Description

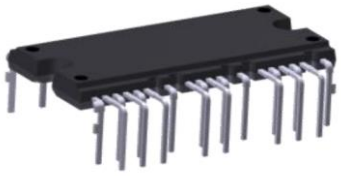
CRM60GK10E4 are 3-phase Integrated Power Modules (IPM) designed for advanced appliance motor drive applications such as fan, water pump, refrigerator, etc.

CRM60GK10E4 Integrated 6 low-loss IGBTs and FRDs, 3-phase half bridge high voltage gate drivers in a familiar package. The modules are optimized for low EMI characteristics.

CRM60GK10E4 internal integration of undervoltage, short circuit and other protection functions, providing excellent protection and a wide range of safe working area. Since each phase has an independent negative DC terminal, its current can be detected separately.

Features

- 600V/10A three-phase inverter
- Works with 3.3V/5V MCU
- Built-in high voltage gate drive circuit
- Integrated over temperature protection
- Integrated under-voltage protection
- Integrated high accurate over-current protection
- Integrated enable shut down function
- Integrated double high interlock function
- Integrated bootstrap functionality
- Three independent negative DC terminals are used for inverter current detection
- Isolation rating: 1500 Vrms/min



DIP-25A

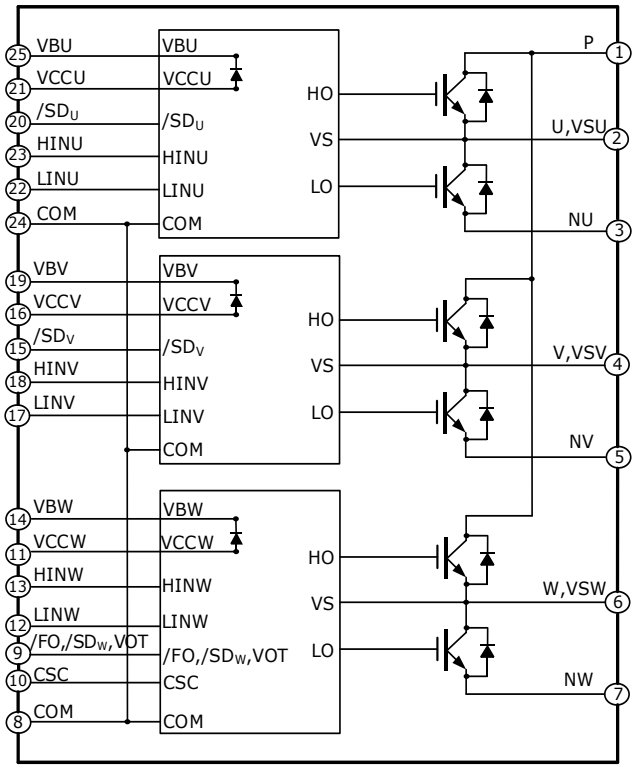
Applications

- Freezer compressor
- Pumps

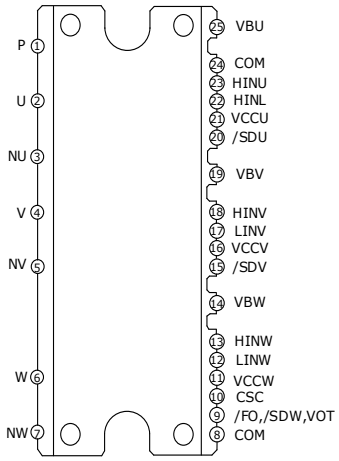
Package Marking and Ordering Information

Part #	Marking	Package	Packing	Quantity	VOT
CRM60GK10E4	CRM60GK10E4	DIP-25A	Tube	308	Yes

