

## Description

CRM50TA02E1 is 3-phase Integrated Power Modules (IPM) designed for advanced appliance motor drive applications such as energy efficient fans and pumps.

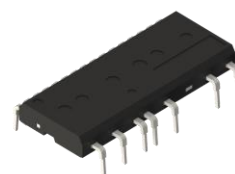
This module Integrated 6 fast recovery MOSFETs and 3 high voltage gate drivers in a familiar package. This module is optimized for low EMI characteristics.

## 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

## Applications

- Energy efficient fans
- Pumps



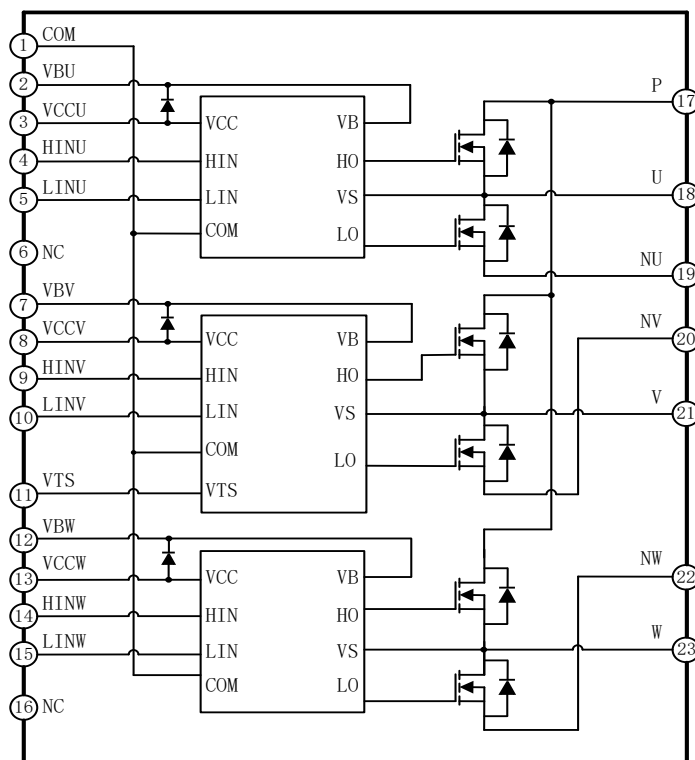
DIP-23E



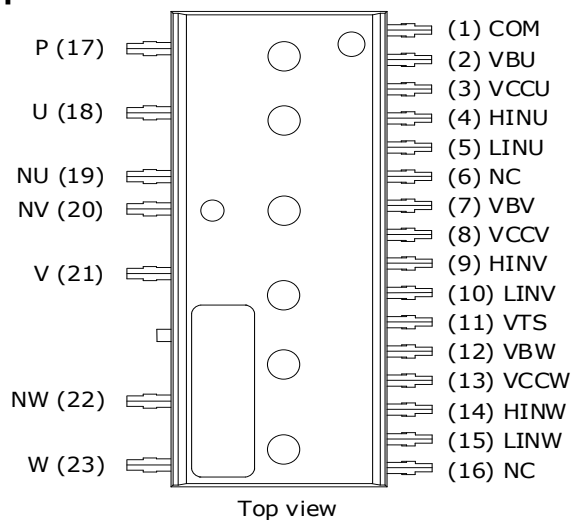
## Package Marking and Ordering Information

| Part #      | Marking     | Package | Packing | Quantity | V <sub>TS</sub> |
|-------------|-------------|---------|---------|----------|-----------------|
| CRM50TA02E1 | CRM50TA02E1 | DIP-23E | Tube    | 360      | Yes             |

## Internal Electrical Schematic

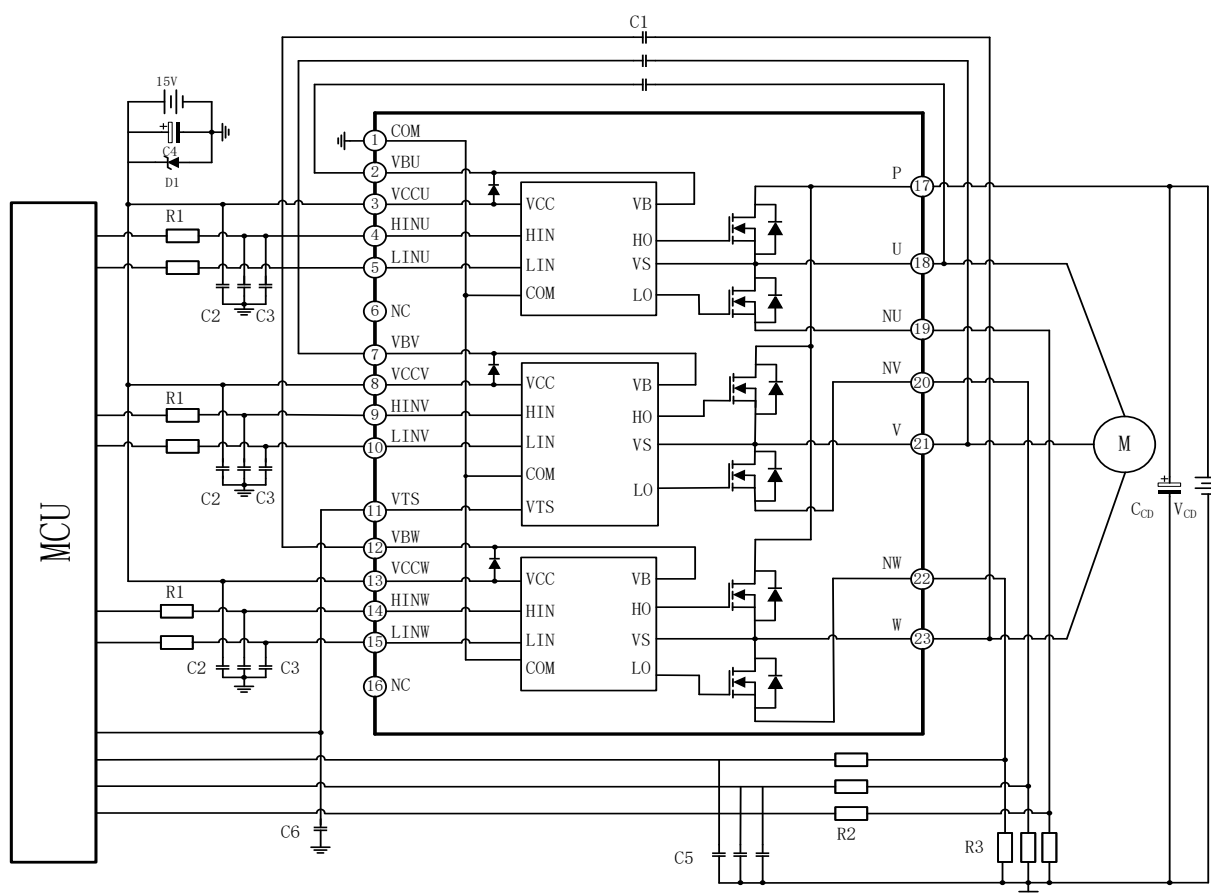


## Module Pin-Out Description



| 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 K $\Omega$  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 2.2 $\mu$ F) is used as the bootstrap-up capacitor to absorb high frequency ripple.

