

### 描述

HR3988是一款四路DMOS全桥驱动芯片,能够驱动多达2个步进电机或4个直流电机。每个全桥输出额定值高达36V, 1.2 A。其内部集成了固定关闭时间的PWM电流调节器和2位非线性数模转换器,支持步进电机的全步、半步、1/4步控制,或直流电机的正向、反向、滑行模式控制。其PWM电流调节器采用的混合衰减模式可有效降低电机的可闻噪声,增加步进精度,并减小功耗。

在PWM工作模式下,内置的同步整流控制电路能够有效减小电路功耗。

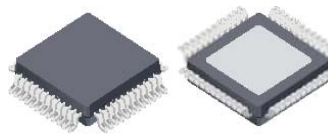
该芯片还具有过热关断、欠压锁定以及过流保护等保护功能,且无需特定的上电时序。

HR3988提供EV和JP两种贴片封装,并都带有裸露散热焊盘,能有效改善散热性能。EV是QFN36(6mm×6mm),JP是TQFP48(7mm×7mm)。两种封装为无铅封装,引框采用100%无锡电镀。

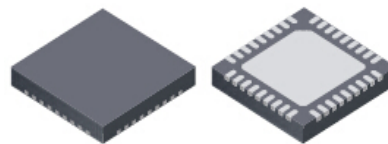
### 特点

- 36V 额定输出能力;
- 4路全桥;
- 可驱动2个步进电机;
- 大电流输出;
- 兼容3.3和5V逻辑电平;
- 同步整流;
- 欠压锁定(UVLO)保护电路;
- 过热关断保护电路;
- 过流保护电路。

### 封装形式



带散热盘的TQFP48



带散热盘的QFN36

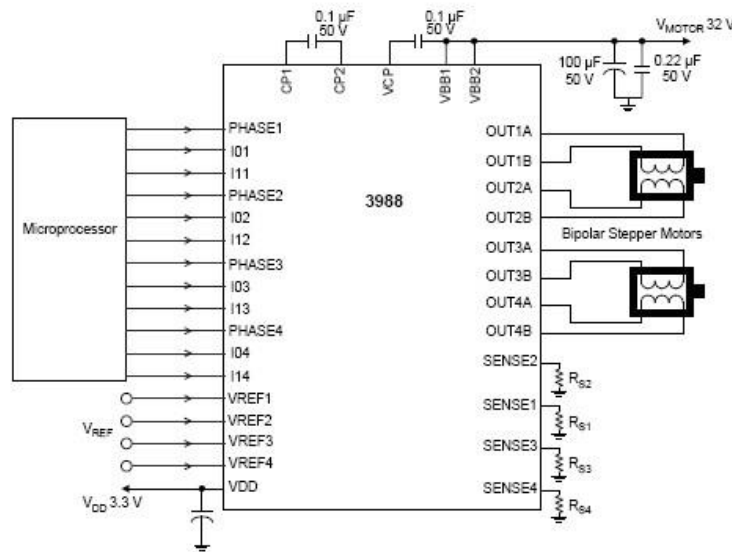
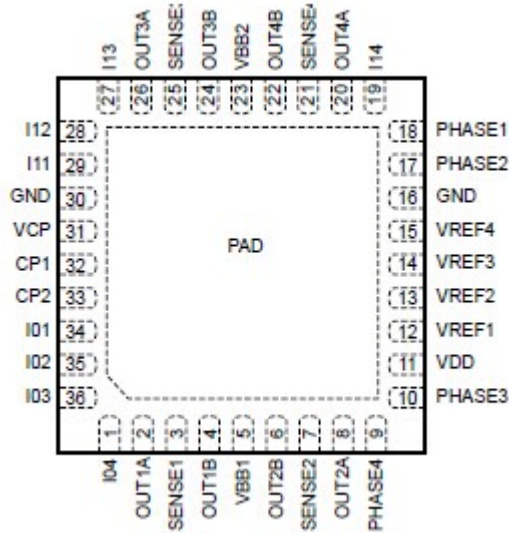


