

MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

SN74LVC1G14

产品手册

产品简介

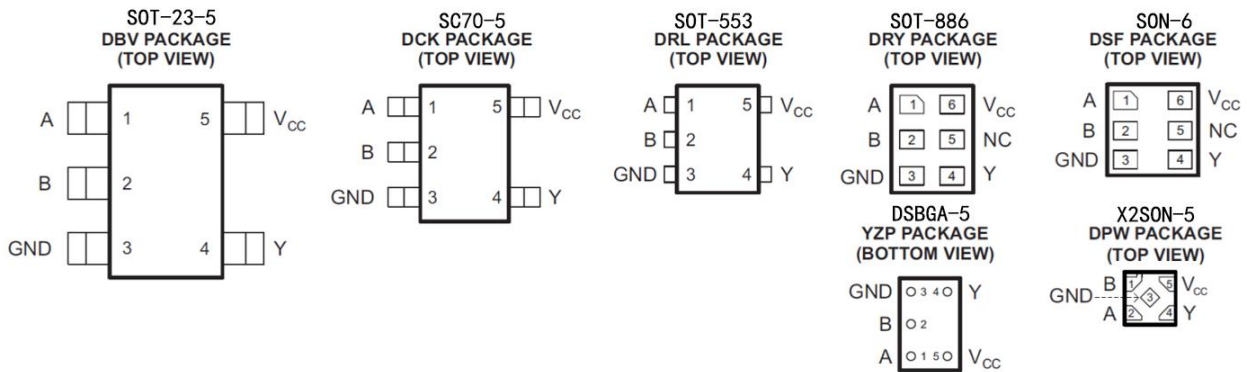
SN74LVC1G14 是一款的施密特触发功能的非门集成电路,可实现 $Y = \bar{A}$ 的数学逻辑运算。采用先进 CMOS 工艺设计,具有低功耗和高输出驱动能力的工作特点,电源电压 VCC 在 1.65V 和 5.5V 之间芯片均可正常工作。并且 SN74LVC1G14 具有多种小型封装外形,可广泛应用于高端精密仪器和小型化低功耗的手持设备,以及人工智能等领域。

产品特点

- 低输入电流: 典型值 0.1uA
- 低静态功耗: 典型值 0.1uA
- 高输出驱动: VCC=4.5V, 大于 32MA
- 宽工作电压范围: 1.65V to 5.5V
- 封装形式: DBV/DCK/DRL/YZP/ DRY/DSF/ DPW

产品用途

- 便携式音频接口
- 蓝光播放器和家庭影院
- 数字电视
- 固态硬盘
- 无线耳机, 智能手表等
- 智能穿戴设备



名称	管脚				说明
	DBV/DCK/DRL	DRY/DSF	YZP	DPW	
NC	1	1, 5	A1, B2	1	空脚
A	2	2	B1	2	输入
GND	3	3	C1	3	电源地
Y	4	4	C2	4	输出
VCC	5	6	A2	5	电源正

注: NC---空脚, 内部无连接线

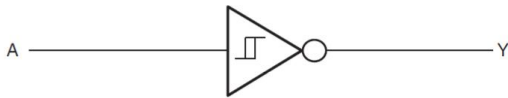
极限参数

参数	符号	极限值	单位
工作电压	V_{CC}	6.5	V
输入	V_{IN}	-0.5~6.5	V
输出电压 (1)	V_{OUT}	-0.5~6.5	V
单个管脚输出电流	I_{OUT}	25	mA
V_{CC} 或 GND 电流	I_{CC}	50	mA
存储温度	T_S	-65~150	°C
引脚焊接温度	T_W	260, 10s	°C

