

## HPW82521 Brushless Motor Driver

### 1 Features

- Replace HPW82521 series of DDC Company
- 1A、3A、10A continuous output current
- 200V motor supply voltage
- Torque control with four quadrants
- 60/120 phase selection
- 10KHZ~100KHZ operating frequency

### 2 Applications

- Triple-phase brushless motor drive control
- Drive the reactive load
- Servo Control

### 3 Descriptions

HPW82521 series is a brushless DC motor control module, the module has a complete triple-phase MOSFET bridge inside. The maximum supply voltage of the MOS-FET bridge is 200V, with output current of 1A、3A、10A, Module is composed of Hall sensor inter-face circuit, pulse width modulation circuit, power amplifier circuit, current detection and current feedback interface circuit.

Product design and manufacturing to meet the MIL-STD and detailed specifications of the product requirements, the quality level is H-class

### 4 Technical Specifications

Form 1 **HPW82521** electrical characteristics

No	Character	(Unless other wise, $V_{DR}=15V \pm 1\%$ $V_{CC}=5V \pm 0.5\%$ , $V_{DD}=5V \pm 0.5\%$ $V_{EE}=-5V \pm 5\%$	HPW-82521N			Unit
			Group	Min	Max	

		$V_S=56V \pm 3V$ , ENABLE=0 Input triple Hall TTL square wave signal 40Hz: $-55^{\circ}C \leq T_c \leq 125^{\circ}C$				
1	Control supply $V_{DR}$ Static current/ $I_{DR}$	No load	1, 2, 3	-	40	mA
2	Control supply $V_{DD}$ Static current / $I_{DD}$	No load	1, 2, 3	-	50	mA
3	Control supply $V_{EE}$ Static current / $I_{EE}$	No load	1, 2, 3	-	50	mA
4	Bias current/ $I_{OFFSET}$	No load	1	-300	+300	mA
5	Speed signal low level/ $V_{OL}$	$RL=18\Omega \pm 2\Omega$ ( $\Delta$ connect)	1	0.7	1.2	V
6	Working frequency /fcp	$RL=18\Omega \pm 2\Omega$ ( $\Delta$ connect )	4	10	55	KHZ
7	PWM Positive peak voltage/ $V_{p+}$	No load	1	2.3	2.8	A
8	PWM Negative peak voltage / $V_{p-}$	No load	1	-2.5	-2.3	mA
9	Duty cycle/D	No load	1	49	51	%

## 5 Lead function descriptions (Fig 2, Fig3)

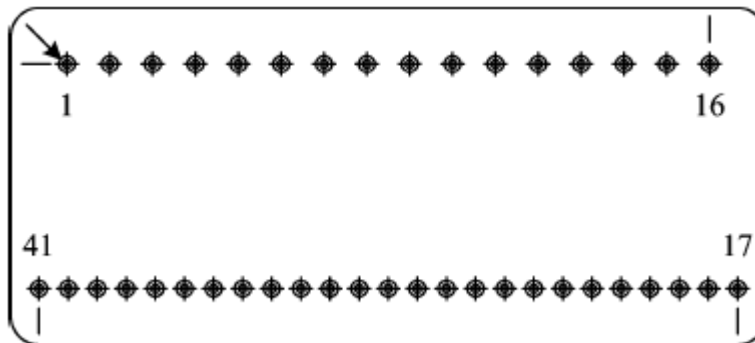


Fig 2 upward view

No	symbol	Designation	No	symbol	Designation
1	VBUS+A	A channel Power supply	23	COMMAND OUT	Current control signal output
2	VBUS+A	A channel Power supply	24	ERROR AMP OUT	Error amplifier output
3	PHASE A	A channel Output	25	ERROR AMP IN	Error amplifier input

4	PHASE A	A channel Output	26	CMO	Current monitor output
5	VBUS+B	B channel Power supp	27	N/C	N/C
6	VBUS+B	B channel Power supp	28	N/C	N/C
7	PHASE B	B channel Output	29	V <sub>EE</sub>	V <sub>EE</sub> power
8	PHASE B	B channel Output	30	Supply GND	Control ground
9	VBUS-	Power supply Ground	31	V <sub>DD</sub>	V <sub>EE</sub> power
10	VBUS-	Power supply Ground	32	SYNC IN	Synchronize input
11	RS+	Current sampling	33	V <sub>DR</sub>	V <sub>DR</sub> power
12	RS+	Current sampling	34	V <sub>CC</sub> RTN	V <sub>CC</sub> power ground
13	VBUS+C	C channel Power supp	35	V <sub>CC</sub>	V <sub>CC</sub>
14	VBUS+C	C channel Power supp	36	ENABLE	Enable
15	PHASE C	C channel Output	37	HALL C	Hall signal C
16	PHASE C	C channel Output	38	HALL A	Hall signal A
17	CASE GND	Case ground	39	HALL B	Hall signal B
18	PWM IN	PWM Input	40	DIR OUT	Direction out
19	PWM OUT	PWM Output	41	TACH OUT	Count output
20	COMMAND GND	Current control signal ground			
21	COMMAND IN+	Positive current control signal			
22	COMMAND IN-	Negative current control signal			

