

## SNx4AHC157 四通道 2 线至 1 线数据选择器/多路复用器

### 1 特性

- 工作电压范围为 2V 至 5.5V
- 闩锁性能超过 250mA，符合 JESD 17 规范
- 静电放电 (ESD) 保护性能超过 JESD 22 规范要求：
  - 2000V 人体放电模型 (A114-A)
  - 200V 机器放电模型 (A115-A)
  - 1000V 充电器件模型 (C101)

### 2 说明

这些四通道 2 线至 1 线数据选择器/多路复用器可在 2V 至 5.5V  $V_{CC}$  下运行。

SNx4AHC157 器件具有一个常见选通 ( $\bar{G}$ ) 输入。当选通脉冲为高电平时，所有输出都为低电平。当选通脉冲为低电平时，从两个源之一选择一个 4 位字并将其发送到四个输出。这些器件提供真实数据。

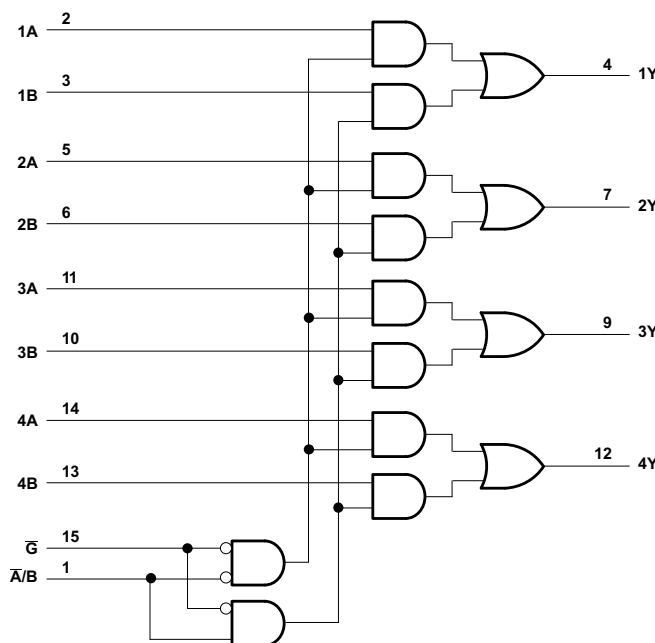
#### 器件信息

器件型号	封装 <sup>(1)</sup>	封装尺寸 <sup>(2)</sup>	本体尺寸 <sup>(3)</sup>
SNx4AHC157	D (SOIC, 16)	9.90mm × 6mm	9.90mm × 3.90mm
	DB (SSOP, 16)	6.20mm × 7.8mm	6.20mm × 5.30mm
	N (PDIP, 16)	19.31mm × 9.4mm	19.31mm × 6.35mm
	NS (SOP, 16)	5mm × 6.4mm	5mm × 4.4mm
	PW (TSSOP, 16)	5.00mm × 6.4mm	5.00mm × 4.40mm
	DGV (TVSOP, 16)	3.6mm × 6.4mm	3.6mm × 4.4mm
	RGY (VQFN, 16)	4mm × 3.5mm	4mm × 3.5mm

(1) 有关更多信息，请参阅节 10。

(2) 封装尺寸 (长 × 宽) 为标称值，并包括引脚 (如适用)。

(3) 本体尺寸 (长 × 宽) 为标称值，不包括引脚。



所示引脚编号用于 D、DB、DGV、J、N、NS、PW、RGY 和 W 封装。

#### 逻辑图 (正逻辑)



## 内容

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### 3 引脚配置和功能

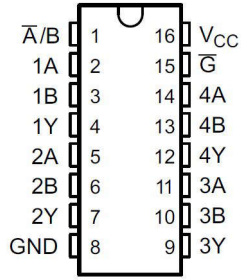


图 3-1. SN54AHC157 J 或 W 封装，  
SN74AHC157 D、DB、DGV、N、NS 或 PW 封装  
(顶视图)

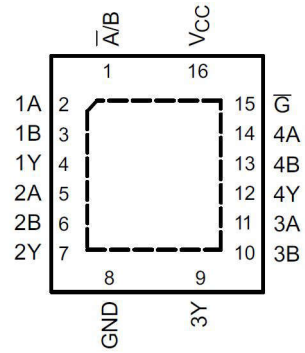
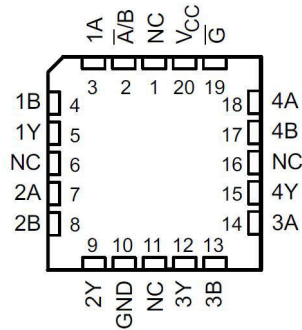


