

CYL60X 线性霍尔效应传感器芯片

CYL60X 系列是高性能的小型多功能线性霍尔效应器件，对永磁或电磁铁磁场进行感应和测试。线性比例输出电压可由电源电压设定，并随磁场强度而变化。CYL60X 系列传感器有一个静态输出电压，是50% 的电源电压和输出灵敏度选项为 1.2mV/G和5.0mV/G (毫伏/高斯)。集成电路提供了提高温度稳定性和灵敏度。CYL60X 提供高精度和温度补偿。这些线性位置传感器的工作温度范围为-40°C 至150°C，适用于工业和汽车工业环境。它们不仅对正负磁场进行检测，而且能监测两个磁极。该传感器有两种封装形式，即TO92和SOT23。

特点

- 3.0V 至 12.0V 操作
- 单电流源输出
- 精确的灵敏度和温度补偿
- 在 5VDC 供电时功耗为 5mA
- 输出电压与磁通密度成正比
- 温度范围-40°C 至 150°C
- 最高 ESD 静电放电性能达±4 kV
- 强健的 EMC 保护
- 对南极和北极磁场的反应不同

应用

- 电流传感
- 位置传感
- 磁码读数
- 马达控制
- 重量和液位传感
- 运动检测
- 接近检测
- 速度检测

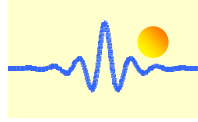
绝对最大额定值

供电电压 V_{DD}	15V
供电电流 I_{DD}	10mA
输出灌电流, I_{OUT}	5mA
工作温度范围, T_A	-40°C ~ +150°C
贮存温度范围, T_S	-40°C ~ +165°C
最大结温, T_J	165°C

静电保护

人体模型 (HBM) 测试根据: 标准 EIA/JESD22-A114-B HBM

参数	符号	最小值	最大值	单位
人体模型静电应力电压	V_{ESD}	-4000	4000	V



电参数

DC 操作参数 $T_A = 25^\circ\text{C}$, $V_{DD} = 5\text{V}$ (除非另有规定)

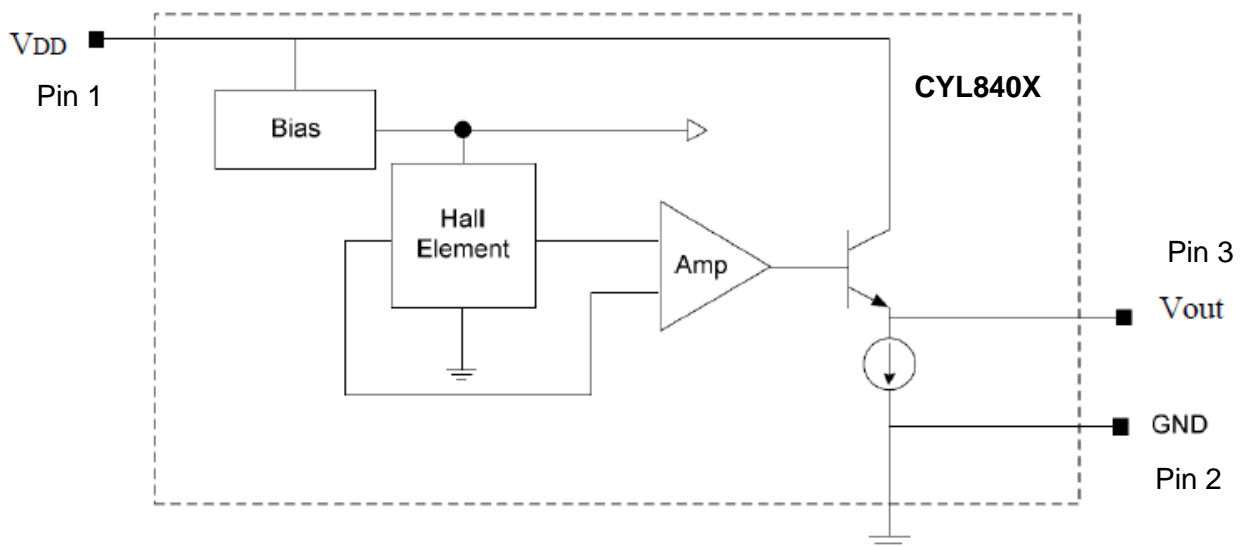
参数	符号	测试条件	最小	典型	最大	单位
电源电压	V_{DD}	操作	3.0	5.0	12	V
供电电流	I_{DD}	$V_{DD} = 5\text{V}$, $T_A = 25^\circ\text{C}$	3.0	5.0	8.0	mA
静态电压	V_{null}	$B = 0$, $T_A = 25^\circ\text{C}$, $V_{DD} = 5\text{V}$	2.25	2.5	2.75	V
输出电压	CYL601	$B = -1250\text{Gs} \sim 1250\text{Gs}$	1.0	2.5	4.0	V
	CYL602	$B = -600\text{Gs} \sim 600\text{Gs}$	1.0	2.5	4.0	V
	CYL603	$B = -460\text{Gs} \sim 460\text{Gs}$	1.0	2.5	4.0	V
	CYL605	$B = -300\text{Gs} \sim 300\text{Gs}$	1.0	2.5	4.0	V
输出源电流限制	$I_{out}(\text{LMT})$	$B \rightarrow 0$		-2.0		mA
响应时间	t_r	输出信号到达 90%		1		μs
输出负载电阻	R_L	$ \Delta V_{OUT} < 15\text{mV}$	200			k Ω
频率带宽(-3dB)	f_B		0	200	250	kHz

磁性技术参数

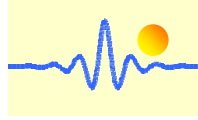
DC 操作参数 $T_A = 25^\circ\text{C}$, $V_{DD} = 5\text{V}$ (除非另有规定)

参数	符号	工件号	最小	典型	最大	单位
灵敏度	Sens	CYL601	0.9	1.2	1.5	mV/G
		CYL602	2.2	2.5	2.8	mV/G
		CYL603	2.95	3.25	3.55	mV/G
		CYL603	4.7	5.0	5.3	mV/G
线性度	Lin	CYL60X 系列			± 1.0	%
零偏置的热漂移		CYL60X 系列		300		ppm/ $^\circ\text{C}$
温度零位电压 V_{null}	$V_{null}(T)$	CYL60X 系列			± 2.0	%

