

## CR211

### 2PHASE DC MOTOR DRIVER WITH SPEED DETECTION

#### 1. General Description

The CR211, one chip composed of hall sensor and output coil drivers, applied to 2-phase DC motor. The high sensitivity of Hall Effect sensor is suitable for motors from mini-type CPU coolers to blowers and DC fans. The device also includes an amplifier that amplifies the Hall voltage, and a Schmitt trigger to provide switching hysteresis for noise rejection, and complementary open-collector drivers for sinking large current loads. An internal bandgap regulator is used to provide temperature compensated supply voltage for internal circuits and allows a wide operating supply voltage.

CR211 could support 300mA driven current and wide operating voltage range. FG signal, an open collector, provides a square waveform output for the detection of the motor speed.

#### 2. Feature

- „ On-chip Hall sensor with two different sensitivity and hysteresis settings
- „ Two complementary output
- „ Build in FG output for speed detection compatible with CMOS and TTL interface
- „ Wide operating voltage range:4V~20V
- „ Output sink current up to 300mA

#### 3. Application Range

- „ Dual-coil Brush-less DC Motor
- „ Dual-coil Brush-less DC Fan
- „ Revolution Counting
- „ Speed Measurement

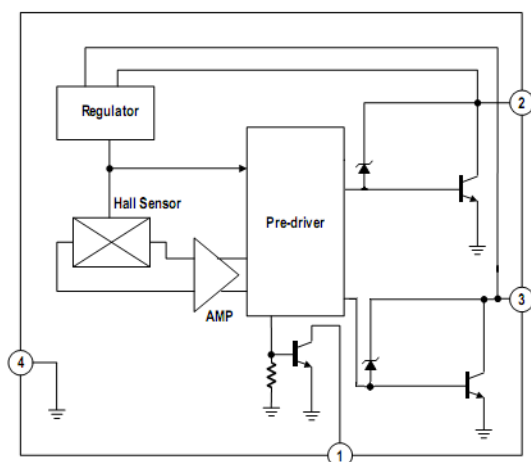


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## 4. Block Diagram



## 5. Pin Description



| Pin Number | Symbol | Description  |
|------------|--------|--------------|
| 1          | FG     | Speed Output |
| 2          | DO     | Output 1     |
| 3          | DOB    | Output 2     |
| 4          | GND    | Ground       |

## 6. Absolute Maximum Rating

| Symbol    | Description           | Min. | Max. | Unit |
|-----------|-----------------------|------|------|------|
| $V_{CC}$  | Supply Voltage        | —    | 30   | V    |
| $I_{OUT}$ | Supply current        |      | 350  | mA   |
| $T_{stg}$ | Storage Temperature   | — 65 | 150  | °C   |
| $T_{OP}$  | Operating Temperature | — 20 | 80   | °C   |



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## 7. Electrical Characteristics

 $V_{CC} = 12V, T_a = 25^{\circ}C$ 

| Symbol   | Description           | Test Condition         | Min. | Typ. | Max. | Unit |
|----------|-----------------------|------------------------|------|------|------|------|
| $V_{CC}$ | Power Supply          |                        | 3    |      | 20   | V    |
| $I_{CC}$ | Supply Current        | $B = 0GS$              |      | 11   | 15   | mA   |
| $V_{OL}$ | Output Low Voltage    | $I_{OUT}=300mA$        |      |      | 600  | mV   |
| $I_{LK}$ | Leakage of FG Output  | $V_{OUT}=24V$          |      |      | 1    | uA   |
| $V_{FG}$ | FG Output Low Voltage | $I_{FG}=5mA$           |      |      | 500  | mV   |
| Tr       | Output Rising Time    | $RL=820\Omega CL=20pF$ |      | 3    | 10   | uS   |
| Tf       | Output Falling Time   | $RL=820\Omega CL=20pF$ |      | 0.3  | 1.5  | uS   |

## 8. Magnetic Characteristics

 $V_{CC} = 12V, T_a = 25^{\circ}C$ 

| Symbol   | Characteristic  | Grade | Min. | Typ. | Max. | Unit |
|----------|-----------------|-------|------|------|------|------|
| $B_{OP}$ | Operating Point | A     | 0    |      | 50   | GS   |
|          |                 | B     |      |      | 70   | GS   |
|          |                 | C     |      |      | 90   | GS   |
|          |                 | D     |      |      | 120  | GS   |
| $B_{RP}$ | Releasing Point | A     | -50  |      | 0    | GS   |
|          |                 | B     | -70  |      |      | GS   |
|          |                 | C     | -90  |      |      | GS   |
|          |                 | D     | -120 |      |      | GS   |
| $B_{HY}$ | Hysteresis      |       | 30   |      | 110  | G    |

