



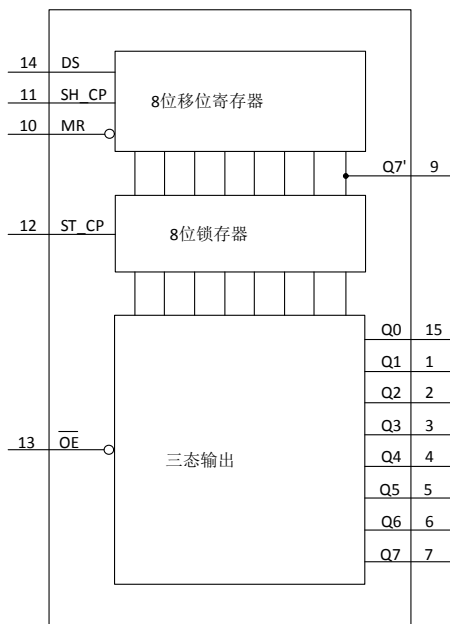
概述

74HC595D是高速硅栅COMS器件，且其引脚兼容低功耗肖特基TTL。74HC595D中由一个8位移位寄存器和一个带有三态并行输出的8位D型锁存器组成。移位寄存器接收串行数据，并提供串行或并行输出。移位寄存器也给8位锁存器提供并行数据。移位寄存器和锁存器有独立的CLK输入端。该元器件还有一个对移位寄存器的异步复位端。

特点

- 8位移位寄存器（串行输入，串行或并行输出）
- 具有三态输出的锁存器
- 60MHz(典型值)的移位输出频率
- 率ESD保护
- 封装形式：DIP16、SOP16

功能图



IEC逻辑图

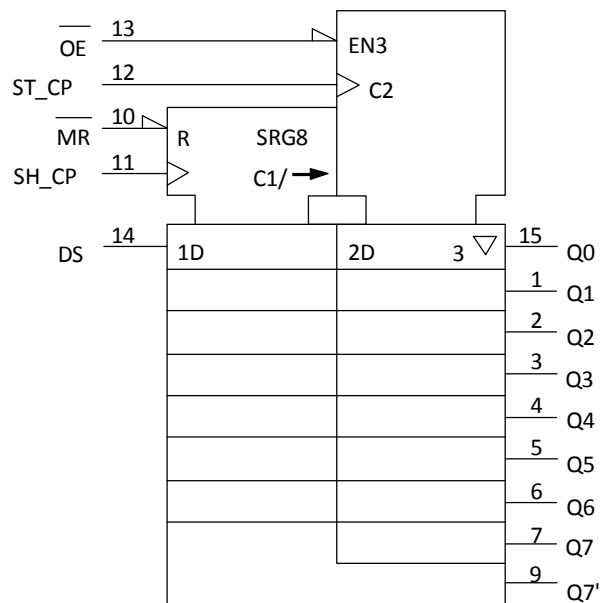


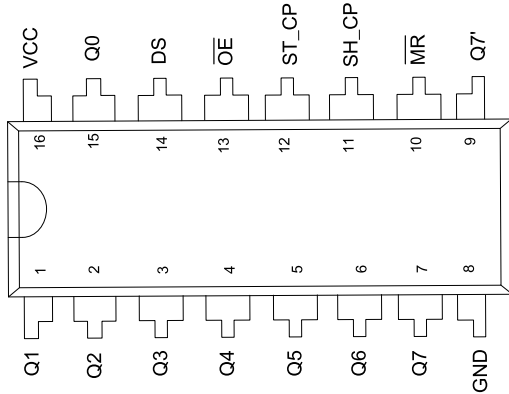
图 1 74HC595D功能图



引脚配置

订购信息

芯片型号	封装形式	采购代号
74HC595D	DIP-16	595DIP16
74HC595D	SOP-16	595SOP16



引脚功能描述

引脚编号	引脚名称	引脚功能
1~7	Q1、Q2、Q3、Q4、Q5、Q6、Q7	并行数据输出
8	GND	接地
9	Q7'	串行数据输出
10	$\overline{\text{MR}}$	主复位（低电平有效）
11	SH_CP	移位寄存器时钟输入
12	ST_CP	锁存器时钟输入
13	$\overline{\text{OE}}$	输出势能（低电平有效）
14	DS	串行数据输入
15	Q0	并行数据输出
16	VCC	正电源电压