注：1、在 $V_{CC}=0V$ 断电状态下，输出所能承受的极限电压，

2、极限参数是指无论在任何条件下都不能超过的极限值。万一超过此极限值，将有可能造成产品劣化等物理性损伤；同时在接近极限参数下，不能保证芯片可以正常工作。

原理逻辑图



真值表

Inputs	Output
A	Y
L	H
H	L

工作条件

项目	符号	测试条件	最小值	典型值	最大值	单位
工作电压	V_{CC}	-	1.65	-	5.5	V
输入高电平电压	V_{IH}	$V_{CC} = 1.65V \sim 1.95V$	$0.65 * V_{CC}$	-	-	V
		$V_{CC} = 2.3V \sim 2.7V$	1.7V	-	-	
		$V_{CC} = 3V \sim 5.5V$	$0.7 * V_{CC}$	-	-	
输入高电平电压	V_{IH}	$V_{CC} = 1.65V \sim 1.95V$	-	-	$0.35 * V_{CC}$	V
		$V_{CC} = 2.3V \sim 2.7V$	-	-	0.7	
		$V_{CC} = 3V \sim 5.5V$	-	-	$0.3 * V_{CC}$	
输入电压	V_I	-	0	-	5.5	V
输出电压	V_O	-	0	-	V_{CC}	V
高电平输出电流	I_{OH}	$V_{CC} = 1.65V$	-	-	-4	mA
		$V_{CC} = 2.3V$	-	-	-8	
		$V_{CC} = 3V$	-	-	-16	
		$V_{CC} = 4.5V$	-	-	-32	
低电平输出电流	I_{OL}	$V_{CC} = 1.65V$	-	-	4	mA
		$V_{CC} = 2.3V$	-	-	8	
		$V_{CC} = 3V$	-	-	16	
		$V_{CC} = 4.5V$	-	-	32	

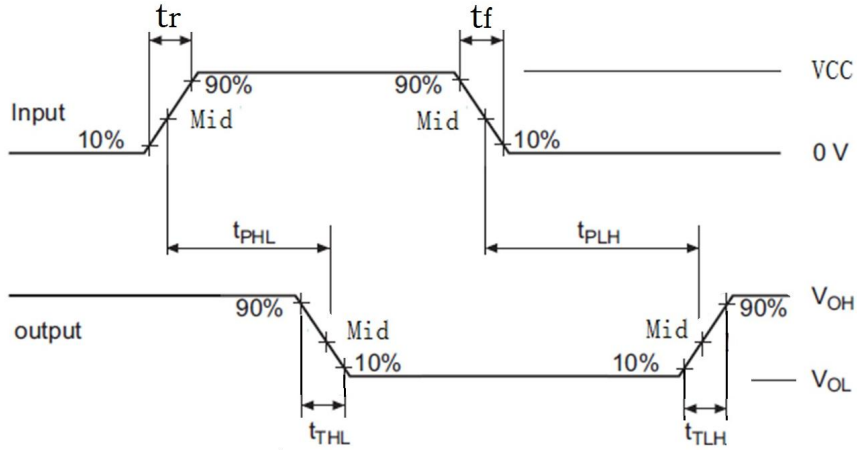
电学特性

 直流电学特性: $T_A=25^{\circ}\text{C}$

项目	符号	测试条件	V_{CC}	典型值	最大值	单位	
上临界电压	V_{T+}	-	1.65V	1	-	V	
			2.3V	1.35	-		
			3V	1.7	-		
			4.5V	2.5	-		
			5.5V	3	-		
下临界电压	V_{T-}	-	1.65V	0.5	-	V	
			2.3V	0.7	-		
			3V	1.1	-		
			4.5V	1.65	-		
			5.5V	1.9	-		
滞后宽度电压	$D V_T$ ($V_{T+} - V_{T-}$)	-	1.65V	0.5	-	V	
			2.3V	0.65	-		
			3V	0.6	-		
			4.5V	0.85	-		
			5.5V	1.1	-		
高电平负载电压	V_{OH}	$I_{OH} = -100\mu\text{A}$	1.65V~5.5V	1.64	-	V	
		$I_{OH} = -4\text{ mA}$	1.65V	1.47	-		
		$I_{OH} = -8\text{ mA}$	2.3V	2.15	-		
		$I_{OH} = -16\text{ mA}$	3V	2.73	-		
		$I_{OH} = -32\text{ mA}$	4.5V	4.0	-		
低电平负载电压	V_{OL}	$I_{OH} = 100\mu\text{A}$	1.65V~5.5V	0.01	-	V	
		$I_{OH} = 4\text{ mA}$	1.65V	0.11	-		
		$I_{OH} = 8\text{ mA}$	2.3V	0.11	-		
		$I_{OH} = 16\text{ mA}$	3V	0.2	-		
		$I_{OH} = 32\text{ mA}$	4.5V	0.35	-		
输入电流	I_I	A	$V_I = 5.5\text{V}$ 或 GND	0~5.5V	0.01	± 5	μA
关断电流	I_{OFF}	V_I	$V_I = 5.5\text{V}$	0	0.01	± 10	μA
		V_O	$V_O = 5.5\text{V}$	0	0.01	± 10	
工作电流	I_{CC}	$V_I = 5.5\text{V}, I_O = 0$	1.65V~5.5V	0.01	10	μA	
		$V_I = \text{GND}, I_O = 0$		0.01	10		
工作电流变化值	ΔI_{CC}	$A = V_{CC} - 0.6\text{V}$	3V~5.5V	25	-	μA	

