver

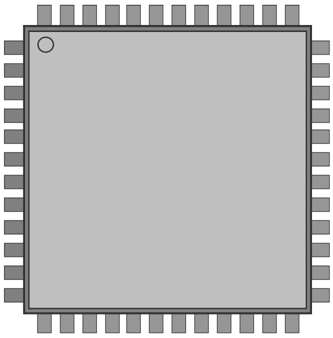
3. BLOCK DIAGRAM



4. PIN ASSIGNMENT



LQFP48

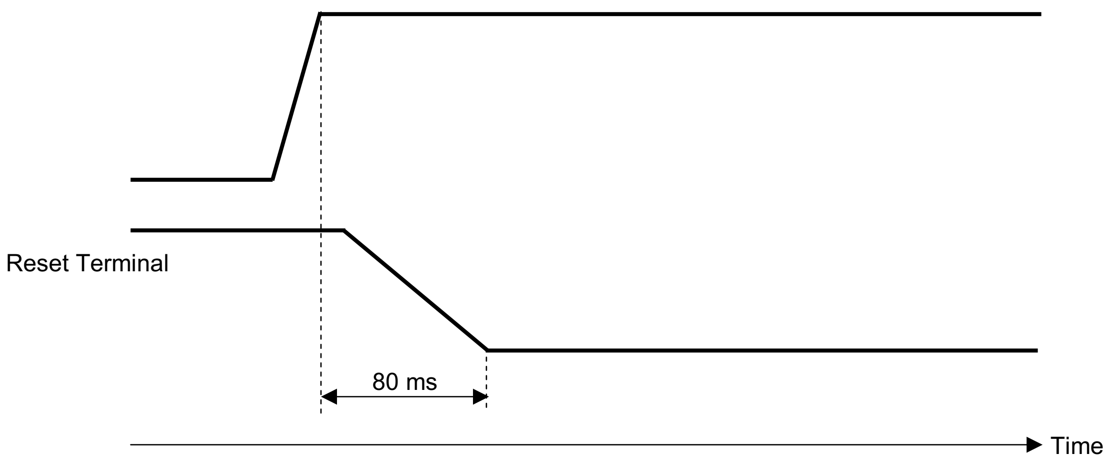


Pin No.	Name	Description
1	SW3	Chip I/O switch pin
2	SW4	Chip I/O switch pin
3	SW5	Chip I/O switch pin
4	SW6	Chip I/O switch pin
5	SW7	Chip I/O switch pin
6	RESET	Chip RESET
7	NC	
8	NC	
9	NC	
10	PNP	
11	NC	
12	NC	
13	NC	
14	NC	
15	VSS	Power ground
16	NC	
17	NC	
18	VDD	+5V power supply
19	XTAL2	Crystal output
20	XTAL1	Crystal input
21	VSS	Power ground
22	AD1	Chip A/D input
23	AD2	Chip A/D input
24	NC	
25	NC	
26	NC	
27	NC	
28	NC	
29	NC	
30	DM/D-	USB D- signal
31	DP/D+	USB D+signal
32	V33	3.3V regulation output
33	Usb_232	Choose chip mode
34	Ch_4_5	Choose chip mode
35	NC	
36	NC	
37	NC	
38	NC	
39	NC	
40	NC	
41	NC	
42	NC	
43	NC	
44	LED	LED input
45	VDD	+5V power supply
46	SW0	Chip I/O switch pin
47	SW1	Chip I/O switch pin
48	SW2	Chip I/O switch pin

5. FUNCTION SPECIFICATIONS

5.1 POWER ON RESET

MCU is low level reset for at least 80ms while the oscillator is running in order to reset the entire MCU .



5.2 TOUCH-PANEL FUNCTION

5.2.1 Coordinate Placement

This board outputs is assumed to be X-Y rectangular coordinate placement. The coordinate placement shows that the corner of the panel is a starting point and the diagonal corner becomes the maximum. Both X and Y maximum values are 12bit=FFFH=4095d.

5.2.2 Output Data

MCU on this board generates 12bit coordinates by using built-in ADC.

The output data format is as following

Byte	Definition	Explanation
Byte 0	Touch ON/OFF	Touch ON/OFF
Byte 2~ Byte 1	X Coordinates	The Data Numerical Value is 0~MAX4096
Byte 4 ~ Byte 3	Y Coordinates	The Data Numerical Value is 0~MAX4096

5.4 ELECTRICAL CHARACTERISTICS

5.4.1 Absolute Maximum Rating

Item	Description
DC Supply Voltage	-0.3 to 7.0
Input / Output Voltage	GND -0.3 to VCC +0.3
Operating Ambient Temperature (℃)	-40 to 85
Storage Temperature (℃)	-50 to 125
Operating Voltage (VCC)	+3.0 to 5.5