极限参数

除非有特殊要求，GND=0V。

参数名称	符号	条件	最小	最大	单位
电源电压	V_{CC}		-0.5	+6.5	V
输入二极管电流	I_{IK}	$V_I < -0.5V \sim V_I > V_{CC} + 0.5V$	-	± 20	mA
输出二极管电流	I_{OK}	$V_I < -0.5V \sim V_I > V_{CC} + 0.5V$	-	± 20	mA
输出电源电流或灌电流	I_O	$V_I < -0.5V \sim V_I > V_{CC} + 0.5V$ Q7' 标准输出 Qn 总线驱动输出	-	+25	mA
			-	+35	
电源电流或地电流	V_{CC} 、 I_{GND}		-	± 70	mA
功耗	P_D	$T_{amb} = -40 \sim +125^\circ C$	500		mW
贮存温度	T_{stg}		-65	+150	$^\circ C$

推荐工作范围

参数	符号/条件	最小值	典型值	最大值	单位
电源电压	V_{CC}	2.0	5.0	6.0	V
输入电压	V_I	0	-	V_{CC}	V
输出电压	V_O	0	-	V_{CC}	V
环境温度	T_{amb}	-40	-	+125	$^\circ C$
输入上升时间 T_r 和下降时间 T_f	$V_{CC}=2.0V$	-	-	1000	ns
	$V_{CC}=4.5V$	-	6.0	500	ns
	$V_{CC}=6.0V$	-	-	400	ns