交流电学特性: $T_a=25^{\circ}\text{C}$ $V_{CC}=5.0\text{V}$, $t_r=t_f \leq 20\text{ns}$ 见测试方法。

项目	符号	测试条件	最小值	典型值	最大值	单位
最大传输延迟时间	t_{PHL}	$CL=15\text{pF}$	-	20	-	ns
A、B to Y	t_{PLH}	$CL=15\text{pF}$	-	20	-	ns

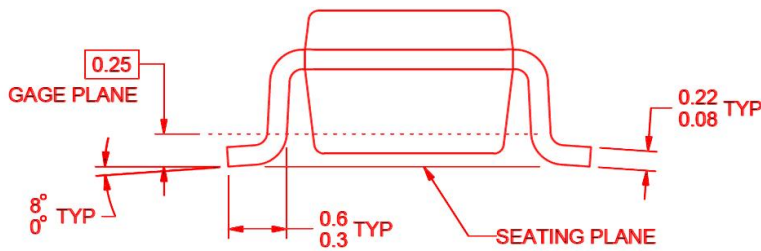
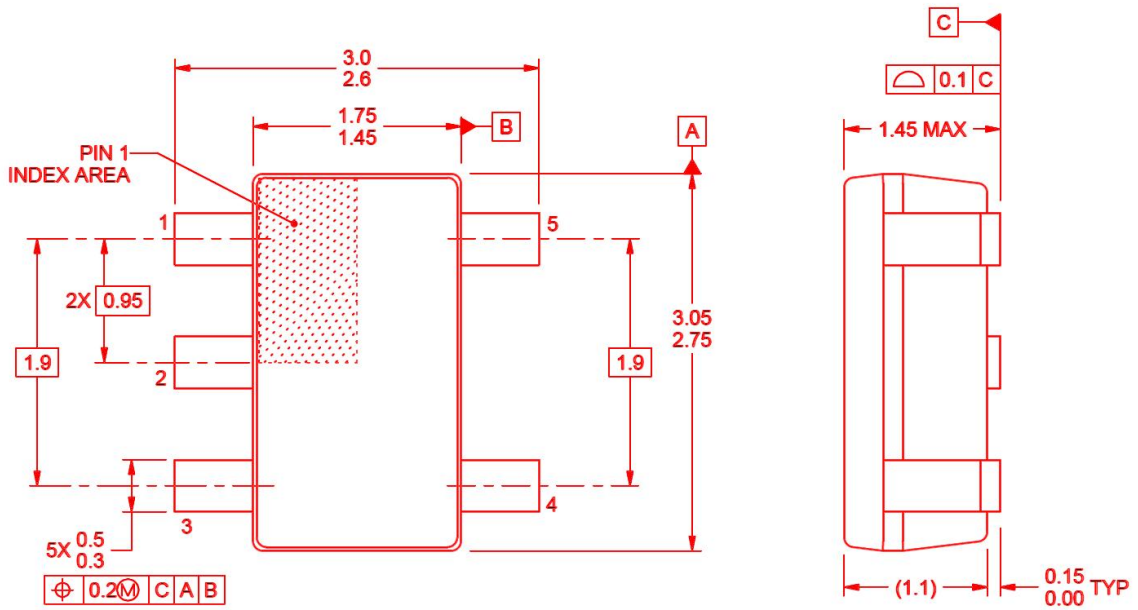