图 3-2. SN74AHC157 RGY 封装，(顶视图)



NC - No internal connection

图 3-3. SN54AHC157 FK 封装，(顶视图)

表 3-1. 引脚功能

引脚		类型 <sup>(1)</sup>	说明
名称	编号		
$\bar{A}/B$	1	I	地址选择
1A	2	I	通道 1, 数据输入 A
1B	3	I	通道 1, 数据输入 B
1Y	4	O	通道 1, 数据输出
2A	5	I	通道 2, 数据输入 A
2B	6	I	通道 2, 数据输入 B
2Y	7	O	通道 2, 数据输出
GND	8	G	接地
3Y	9	O	通道 3, 数据输出
3B	10	I	通道 3, 数据输入 B
3A	11	I	通道 3, 数据输入 A
4Y	12	O	通道 4, 数据输出
4B	13	I	通道 4, 数据输入 B
4A	14	I	通道 4, 数据输入 A
$\bar{G}$	15	I	输出选通, 低电平有效
V <sub>CC</sub>	16	P	正电源
散热焊盘 <sup>(2)</sup>		—	散热焊盘可连接到 GND 或悬空。请勿连接到任何其他信号或电源。

(1) 信号类型: I = 输入, O = 输出, I/O = 输入或输出, P = 电源, G = 接地。

(2) 仅限 WBQB 封装。

## 4 规格

### 4.1 绝对最大额定值

在自然通风条件下的工作温度范围内测得 (除非另有说明) (1)

		最小值	最大值	单位
V <sub>CC</sub>	电源电压范围	-0.5	7	V
V <sub>I</sub> (2)	输入电压范围	-0.5	7	V
V <sub>O</sub> (2)	输出电压范围	-0.5	V <sub>CC</sub> + 0.5	V
I <sub>IK</sub>	输入钳位电流	(V <sub>I</sub> < 0)	-20	mA
I <sub>OK</sub>	输出钳位电流	(V <sub>O</sub> < 0 或 V <sub>O</sub> > V <sub>CC</sub> )	±20	mA
I <sub>O</sub>	持续输出电流	(V <sub>O</sub> = 0 至 V <sub>CC</sub> )	±25	mA
通过 V <sub>CC</sub> 或 GND 的持续电流			±50	mA
T <sub>stg</sub>	贮存温度范围	-65	150	°C

- (1) 应力超出“绝对最大额定值”下所列的值可能会对器件造成永久损坏。这些仅为在应力额定值下的工作情况，对于额定值下的器件的功能性操作或者在超出“建议运行条件”下的任何其它情况，在此并未说明。长时间处于绝对最大额定条件下可能会影响器件的可靠性。
- (2) 如果遵守输入和输出电流额定值，输入和输出电压可超过额定值。

### 4.2 ESD 额定值

		值	单位
V <sub>(ESD)</sub>	静电放电	人体放电模型 (HBM), 符合 ANSI/ESDA/JEDEC JS-001	V
		充电器件模型 (CDM), 符合 JEDEC 规范 JESD22-C101	

### 4.3 建议运行条件

在自然通风条件下的工作温度范围内测得 (除非另有说明) (1)

		SN54AHC157		SN74AHC157		单位
		最小值	最大值	最小值	最大值	
V <sub>CC</sub>	电源电压	2	5.5	2	5.5	V
V <sub>IH</sub>	高电平输入电压	V <sub>CC</sub> = 2 V	1.5	1.5		V
		V <sub>CC</sub> = 3 V	2.1	2.1		
		V <sub>CC</sub> = 5.5 V	3.85	3.85		
V <sub>IL</sub>	低电平输入电压	V <sub>CC</sub> = 2 V		0.5	0.5	V
		V <sub>CC</sub> = 3 V		0.9	0.9	
		V <sub>CC</sub> = 5.5 V		1.65	1.65	
V <sub>I</sub>	输入电压	0	5.5	0	5.5	V
V <sub>O</sub>	输出电压	0	V <sub>CC</sub>	0	V <sub>CC</sub>	V
I <sub>OH</sub>	高电平输出电流	V <sub>CC</sub> = 2 V		-0.05	-0.05	µA
		V <sub>CC</sub> = 3.3 V ± 0.3 V		-4	-4	
		V <sub>CC</sub> = 5 V ± 0.5 V		-8	-8	
I <sub>OL</sub>	低电平输出电流	V <sub>CC</sub> = 2 V		0.05	0.05	µA
		V <sub>CC</sub> = 3.3 V ± 0.3 V		4	4	
		V <sub>CC</sub> = 5 V ± 0.5 V		8	8	
Δt/Δv	输入转换上升或下降速率	V <sub>CC</sub> = 3.3 V ± 0.3 V		100	100	ns/V
		V <sub>CC</sub> = 5 V ± 0.5 V		20	20	
T <sub>A</sub>	自然通风条件下的工作温度范围	-55	125	-40	125	°C

