

High-Precision Low Power Voltage Detector

Datasheet brief

PRELIMINARY DATASHEET

Product Overview

The FH2801 series devices are a set of three terminal low power voltage detectors implemented in CMOS technology. Each voltage detector in the series detects a particular fixed voltage ranging from 0.9V to 5.0V.

The voltage detectors consist of a high-precision and low power consumption standard voltage source as well as a comparator, hysteresis circuit, and an output driver (CMOS inverter or NMOS open drain). CMOS technology ensures low power consumption.

Although designed primarily as fixed voltage detectors, these devices can be used with external components to detect user specified threshold voltages.

Typical Application Circuit

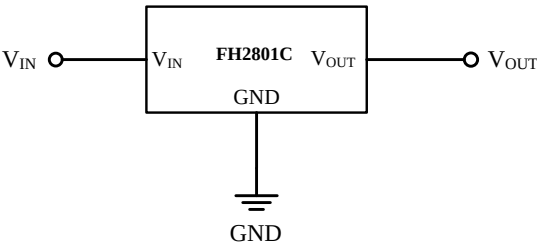


Figure 1-A. COMS Output

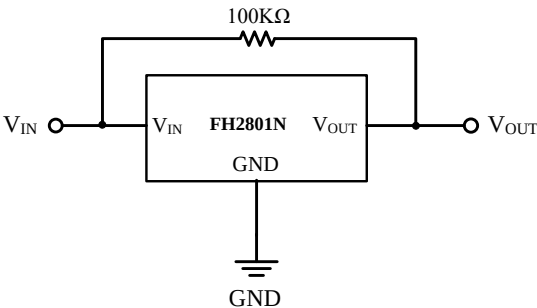


Figure 1-B. N-ch Open Drain Output

Key Features

- Operating voltage range: ~7.0V(FH2801), ~10V(FH2801H)
- High-precision detection voltage: ±2%
- Detection voltage: 0.9V~6.0V (in 0.1V step)
- Detect voltage temperature: ±100ppm/°C (typ.)
- Low current consumption: 0.2uA typ. (at V_{DD}=1.5V)
- Two output forms: FH2801C CMOS(active low) or FH2801N N-channel open-drain(active low)
- Environment Temperature: -40°C ~ +85°C
- RoHS Compliant and 100% Lead (Pb)-Free

Applications

- Microprocessor reset circuitry
- Memory battery back-up circuits
- Power-on reset circuits
- Power failure detection

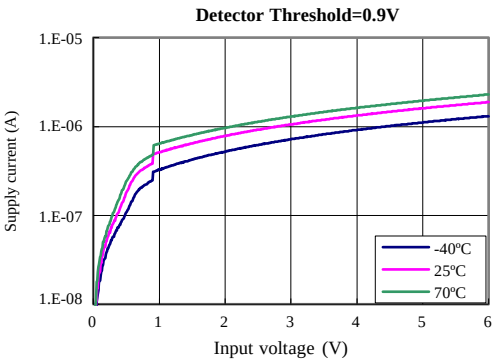
Package Type

- SOT-23
- SOT-23-3L
- FBP1*1-4L

Device Information ⁽¹⁾		
PART NUMBER	PACKAGE	BODY SIZE (NOM)
FH2801C**U4	FBP (4L)	1.00mm × 1.00mm
FH2801C/N**M3	SOT-23 (3L)	2.90mm × 1.60mm
FH2801C/N**M0	SOT-23	2.80mm × 1.20mm

(1) For all available packages, see the orderable addendum at the end of the data sheet.

Typical Performance Characteristics

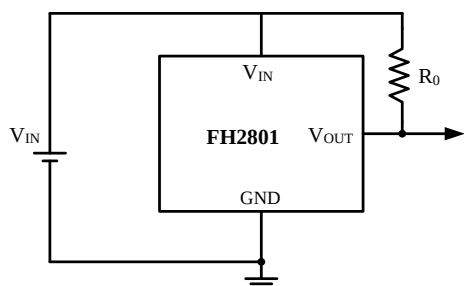


高精度、低功耗、小封装，电压检测芯片

产品概述

FH2801 系列是使用 CMOS 技术开发的高精度、低功耗、小型封装电压检测芯片。检测电压在小温度漂移的情况下保持极高的精度，且温度漂移小。器件提供两种类型 CMOS 输出或 Open Drain 输出。

