

# HMSK4362 High Efficiency Pulse Width Modulation Amplifier of Brushless Motor Driver

## 1 Features of HMSK4362 High Efficiency Pulse Width Modulation Amplifier of Brushless Motor Driver

- Replacement with MSK4362 of MSK Company
- Continuous output current: 30A
- Motor power voltage: 75V
- Torque control of four-quadrant
- 60/120 phase selection
- Inhibition function
- Trimmable +15V output terminal



Fig 1 HMSK4362 External view

## 2 Applications of HMSK4362 High Efficiency Pulse Width Modulation Amplifier of Brushless Motor Driver

- Three-phase brushless motor Drive control
- Driven reaction load
- Servo control

## 3 Description of HMSK4362 High Efficiency Pulse Width Modulation Amplifier of Brushless Motor Driver

HMSK4362 is an exclusive module for brushless DC motor, the module inside has the integrated three-phase MOSFET bridge, the MOSFET bridge can provide the maximum 75V, power supply voltage the maximum output current is 30A. The module is consisted of HALL sensor interface circuit, PWM, power amplifier, current detection and current feedback interface and so on.

This series of products are made of thick film hybrid integrated process, metal sealed package. Product design and manufacturing meet the requirements of MIL-STD and detailed specifications, the quality level is H-class.

## 4 Technical Specifications of HMSK4362 High Efficiency Pulse Width Modulation Amplifier of Brushless Motor Driver

Table 2 Electrical Characteristic (Complete according to the standard)

No.	Characteristic	( Unless other condition, V <sub>CC</sub> =15V±5% V <sub>S</sub> =100V±5% -55°C≤T <sub>c</sub> ≤125°C )	HMSK4362			Unit
			A group	min	max	
1	+15V power current/I <sub>CC</sub>	Speed control GND, empty load, Efficient HALL signal, frequency:40Hz, V <sub>H</sub> ≥3V, V <sub>L</sub> ≤0.8V	1	-	90	mA
	-15V power current /I <sub>EE</sub>		1	-	40	
2	Clock frequency/f <sub>CP</sub>	Efficient HALL signal, frequency:40Hz, V <sub>H</sub> ≥3V, V <sub>L</sub> ≤0.8V	4\5\6	18.7	25.3	KHZ
3	Reference voltage/V <sub>REF</sub>	RREF=430Ω	1\2\3	5.82	6.57	V
4	Control voltage transconductance/g <sub>m</sub>	Efficient HALL signal, frequency:40Hz, efficient current control setup	4	2.4	3.6	A/V
5	Bias current/I <sub>OO</sub>	Efficient HALL signal, frequency:40Hz, V <sub>H</sub> ≥3V, V <sub>L</sub> ≤0.8V	1	-100	100	MA
6	Current monitoring slope/K	Efficient HALL signal, frequency:40Hz, efficient current control setup	4	0.25	0.45	V/A
7	+15V Output/V	Efficient HALL signal, frequency:40Hz, efficient current control setup	1	14.25	15.75	V
8	-15V Output /V	Efficient HALL signal, frequency:40Hz, efficient current control setup	1	-14.25	-15.75	V

## 5 Pin Designations of HMSK4362 High Efficiency Pulse Width Modulation Amplifier of Brushless Motor Driver

Outline package is shown as Figure 1, it's a platform view.