- (1) 器件所有的未使用输入必须保持在 V<sub>CC</sub> 或 GND 以确保器件正常运行。请参阅 TI 应用报告 CMOS 输入缓慢变化或悬空的影响，文献编号 SCBA004。

#### 4.4 热性能信息

热性能指标 <sup>(1)</sup>		SNx4AHC157							单位
		D	DB	DGV	N	NS	PW	RGY	
		16							
$R_{\theta JA}$	结至环境热阻	93.8	82	120	67	64	135.9	52.9	°C/W

(1) 有关新旧热指标的更多信息，请参阅 [半导体和 IC 封装热指标](#) 应用报告。

#### 4.5 电气特性

在自然通风条件下的工作温度范围内测得（除非另有说明）

参数	测试条件	$V_{CC}$	$T_A = 25^\circ\text{C}$		$T_A = -55^\circ\text{C}$ 至 $125^\circ\text{C}$		$T_A = -40^\circ\text{C}$ 至 $85^\circ\text{C}$		$T_A = -40^\circ\text{C}$ 至 $125^\circ\text{C}$		单位	
					推荐		推荐		推荐			
			SN54AHC157	SN74AHC157	SN74AHC157	SN74AHC157	SN74AHC157					
			最小值	典型值	最大值	最小值	最大值	最小值	最大值	最小值	最大值	
$V_{OH}$	$I_{OH} = -50 \mu\text{A}$	2 V	1.9	2	1.9	1.9	1.9	1.9	1.9	1.9	V	
		3 V	2.9	3	2.9	2.9	2.9	2.9	2.9			
		4.5 V	4.4	4.5	4.4	4.4	4.4	4.4	4.4			
	$I_{OH} = -4 \text{ mA}$	3 V	2.58		2.48	2.48	2.48	2.48				
	$I_{OH} = -8 \text{ mA}$	4.5 V	3.94		3.8	3.8	3.8	3.8	3.8			
$V_{OL}$	$I_{OL} = 50 \mu\text{A}$	2 V			0.1	0.1	0.1	0.1	0.1	0.1	V	
		3 V			0.1	0.1	0.1	0.1	0.1			
		4.5 V			0.1	0.1	0.1	0.1	0.1			
	$I_{OH} = 4 \text{ mA}$	3 V		0.36	0.5	0.44	0.5	0.5				
	$I_{OH} = 8 \text{ mA}$	4.5 V		0.36	0.5	0.44	0.5	0.5				
$I_I$	$V_I = 5.5 \text{ V}$ 或 GND	0 V 至 5.5 V			$\pm 0.1$	$\pm 1^{(1)}$		$\pm 1$	$\pm 1$	$\mu\text{A}$		
$I_{CC}$	$V_I = V_{CC}$ 或 GND, $I_O = 0$	5.5 V			4	40		40	40	$\mu\text{A}$		
$C_i$	$V_I = V_{CC}$ 或 GND	5 V		2	10			10		pF		

(1) 对于符合 MIL-PRF-38535 标准的产品，此参数未经量产测试（在  $V_{CC} = 0\text{V}$  时）。

#### 4.6 开关特性， $V_{CC} = 3.3\text{V} \pm 0.3\text{V}$

在推荐的自然通风条件下的工作温度范围内测得， $V_{CC} = 3.3\text{V} \pm 0.3\text{V}$ （除非另有说明）（请参阅 [负载电路和电压波形](#)）