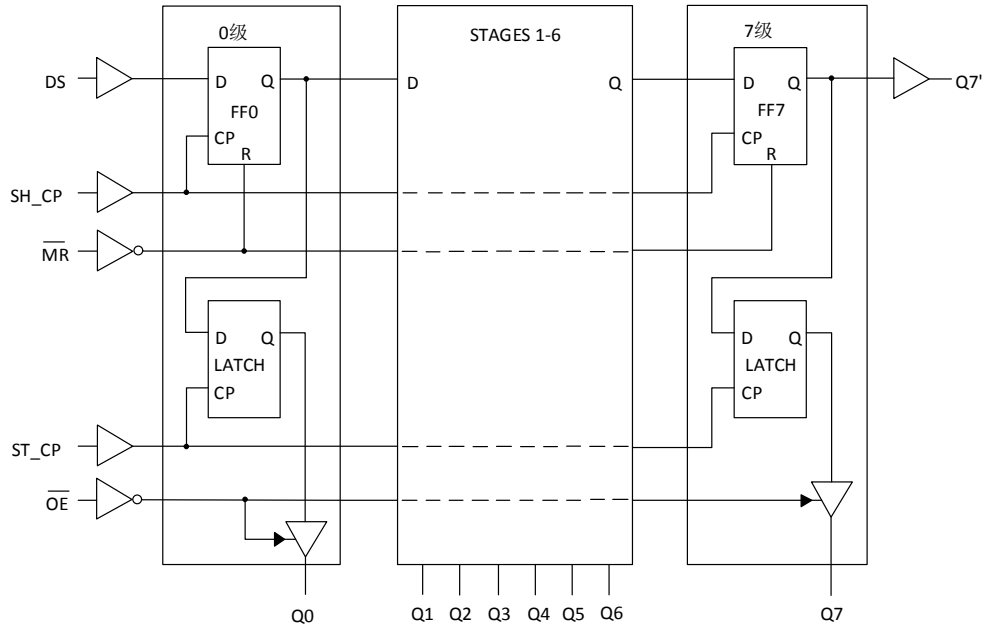
电参数：

除非有特殊要求， $T_A = -40^{\circ} \sim +85^{\circ} \text{C}$ ， $GND = 0V$ 。

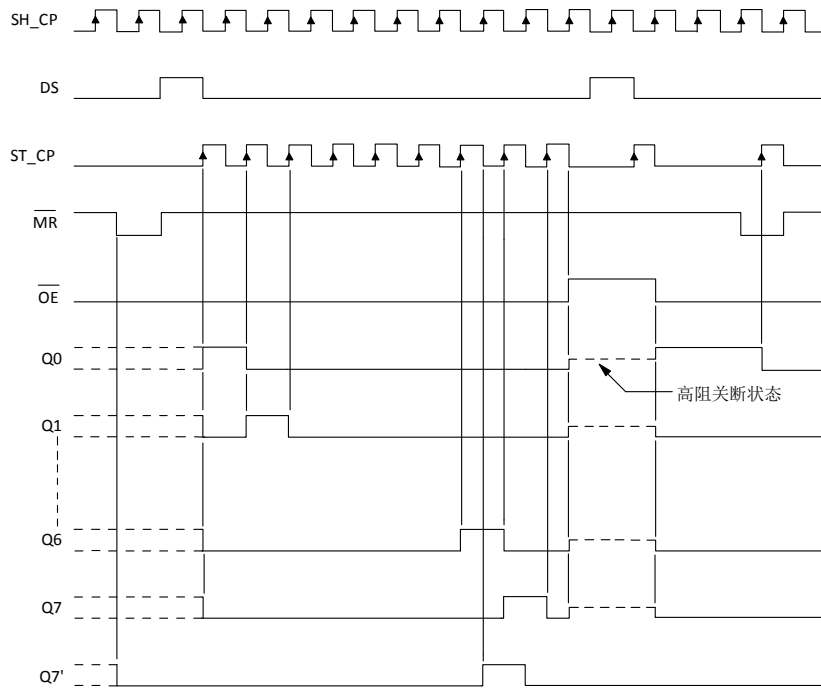
特性	符号	条件		最小值	典型值	最大值	单位
		其他	V_{CC} (V)				
输入高电平电压	V_{IH}		2.0	1.4	-	-	V
			4.5	3.15	-	-	
			6.0	4.2	-	-	
输入低电平电压	V_{IL}		2.0	-	-	0.6	V
			4.5	-	-	1.35	
			6.0	-	-	1.8	
输出高电平电压	V_{OH}	$V_I = V_{IH}$ 或 V_{IL}					V
		所有输出 $I_O = -20\mu A$	2.0	1.9	2.0	-	
			4.5	4.4	4.5	-	
			6.0	5.9	6.0	-	
		Q7'标准输出 $I_O = -4.0mA$ $I_O = -5.2mA$	4.5	3.84	4.32	-	
6.0	5.34		5.81	-			
Qn总线驱动输出 $I_O = -6.0mA$ $I_O = -7.8mA$	4.5	3.84	4.32	-			
	6.0	5.34	5.81	-			
输出低电平电压	V_{OL}	$V_I = V_{IH}$ 或 V_{IL}					V
		所有输出 $I_O = -20A$	2.0	-	0	0.1	
			4.5	-	0	0.1	
			6.0	-	0	0.1	
		Q7'标准输出 $I_O = -4.0mA$ $I_O = -5.2mA$	4.5	-	0.15	0.33	
6.0	-		0.16	0.33			
Qn总线驱动输出 $I_O = -6.0mA$ $I_O = -7.8mA$	4.5	-	0.16	0.33			
	6.0	-	0.16	0.33			
输入漏电流	I_I	$V_I = V_{CC}$ 或 GND	6.0	-	-	± 1.0	μA
三态输出关断电流	I_{OZ}	$V_I = V_{IH}$ 或 V_{IL} $V_O = V_{CC}$ 或 GND	6.0	-	-	± 5.0	μA
静态电流	I_{CC}	$V_I = V_{CC}$ 或 GND $I_O = 0$		6.0	-	80	μA