典型应用电路



图一、典型应用电路

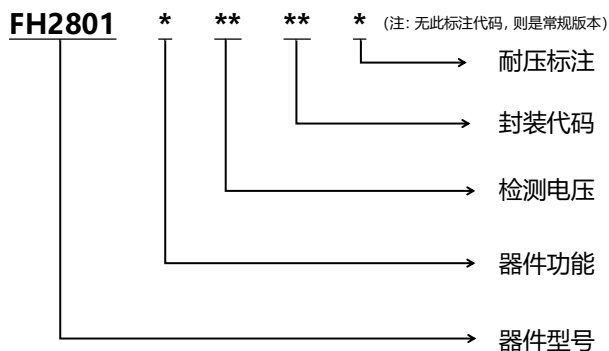
封装类型

- SOT-23
- SOT-23-3L
- FBP1*1-4L

应用领域

- 微处理器复位电路
- 上电复位电路
- 存储器电池后备电路
- 掉电检测
- 系统电池寿命和充电电压监视

器件型号指南



主要电气特性

- 高精度：±2%
- 低功耗：0.2μA ($V_{DD} = 1.5V$)
- 检测电压范围：1.0V~6.0V，100mV 步进
- 工作电压范围：0.7~7.0V (FH2801)、0.7~10V (FH2801H)
- 检测电压温度特性：±100ppm(typ.)
- 输出类型：N-channel open drain 或 CMOS

绝对最大额定值 ($T_A = 25^\circ C$)

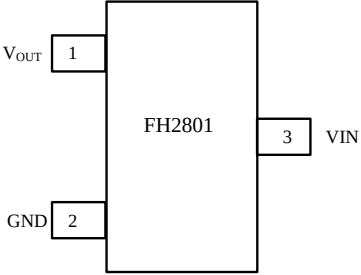
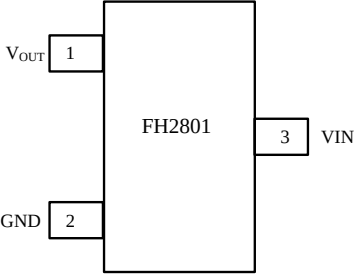
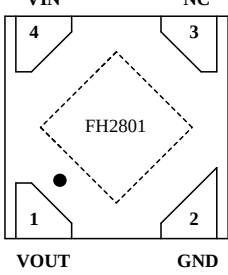
参数		符号	极限值	单位
输入电压		V _{IN} (V _{DD})	-0.3V to 8V, -0.3V to 10V	V
输出电流		I _{OUT}	50	mA
输出电压	CMOS	V _{OUT}	GND-0.3 ~ VIN+0.3	V
	N-ch		GND-0.3 ~ 8, GND-0.3 ~ 12	V
最大功耗	SOT-23	P _D	250	mW
	SOT-23-3L		250	mW
	FBP1*1-4L		380	mW
工作温度		T _{OPR}	-40~+85	℃
存储温度		T _{STG}	-40~+125	℃
焊接温度和时间		T _{SOLDER}	260℃, 10s	

功能描述(工作原理)

- ▲ 当输入电压(V_{IN})上升到大于检测电压(V_{DF})时，输出电压(V_{OUT})将等于 V_{IN} 。
- ▲ 当输入电压(V_{IN})下降到低于检测电压(V_{DF})时，输出电压(V_{OUT})将等于地电平(V_{SS})。
- ▲ 当输入电压(V_{IN})下降到低于最小工作电压(V_{MIN})时，输出将变得不稳定。在这种情况下， V_{IN} 将等于上拉输出(输出上拉)。
- ▲ 当输入电压(V_{IN})上升到大于地电平(V_{SS})时，如 V_{IN} 小于最小工作电压(V_{MIN})，输出将变得不稳定；如 V_{IN} 大于最小工作电压，又小于检测释放电压(V_{DR})，输出将稳定在地电平(V_{SS})。
- ▲ 当输入电压(V_{IN})上升到大于检测释放电压(V_{DR})时，输出电压(V_{OUT})将等于 V_{IN} 。
- ▲ V_{DR} 和 V_{DF} 之差就是迟滞范围。

