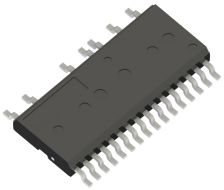
## Description

CRMT5002E1 is 3-phase Integrated Power Modules (IPM) designed for advanced appliance motor drive applications such as energy efficient fans and pumps.
This module Integrated 6 fast recovery MOSFETs and 3 high voltage gate drivers in a familiar package. This module is optimized for low EMI characteristics.

## Features

- 500V 3-phase inverter including high voltage gate drivers
- HVIC Temperature-Sensing Built-In for temperature Monitoring
- Works with 3.3V/5V MCU, Active-High interface
- HVIC for Under-voltage Protection
- Integrated bootstrap functionality
- Isolation Rating 1500V



SOP-23A

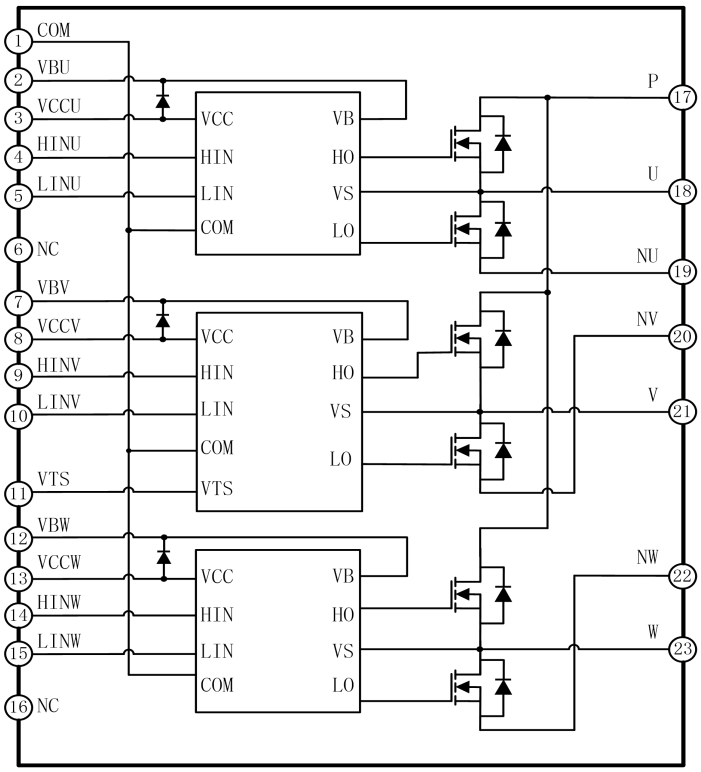
## Applications

- Energy efficient fans
- Pumps

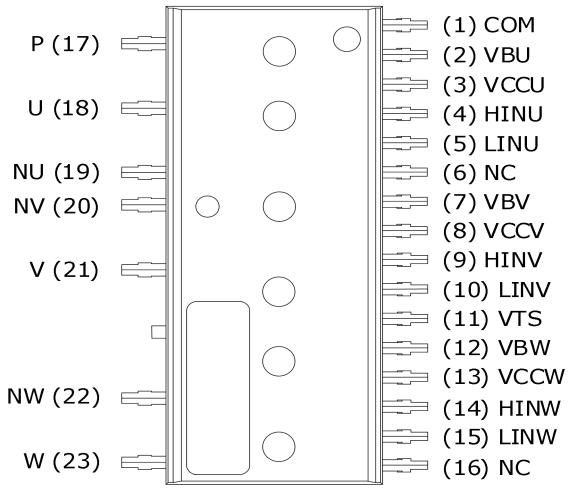
### Package Marking and Ordering Information

| Part # | Marking | Package | Packing | Quantity | $V_{TS}$ |
|---|---|---|---|---|---|
| CRMT5002E1 | CRMT5002E1 | SOP-23A | Tube | 340/640 | Yes |