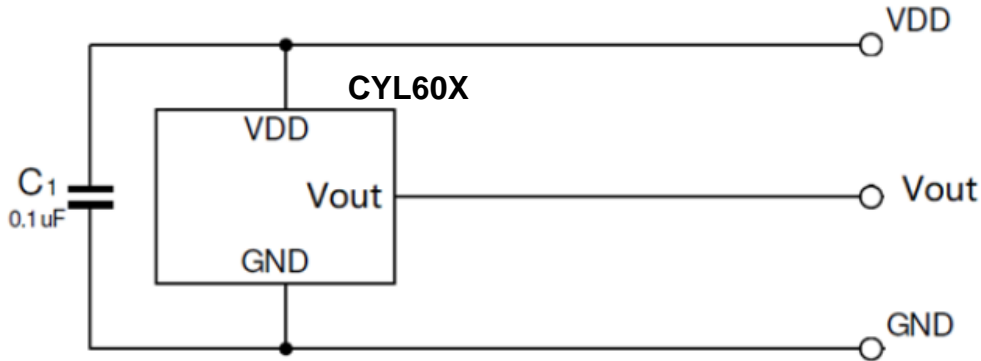
功能图



Pin 1: VDD (电压供电), Pin 2: GND (接地), Pin 3: Vout (信号输出)



典型的应用接线



应用例子: $V_{DD} = 5V$

TO92S 封装:

- CYL601UA
- CYL602UA
- CYL603UA
- CYL605UA

SOT23 封装:

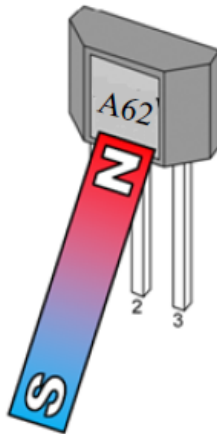
- CYL601SU
- CYL602SU
- CYL603SU
- CYL605SU

标签:

- CYL601: A61
- CYL602: A62
- CYL603: A63
- CYL605: A65

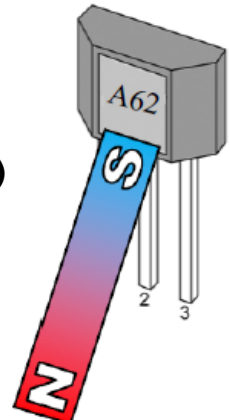
管脚安排:

- Pin 1: VDD (Voltage Supply)
- Pin 2: GND (Ground)
- Pin 3: Vout (Signal Output)



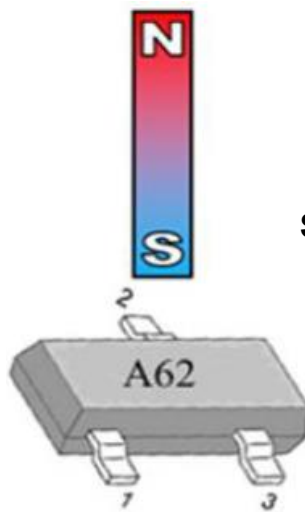
$V_{OUT} = 1.0 \text{ to } 2.5 \text{ V}$

TO92S (CYL602UA)

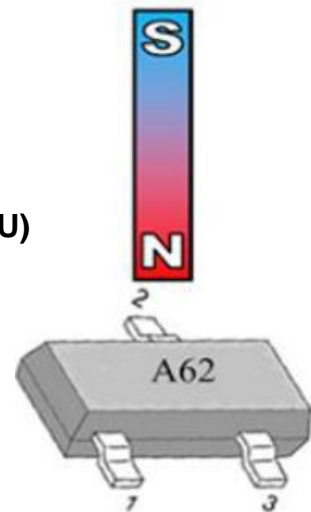


$V_{OUT} = 2.5 \text{ to } 4 \text{ V}$

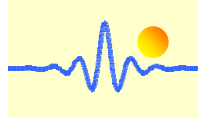
SOT23 (CYL602SU)



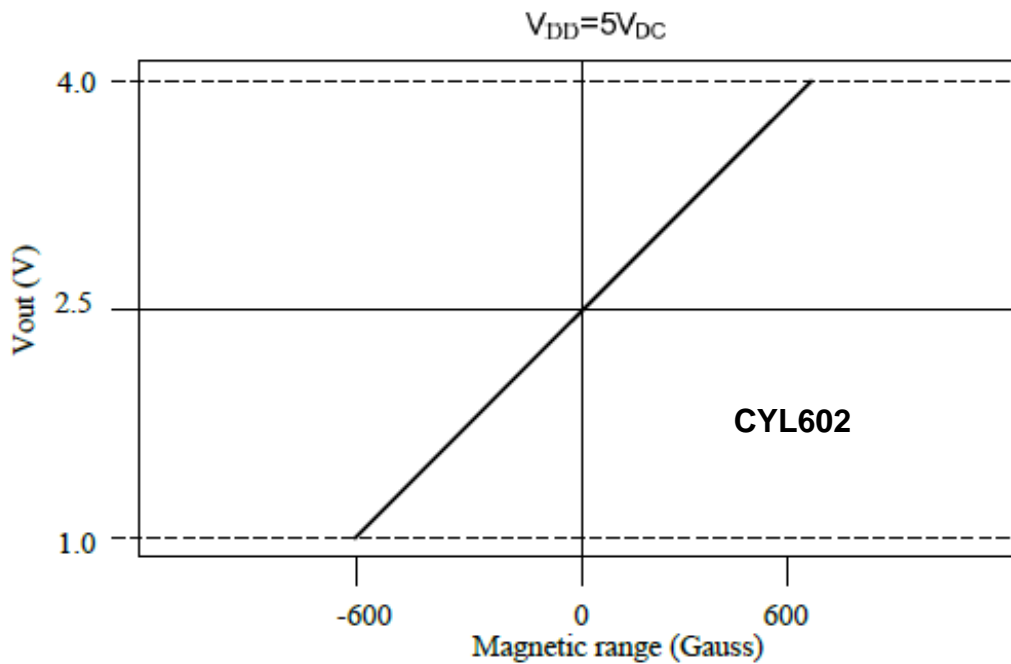
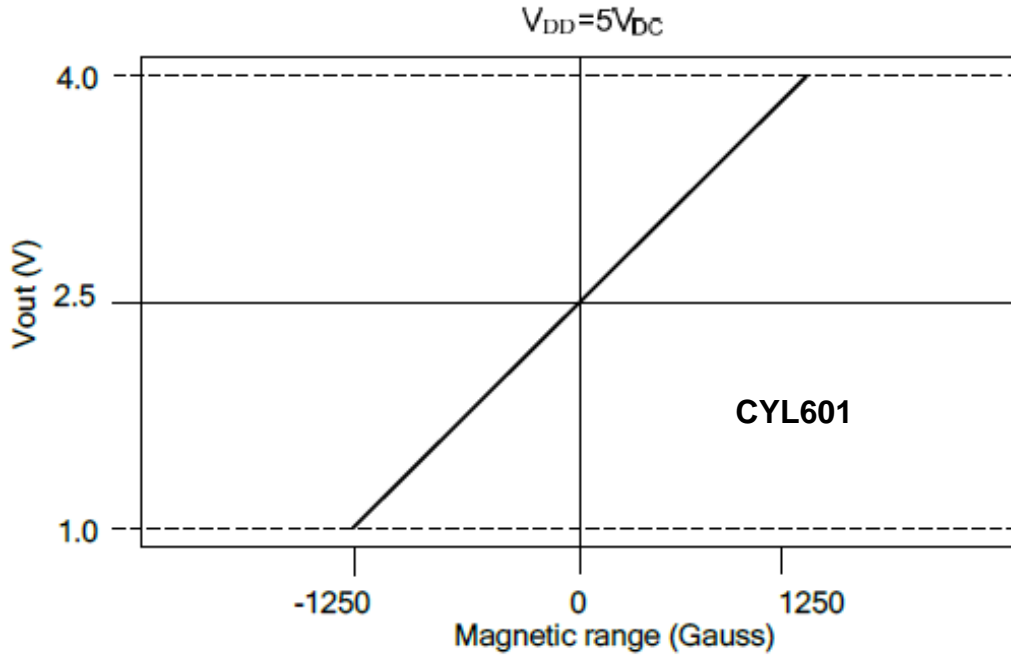
$V_{OUT} = 1.0 \text{ to } 2.5 \text{ V}$