【声明】所有中文内容如果与英文描述出现差异，请以英文为准。

Pin Configuration

SOT-23-3L	SOT-23	FBP1*1-4L
TOP VIEW 	TOP VIEW 	TOP VIEW 

Pin Description

Name	Pin Number			Description
	SOT-23-3L	SOT-23	FBP1-1-4L	
VOUT	1	1	1	Voltage detection output pin
GND (VSS)	2	2	2	Ground pin.
VIN	3	3	4	Input voltage pin
NC	/	/	3	No connect

Function Block Diagram

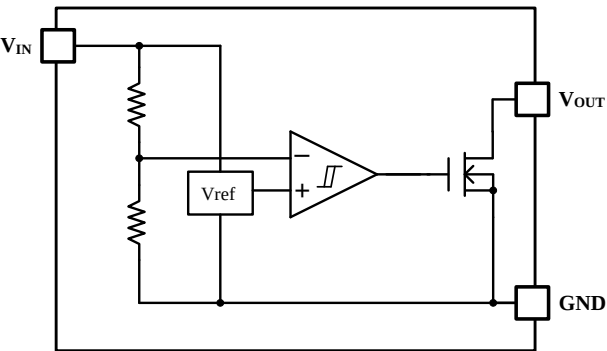


Figure 2-A. N-channel Open-drain

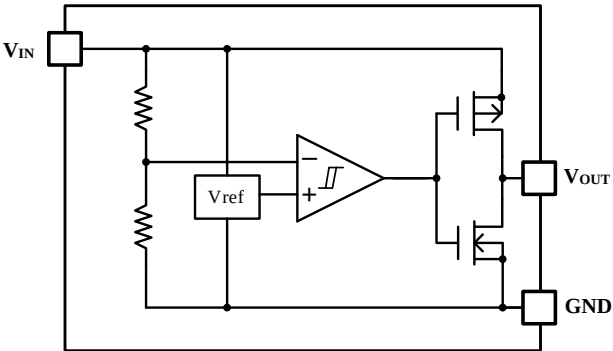
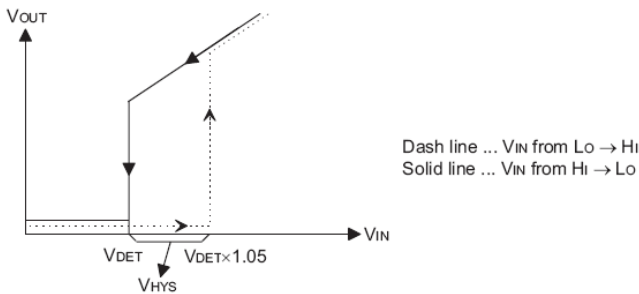