Internal Electrical Schematic



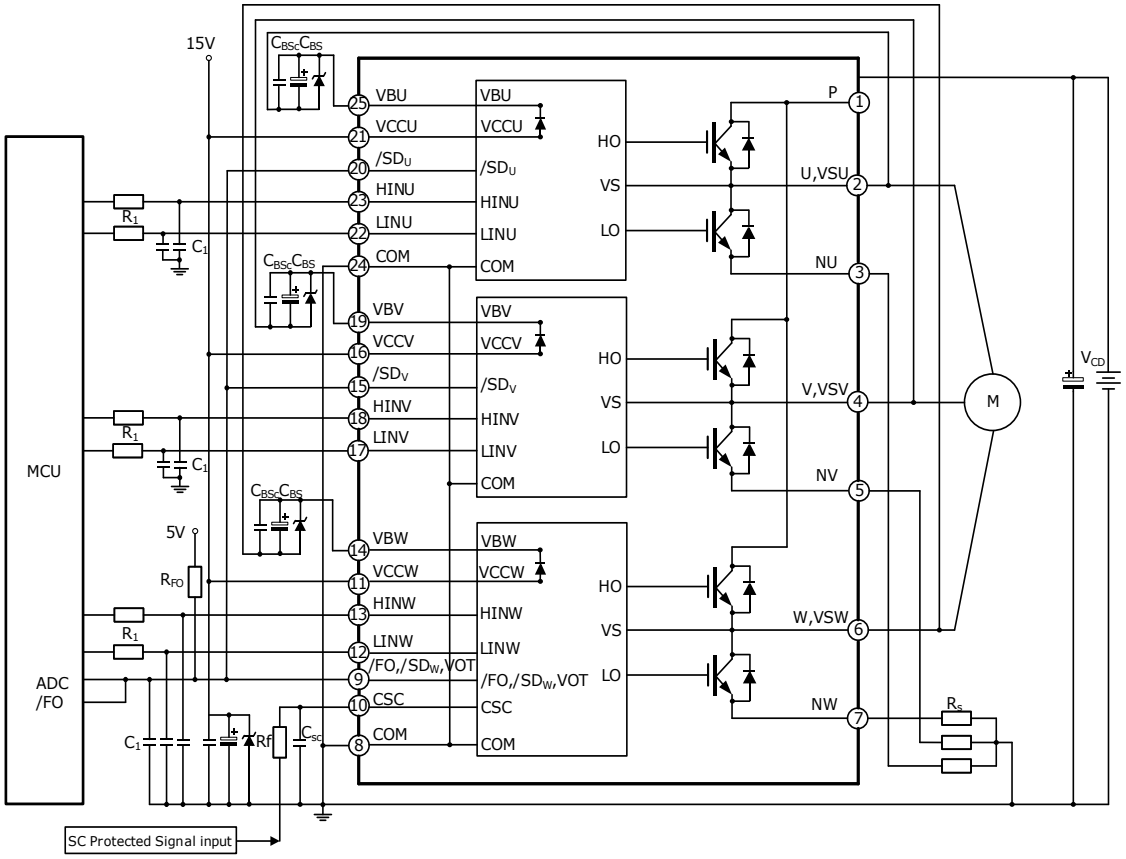
Module Pin-Out Description



Top view

Pin Number	Pin Name	Description
1	P	DC Bus Voltage Positive
2	U	Output - Phase U, High Side Floating Supply Offset U
3	NU	Phase U Low Side Source
4	V	Output - Phase V, High Side Floating Supply Offset V
5	NV	Phase V Low Side Source
6	W	Output - Phase W, High Side Floating Supply Offset W
7	NW	Phase W Low Side Source
8	COM	Logic Ground
9	/FO,/SD_W,VOT	Fault output ,W phase shut down,Temperature Output
10	CSC	External capacitance, Over current shutdown input
11	VCCW	W phase IC supply voltage
12	LINW	Logic Input for Low Side Gate Driver - Phase W
13	HINW	Logic Input for High Side Gate Driver - Phase W
14	VBW	High Side Floating Supply Voltage W
15	/SD_V	V phase shut down
16	VCCV	V phase IC supply voltage
17	LINV	Logic Input for Low Side Gate Driver - Phase V
18	HINV	Logic Input for High Side Gate Driver - Phase V
19	VBV	High Side Floating Supply Voltage V
20	/SD_U	U phase shut down
21	VCCU	U phase IC supply voltage
22	LINU	Logic Input for Low Side Gate Driver - Phase U
23	HINU	Logic Input for High Side Gate Driver - Phase U
24	COM	Logic Ground
25	VBU	High Side Floating Supply Voltage U

Application Circuit



Remark:

1、To prevent malfunction, the wiring of each input should be as short as possible.
2、 Input drive is High-Active type.There is a 20kΩ（typ.）pull-down resistor integrated in the IC input circuit.And adding RC filter circuit to the input will prevent the surgenoise caused by incorrect input.
3、To prevent surge damage, it is recommended to add a high-frequency non-inductive flat capacitor (0.1uF to 0.22uF)between P and N. The cable connection of the capacitor should be as short as possible.
4、The line between the current detection resistor and the IPM should be as short as possible, otherwise the large surge voltage generated by the connecting inductor may cause damage.
5、All capacitors should be mounted as close to the terminals of the IPM as possible.
6、FO output is open drain type.It should be pulled up to the positive side of 5V power supply by a resistor of about 10kΩ.
7、The time constant Rf and Cf of the protection circuit should be selected in the range of 1.5-2.0 μs.

Package Outline

DIP-25A **UNIT:mm**