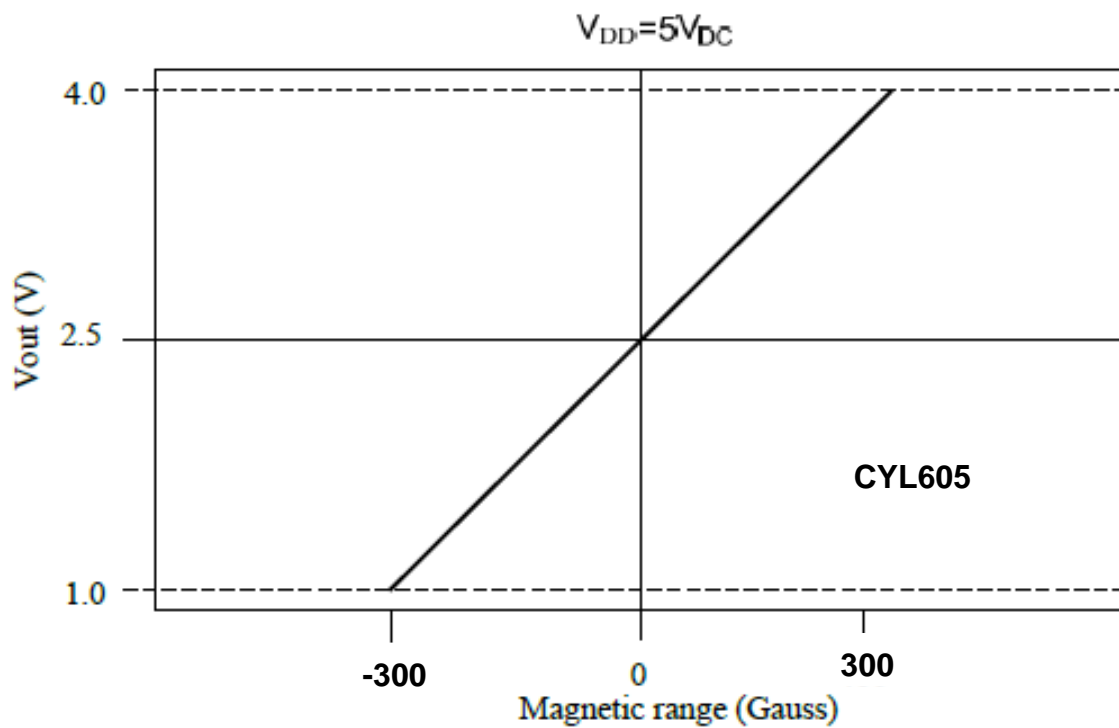
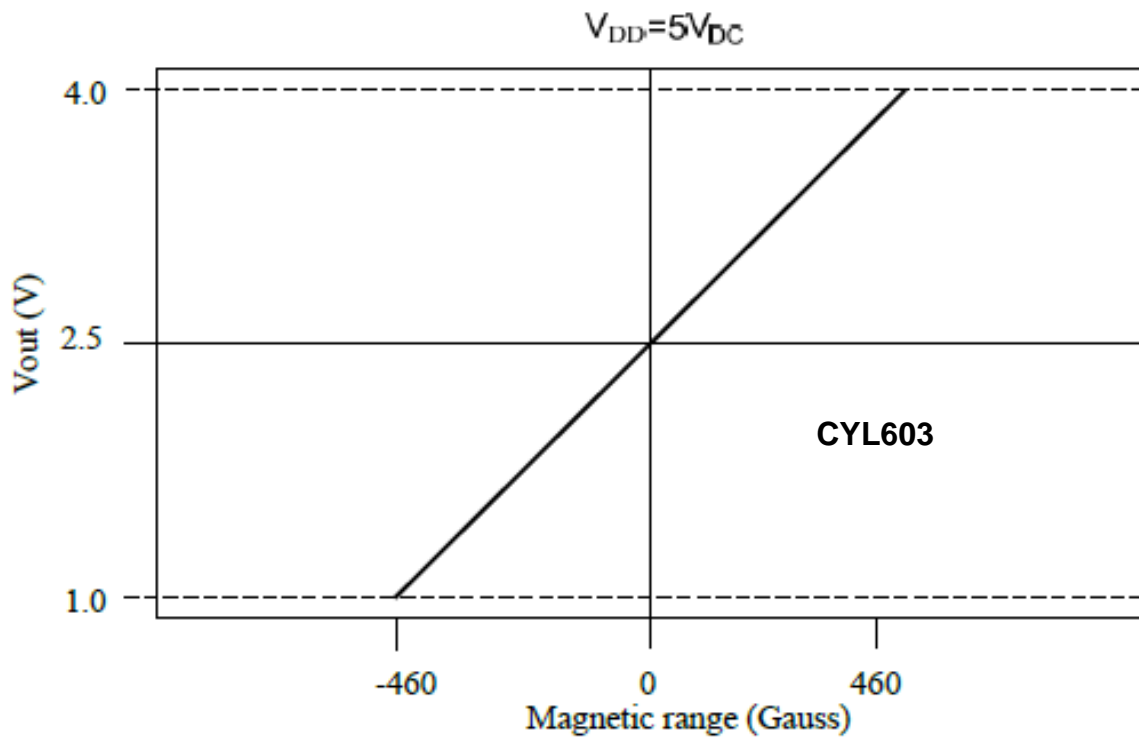
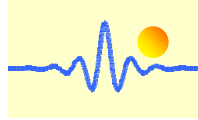