- 注：1、CL电容为外接贴片电容（0603），靠近输出管脚接入，电容地靠近芯片GND；
2、Input：端口输入电平， $f=500\text{kHz}$, $D=50\%$ ； $t_r=t_f \leq 20\text{ns}$ ；
3、Output：Y 端输出测试。

封装信息

单位：毫米 / 英寸

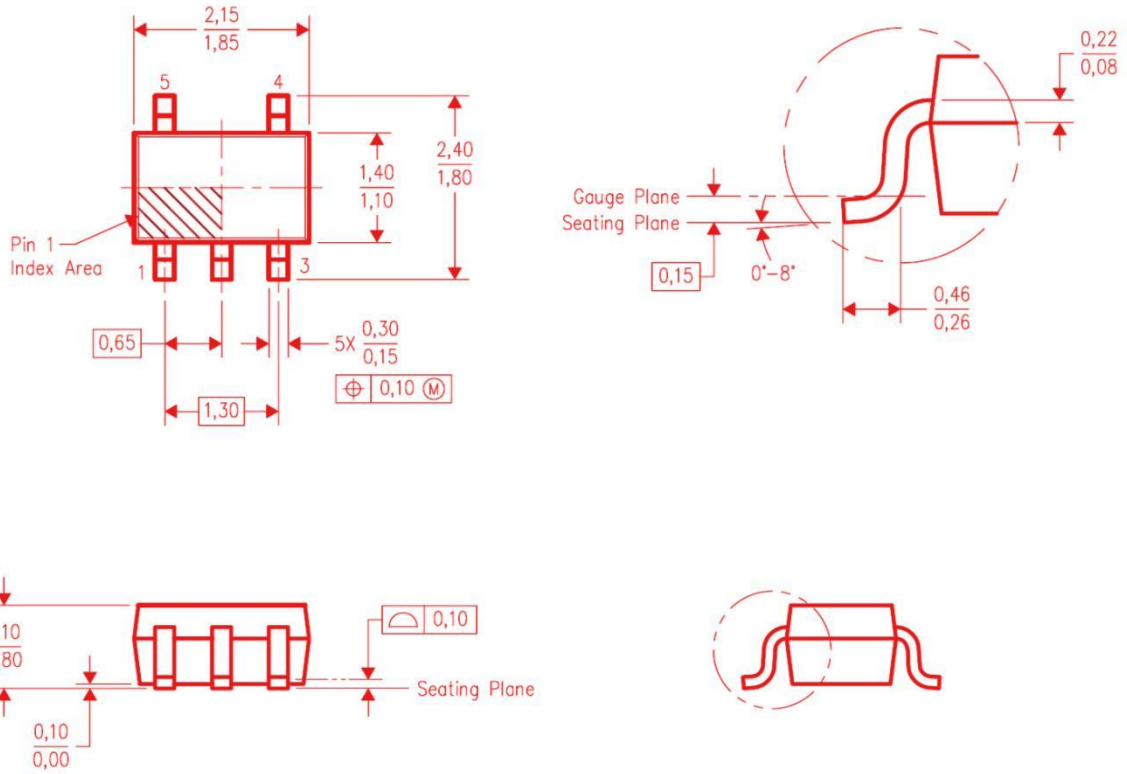
DBV (SOT-23-5)



