

NovaComm

NVC-MDCS23-M Datasheet



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Confidential

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Release Record

Version	Release Date	Comments
1.0	Mar 03, 2012	Release
1.1	Mar 20, 2013	Add power consumptions

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Description:

NVC-MDCS23-M is fully qualified Bluetooth V4.0 specification module, support Dual-mode Bluetooth/Bluetooth low energy. The product supports Bluetooth® Enhanced Data Rate (EDR) and delivers up to 3 Mbps data rate for distances to 10M.

Applications:

- PC notebooks,
- Netbooks and desktops
- USB Dongle
- TV set-top boxes
- MID

Features:

- Bluetooth V4.0 class2 (also compliant Bluetooth 2.1+EDR)
- OS supported :win7, vista ,xp,win 8.android
- Dual-mode Bluetooth low energy radio USB dongle
- Full speed USB 2.0 interface
- Bluetooth low energy Support Heart rate belt, Find me, Proximity, Generic Attribute Profile
- Bluetooth 2.1+EDR Support A2DP, AVRCP, DUN-GW, HSP, HFP A2DP AVTCP, FTP, OPP, Audio-GW, FAX, BPP and tec.
- RoHS compliant BQB, CE, CE and FCC

Table 1 :Ordering Information

Ordering Number	Package	Items in One Package	Comments
NVC-MDCS23-M	Plastic tray	70PCS	

Please also supply the customer firmware code issued by NovaComm Technologies when you place the order.

Table of Contents

1.	Pinout and Description	5
1.1.	Pin Configuration	5
2.	Electrical Characteristic.....	6
2.1.	Absolute Maximum Rating	6
2.2.	Recommend operation conditions	6
2.3.	Power consumptions	6
3.	Physical Interfaces	6
3.1.	Power Supply	6
3.2.	Internal Antenna	6
3.3.	USB interface.....	6
3.4.	PCM interface	7
4.	Layout and Soldering Considerations	8
4.1.	Soldering Recommendations	8
4.2.	Layout Guidelines.....	8
5.	Physical Dimensions.....	9
6.	Package.....	9
7.	Contact Information.....	9

List of Tables

Table 1 :	Ordering Information.....	3
Table 2 :	Pin Definition.....	5
Table 3 :	Absolute Maximum Rating Recommended Operating Conditions	6
Table 4:	Recommended Operating Conditions	6

List of Figures

Figure 1:	Pinout of NVC-MDCS23-M	5
Figure 2:	Placement of the Module on a Main Board	8
Figure 3:	Physical Dimensions and Recommended Footprint (Unit: mm, Deviation:0.02mm)	9

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1. Pinout and Description

1.1. Pin Configuration

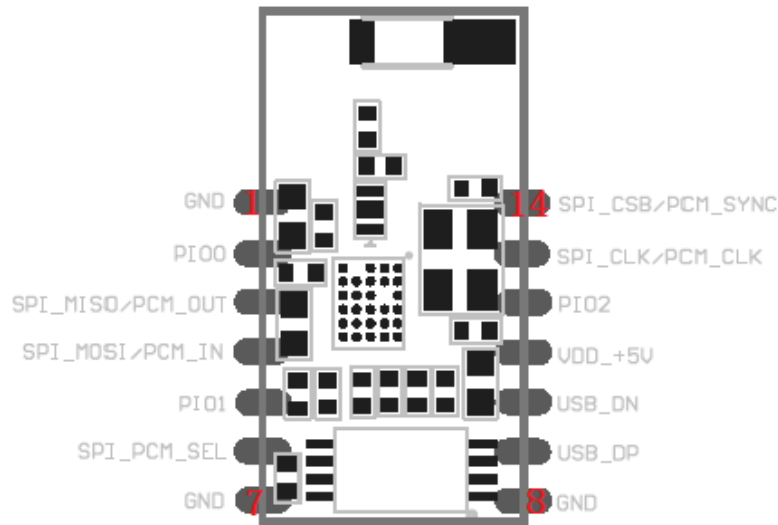


Figure 1: Pinout of NVC-MDCS23-M

Pin	Symbol	I/O Type	Description
1	GND	Ground	Ground
2	PIO0	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
3	SPI_MISO/PCM_OUT/PIO22	Output, Tristate, with weak internal pull down	PCM synchronous data output SPI data output Programmable input/output line
4	SPI_MOSI/PCM_IN/PIO21	Input, Tristate, with weak internal pull down	PCM synchronous data input SPI data input Programmable input/output line
5	PIO1	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
6	SPI_PCM_SEL	Input with weak internal pull down	High switches SPI/PCM lines to SPI Low switches SPI/PCM lines to PCM/PIO use
7	GND	Ground	Ground
8	GND	Ground	Ground
9	USB_DP	Bi-directional	USB data plus with selectable internal 1.5K pull up resistor
10	USB_DN	Bi-directional	USB data minus
11	VDD_+5V	Power supply	Provide +5V voltage
12	PIO2	Bi-directional with programmable strength internal pull-up/down	Programmable input/output line
13	SPI_CLK/PCM_CLK/	Bi-directional Tristate, with weak internal pull down	PCM Synchronous data clock SPI clock Programmable input/output line
14	SPI_CSB/CPM_Sync	Bi-directional Tristate, with weak internal pull down	PCM Synchronous data sync SPI chip select ,active low Programmable input/output line