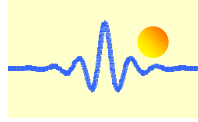
$V_{OUT} = 2.5 \text{ to } 4 \text{ V}$



传输特性 ($V_s = 5.0V_{DC}$)

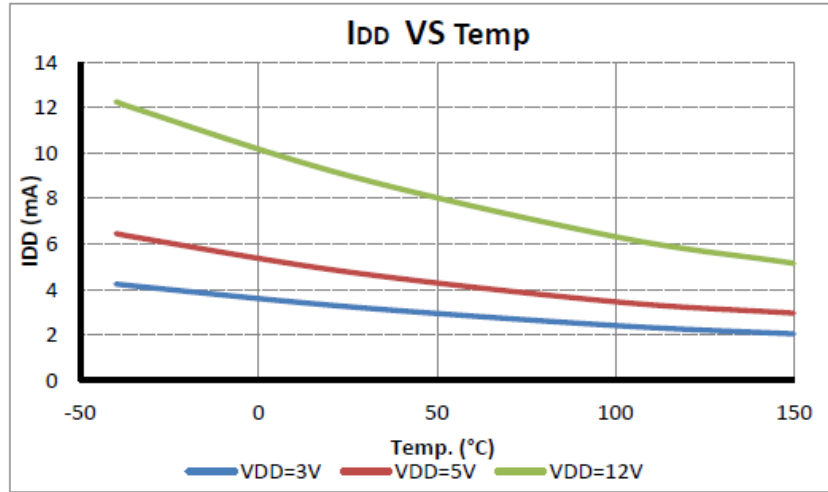




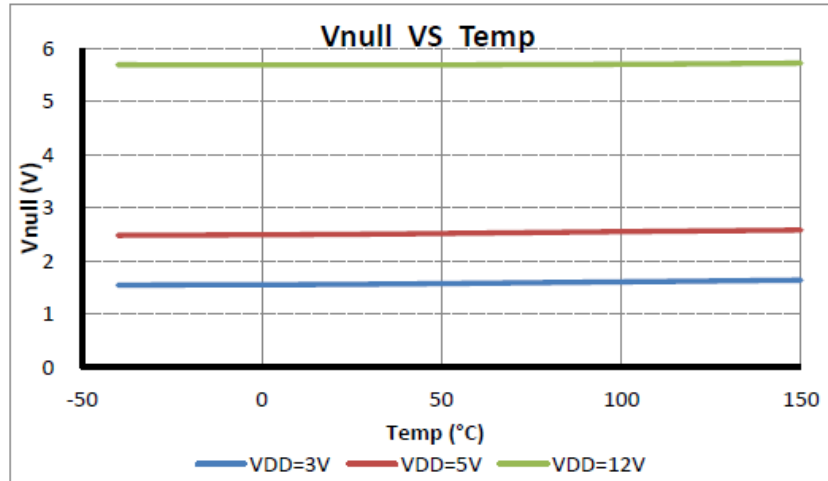


典型特性曲线

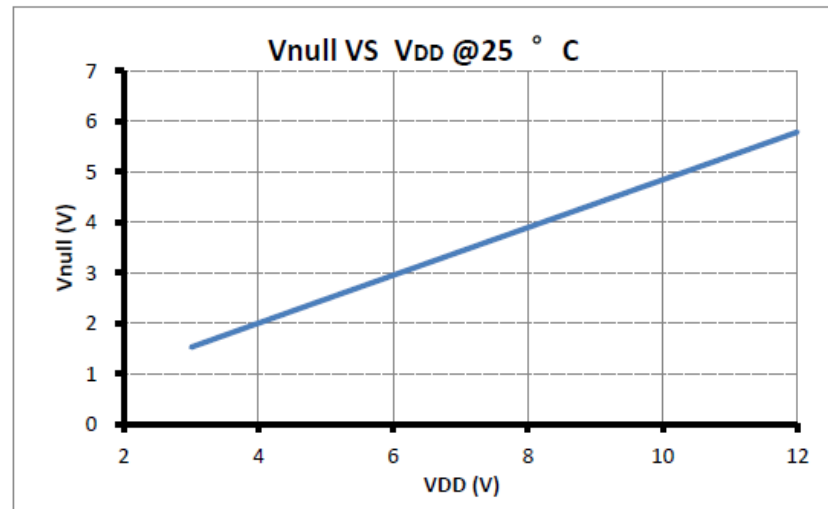
CYL601
CYL602
CYL603
CYL605

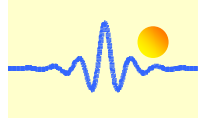


CYL601
CYL602
CYL603
CYL605

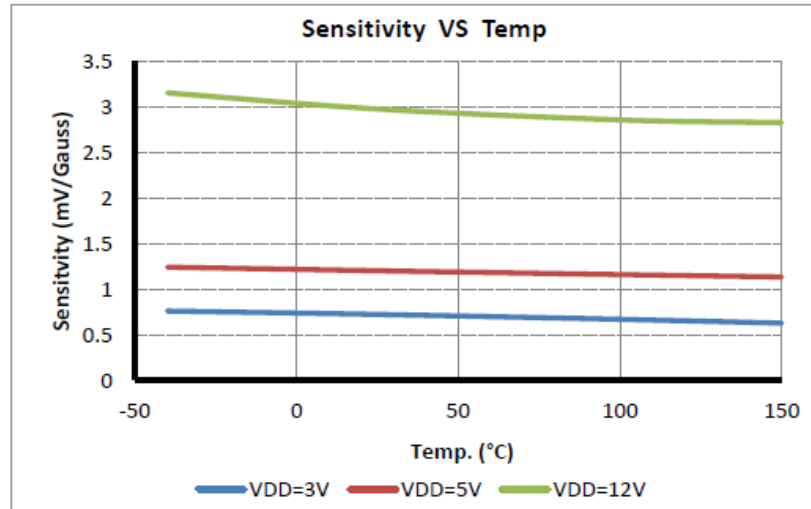


CYL601