逻辑图



时序图





参考测量资料

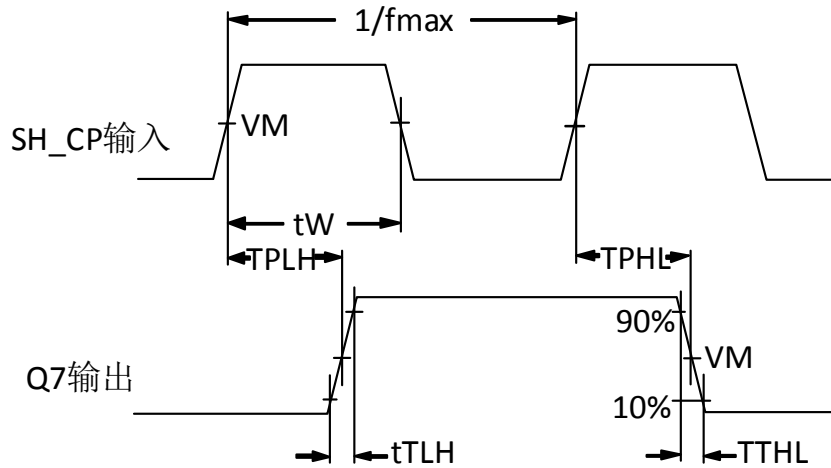


图 1 SH_CP 至 Q7' 的传播时延、移位寄存器时钟宽度及最大移位时钟频率的波形图

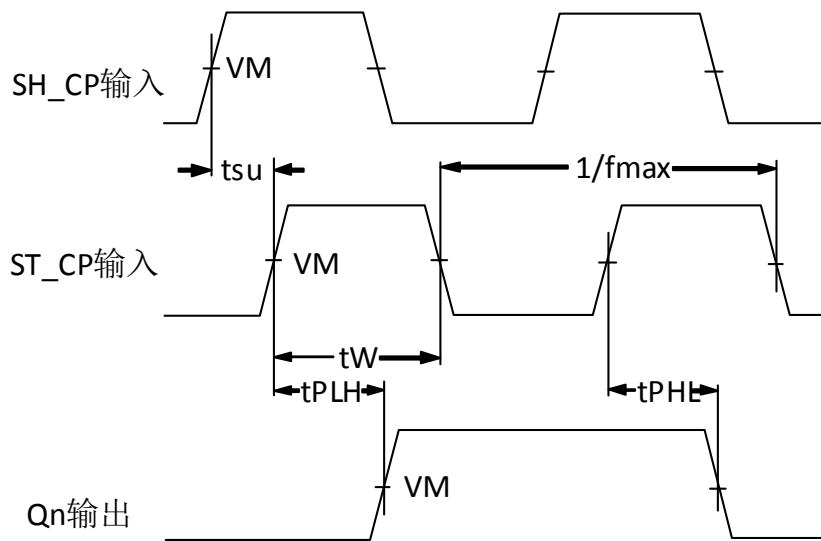


图 2 ST_CP 至 Qn 传播时延、锁存器脉冲宽度及移位寄存器 CLK 到锁存器 CLK 的建立时间



参考测量资料

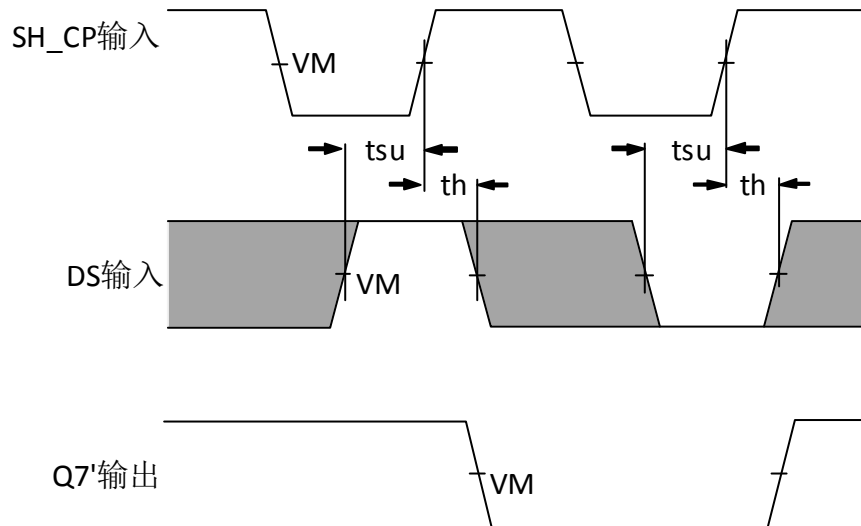