卷轴规格

P/N	PKG	QTY
SN74LVC1G14DBVR-MS	SOT-23-5	3000

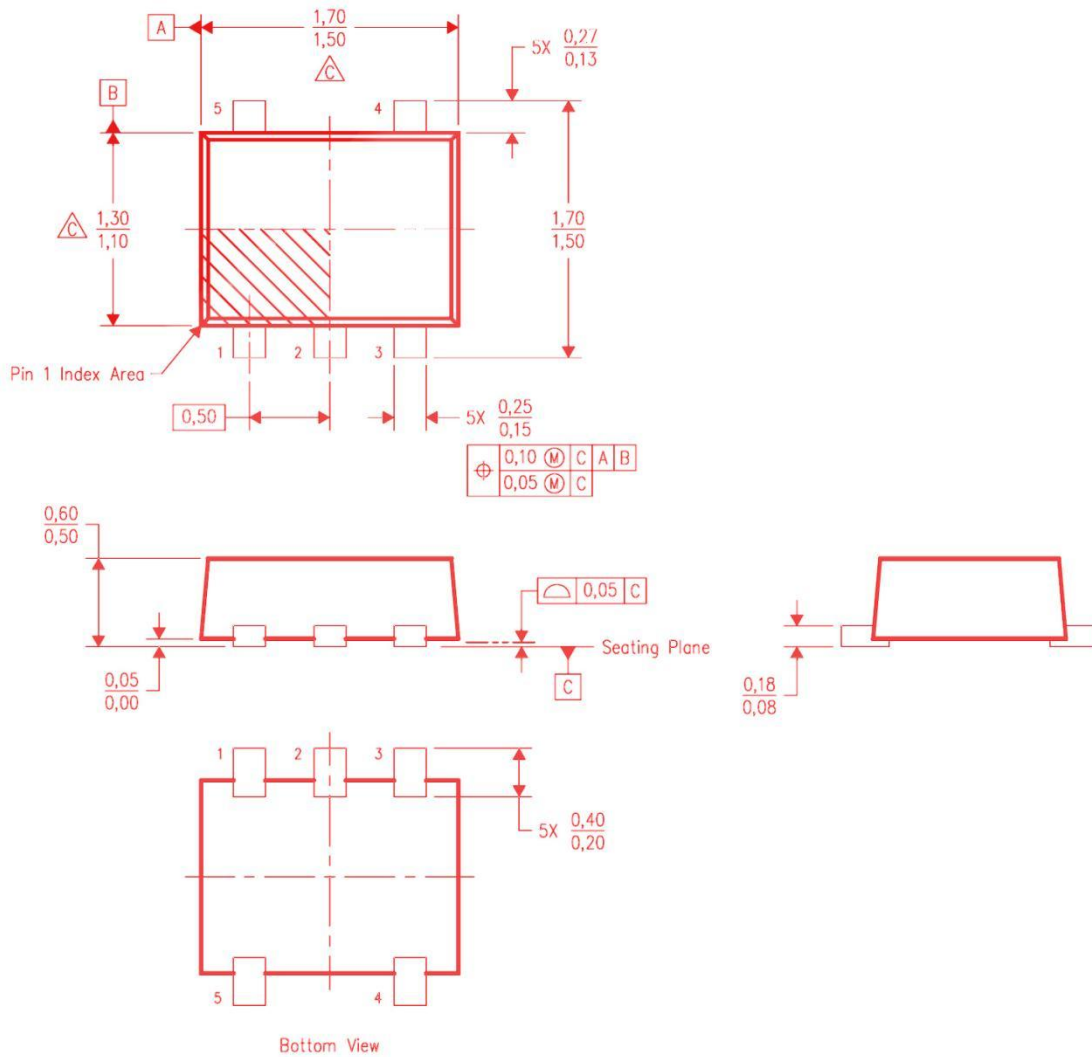
DCK (SC70-5)