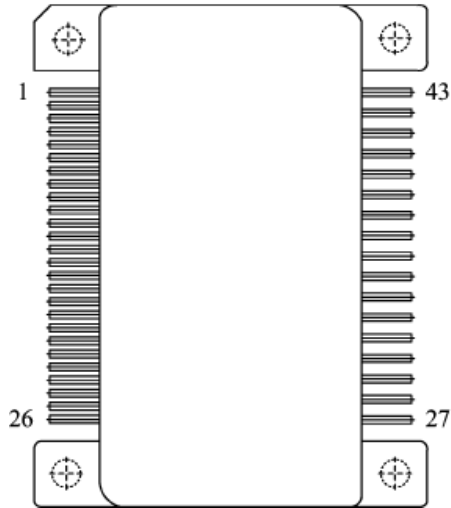


Figure 2 Platform

Table 3 Pin Designations

Pin	Symbol	Designation	Pin	Symbol	Designation
1	$V_{REF}$	Reference voltage output	23	GND	Ground
2	$IN_{HALL A}$	A phase HALL signal	24	+15Vout	+15V Output
3	$IN_{HALL B}$	B phase HALL signal	25	+REG	Positive regulation input
4	$IN_{HALL C}$	C phase HALL signal	26	GND <sub>L</sub>	Detection ground
5	CON <sub>60/60/12</sub>	Phase control	27	GND <sub>P</sub>	Power ground
6	CON <sub>BRAKE</sub>	Motor braking control	28	GND <sub>P</sub>	Power ground
7	SYNC	Clock synchronization	29	GND <sub>PC</sub>	C phase power ground
8	CON <sub>DIS</sub>	Enable control	30	GND <sub>PC</sub>	C phase power ground
9	GND	Ground	31	OUT <sub>C</sub>	C phase output
10	NC	NULL	32	OUT <sub>C</sub>	C phase output
11	NC	NULL	33	V <sub>SC</sub>	C phase power Drive supply
12	OUT <sub>E/A</sub>	Error amplifier output	34	GND <sub>PB</sub>	B phase power ground
13	IN <sub>E/A-</sub>	Reverse input of error amplifier	35	GND <sub>PB</sub>	B phase power ground
14	GND	Ground	36	OUT <sub>B</sub>	B phase output

15	CON <sub>+</sub>	Control positive	37	OUT <sub>B</sub>	B phase output
16	CON <sub>-</sub>	Control negative	38	V <sub>SB</sub>	B phase power Drive supply
17	V <sub>CC</sub>	+15V supply	39	GND <sub>PA</sub>	A phase power ground
18	TEST <sub>I</sub>	Current Detection	40	GND <sub>PA</sub>	A phase power ground
19	V <sub>EE</sub>	-15V supply	41	OUT <sub>A</sub>	A phase output
20	-REG	Negative regulation input	42	OUT <sub>A</sub>	A phase output
21	L1	Current reaction input	43	V <sub>SA</sub>	A phase power Drive supply
22	-15VOUT	-15V Output			