## 6 Circuit block diagram

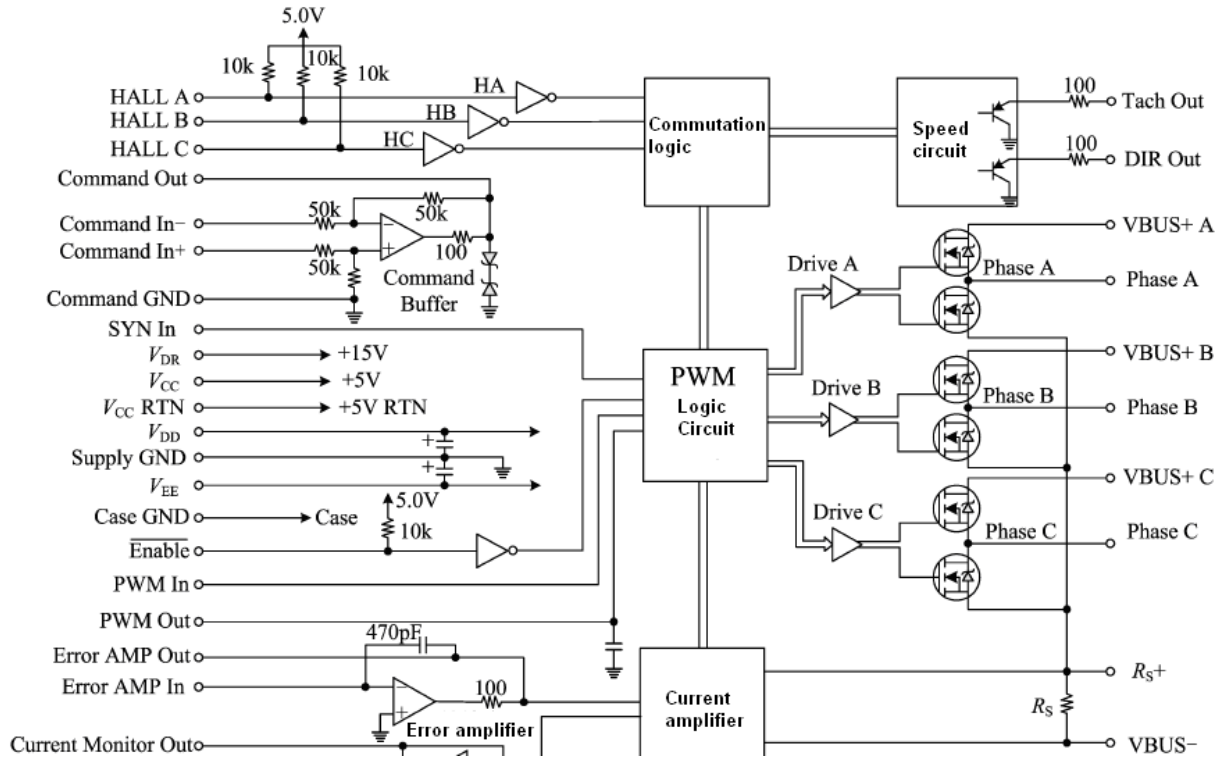


Fig 2 Single-circuit block diagram

## 7. Typical Connection Diagram

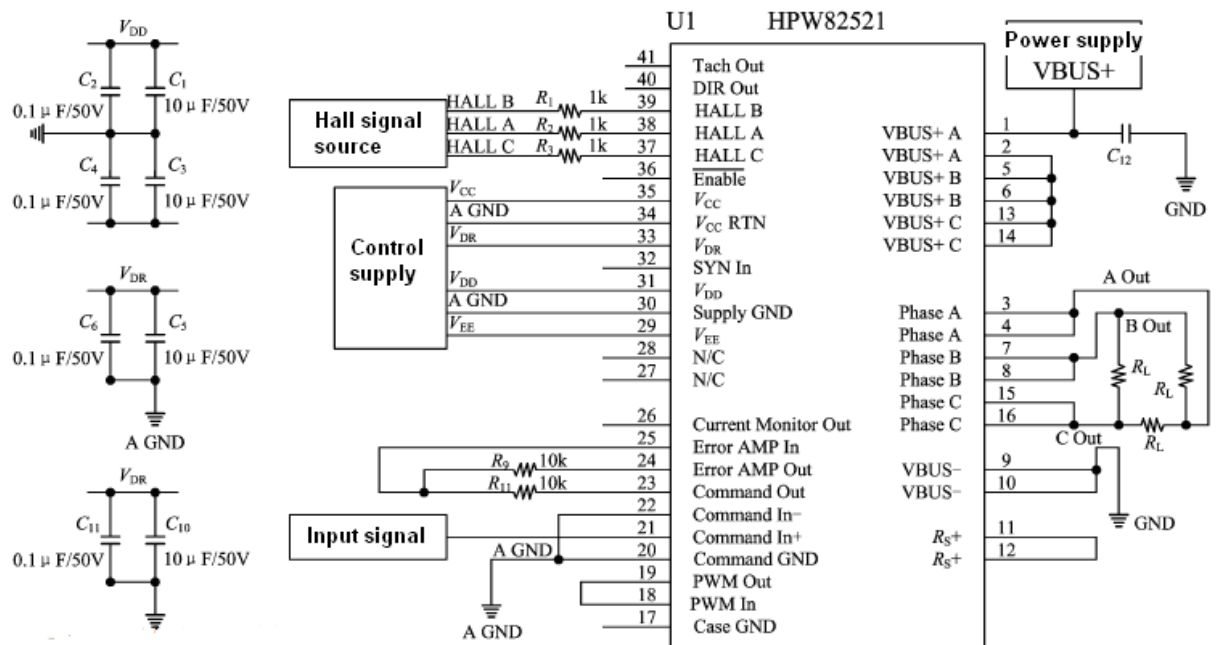


Fig 3 HPW82521 connection diagram

Notes: V<sub>CC</sub>: +5V, V<sub>DD</sub>: +5V, V<sub>EE</sub>: -5V, V<sub>DR</sub>: +15V, V<sub>BUS</sub>: +100V, C<sub>12</sub> ≥ 100 μF / 300V

