

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

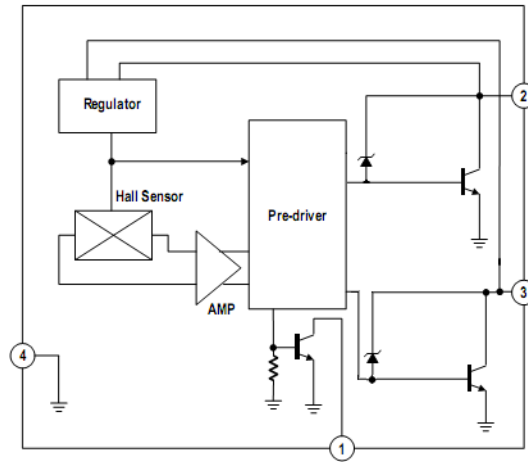


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4. Block Diagram



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 Voltage	Low $I_{OUT}=300mA$			600	mV
I_{LK}	Leakage of Output	$V_{OUT}=24V$			1	uA
V_{FG}	FG Output Voltage	$I_{FG}=5mA$			500	mV
T_r	Output Rising Time	$R_L=820\Omega, C_L=20pF$		3	10	uS
T_f	Output Falling Time	$R_L=820\Omega, C_L=20pF$		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

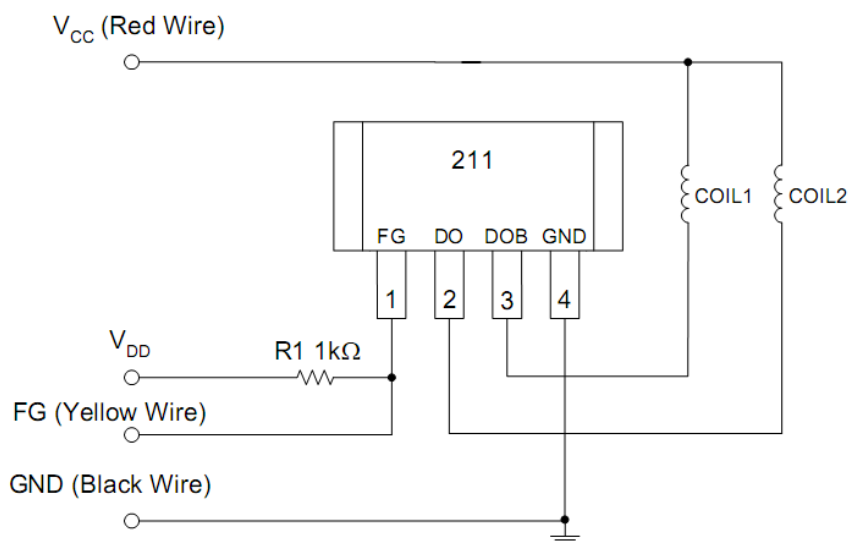


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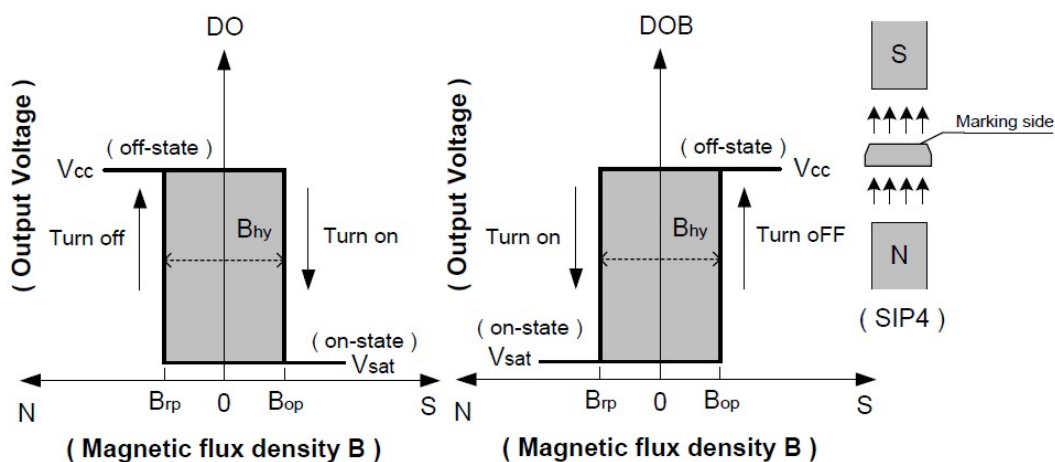
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9. Typical Application



10. Magnetic Characteristics



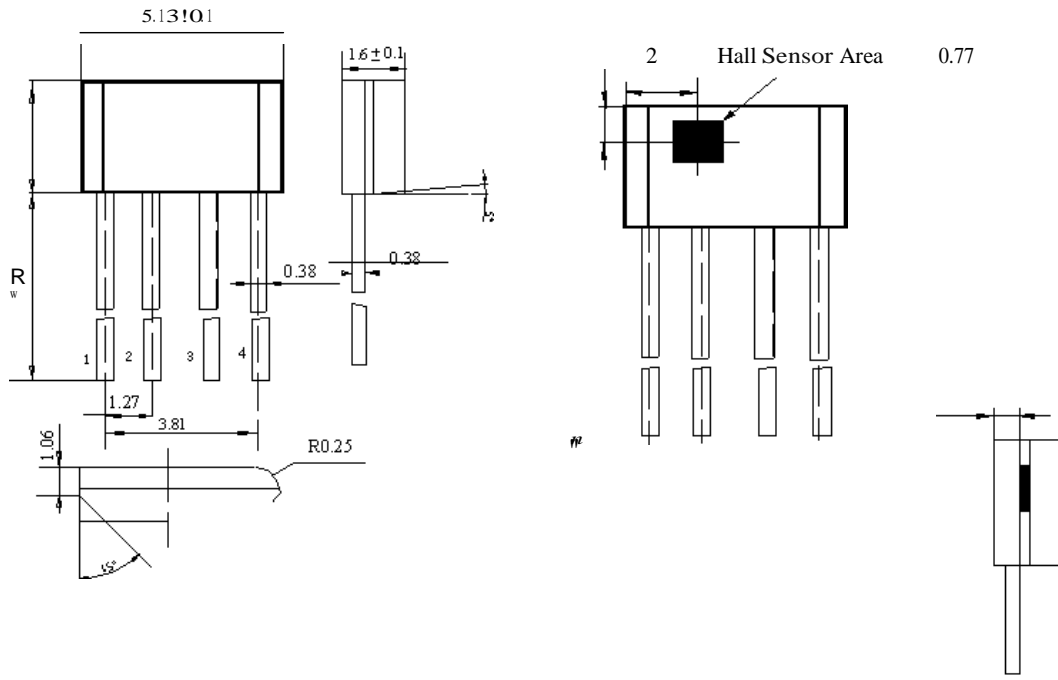
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CR2₂PHASE DC MOTOR DRIVER 11TH SPEED DETECTION

11. Packae and Sensor Location



Package Sensor Location

Package Dimension