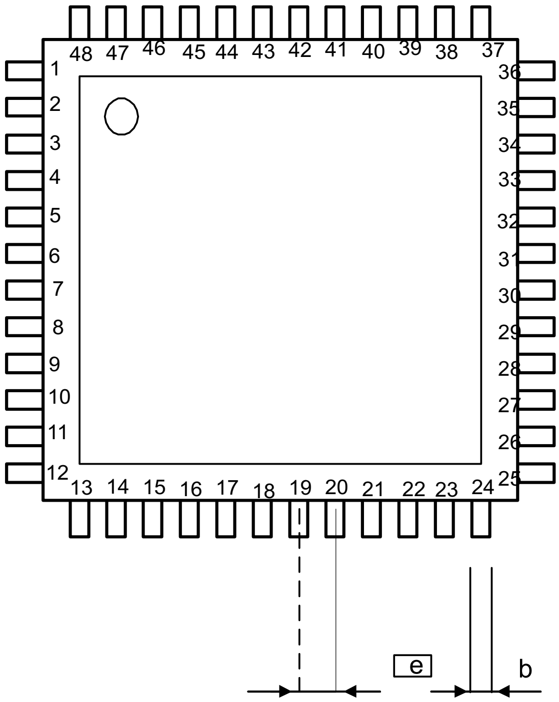
5.4.2 DC Electrical Characteristics

(VCC=5V±5%, GND=0V, TA=-40~85▯ ,Fosc=6MHz, Unless Otherwise Noted)

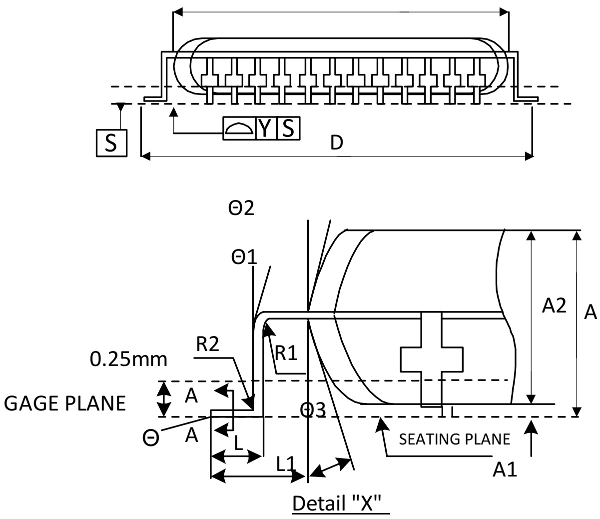
Symbol	Parameter	Condition	Min	Type	Max	Units
VDD	Supply Voltage		3.0	-	5.5	V
VIH	Inpuy High Voltage		0.7VDD	-	VDD+0.3	V
VIL	Inpuy Low Voltage		-0.3	-	0.3VDD	V
VOH	Output High Voltage (port 2)	Ioh=-25mA	VDD-2.0	-	VDD	V
VOH	Output High Voltage (port 0,1,3)	Ioh=-80 A	2.4	-	-	V
VOL	Output Low Voltage (port 2)	IoL=25mA	0	-	0.4	V
VOL	Output Low Voltage (port 0,1,3)	IoL=1.6mA	-	-	0.45	V
IiL	Input Leakage Current	0V<VIN<VDD	-2	-	2	uA
RPH	Pull High Resistance		-	25	-	Kohm
IDD,OPT	Operting Mode Current	Fosc=6MHz, No load	-	11	-	mA
IDD,IDL	Idel Mode Current	Fosc=6MHz, No load V3.3 regulator and 1.5K register turn off	-	-	200	uA
IDD,PD	Power Down Mode Current	Oscillator disabled, No load, V3.3 regulator and 1.5K register turn off	-	-	1	uA
V33	3.3 Regulator Output		3.0	3.3	3.6	V
Vrest	Reset Voltage Note		3.5	3.6	3.7	V

