IC1220 DeviceNet slave chip

Data sheet

KEYHO

Content

1. Overview

Thanks for select the IC1220 chip from KEYHO. IC1220 is a DeviceNet slave chip, and it integrates all DeviceNet slave protocol to one chip. User can develop a new DeviceNet product using IC1220 chip without understand detail knowledge of DeviceNet protocol.

At same time, IC1220 provides MCU interface to user, includes SCI, SSC and MIF interface. SCI and MIF interface is a UART communication interface, user may use MCU's UART connect to IC1220, and using MODBUS RTU protocol to exchange the data with IC1220. SSC is a synchronous serial interface similar to the SPI, SSC integrate the DeviceNet state indication function (MS and NS led) and Network setting function (MAC ID and Baud rate setting).

The application is very simple using IC1220, user may connect to IC1220 just use any MCU that with UART interface. But before the start designing, please get the reference circuit sheet, and care some important items.

2. Description

2.1 Clock and startup

IC1220 need an 8Mhz external clock input, and connect the clock to pin 5 and pin 6.

2.2 Power supply

VDD need 2.0 to 3.6 V power supply.

2.3 CAN interface

IC1220 have a standard CAN interface, support CAN 2.0B. This CAN interface integrate the DeviceNet protocol, so user just need provide some hardware, then this interface can communicate with DeviceNet network.

2.4 SSC interface

SSC is a synchronous serial interface similar to the SPI. Use this interface user may connect HC165 and HC595 to develop the digital input and digital output device. SSC also integrate the DeviceNet indication function and network setting function.

The first byte of SSC output data is default use to MS and NS led indication, and the first byte of SSC input data is default use to MAC ID and baud rate setting.

2.5   SCI interface

The SCI interface is an asynchronous serial interface. SCI can be used to configuration and IO data exchange via Modbus protocol.

2.6   MIF interface

The MIF interface is also an asynchronous serial interface. MIF is a monitor interface, and can be used to access the parameters of IC1220 chip via Modbus protocol.

3. Electrical characteristics

3.1   Absolute maximum ratings

Voltage characteristics

Symbol	Ratings	Min	Max	Unit
VDD-VSS	External main supply voltage	-0.3	4.0	V
Vin	Input voltage on pin	VSS-0.3	4.0	V

Current characteristics

Symbol	Ratings	Max	Unit
Ivdd	Total current into VDD power lines	150	mA
Ivss	Total current out of Vss ground lines	150	
Iio	Output current sink by any IO and control pin	25	
	Output current source by any IO and control pin	-25	

3.2   Operating conditions

Symbol	Ratings	Min	Max	Unit
VDD	Standard operation voltage	2	3.6	V
Vin	IO input voltage	-0.3	Vdd+0.3	V

4. Pin definition

4.1 Pinout
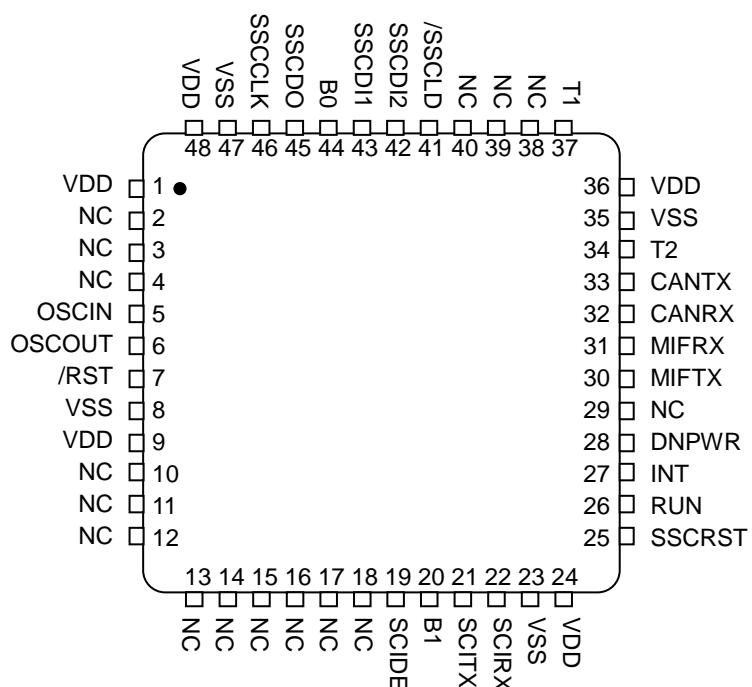
4.2 Pin description

Pins	Name	Description
1	VDD	Power, 3.3V
2	NC	
3	NC	
4	NC	
5	OSC_IN	
6	OSC_OUT	
7	/RST	Reset
8	VSS	GND
9	VDD	Power, 3.3V
10	NC	
11	NC	