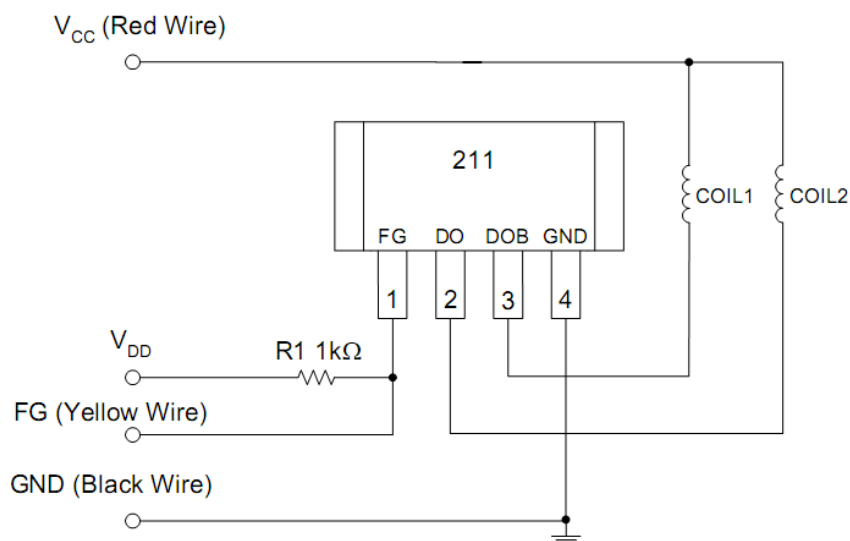


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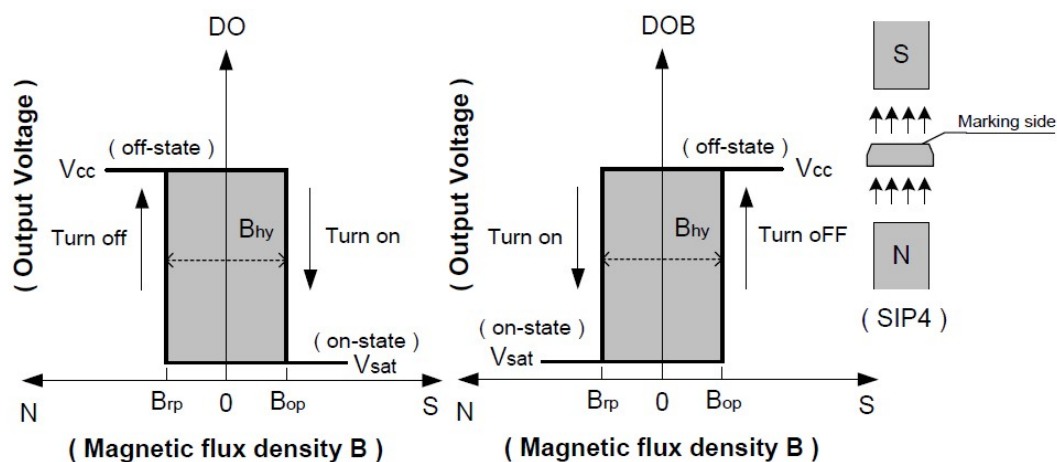
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## 9. Typical Application



## 10. Magnetic Characteristics



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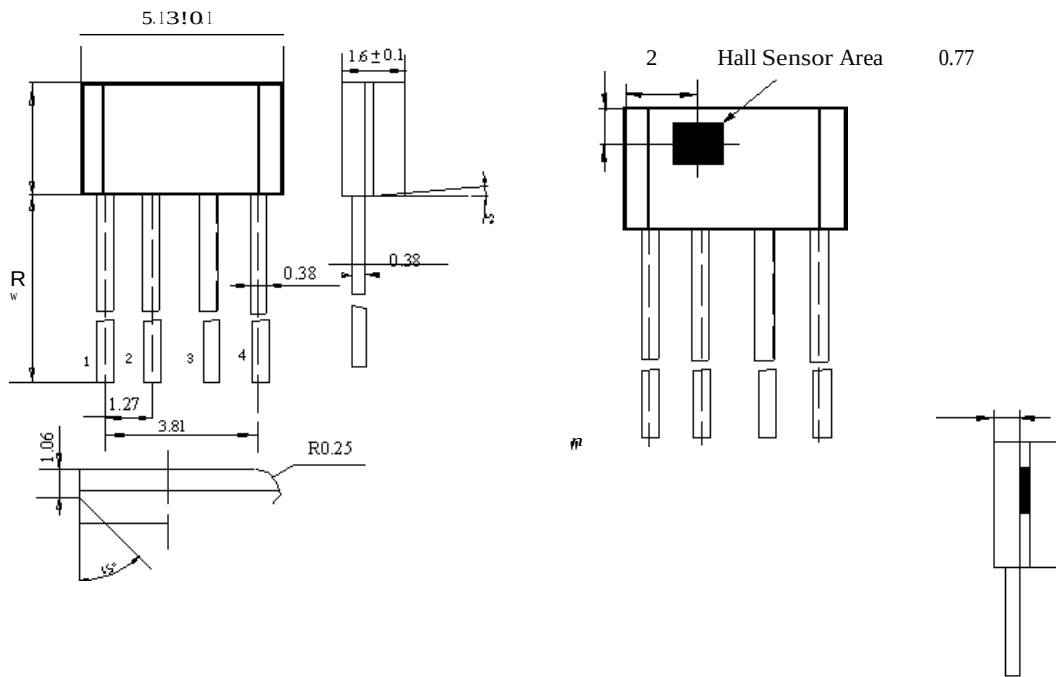
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CR22PHASE DC MOTOR DRIVER 11TH SPEED DETECTION

11. PackaeeandSensor Location



Package Sensor Location

Package Dimension