CYL602
CYL603
CYL605

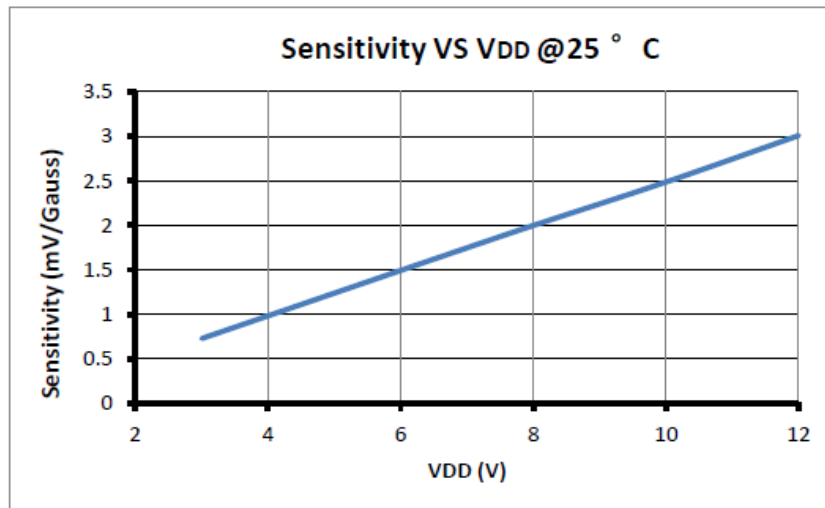




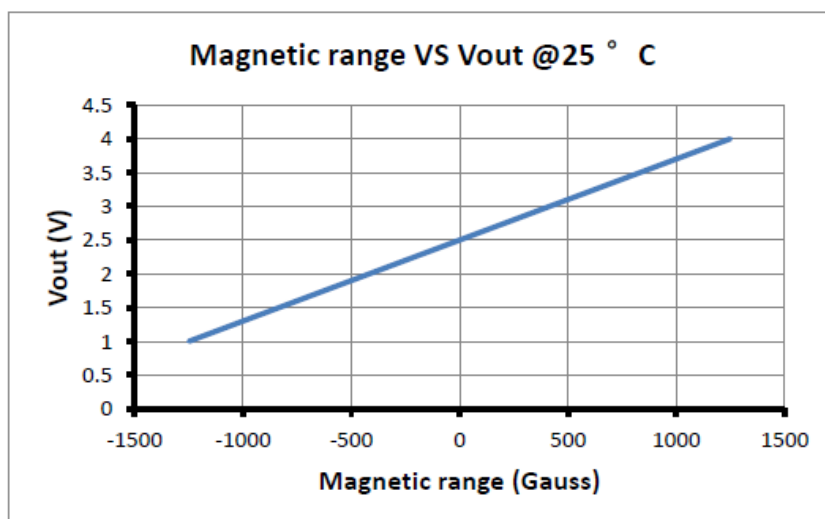
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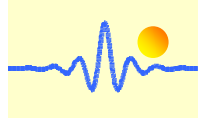


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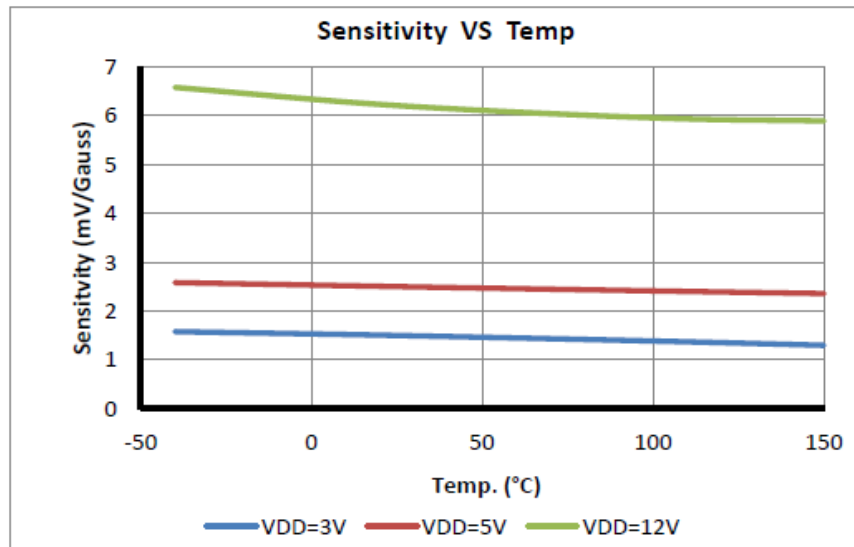


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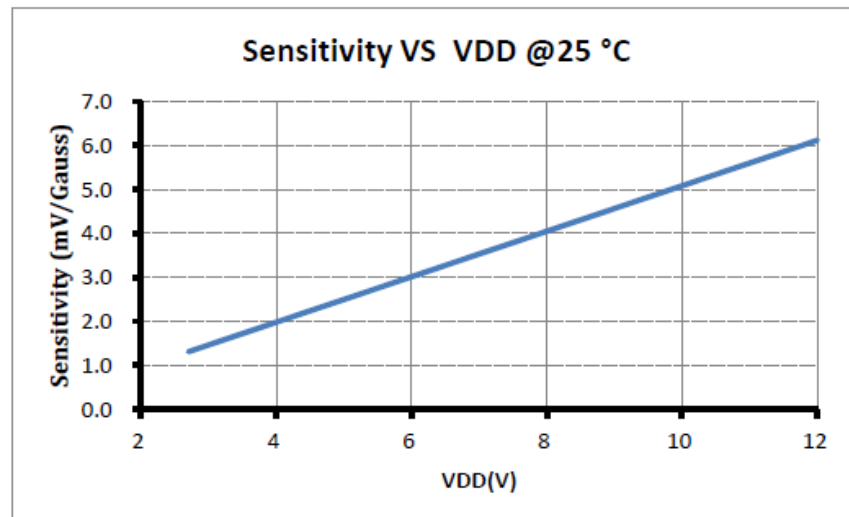