| 12	NC	
13	NC	
14	NC	
15	NC	
16	NC	
17	NC	
18	NC	
19	SCIDE	Direction for SCI communication channel, use for RS485 driver.
20	B1	Special pin for test function.
21	SCITX	Transmit data pin for SCI communication channel.
22	SCIRX	Receive data pin for SCI communication channel.
23	VSS	GND
24	VDD	Power, 3.3V
25	SSCRST	Reset pin for SSC communication channel.
26	RUN	State output pin for Running.
27	INT	Interrupt pin
28	DNPWR	Network power detect for DeviceNet
29	NC	
30	MIFTX	Transmit data pin for MIF communication channel.
31	MIFRX	Receive data pin for MIF communication channel.
32	CANRX	Receive data pin for CAN communication channel.
33	CANTX	Transmit data pin for CAN communication channel.
34	T2	Special pin for test function.
35	VSS	GND
36	VDD	Power, 3.3V
37	T1	Special pin for test function.
38	NC	
39	NC	
40	NC	
41	/SSCLD	Latch pin for SSC communication channel.
42	SSCDI2	Data input pin 2 for SSC communication channel.
43	SSCDI1	Data input pin 1 for SSC communication channel.
44	B0	Special pin for test function.
45	SSCDO	Data output pin for SSC communication channel.
46	SSCCLK	Clock output pin for SSC communication channel.
47	VSS	GND
48	VDD	Power, 3.3V