参数	从 (输入)	到 (输出)	负载 电容	$T_A = 25^\circ\text{C}$		$T_A = -55^\circ\text{C}$ 至 $125^\circ\text{C}$		$T_A = -40^\circ\text{C}$ 至 $85^\circ\text{C}$		$T_A = -40^\circ\text{C}$ 至 $125^\circ\text{C}$		单位
						推荐		推荐		推荐		
				SN54AHC157	SN74AHC157	SN74AHC157	SN74AHC157	SN74AHC157				
			典型值	最大值	最小值	最大值	最小值	最大值	最小值	最大值		
$t_{PLH}$	A 或 B	Y	$C_L = 15\text{pF}$	6.2 <sup>(1)</sup>	9.7 <sup>(1)</sup>	1 <sup>(1)</sup>	11.5 <sup>(1)</sup>	1	11.5	1	11.5	ns
$t_{PHL}$				6.2 <sup>(1)</sup>	9.7 <sup>(1)</sup>	1 <sup>(1)</sup>	11.5 <sup>(1)</sup>	1	11.5	1	11.5	
$t_{PLH}$	$\bar{A}/\bar{B}$	Y	$C_L = 15\text{pF}$	8.4 <sup>(1)</sup>	13.2 <sup>(1)</sup>	1 <sup>(1)</sup>	15.5 <sup>(1)</sup>	1	15.5	1	15.5	ns
$t_{PHL}$				8.4 <sup>(1)</sup>	13.2 <sup>(1)</sup>	1 <sup>(1)</sup>	15.5 <sup>(1)</sup>	1	15.5	1	15.5	
$t_{PLH}$	$\bar{G}$	Y	$C_L = 15\text{pF}$	8.7 <sup>(1)</sup>	13.6 <sup>(1)</sup>	1 <sup>(1)</sup>	16 <sup>(1)</sup>	1	16	1	16	ns
$t_{PHL}$				8.7 <sup>(1)</sup>	13.6 <sup>(1)</sup>	1 <sup>(1)</sup>	16 <sup>(1)</sup>	1	16	1	16	
$t_{PLH}$	A 或 B	Y	$C_L = 50\text{pF}$	8.7	13.2	1	15	1	15	1	15	ns
$t_{PHL}$				8.7	13.2	1	15	1	15	1	15	
$t_{PLH}$	$\bar{A}/\bar{B}$	Y	$C_L = 50\text{pF}$	10.9	16.7	1	19	1	19	1	19	ns
$t_{PHL}$				10.9	16.7	1	19	1	19	1	19	

在推荐的自然通风条件下的工作温度范围内测得， $V_{CC} = 3.3V \pm 0.3V$  (除非另有说明) (请参阅[负载电路和电压波形](#))

参数	从 (输入)	到 (输出)	负载 电容	$T_A = 25^\circ\text{C}$		$T_A = -55^\circ\text{C}$ 至 $125^\circ\text{C}$		$T_A = -40^\circ\text{C}$ 至 $85^\circ\text{C}$		$T_A = -40^\circ\text{C}$ 至 $125^\circ\text{C}$		单位
						SN54AHC157		SN74AHC157		推荐 SN74AHC157		
				典型值	最大值	最小值	最大值	最小值	最大值	最小值	最大值	
$t_{PLH}$	$\bar{G}$	Y	$C_L = 50\text{pF}$	11.2	17.1	1	19.5	1	19.5	1	19.5	ns
$t_{PHL}$				11.2	17.1	1	19.5	1	19.5	1	19.5	

(1) 对于符合 MIL-PRF-38535 标准的产品，此参数未经量产测试。

#### 4.7 开关特性， $V_{CC} = 5V \pm 0.5V$

在推荐的自然通风条件下的工作温度范围内测得， $V_{CC} = 5V \pm 0.5V$  (除非另有说明) (请参阅[负载电路和电压波形](#))