图 3 DS 输入数据的建立、持续时间

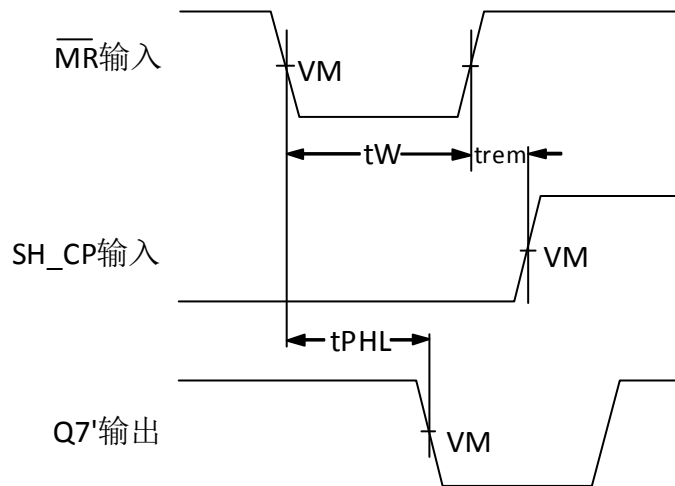


图 4 MR 脉冲宽度、MR 至 Q7'的传播时延及 MR 至 SH_CP 的时间



参考测量资料

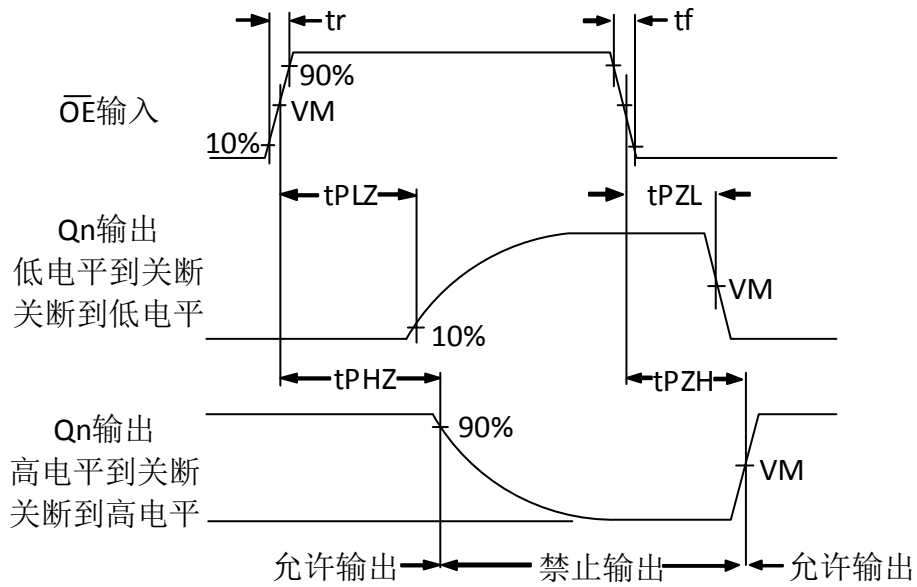


图 5 OE 输入端的三态允许、禁止输出时间波形

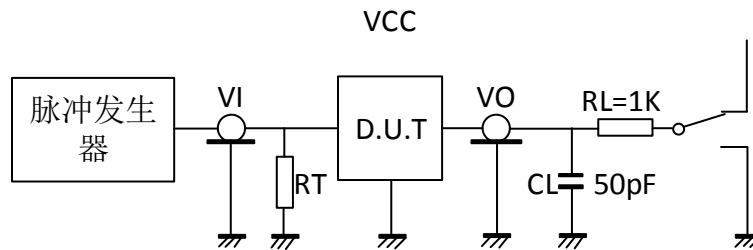
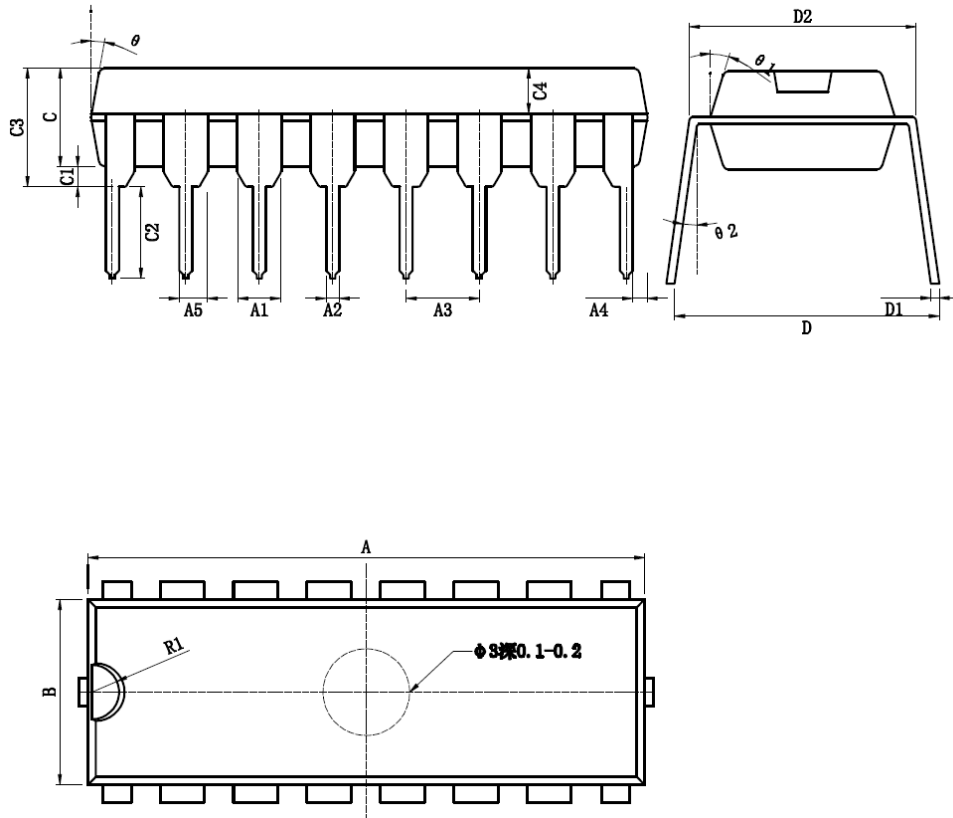