Figure 2-B. CMOS Output

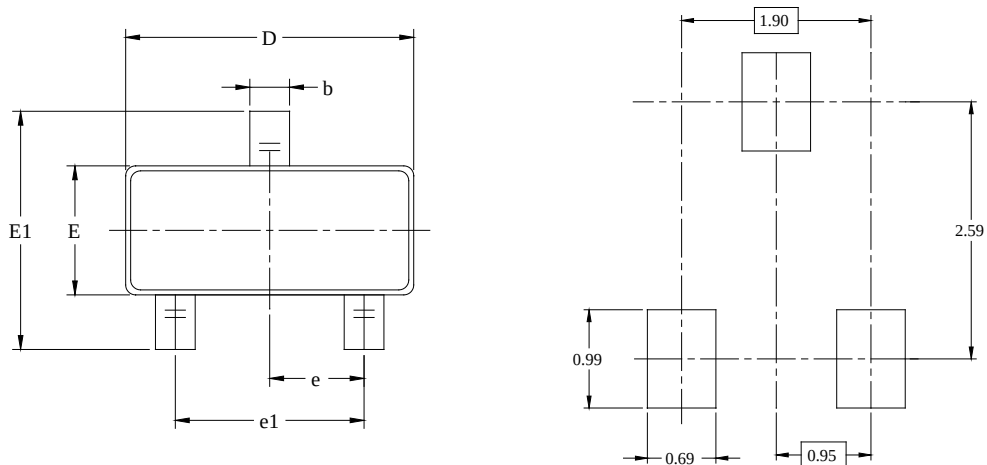


Output Table&Curve

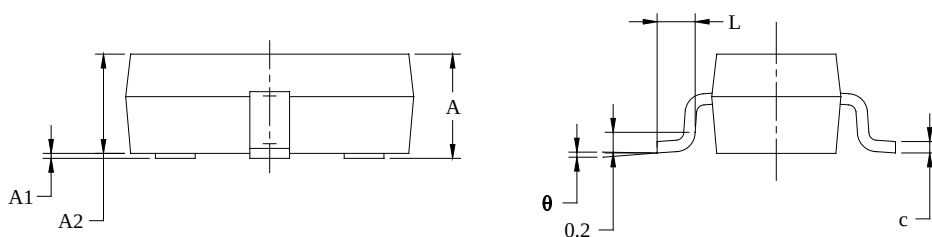
V _{DD}	V _{DD} > V _{DET} (+)	V _{DD} ≤ V _{DET} (-)
V _{OUT}	Hi-Z	VSS

Packaging Information

- Package Type: SOT-23-3L



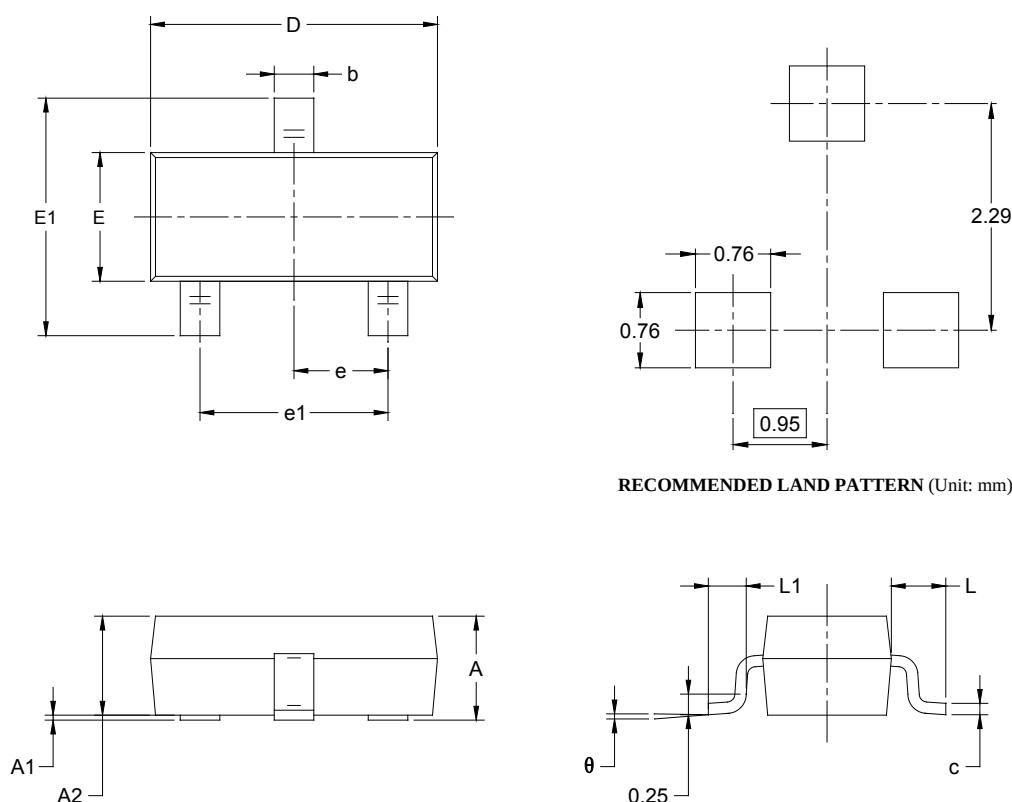
RECOMMENDED LAND PATTERN (Unit: mm)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950 BSC		0.037 BSC	
e1	1.900 BSC		0.075 BSC	
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