卷轴规格

P/N	PKG	QTY
SN74LVC1G14DCKR-MS	SC70-5	3000

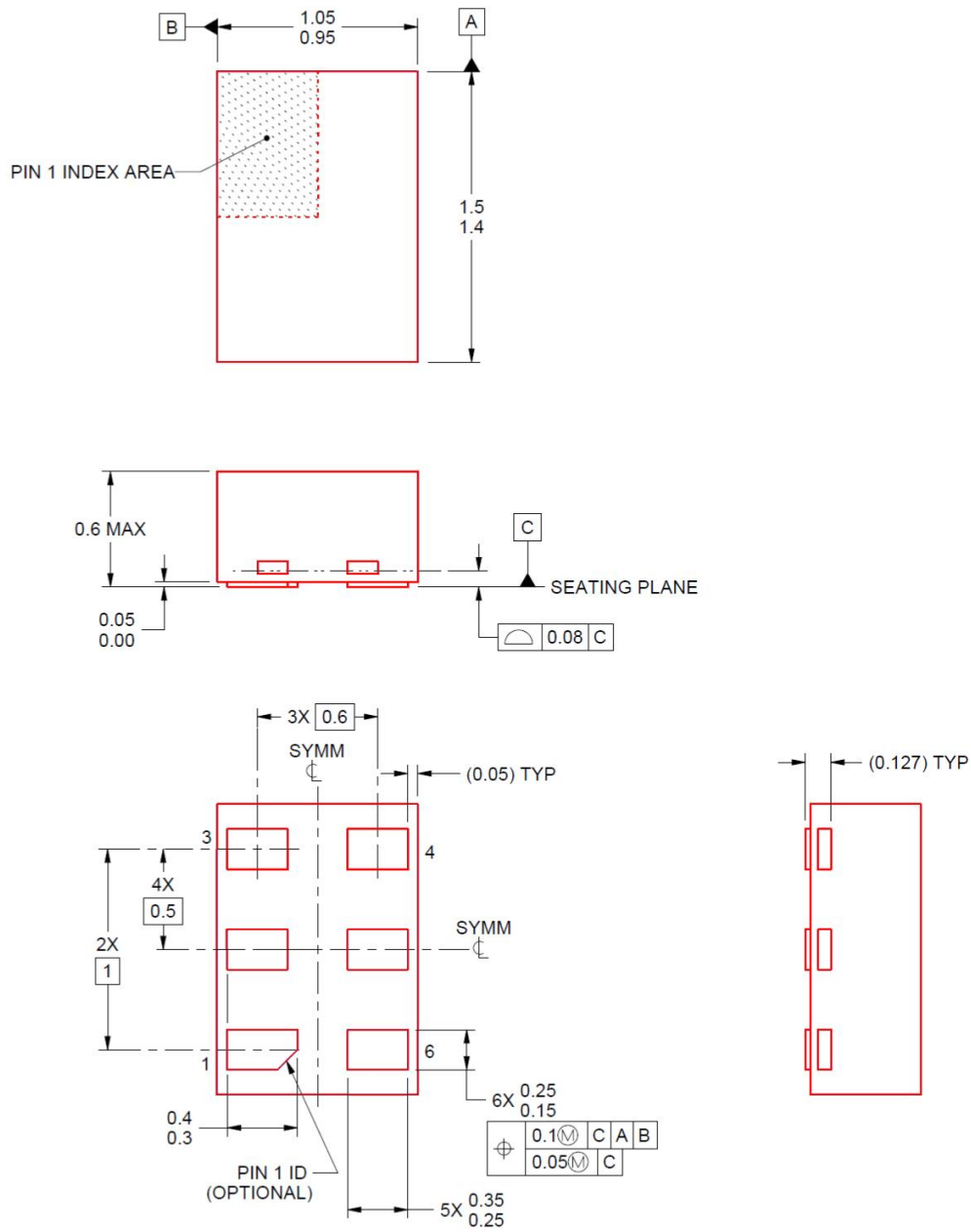
DRL (SOT-553)