图 6 3 态输出的测试电路图



外形封装图

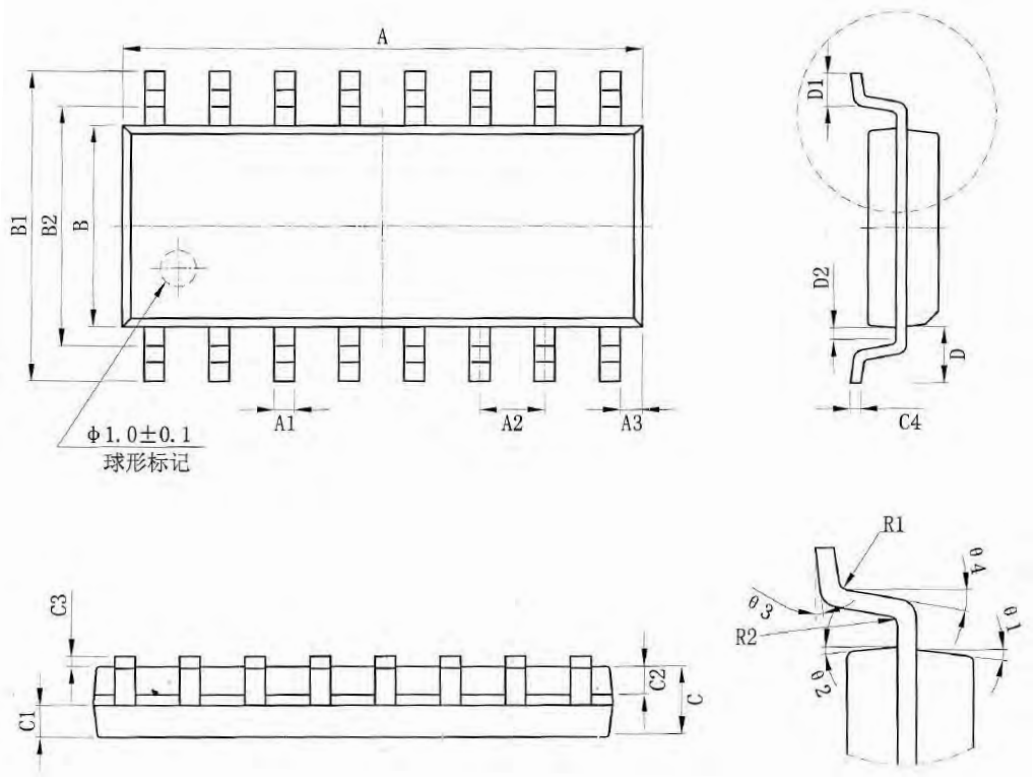
DIP-16 封装



符号	尺寸 (mm)		符号	尺寸 (mm)	
	最小	最大		最小	最大
A	19.00	19.20	C3	3.85	4.45
A1	1.524TYP		C4	1.40	1.50
A2	0.41	0.51	D	8.20	8.80
A3	2.54TYP		D1	0.20	0.35
A4	0.38TYP		D2	7.74	8.00
A5	0.99TYP		θ	10°TYP	
B	6.30	6.50	θ1	17°TYP	
C	3.00	3.20	θ2	6°TYP	
C1	0.51TYP		R1	1.27TYP	
C2	3.00	3.60			



SOP-16 封装



符号	尺寸 (mm)		符号	尺寸 (mm)	
	最小	最大		最小	最大
A	9.80	10.00	C3	0.05	0.25
A1	0.356	0.456	C4	0.203	0.233
A2	1.27TYP		D	0.15TYP	
A3	0.302TYP		D1	0.40	0.70
B	3.85	3.95	D2	0.15	0.25
B1	5.84	6.24	R1	0.20TYP	
B2	5.00TYP		R2	0.20TYP	
C	1.40	1.60	θ_1	8°~12°TYP	
C1	0.61	0.71	θ_2	8°~12°TYP	
C2	0.54	0.64	θ_3	0°~12°	
			θ_4	4°~12°	



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