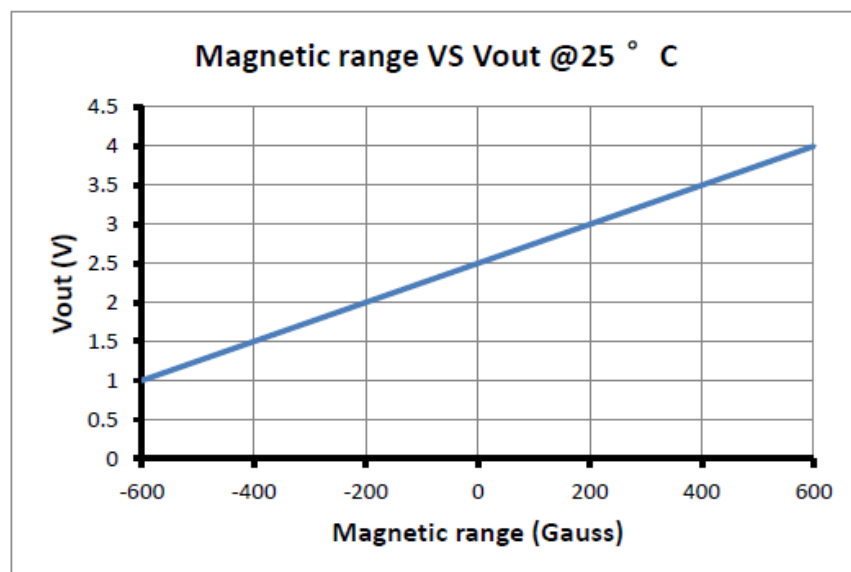
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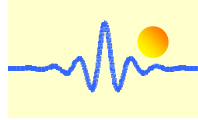


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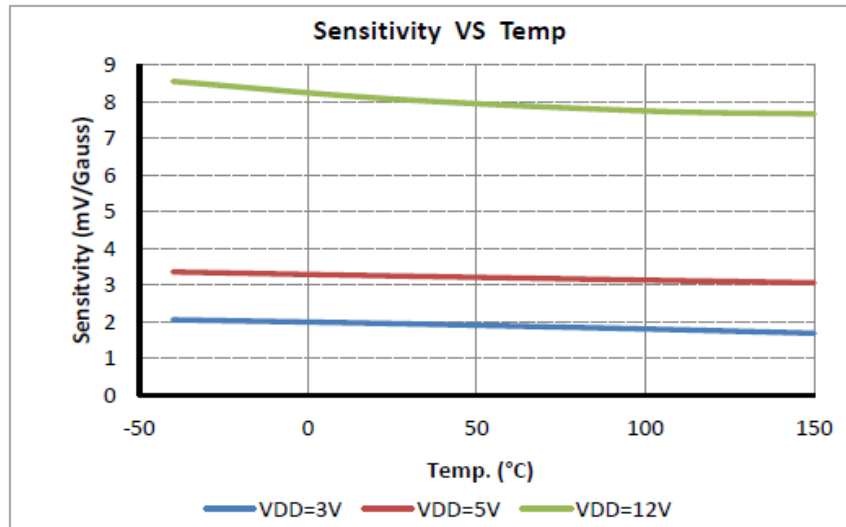


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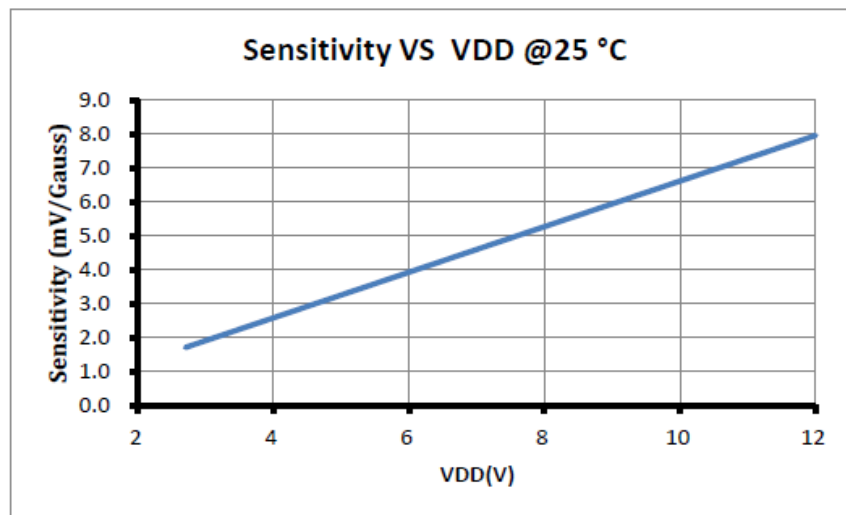




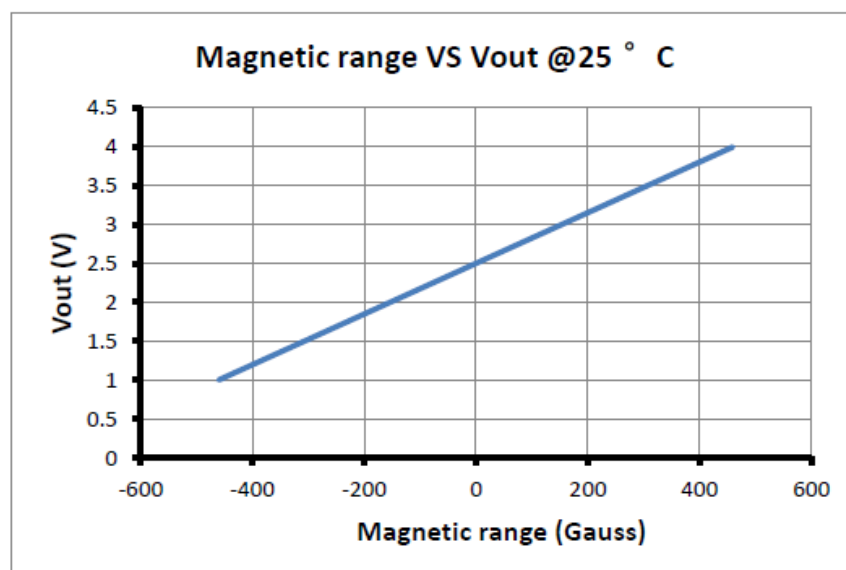
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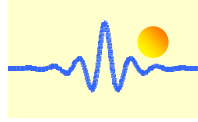