卷轴规格

P/N	PKG	QTY
SN74LVC1G14DBLR-MS	SOT-553	4000

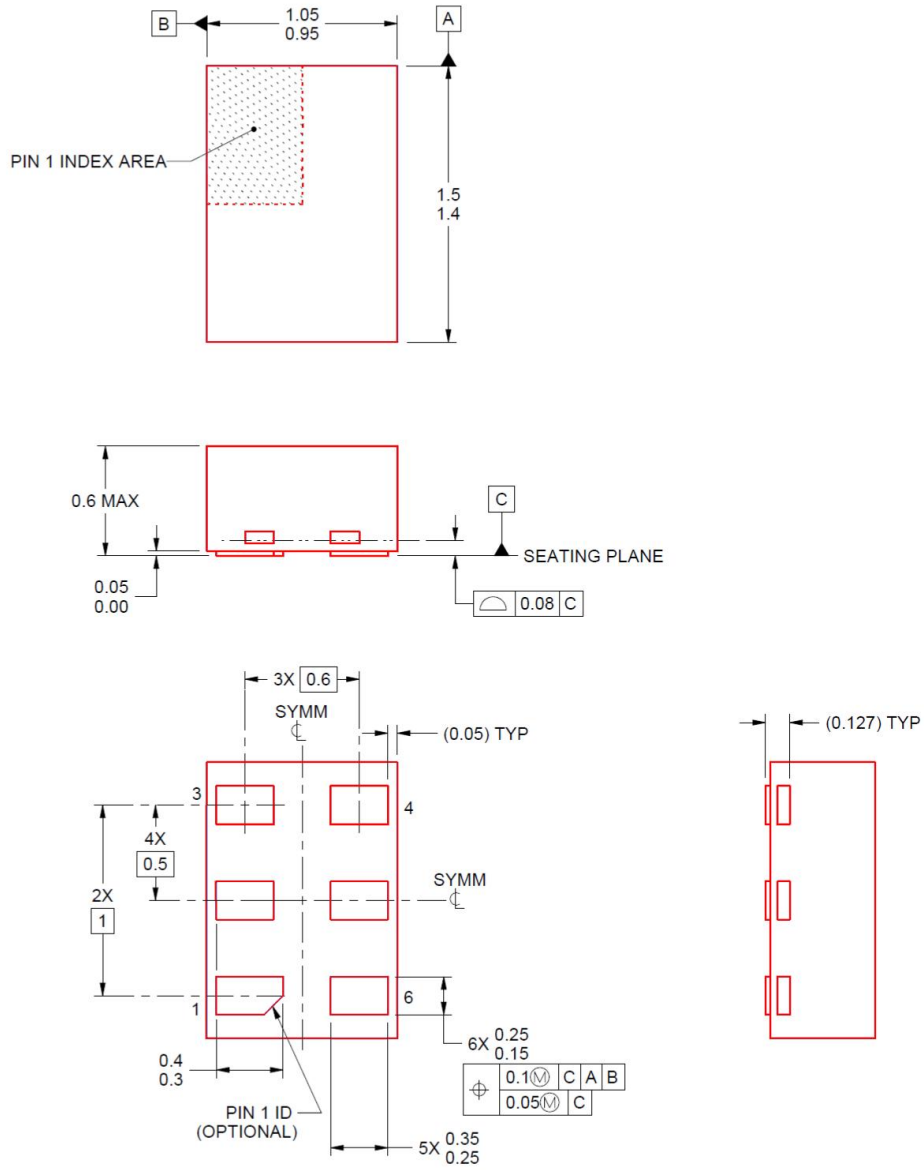
DRY (SOT-886)



卷轴规格

P/N	PKG	QTY
SN74LVC1G14DBYR-MS	SOT-886	5000

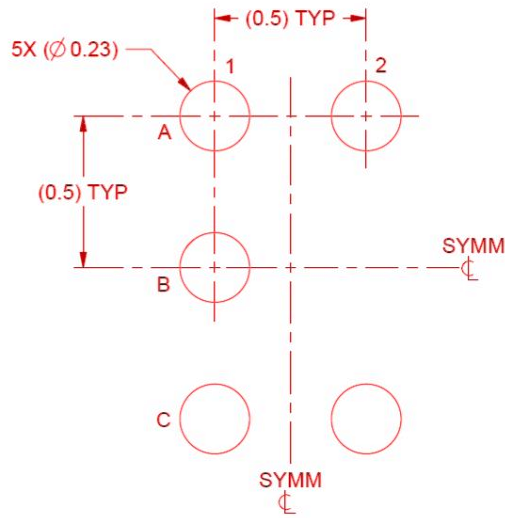
DSF (SON-6)



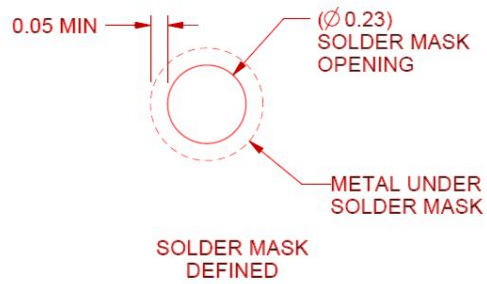
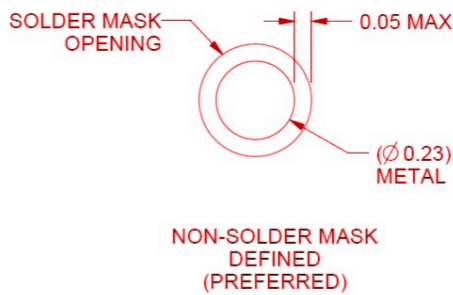
卷轴规格