5. Package characteristics

5.1. Package mechanical data

LQFP48, 7 x 7 mm, 48-pin low-profile quad flat package outline
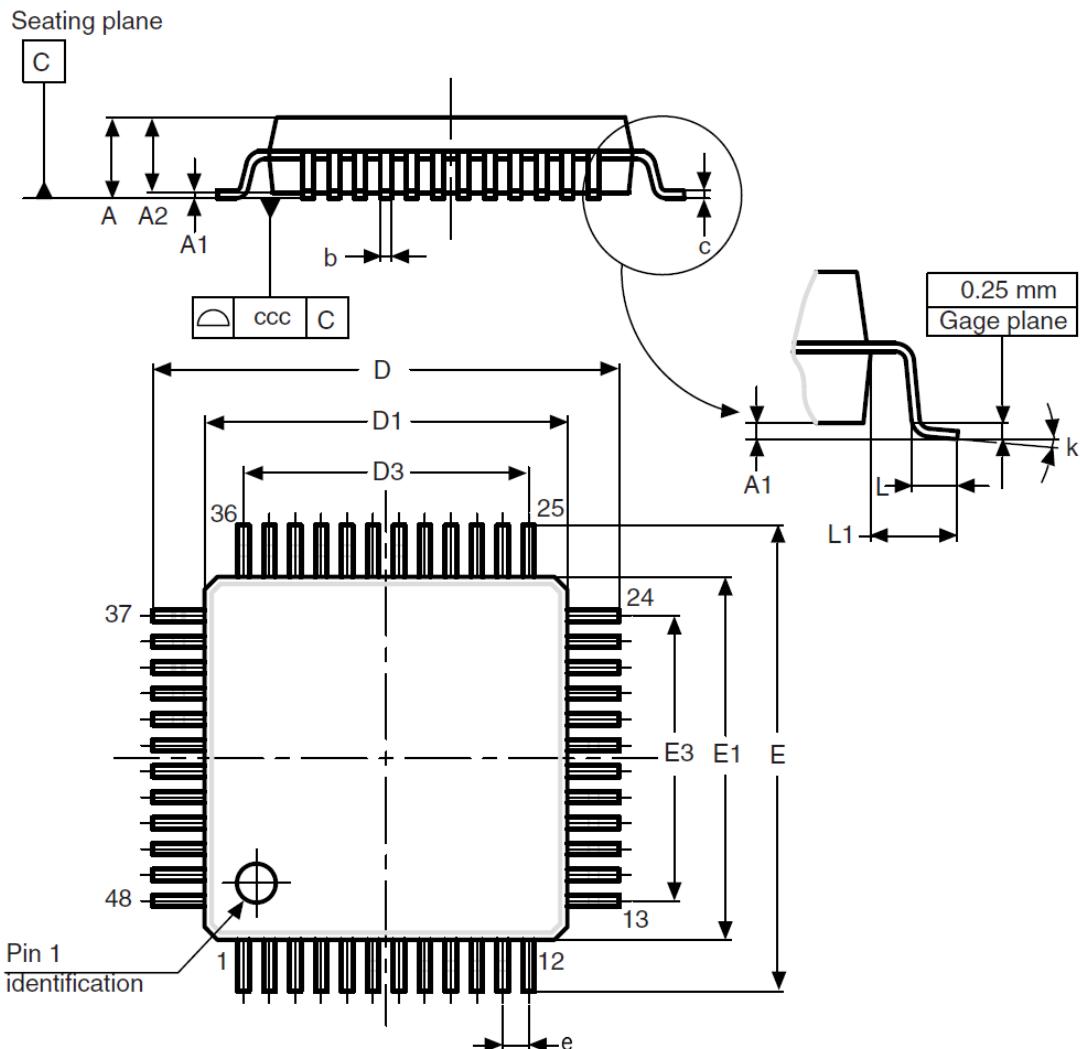
LQFP48 recommended footprint
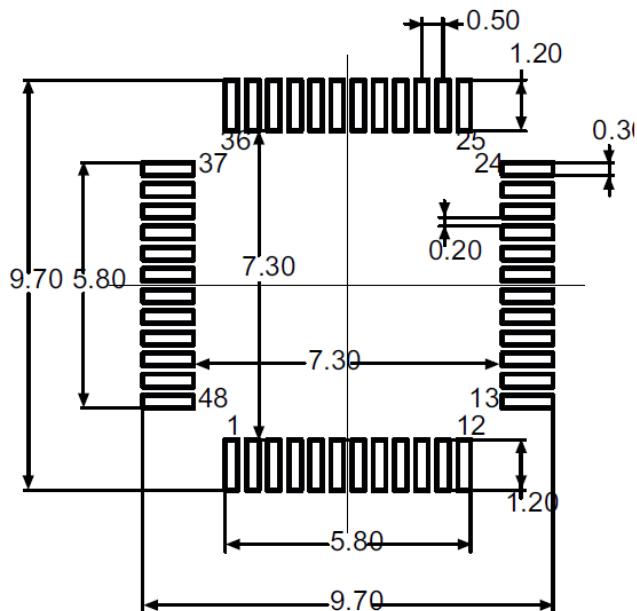
LQFP48, 7 x 7 mm, 48-pin low-profile quad flat package mechanical data

Symbol	millimeters			inches[1]		
	Min	Typ	Max	Min	Typ	Max
A	-	-	1.600	-	-	0.0630
A1	0.050	-	0.150	0.0020	-	0.0059
A2	1.350	1.400	1.450	0.0531	0.0551	0.0571
b	0.170	0.220	0.270	0.0067	0.0087	0.0106
c	0.090	-	0.200	0.0035	-	0.0079
D	8.800	9.000	9.200	0.3465	0.3543	0.3622
D1	6.800	7.000	7.200	0.2677	0.2756	0.2835
D3	-	5.500	-	-	0.2165	-
E	8.800	9.000	9.200	0.3465	0.3543	0.3622
E1	6.800	7.000	7.200	0.2677	0.2756	0.2835
E3	-	5.500	-	-	0.2165	-
e	-	0.500	-	-	0.0197	-
L	0.450	0.600	0.750	0.0177	0.0236	0.0295
L1	-	1.000	-	-	0.0394	-
k	0°	3.5°	7°	0°	3.5°	7°
ccc	0.080			0.0031		

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