## Internal Electrical Schematic



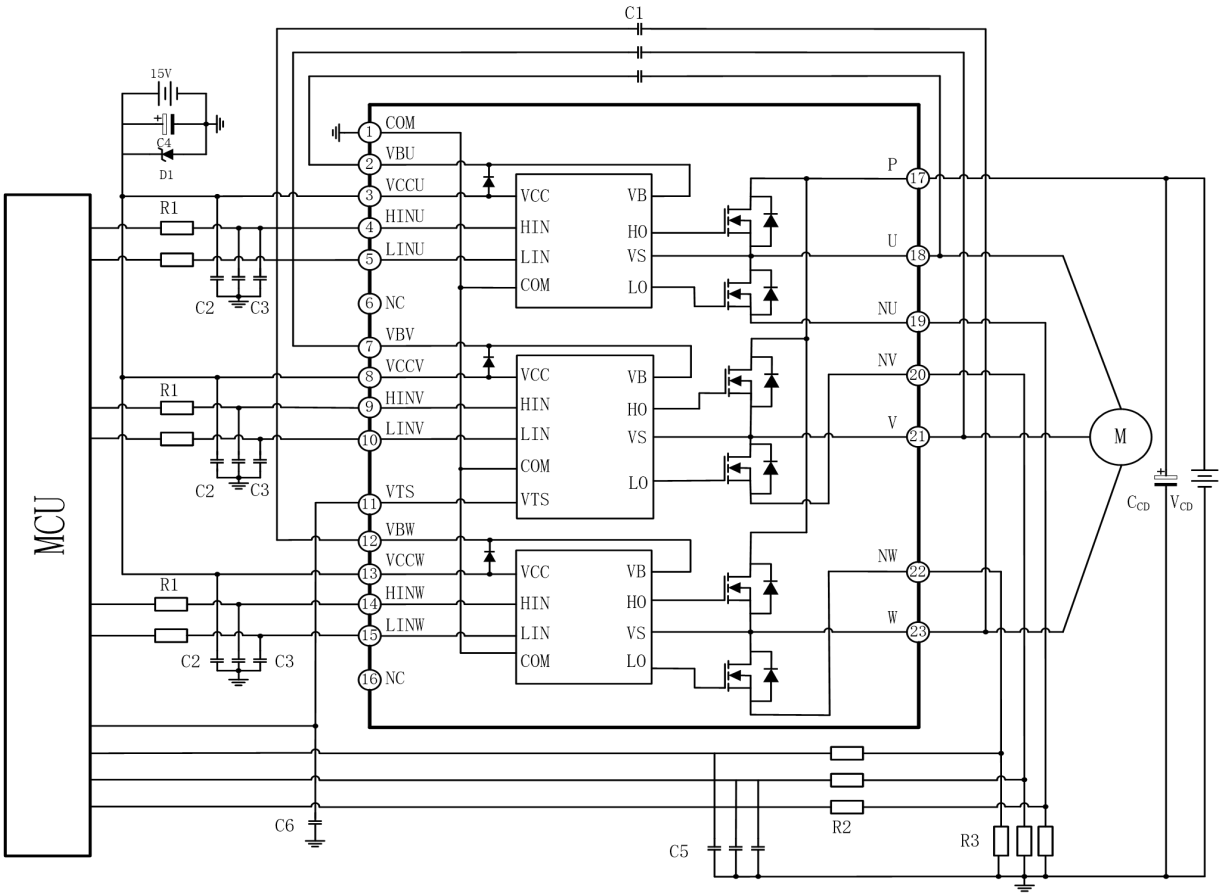
## Module Pin-Out Description




Top view

| Pin Number | Pin Name | Description |
|---|---|---|
| 1 | COM | Logic Ground |
| 2 | VBU | High Side Floating Supply Voltage U |
| 3 | VCCU | Low Side Supply Voltage U |
| 4 | HINU | Logic Input for High Side Gate Driver - Phase U |
| 5 | LINU | Logic Input for Low Side Gate Driver - Phase U |
| 6 | NC | Not Connected |
| 7 | VBV | High Side Floating Supply Voltage V |
| 8 | VCCV | Low Side Supply Voltage V |
| 9 | HINV | Logic Input for High Side Gate Driver - Phase V |
| 10 | LINV | Logic Input for Low Side Gate Driver - Phase V |
| 11 | VTS | Temperature-sensing Voltage Output |
| 12 | VBW | High Side Floating Supply Voltage W |
| 13 | VCCW | Low Side Supply Voltage W |
| 14 | HINW | Logic Input for High Side Gate Driver - Phase W |
| 15 | LINW | Logic Input for Low Side Gate Driver - Phase W |
| 16 | NC | Not Connected |
| 17 | P | DC Bus Voltage Positive |
| 18 | U | Output - Phase U, High Side Floating Supply Offset U |
| 19 | NU | Phase U Low Side Source |
| 20 | NV | Phase V Low Side Source |
| 21 | V | Output - Phase V, High Side Floating Supply Offset V |
| 22 | NW | Phase W Low Side Source |
| 23 | W | Output - Phase W, High Side Floating Supply Offset W |

## Application Circuit




**Remark:**

1、Input drive is High-Active type.To prevent malfunction, the wiring of each input should be as short as possible.

When using RC coupling circuit, make sure the input signal level meet the turn-on and turn-off threshold voltage.

2、Thanks for HVIC inside modules, direct coupling to MCU without any opto-coupler or transformer isolation is possible.

3、 The terminals of VTS is used to temperature detection, if you don't want to use it, please pull-down the terminal with a 100 KΩ resistor to GND. No connection is forbidden.

4、All capacitors should be mounted as close to the terminals of the IPM as possible.

5、The HIN and LIN have internal pull-down resistors. Additional pull-down resistors can be connected if necessary.

6、Bootstrap negative electrodes should be connected to U, V, W terminals directly and separated from the main output wires.

7、High frequency capacitor C1(greater than 2.2μF) is used as the bootstrap-up capacitor to absorb high frequency ripple.

## Package Outline

SOP-23A

UNIT:mm