Table 2 : Pin Definition

2. Electrical Characteristic

2.1. Absolute Maximum Rating

Rating	Min	Max	Unit
Storage Temperature	-40	+85	°C
Operating Temperature	-30	+85	°C
VDD_5V	+3.0	+5.7	V

Table 3 : Absolute Maximum Rating Recommended Operating Conditions

2.2. Recommend operation conditions

Operating Condition	Min	Typical	Max	Unit
VDD_5V	+4.25	+5	+5.7	V
I/O Supply Voltage	+1.7	+3.3	+3.6	V

Table 4: Recommended Operating Conditions

2.3. Power consumptions

Operating Condition	Min	Typical	Max	Unit
Radio On* (Inquiry window time)	--	33	--	mA
Standby	--	10	--	mA
Connected	--	13	--	mA
Connected with data transfer	15	19	33	mA

3. Physical Interfaces

3.1. Power Supply

The module is power supply voltage 4.25V to 5.7V. ,it is essential that the power rail recovers quickly.

3.2. Internal Antenna

The module integrates onboard PCB antenna so there's no need to use antenna on customer's PCB. Simply pay attention to leave enough clearance for the antenna.

3.3. USB interface

NVC-MDCS23-M has a full-speed (12Mbps) USB interface for communicating with other compatible digital devices. The USB interface on the module acts as a USB peripheral,

Responding to requests from a master host controller.

The module supports the Universal Serial Bus Specification, Revision v2.0 (USB v2.0

Specification) and USB Battery Charging Specification, available from <http://www.usb.org>. For more information on how to integrate the USB interface on The module see the Bluetooth and USB Design Considerations Application Note.

As well as describing USB basics and architecture, the application note describes:

- Power distribution for high and low bus-powered configurations
- Power distribution for self-powered configuration, which includes USB VBUS monitoring
- USB enumeration
- Electrical design guidelines for the power supply and data lines, as well as PCB tracks and the effects of ferrite beads
- USB suspend modes and Bluetooth low-power modes:
- Global suspend

- Selective suspend, includes remote wake
- Wake on Bluetooth, includes permitted devices and set-up prior to selective suspend
- Suspend mode current draw
- PIO status in suspend mode
- Resume, detach and wake PIOs
- Battery charging from USB, which describes dead battery provision, charge currents, charging in suspend modes and USB VBUS voltage consideration
- USB termination when interface is not in use
- Internal modules, certification and non-specification compliant operation

3.4. PCM interface

The audio PCM interface on the NVC-MDCS23-M supports:

- Continuous transmission and reception of PCM encoded audio data over Bluetooth.
- Processor overhead reduction through hardware support for continual transmission and reception of PCM data.
- A bidirectional digital audio interface that routes directly into the baseband layer of the firmware. It does not pass through the HCI protocol layer.
- Hardware on NVC-MDCS23-M for sending data to and from a SCO connection.
- Up to 3 SCO connections on the PCM interface at any one time.
- PCM interface master, generating PCM_SYNC and PCM_CLK.
- PCM interface slave, accepting externally generated PCM_SYNC and PCM_CLK.
- Various clock formats including:
 - Long Frame Sync
 - Short Frame Sync
 - GCI timing environments
 - 13-bit or 16-bit linear, 8-bit μ -law or A-law companded sample formats.
- Receives and transmits on any selection of 3 of the first 4 slots following PCM_SY

4. Layout and Soldering Considerations

4.1. Soldering Recommendations

NVC-MDCS23-M is compatible with industrial standard reflow profile for Pb-free solders. The reflow profile used is dependent on the thermal mass of the entire populated PCB, heat transfer efficiency of the oven and particular type of solder paste used. Consult the datasheet of particular solder paste for profile configurations.

NovaComm Technologies will give following recommendations for soldering the module to ensure reliable solder joint and operation of the module after soldering. Since the profile used is process and layout dependent, the optimum profile should be studied case by case. Thus following recommendation should be taken as a starting point guide.

- Refer to technical documentations of particular solder paste for profile configurations
- Avoid using more than one flow.
- Reliability of the solder joint and self-alignment of the component are dependent on the solder volume. Minimum of 150µm stencil thickness is recommended.
- Aperture size of the stencil should be 1:1 with the pad size.
- A low residue, “no clean” solder paste should be used due to low mounted height of the component.