P/N	PKG	QTY
SN74LVC1G14DSFR-MS	SON-6	5000

YZP (DSBGA-5)



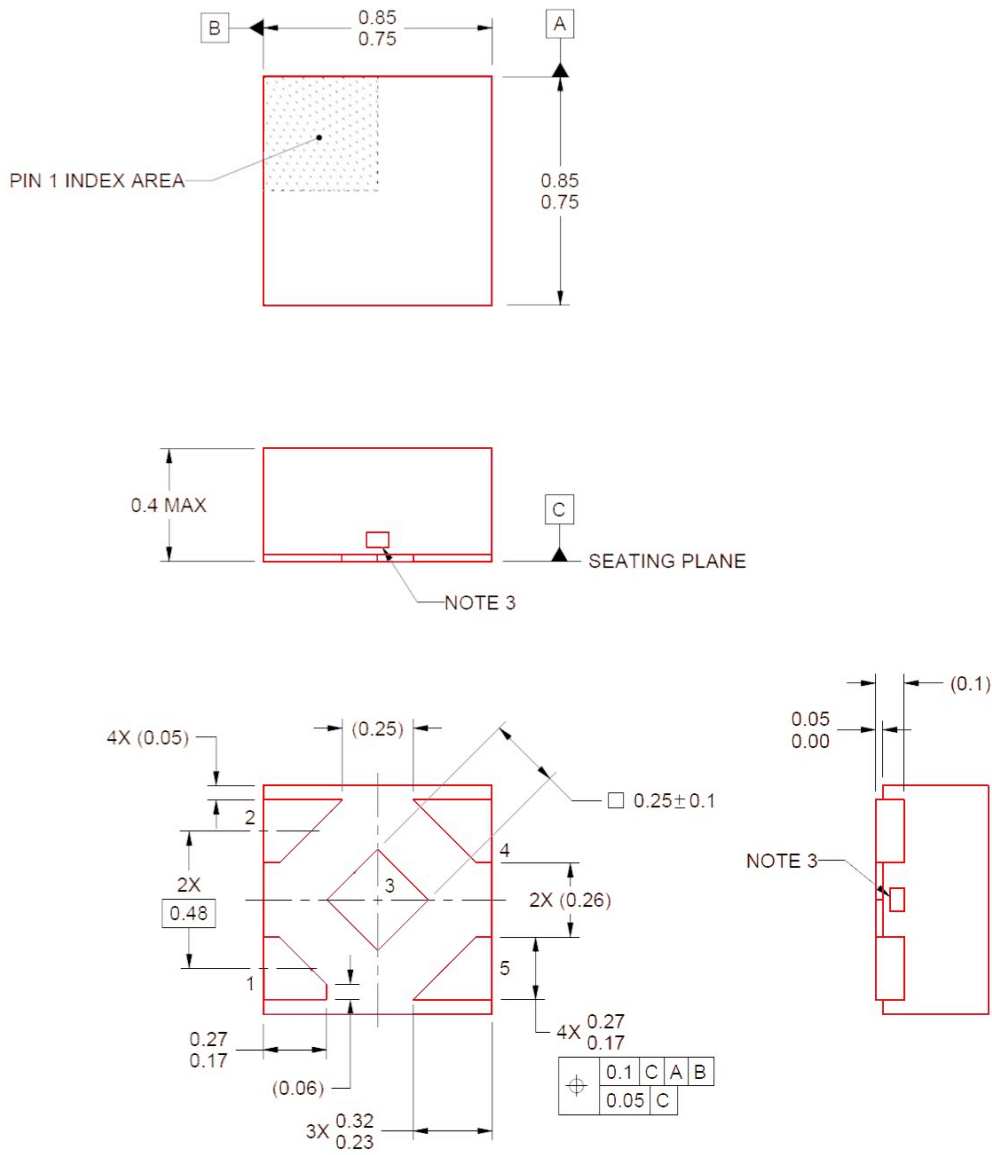
LAND PATTERN EXAMPLE
SCALE:40X



卷轴规格

P/N	PKG	QTY
SN74LVC1G14YZPR-MS	X2SON-5	3000

DPW (X2SON-5)



卷轴规格

P/N	PKG	QTY
SN74LVC1G14DPWR-MS	DSBGA-5	5000

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