HALL<sub>A</sub>, HALL<sub>B</sub> and HALL<sub>C</sub> phase difference 120°, TTL square wave

## 8. Package Specifications (Fig 4)

Outline of package is shown in Figure 4:

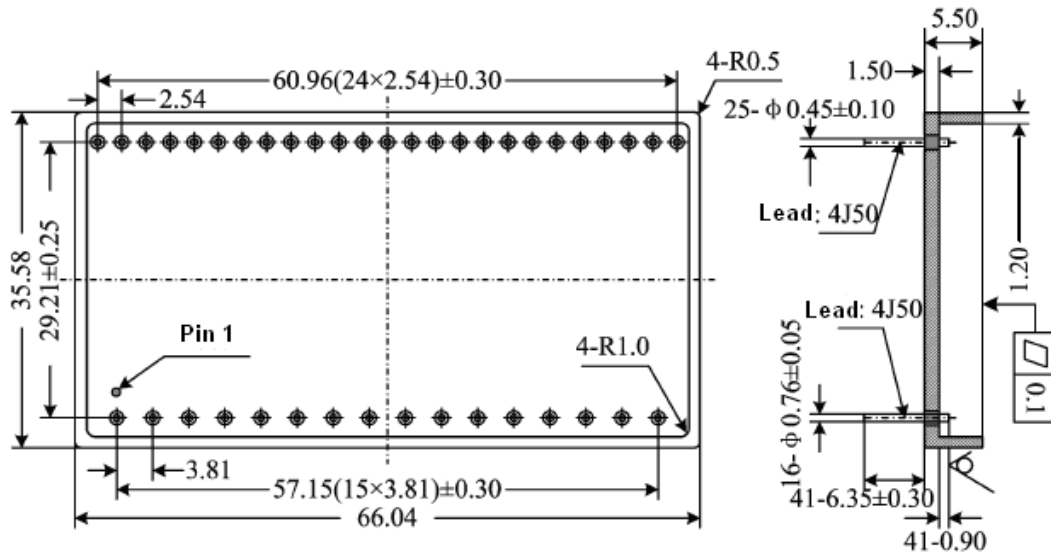


Fig 4 Package Specifications

**Application Notes please refer to the appendix, must read it carefully**