图 1. 典型应用电路

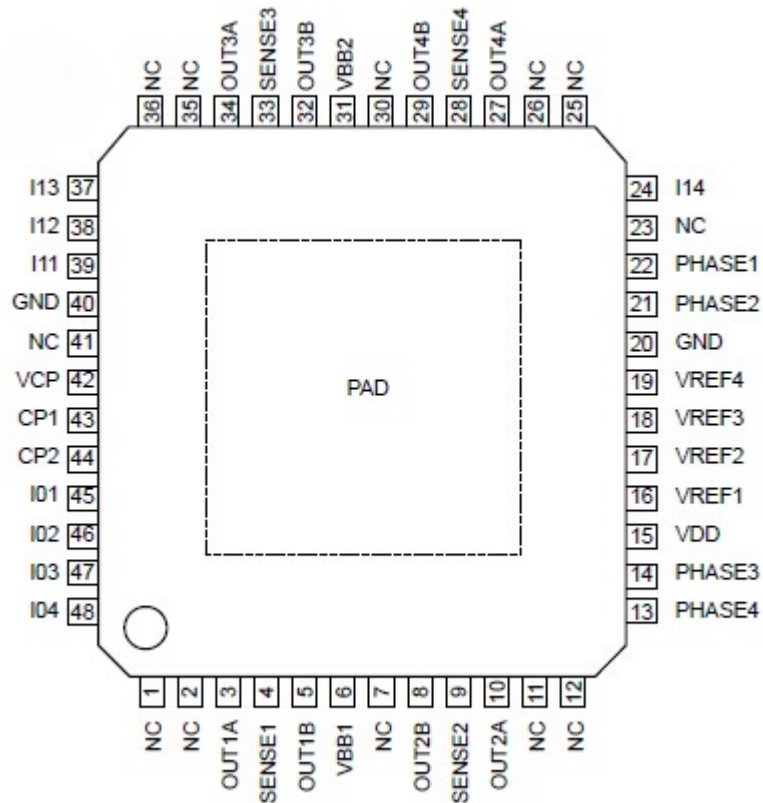
订购信息

Part Number	Package	Packing
HR3988 PQ	48 pin TQFP with exposed thermal pad	2500 pieces per tray
HR3988SQ	36 pin QFN with exposed thermal pad	3000 pieces per reel

引脚排列图



QFN36



LQFP48

引脚列表

QFN36	LQFP48	Pin Name	Pin Description
2	3	OUT1A	DMOS Full-Bridge 1 Output A
3	4	SENSE1	Sense Resistor Terminal for Bridge 1
4	5	OUT1B	DMOS Full-Bridge 1 Output B
5	6	VBB1	Load Supply Voltage
6	8	OUT2B	DMOS Full-Bridge 2 Output B
7	9	SENSE2	Sense Resistor Terminal for Bridge 2
8	10	OUT2A	DMOS Full-Bridge 2 Output A
9	13	PHASE4	Control Input
10	14	PHASE3	Control Input
11	15	VDD	Logic Supply Voltage
12	16	VREF1	Analog Input
13	17	VREF2	Analog Input
14	18	VREF3	Analog Input
15	19	VREF4	Analog Input
16	20	GND	Ground
17	21	PHASE2	Control Input
18	22	PHASE1	Control Input
19	24	I14	Control Input
20	27	OUT4A	DMOS Full-Bridge 4 Output A
21	28	SENSE4	Sense Resistor Terminal for Bridge 4
22	29	OUT4B	DMOS Full-Bridge 4 Output B
23	31	VBB2	Load Supply Voltage
24	32	OUT3B	DMOS Full-Bridge 3 Output B
25	33	SENSE3	Sense Resistor Terminal for Bridge 3
26	34	OUT3A	DMOS Full-Bridge 3 Output A
27	37	I13	Control Input
28	38	I12	Control Input
29	39	I11	Control Input
30	40	GND	Ground
31	42	VCP	Reservoir Capacitor Terminal
32	43	CP1	Charge Pump Capacitor Terminal
33	44	CP2	Charge Pump Capacitor Terminal
34	45	I01	Control Input
35	46	I02	Control Input
36	47	I03	Control Input
1	48	I04	Control Input
	1, 2, 7, 11, 12, 23, 25, 26, 30, 35, 36, 41	NC	No Connect
		PAD	Exposed pad for enhanced thermal performance. Should be soldered to the PCB.

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