参数	从 (输入)	到 (输出)	负载 电容	$T_A = 25^\circ\text{C}$		$T_A = -55^\circ\text{C}$ 至 $125^\circ\text{C}$		$T_A = -40^\circ\text{C}$ 至 $85^\circ\text{C}$		$T_A = -40^\circ\text{C}$ 至 $125^\circ\text{C}$		单位
						SN54AHC157		SN74AHC157		推荐 SN74AHC157		
				典型值	最大值	最小值	最大值	最小值	最大值	最小值	最大值	
$t_{PLH}$	A 或 B	Y	$C_L = 15\text{pF}$	4.1 <sup>(1)</sup>	6.4 <sup>(1)</sup>	1 <sup>(1)</sup>	7.5 <sup>(1)</sup>	1	7.5	1	7.5	ns
$t_{PHL}$				4.1 <sup>(1)</sup>	6.4 <sup>(1)</sup>	1 <sup>(1)</sup>	7.5 <sup>(1)</sup>	1	7.5	1	7.5	
$t_{PLH}$	$\bar{A}/\bar{B}$	Y	$C_L = 15\text{pF}$	5.3 <sup>(1)</sup>	8.1 <sup>(1)</sup>	1 <sup>(1)</sup>	9.5 <sup>(1)</sup>	1	9.5	1	9.5	ns
$t_{PHL}$				5.3 <sup>(1)</sup>	8.1 <sup>(1)</sup>	1 <sup>(1)</sup>	9.5 <sup>(1)</sup>	1	9.5	1	9.5	
$t_{PLH}$	$\bar{G}$	Y	$C_L = 15\text{pF}$	5.6 <sup>(1)</sup>	8.6 <sup>(1)</sup>	1 <sup>(1)</sup>	10 <sup>(1)</sup>	1	10	1	10	ns
$t_{PHL}$				5.6 <sup>(1)</sup>	8.6 <sup>(1)</sup>	1 <sup>(1)</sup>	10 <sup>(1)</sup>	1	10	1	10	
$t_{PLH}$	A 或 B	Y	$C_L = 50\text{pF}$	5.6 <sup>(1)</sup>	8.4 <sup>(1)</sup>	1 <sup>(1)</sup>	9.5 <sup>(1)</sup>	1	9.5	1	9.5	ns
$t_{PHL}$				5.6 <sup>(1)</sup>	8.4 <sup>(1)</sup>	1 <sup>(1)</sup>	9.5 <sup>(1)</sup>	1	9.5	1	9.5	
$t_{PLH}$	$\bar{A}/\bar{B}$	Y	$C_L = 50\text{pF}$	6.8 <sup>(1)</sup>	10.1 <sup>(1)</sup>	1 <sup>(1)</sup>	11.5 <sup>(1)</sup>	1	11.5	1	11.5	ns
$t_{PHL}$				6.8 <sup>(1)</sup>	10.1 <sup>(1)</sup>	1 <sup>(1)</sup>	11.5 <sup>(1)</sup>	1	11.5	1	11.5	
$t_{PLH}$	$\bar{G}$	Y	$C_L = 50\text{pF}$	7.1 <sup>(1)</sup>	10.6 <sup>(1)</sup>	1 <sup>(1)</sup>	12 <sup>(1)</sup>	1	12	1	12	ns
$t_{PHL}$				7.1 <sup>(1)</sup>	10.6 <sup>(1)</sup>	1 <sup>(1)</sup>	12 <sup>(1)</sup>	1	12	1	12	

#### 4.8 噪声特性

$V_{CC} = 5V$ ,  $C_L = 50\text{pF}$ ,  $T_A = 25^\circ\text{C}$ <sup>(1)</sup>

参数		SN74AHC157			单位
		最小值	典型值	最大值	
$V_{OL(P)}$	安静输出，最大动态 $V_{OL}$		0.8		V
$V_{OL(V)}$	安静输出，最小动态 $V_{OL}$		-0.8		V
$V_{OH(V)}$	安静输出，最小动态 $V_{OH}$		4.8		V
$V_{IH(D)}$	高电平动态输入电压	3.5			V
$V_{IL(D)}$	低电平动态输入电压		1.5		V

(1) 特性仅适用于表面贴装封装。

#### 4.9 工作特性

$V_{CC} = 5V$ ,  $T_A = 25^\circ\text{C}$

参数		测试条件	典型值	单位
$C_{pd}$	功率耗散电容	无负载， $f = 1\text{MHz}$	11	pF

### 4.10 典型特性

$T_A = 25^\circ\text{C}$  (除非另外注明)

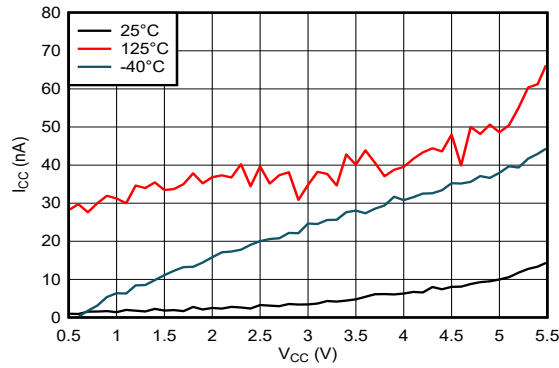


图 4-1. 电源电压两端的电源电流

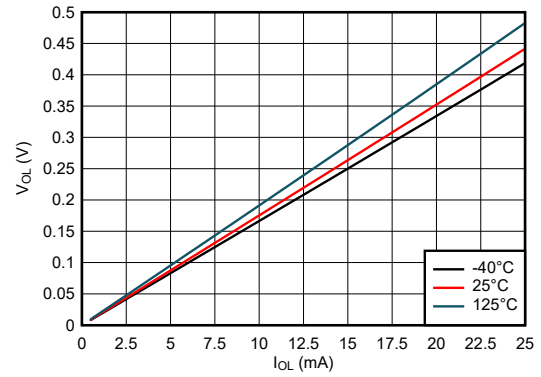


图 4-2. 低电平状态下输出电压与电流间的关系 (5V 电源)