## 6 Circuit block diagram of HMSK4362 High Efficiency Puls

### e Width Modulation Amplifier of Brushless Motor Driver

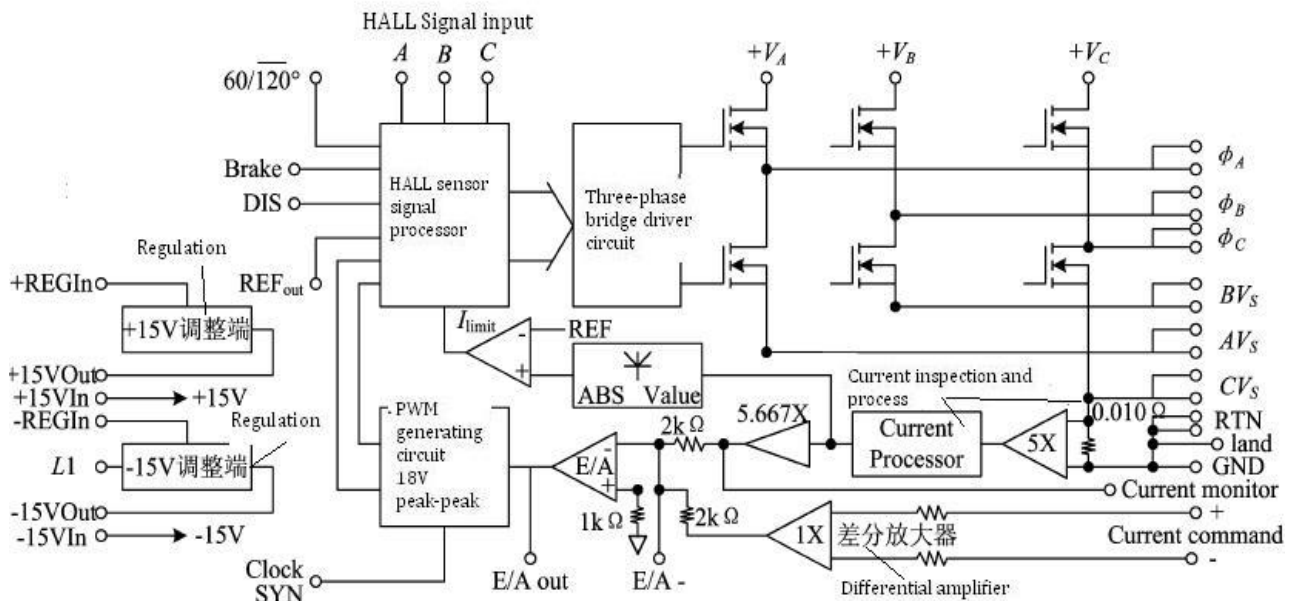


Figure 2 Circuit block diagram

## 7. Typical Connection Diagram of HMSK4362 High Efficiency

### Pulse Width Modulation Amplifier of Brushless Motor Driver

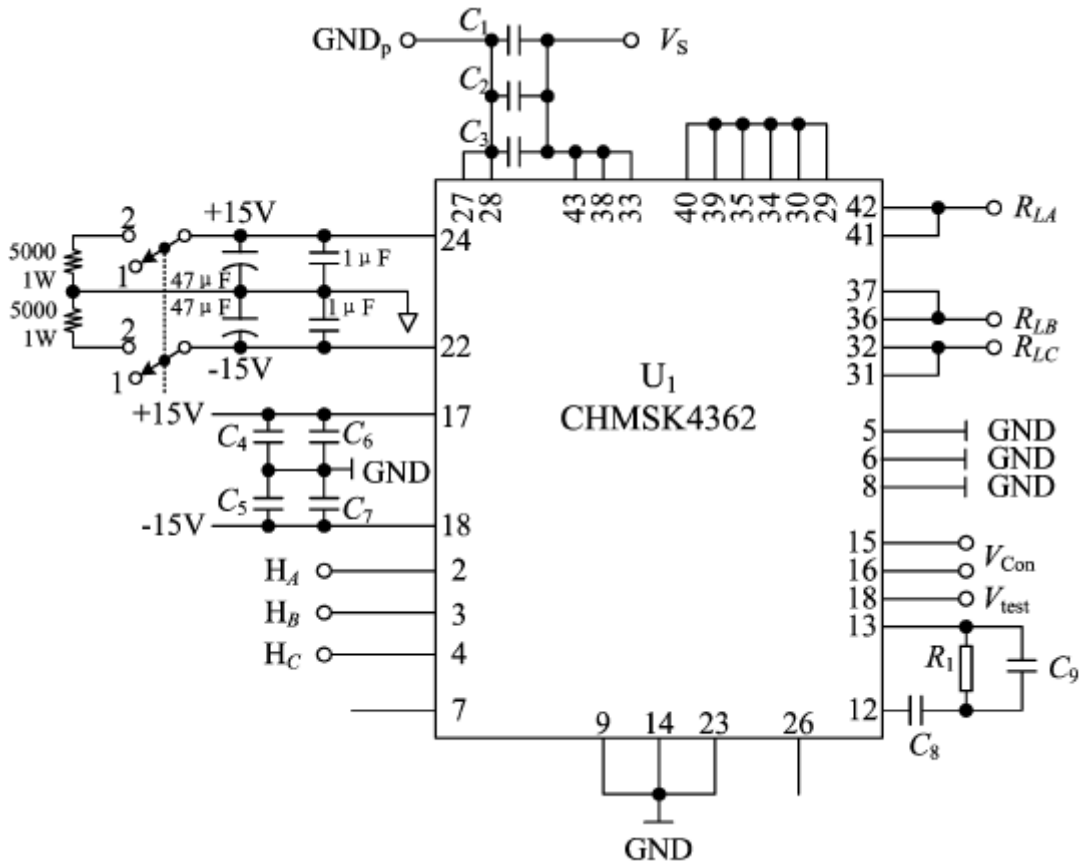


Fig 3 HMSK4362 connection diagram

Note1:  $C_1=C_2 \geq 470\mu\text{f}/100\text{V}$  (choose according to need),  $C_3 \geq 78\mu\text{f}/100\text{V}$  (choose according to need)