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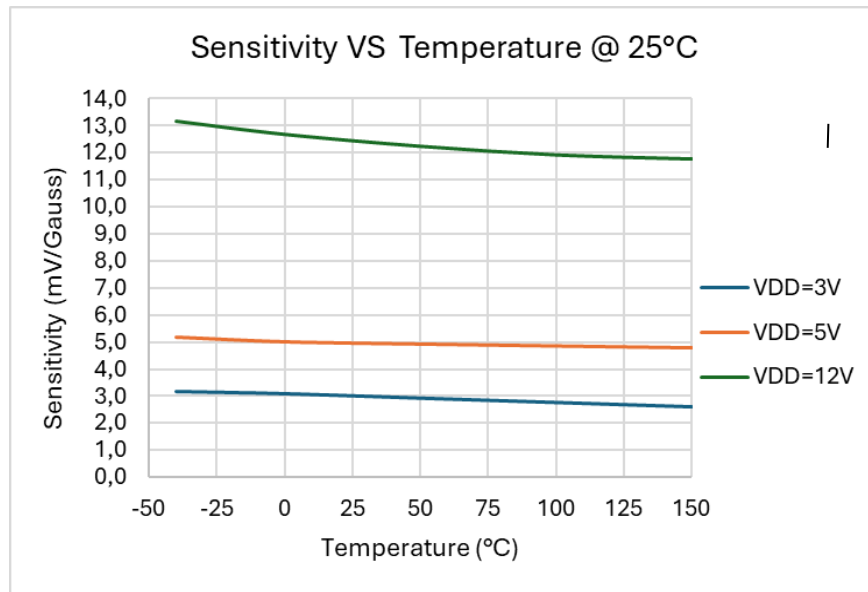


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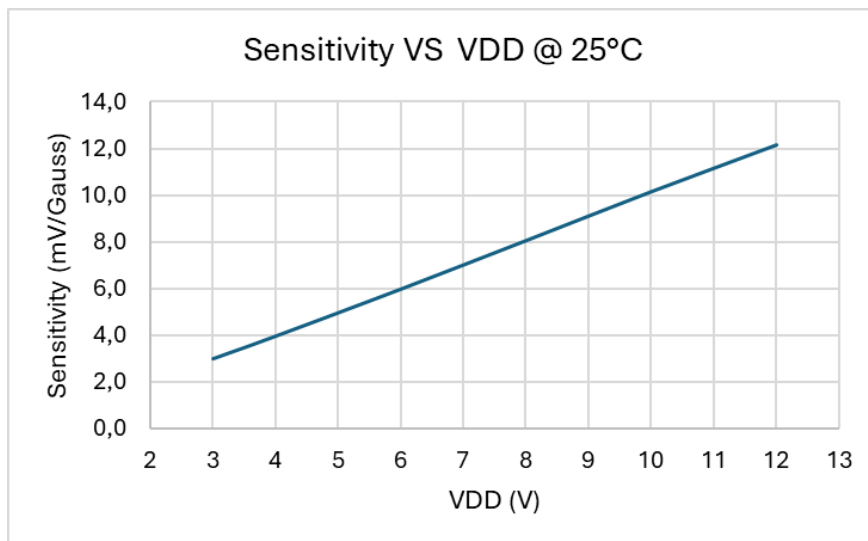




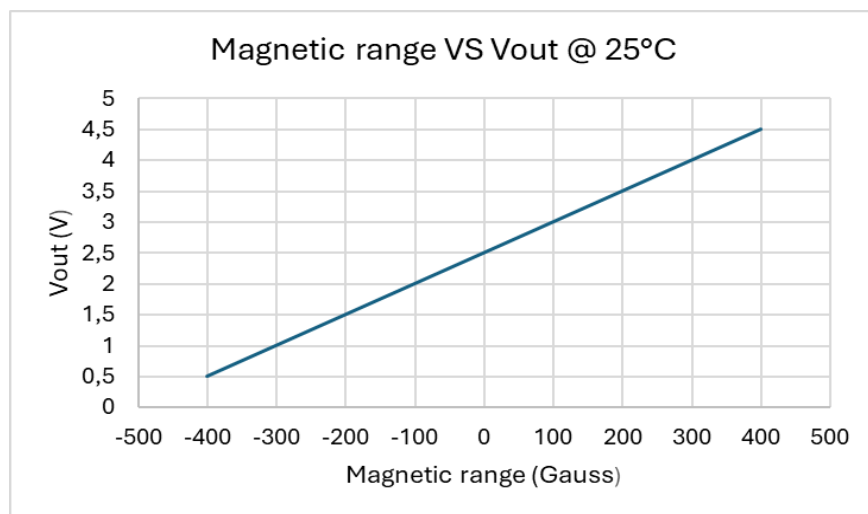
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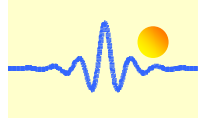


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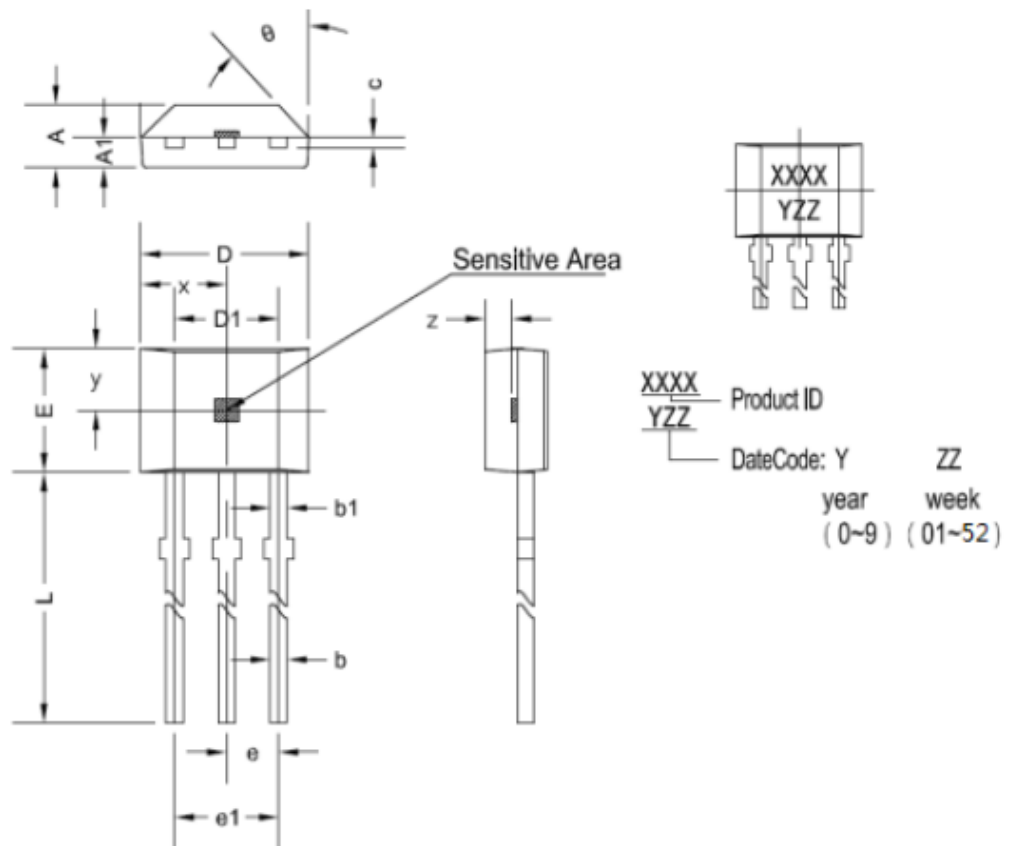
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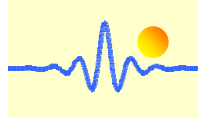