4.2. Layout Guidelines

Strongly recommended that the display module designed in accordance with the antenna copper in the following figure 2 , the preferred antenna design 1, does not recommend the use of antenna design 3 . For the protection module RF distance in the copper when the size of the design in accordance with the following figure , Place the GND vias as close to the GND pins as possible. Use good layout practices in order to avoid any excessive noise coupled to the signal line or power supply voltage line.

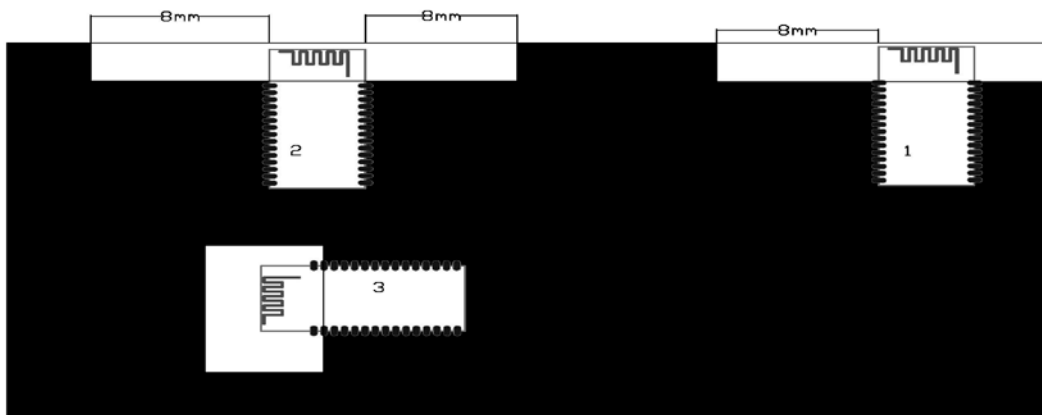


Figure 2: Placement of the Module on a Main Board

5. Physical Dimensions

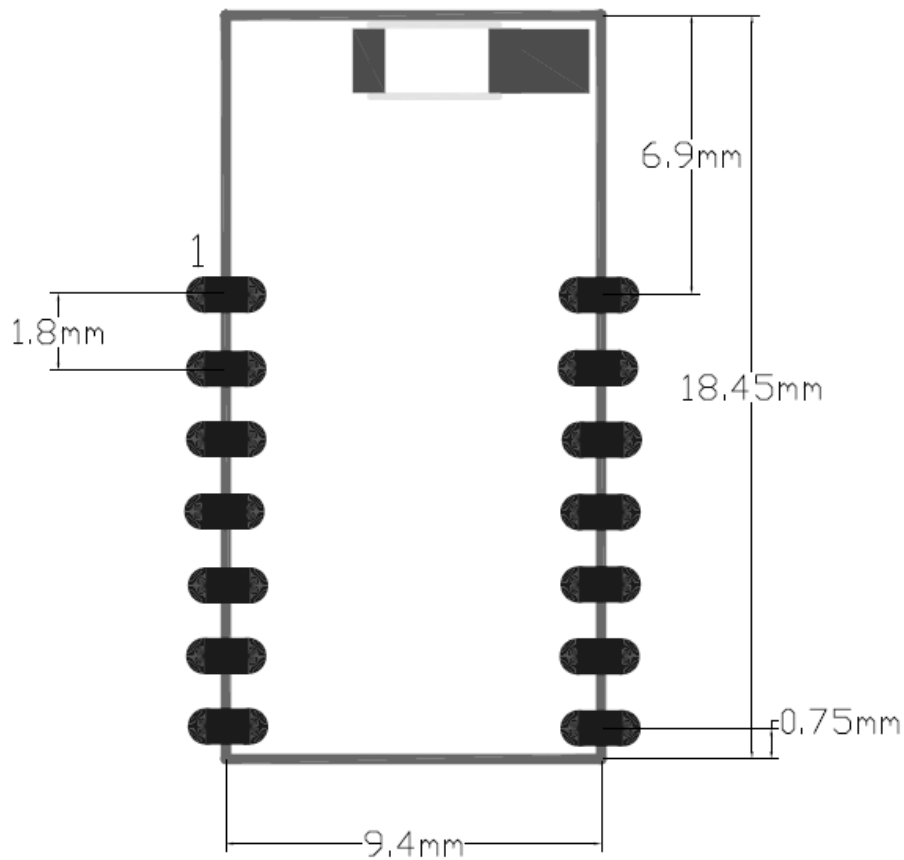


Figure 3: Physical Dimensions and Recommended Footprint (Unit: mm, Deviation:0.02mm)

6. Package

7. Contact Information

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