RX62T Group

Low Cost Motor Control Demo Board based on RX62T

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Introduction

The Motor Control Reference Platform (MCRP07) is based on the powerful 32-bit Renesas Microcontroller RX62T.

This platform and associated software allows for easy custom application development. It includes a small on-board motor and provides a very user-friendly PC interface enabling set up motor parameters.

With this demonstration platform you can experience a new and easier way to evaluate motor control systems. You can effortlessly develop and test your own solutions, deploying the performance of the Renesas RX family of MCUs.

Target Device

RX62T Group

Contents

1. Outline of MCRP07

The MCRP07 platform drives a 3-phase Permanent Magnet Synchronous Motor (Brushless Motor) by using an advanced sensor-less Field Oriented Control algorithm.

The phase currents measurement is done via three shunts, which offers a very low cost solution avoiding an expensive current sensor. Single shunt current measurement is also possible.

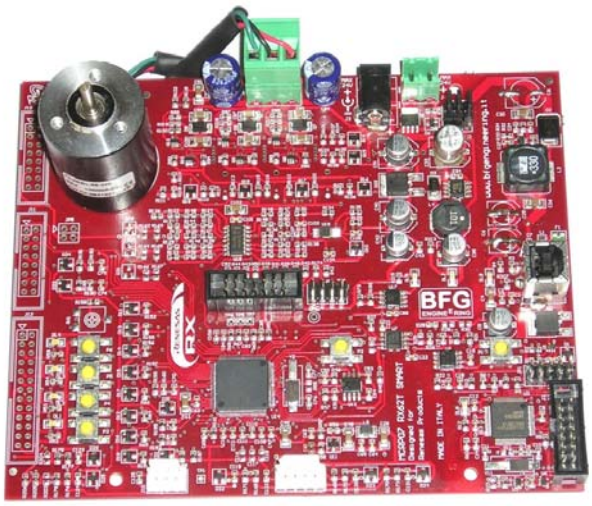
The main applications for this type of algorithm are compressors, air conditioning, fans, industrial drives and washers.

This platform and associated software allows for easy custom application development. It includes a small on-board motor and provides a very user-friendly PC interface enabling set up motor parameters.

The MCRP07 can be powered directly by USB, or it is possible to power through an external supply. When using an external supply the USB communication is optically insulated.

An external power stage can be managed, in order to control higher power motors.

The ZIP package provided with this Application Notes includes sample code supplied as a Hi-performance Embedded Workshop (HEW) workspace; full board schematics, including gerber files; a complete User Manual and Quick Start Guide.



2. Website and Support

Renesas Electronics Website
http://www.renesas.com/

Inquiries
http://www.renesas.com/inquiry

Revision Record

Rev.	Date	Description	
		Page	Summary
1.00	Mar 25, 2011	—	First edition issued

General Precautions in the Handling of MPU/MCU Products

The following usage notes are applicable to all MPU/MCU products from Renesas. For detailed usage notes on the products covered by this document, refer to the relevant sections of the document as well as any technical updates that have been issued for the products.

1. Handling of Unused Pins

   Handle unused pins in accord with the directions given under Handling of Unused Pins in the manual.

   — The input pins of CMOS products are generally in the high-impedance state. In operation with an unused pin in the open-circuit state, extra electromagnetic noise is induced in the vicinity of LSI, an associated shoot-through current flows internally, and malfunctions occur due to the false recognition of the pin state as an input signal become possible. Unused pins should be handled as described under Handling of Unused Pins in the manual.

2. Processing at Power-on

   The state of the product is undefined at the moment when power is supplied.

   — The states of internal circuits in the LSI are indeterminate and the states of register settings and pins are undefined at the moment when power is supplied.
   In a finished product where the reset signal is applied to the external reset pin, the states of pins are not guaranteed from the moment when power is supplied until the reset process is completed.
   In a similar way, the states of pins in a product that is reset by an on-chip power-on reset function are not guaranteed from the moment when power is supplied until the power reaches the level at which resetting has been specified.

3. Prohibition of Access to Reserved Addresses

   Access to reserved addresses is prohibited.

   — The reserved addresses are provided for the possible future expansion of functions. Do not access these addresses; the correct operation of LSI is not guaranteed if they are accessed.

4. Clock Signals

   After applying a reset, only release the reset line after the operating clock signal has become stable. When switching the clock signal during program execution, wait until the target clock signal has stabilized.

   — When the clock signal is generated with an external resonator (or from an external oscillator) during a reset, ensure that the reset line is only released after full stabilization of the clock signal. Moreover, when switching to a clock signal produced with an external resonator (or by an external oscillator) while program execution is in progress, wait until the target clock signal is stable.

5. Differences between Products

   Before changing from one product to another, i.e. to a product with a different part number, confirm that the change will not lead to problems.

   — The characteristics of an MPU or MCU in the same group but having a different part number may differ in terms of the internal memory capacity, layout pattern, and other factors, which can affect the ranges of electrical characteristics, such as characteristic values, operating margins, immunity to noise, and amount of radiated noise. When changing to a product with a different part number, implement a system-evaluation test for the given product.

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