概述

HSS41F是一款耐高压双极霍尔开关芯片，采用高压bipolar工艺制程。该芯片内部由电压稳压单元、霍尔电压发生器、差分放大电路、温度补偿电路、集电极开路输出电路组成。工作形式：输入磁感应强度，输出为数字电压信号。该芯片具有可耐高电压冲击，具有极强的抗噪能力；适用于各种电子消费类、汽车和工业控制等领域。提供 TO-92S 封装形式，且封装都符合RoHS标准。

特征

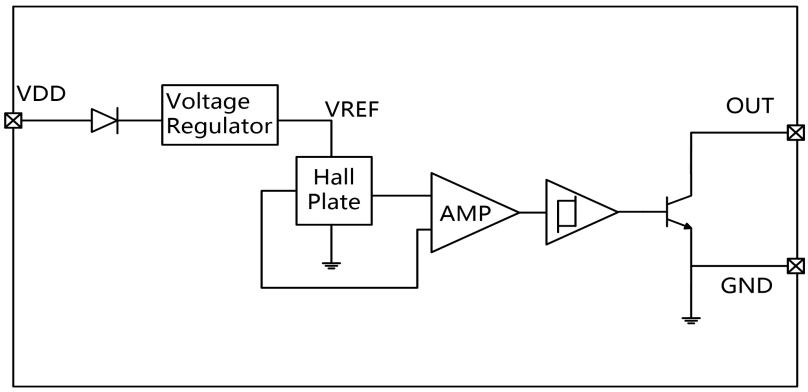
- 工作电压：3.8V~60V
- 过压保护能力：80V
- ESD 性能：±4 kV
- 集电极开路输出
- 电源引脚反向电压保护
- 可驱动电流最大 30mA
- 工作温度范围：-40℃~150℃

典型应用

- 无刷直流电机换向
- 速度测量
- 计数
- 角位置检测
- 接近检测
- 适用于汽车和极端工业环境

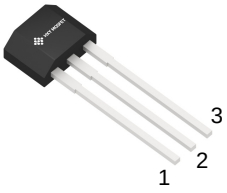
功能框图

该耐高压双极霍尔开关芯片包括电压调制电路、霍尔片、信号放大电路和施密特触发器电路。其中电压调制电路为霍尔片提供参考电压，该霍尔片感应到垂直于传感器表面的磁场产生霍尔电压，放大后发送给施密特触发器。同时该芯片还集成了反向电源的保护二极管，用于保护芯片免于反向电压的击穿。



HSS41F 功能框图

引脚信息



TO-92S

芯片引脚号	名称	说明
1	VSUP	电源
2	GND	地
3	VOUT	集电极开路输出，需外接上拉电阻

订购信息

编号	封装	包装	工作温度范围
HSS41F	TO-92S	1000/袋	-40℃~150℃

绝对最大额定

符号	参数	最小值	最大值	单位
V_{SUP}	电源电压	-60	80	V
V_{OUT}	输出电压	-0.5	80	V
I_{OUT}	输出电流	0	40	mA
T_J	工作温度	-40	150	˚C
T_{STG}	存储温度	-50	165	˚C

绝对最大额定值是芯片所能承受的极限值，超过该值芯片可能会永久损坏。

电磁特性

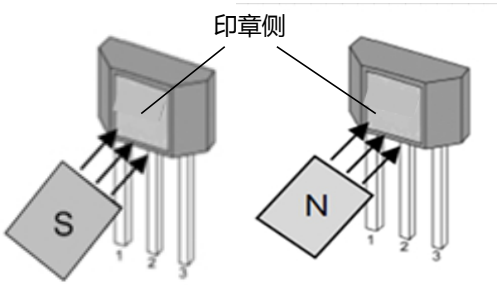
测试条件：T_J=-40˚C~150˚C，V_{SUP}=3.8V~60V；典型值测试条件：T_J=25˚C，V_{SUP}=5V。

符号	参数	测试条件	最小值	典型值	最大值	单位
电特性						
V_{SUP}	电源电压		3.8		60	V
I_{SUP}	电源电流			4.8	8	mA
I_{oleak}	输出漏电流				10	uA
V_{sat}	输出电压	I_{OUT}=20mA			0.4	V
I_{OUT}	输出电流				30	mA
T_r	输出上升时间	R_L=10KΩ，C_L=20pF			1.0	us
T_f	输出下降时间	R_L=10KΩ，C_L=20pF			1.5	us
磁特性						
Bop	工作点	R_L=10KΩ，C_L=20pF	10	45	80	Gauss
Brp	释放点	R_L=10KΩ，C_L=20pF	-80	-45	-10	Gauss
B_{HYS}	回差			90		Gauss

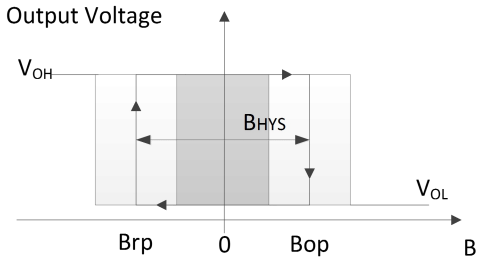
磁电转换说明

在 TO-92S 封装的印章侧施加大于 Bop 的磁场（南极靠近），输出变为低电平；施加小于 Brp 的磁场（北极靠近），输出变为高电平。芯片初次上电时，如果磁场处于 Bop 和 Brp 之间，输出状态会处于未定义的状态（高电平或低电平）。