Note2:  $C_4=C_5 \geq 10\mu\text{f}/50\text{V}$ ,  $C_6=C_7=0.1\mu\text{f} \pm 5\%/50\text{V}$ ,  $C_8=0.33\mu\text{f} \pm 5\%/50\text{V}$ ,  $C_9=0.01\mu\text{f} \pm 5\%/50\text{V}$ ,  $R_1=2\text{K}\Omega \pm 5\%$

Note3:  $V_{CC}=15\text{V} \pm 5\%$ ,  $V_{EE}=-15\text{V} \pm 5\%$ ,  $V_S=28\text{V} \pm 5\%$

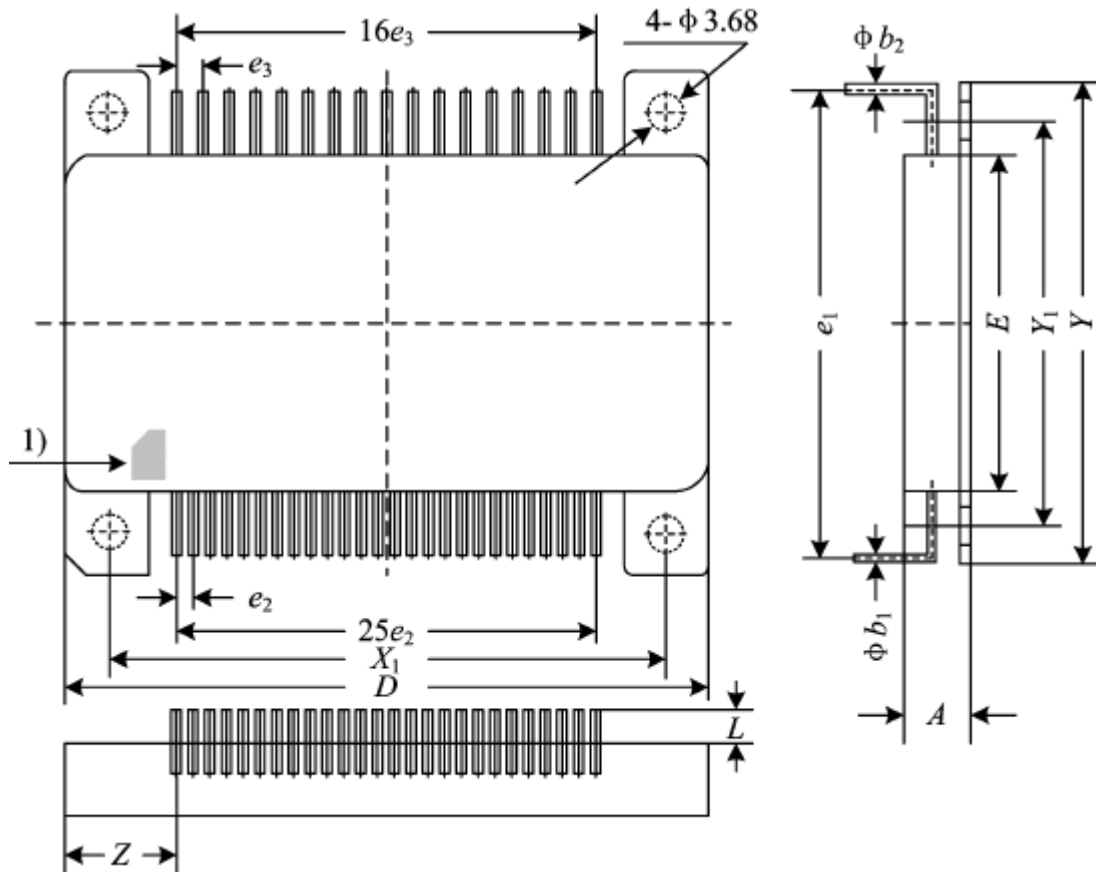
Note4:  $7\text{V} \geq V_{CON} \geq 2\text{V}$

Note5: HALL<sub>A</sub>、HALL<sub>B</sub>、HALL<sub>C</sub> phase shift 120°, TTL square wave.

## 8. Package Specifications of HMSK4362 High Efficiency Pulse

### Width Modulation Amplifier of Brushless Motor Driver

Outline of package is shown in Figure 5:



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