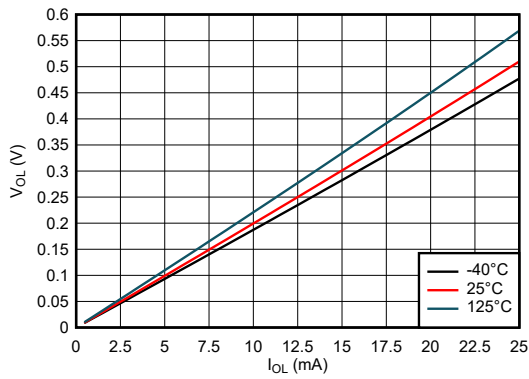


图 4-3. 低电平状态下输出电压与电流间的关系 (3.3V 电源)

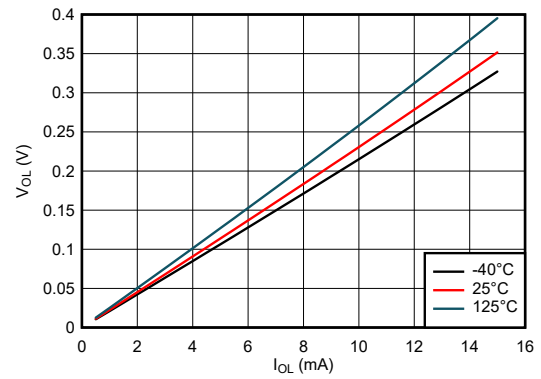
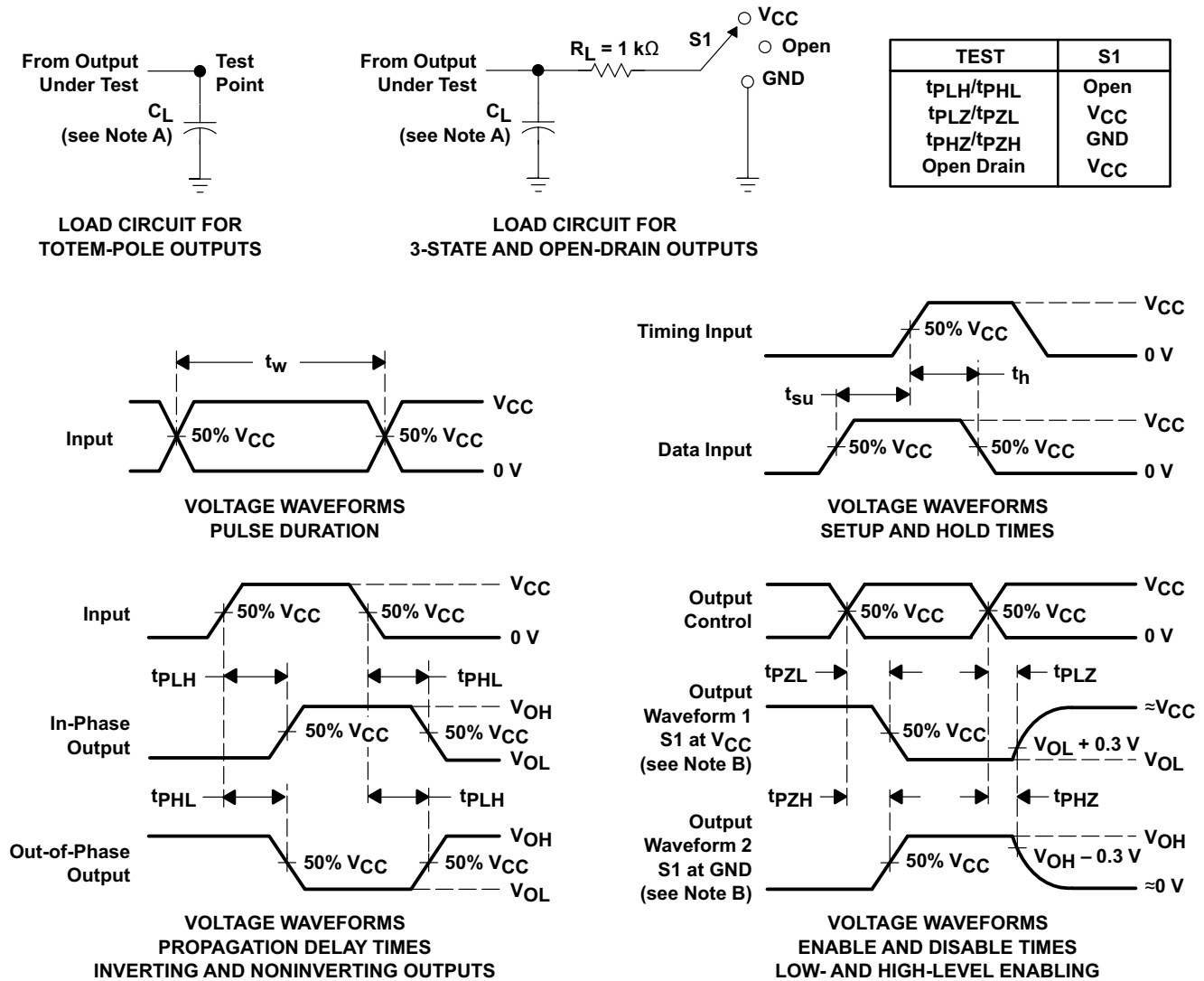