Packaging Information

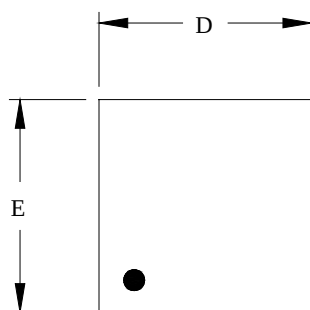
- Package Type: SOT-23



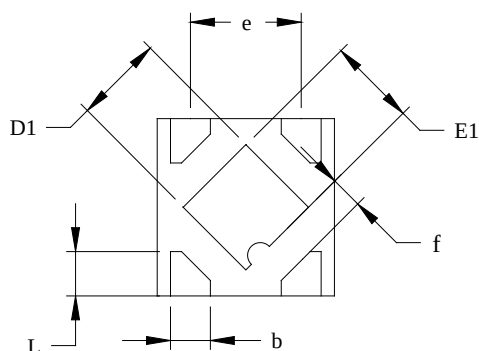
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 BSC		0.037 BSC	
e1	1.900 BSC		0.075 BSC	
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Packaging Information

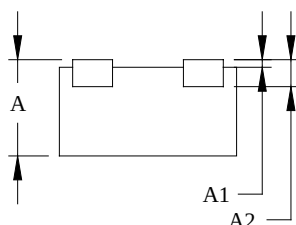
- Package Type: FBP1.0*1.0-4L



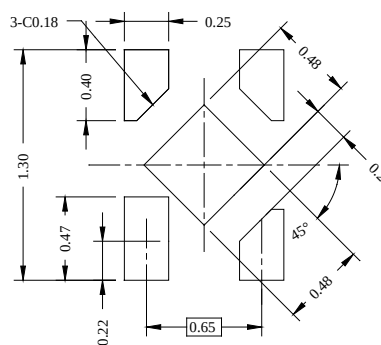
TOP VIEW



BOTTOM VIEW



SIDE VIEW



RECOMMENDED LAND PATTERN (Unit: mm)

Symbol	Dimensions In Millimeters		
	MIN	MOD	MAX
A	0.500	0.550	0.600
A1	0.000		0.050
A2	0.152 REF		
D	0.950	1.000	1.050
D1	0.450	0.500	0.550
E	0.950	1.000	1.050
E1	0.450	0.500	0.550
b	0.175	0.225	0.275
e	0.625 BSC		
f	0.195 REF		
L	0.200	0.250	0.300

ORDERING INFORMATION

Part Number	Input Voltage	Output Function	Operating Temperature	Package Type	Top Mark	SPQ
FH2801C/N**M3	0.7V ~ 8.0V	• Voltage detector • Output forms: C → CMOS, N → NMOS	-40°C to +85°C	SOT-23-3L	A~H Y M L	3000EA/Reel
FH2801C/N**M0	0.7V ~ 8.0V	• Detector voltage: 0.9V / 1.0V / 1.2V / 1.3V / 1.4V / 1.5V / 1.8V / 2.0V / 2.3V / 2.5V / 2.7V / 2.8V / 3.0V / 3.3V / 3.6V / 4.0V / 4.4V / 5.0V	-40°C to +85°C	SOT-23	A~H Y M L	3000EA/Reel
FH2801C/N**U4	0.7V ~ 8.0V		-40°C to +85°C	FBP1.0*1.0-4L	A~H Y M L	10000EA/Reel
FH2801C/N**M3H	0.7V ~ 10V	• Voltage detector • Output forms: C → CMOS, N → NMOS	-40°C to +85°C	SOT-23-3L	C/N Y M L	3000EA/Reel
FH2801C/N**M0H	0.7V ~ 10V	• Detector voltage: 0.9V / 1.2V / 1.4V / 1.5V / 1.8V / 2.0V / 2.5V / 2.8V / 3.0V / 3.3V / 3.6V / 4.0V / 4.4V / 5.0V / 5.2V / 5.6V / 6.0V	-40°C to +85°C	SOT-23	C/N Y M L	3000EA/Reel

- Note:
- FH2801C/N** | FH2801C/N**H | devices are Pb-free and RoHs compliant.
 - The surface prints of our semiconductor devices are subject to change during the production process and do not involve changes in electrical parameters, and we will not separately state the notice.
 - If you have any other custom purchase needs, please contact our sales department.
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