见下图。



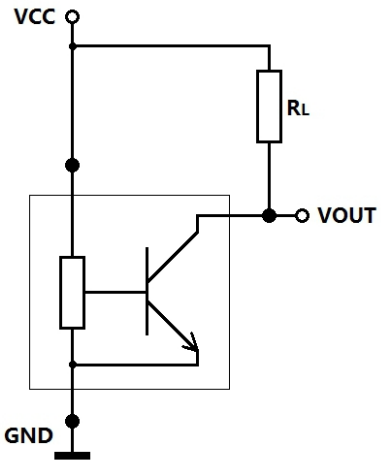
V_{OUT}=低电平　　V_{OUT}=高电平



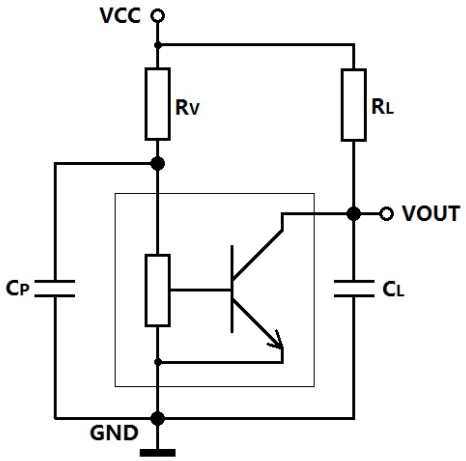
TO-92S输出状态

应用电路

典型应用电路见下图中:应用电路1，其中RL =4.7KΩ，可应用与大多数电路。应用电路2，其中 R_V=100 Ω，C_P=4.7nF，RL =4.7KΩ，C_L=1nF，应用于供电线上具有干扰或辐射干扰的电路，建议在电路中串联电阻R_V和两个电容C_P、C_L，且将电阻和电容这些元器件尽量放置在接近芯片处。



应用电路 1



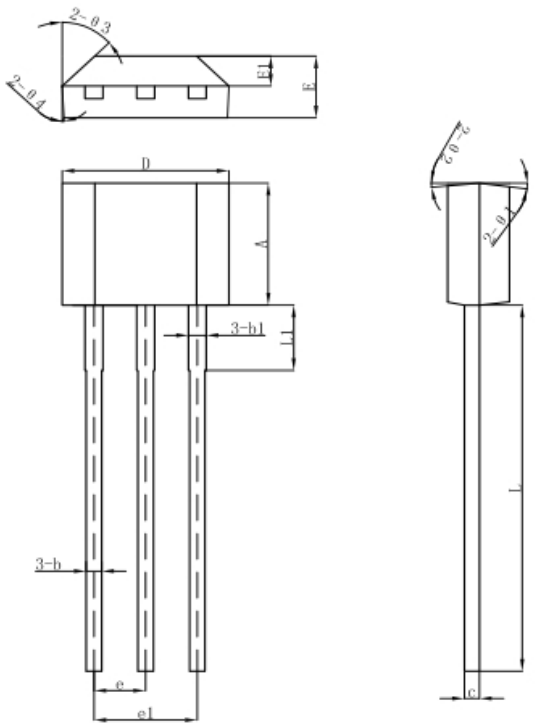
应用电路 2

注意事项

- 霍尔芯片是敏感器件，在使用及存储过程中应注意采取静电防护措施。
- 在安装使用中应尽量减少施加到器件外壳和引线上的机械应力。
- 建议焊接温度不超过 350℃，持续时间不超过 5 秒。
- 为保证霍尔芯片的安全性和稳定性，不建议长期超出参数范围使用。

外形尺寸

TO-92S 封装尺寸



符号	机械尺寸/mm		
	最小	典型	最大
A	2.90	3.00	3.10
b	0.35	0.39	0.40
b1		0.44	
c	0.36	0.38	0.40
D	4.00	4.10	4.20
E	1.42	1.52	1.62
E1		0.75	
e		1.27	
e1		1.27	
L1		2.54	
L	13.50	14.50	15.50
θ1		6°	
θ2		3°	
θ3		45°	
θ4		3°	
h		3.6	

Attention

■ Any and all HUA XUAN YANG ELECTRONICS products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your HUA XUAN YANG ELECTRONICS representative nearest you before using any HUA XUAN YANG ELECTRONICS products described or contained herein in such applications.

■ HUA XUAN YANG ELECTRONICS assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein.

■ Specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.

■ HUA XUAN YANG ELECTRONICS CO.,LTD. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could
give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.

■ In the event that any or all HUA XUAN YANG ELECTRONICS products(including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.

■ No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of HUA XUAN YANG ELECTRONICS CO.,LTD.

■ Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. HUA XUAN YANG ELECTRONICS believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

■ Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the HUA XUAN YANG ELECTRONICS product that you intend to use.