图 4-4. 低电平状态下输出电压与电流间的关系 (2.5V 电源)



## 5 参数测量信息

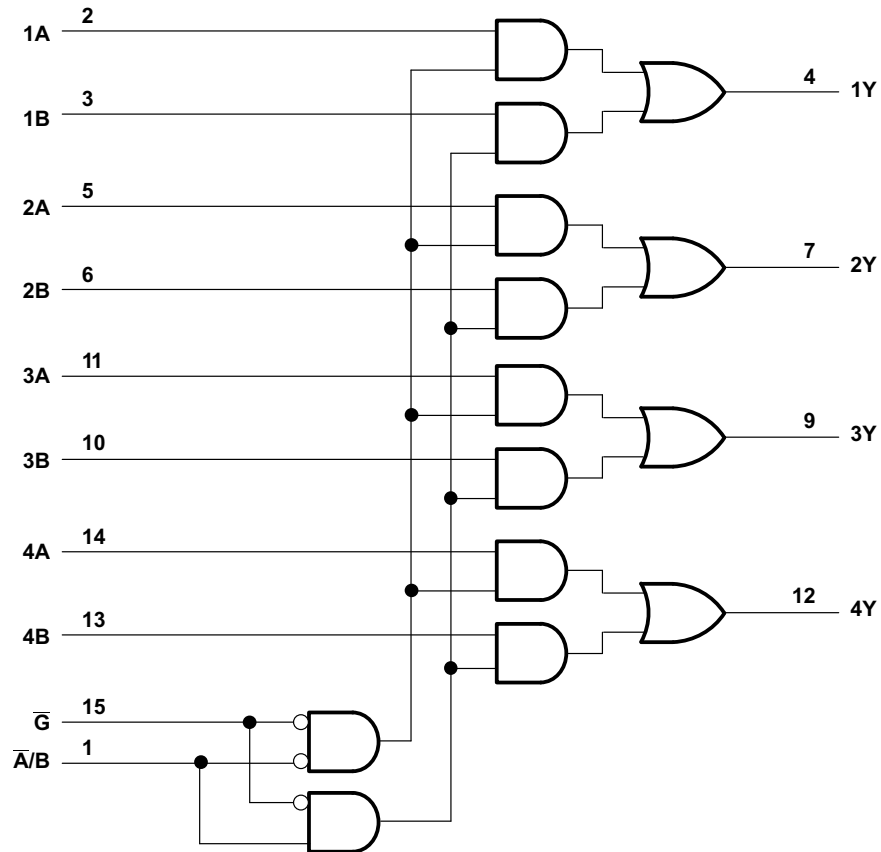


- $C_L$  包括探头和夹具电容。
- 波形 1 用于具有内部条件的输出，使得输出为低电平，除非被输出控制禁用。  
波形 2 用于具有内部条件的输出，使得输出为高电平，除非被输出控制禁用。
- 所有输入脉冲均由具有以下特性的发生器提供： $PRR \leq 1\text{MHz}$ ， $Z_O = 50\ \Omega$ ， $t_r \leq 3\ \text{ns}$ ， $t_f \leq 3\ \text{ns}$ 。
- 一次测量一个输出，每次测量一个输入转换。
- 并非所有参数和波形都适用于所有器件。

图 5-1. 负载电路和电压波形

## 6 详细说明

### 6.1 功能方框图



所示引脚编号用于 D、DB、DGV、J、N、NS、PW、RGY 和 W 封装。

图 6-1. 逻辑图 (正逻辑)

### 6.2 器件功能模式

表 6-1. 功能表

输入				输出
$\bar{G}$	$\bar{A/B}$	A	B	Y
H	X	X	X	L
L	L	L	X	L
L	L	H	X	H
L	H	X	L	L
L	H	X	H	H