Note: reset voltage only valid when USB founction is used

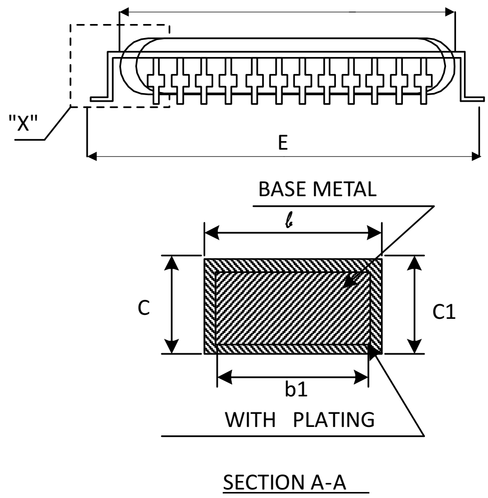
6. EXTERNAL DIAGRAM



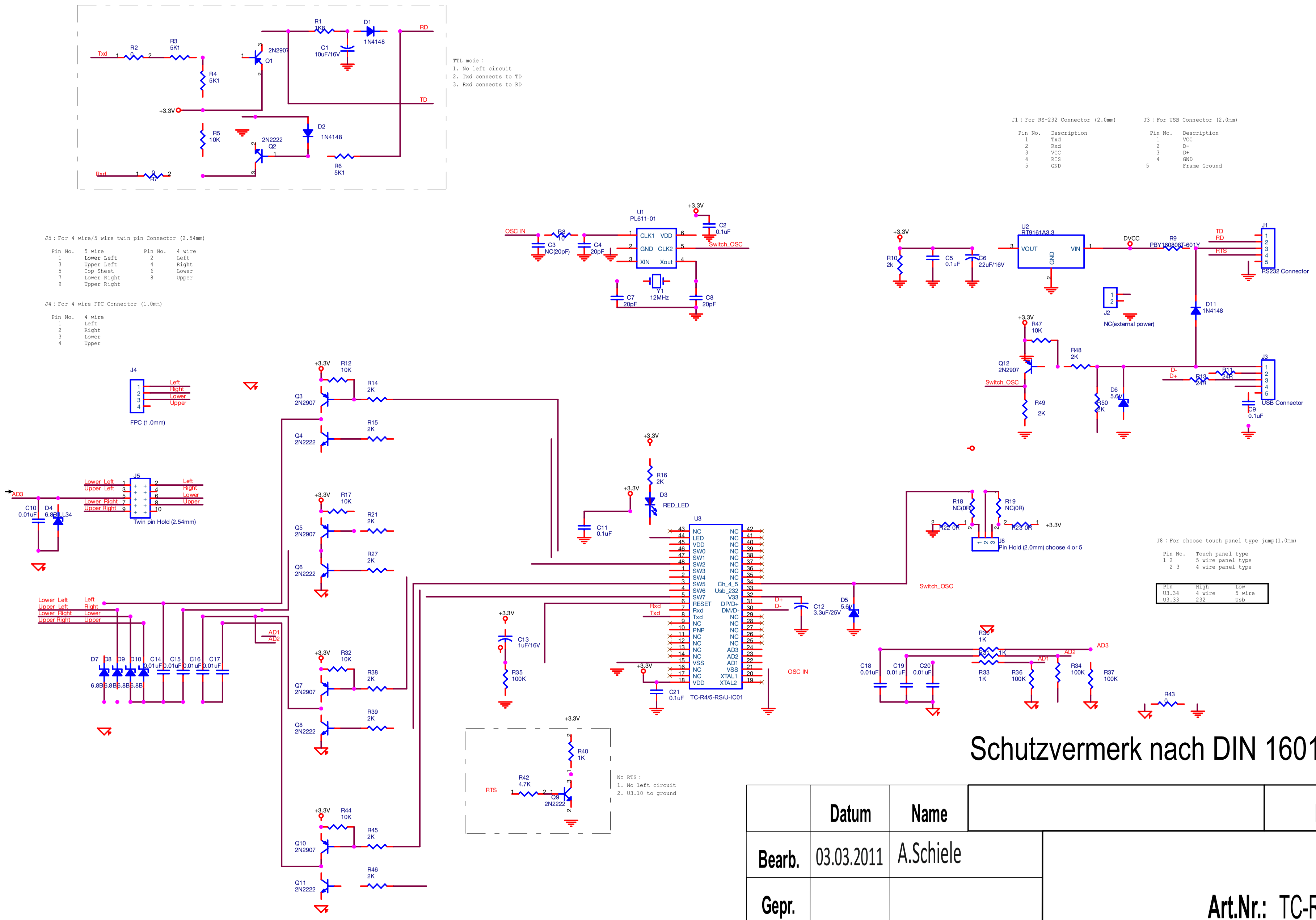
SYMBOL	DIMENSION(MM)			DIMENSION(MIL)		
	MIN	NON	MAX	MIN	NON	MAX
A			1.60			63
A1	0.05		0.15	2		6
A2	1.35	1.40	1.45	53	55	57
b	0.17	0.22	0.27	7	9	11
b1	0.17	0.20	0.23	7	8	12
c	0.09		0.20	4		8
c1	0.09		0.16	4		6
D	9.00 BSC			354 BSC		
D1	7.00 BSC			276 BSC		
E	9.00 BSC			354 BSC		
E1	7.00 BSC			276 BSC		
e	0.50 BSC			20 BSC		
L	0.45	0.60	0.75	18	24	30
L1	1.00 REF			39 REF		
R1	0.08			3		8
R2	0.08		0.20	3		3
Y			0.075			7
θ	0	3.5	7	0	3.5	
θ1	0			0		
θ2	11	12	13	11	12	13
θ3	11	12	13	11	12	13



S
Y
S
D
Θ2
Θ1
R2
R1
0.25mm
GAGE PLANE
A
Θ
A
L
L1
Θ3
SEATING PLANE
A1
A2
A
L
Detail "X"



"X"
E
BASE METAL
C
C1
b1
WITH PLATING
SECTION A-A



Schutzvermerk nach DIN 16016 beachten

	Datum	Name		Maßstab: 1:1.00
Bearb.	03.03.2011	A.Schiele	Art.Nr.: TC-R4/5-RS/U-IC01	
Gepr.				
INDEX: 01			Beschr.: Schaltplan Beispiel	

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