封装尺寸

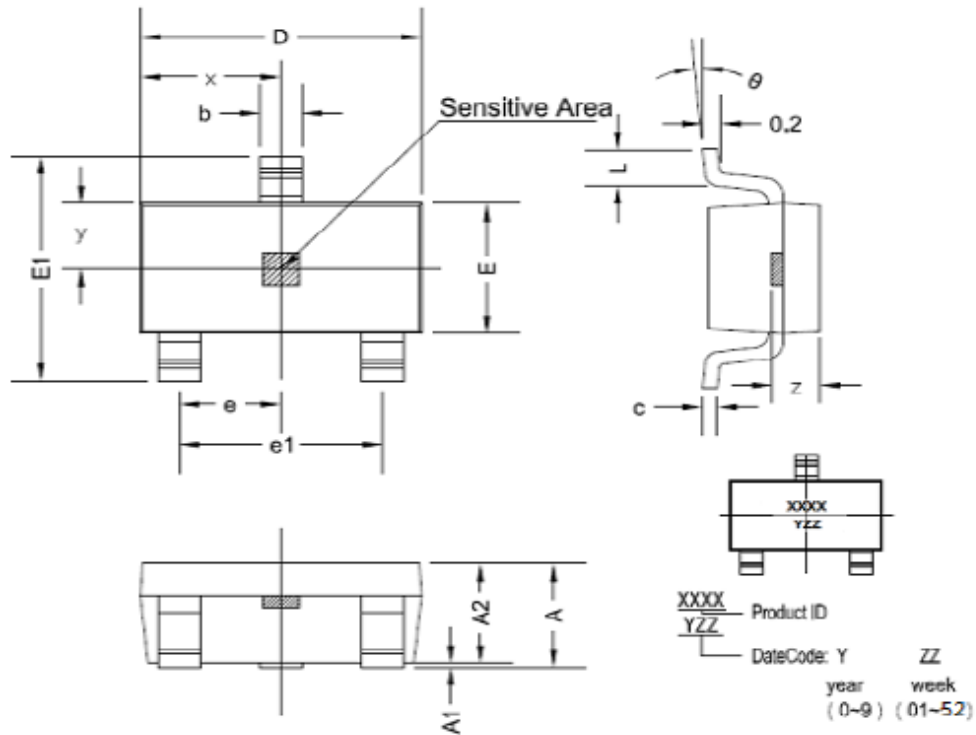
TO92S



symbol	Size (mm)		Size (in inches)	
	minimum	maximum	minimum	maximum
A	1.42	1.67	0.056	0.066
A1	0.66	0.86	0.026	0.034
b	0.35	0.56	0.014	0.022
b1	0.4	0.55	0.016	0.022
C	0.36	0.51	0.014	0.02
D	3.9	4.2	0.154	0.165
D1	2.97	3.27	0.117	0.129
E	2.9	3.28	0.114	0.129
e	1.270 TYP		0.050 TYP	
e1	2.44	2.64	0.096	0.104
L	13.5	15.5	0.531	0.61
x	2.025TYP		0.080TYP	
y	1.545TYP		0.061TYP	
z	0.500TYP		0.020TYP	
θ	45°TYP		45°TYP	

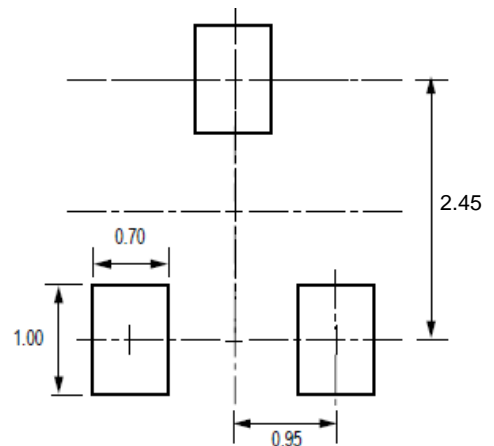


SOT23



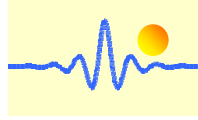
symbol	Size (mm)		Size (in inches)	
	minimum	maximum	minimum	maximum
A	1.05	1.25	0.041	0.049
A1	0	0.1	0	0.004
A2	1.05	1.15	0.041	0.045
b	0.3	0.5	0.012	0.02
c	0.100	0.2	0.004	0.008
D	2.82	3.02	0.111	0.119
E	1.5	1.7	0.059	0.067
E1	2.65	2.95	0.104	0.116
e	0.950 TYP		0.037 TYP	
e1	1.8	2	0.071	0.079
L	0.3	0.6	0.012	0.024
x	1.460TYP		0.057TYP	
y	0.800TYP		0.032TYP	
z	0.600TYP		0.024TYP	
θ	0°	8°	0°	8°

PCB Layout Reference View



注意事项

1. 在所示范围内，由供应商选择确切的主体和引线配置
2. 高度不包括模具毛刺
3. 如果没有指定公差，则尺寸为公称公差



订货信息:

传感器	工件号	封装	包装数量
CYL601	CYL601UA	TO92S	500pcs or 1000pcs / 袋
	CYL601SU	SOT23	3000pcs /卷
CYL602	CYL602UA	TO92S	500pcs or 1000pcs / 袋
	CYL602SU	SOT23	3000pcs /卷
CYL603	CYL603UA	TO92S	500pcs or 1000pcs / 袋
	CYL603SU	SOT23	3000pcs /卷
CYL605	CYL605UA	TO92S	500pcs or 1000pcs / 袋
	CYL605SU	SOT23	3000pcs /卷

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