## 7 应用和实施

### 备注

以下应用部分中的信息不属于 TI 元件规格，TI 不担保其准确性和完整性。TI 的客户负责确定元件是否适合其用途，以及验证和测试其设计实现以确认系统功能。

### 7.1 电源相关建议

电源可以是 [节 4.3](#) 表中最小和最大电源电压额定值之间的任意电压。

每个  $V_{CC}$  引脚应具有一个良好的旁路电容器，以防止功率干扰。对于单电源器件，建议使用  $0.1\ \mu\text{f}$ ；如果有多个  $V_{CC}$  引脚，则建议每个电源引脚使用  $0.01\ \mu\text{f}$  或  $0.022\ \mu\text{f}$ 。可以并联多个旁路电容器以抑制不同的噪声频率。 $0.1\ \mu\text{f}$  和  $1\ \mu\text{f}$  通常并联使用。为了获得更佳效果，旁路电容器应尽可能靠近电源引脚安装。

### 7.2 布局

#### 7.2.1 布局指南

当使用多位逻辑器件时，输入不应悬空。在许多情况下，数字逻辑器件的功能或部分功能未被使用。举两个例子：仅使用三输入与门的 2 个输入；仅使用四缓冲器门中的 3 个门。此类输入引脚不应悬空，因为外部连接处的未定义电压会导致未定义的操作状态。“布局图”指定了在所有情况下都必须遵守的规则。数字逻辑器件的所有未使用输入必须连接至一个高或低偏置以防止悬空。应为任何特定未使用输入应用的逻辑电平取决于器件的功能。通常，它们将连接到 GND 或  $V_{CC}$ ，具体取决于哪种更合理或更方便。使输出悬空是可以接受的，除非该器件是收发器。如果该收发器有一个输出使能引脚，它会在置为有效时禁用该器件的输出部分。这不会禁用 I/O 的输入部分，因此输入在禁用后也无法悬空。

#### 7.2.2 布局示例

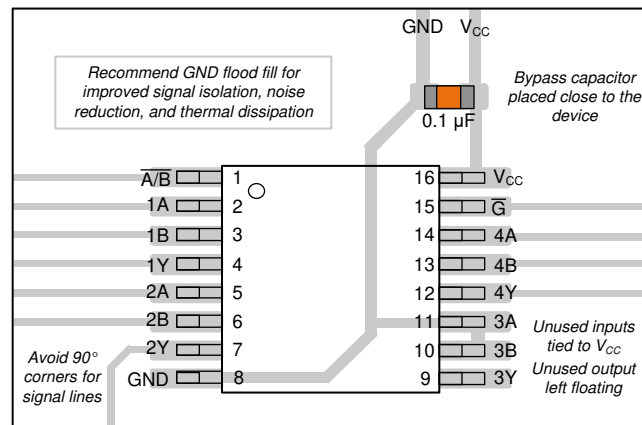


图 7-1. SNx4AHC157 的示例布局

## 8 器件和文档支持

### 8.1 文档支持 (模拟)

#### 8.1.1 相关链接

下表列出了快速访问链接。类别包括技术文档、支持和社区资源、工具和软件，以及申请样片或购买产品的快速链接。

**表 8-1. 相关链接**

器件	产品文件夹	样片 & 购买	技术文档	工具 & 软件	支持 & 社区
SN54AHC157	<a href="#">点击此处</a>	<a href="#">点击此处</a>	<a href="#">点击此处</a>	<a href="#">点击此处</a>	<a href="#">点击此处</a>
SN74AHC157	<a href="#">点击此处</a>	<a href="#">点击此处</a>	<a href="#">点击此处</a>	<a href="#">点击此处</a>	<a href="#">点击此处</a>

### 8.2 接收文档更新通知

要接收文档更新通知，请导航至 [ti.com](http://ti.com) 上的器件产品文件夹。点击 [通知](#) 进行注册，即可每周接收产品信息更改摘要。有关更改的详细信息，请查看任何已修订文档中包含的修订历史记录。

### 8.3 支持资源

[TI E2E™ 中文支持论坛](#) 是工程师的重要参考资料，可直接从专家处获得快速、经过验证的解答和设计帮助。搜索现有解答或提出自己的问题，获得所需的快速设计帮助。

链接的内容由各个贡献者“按原样”提供。这些内容并不构成 TI 技术规范，并且不一定反映 TI 的观点；请参阅 TI 的 [使用条款](#)。

### 8.4 商标

TI E2E™ is a trademark of Texas Instruments.

所有商标均为其各自所有者的财产。

### 8.5 静电放电警告



静电放电 (ESD) 会损坏这个集成电路。德州仪器 (TI) 建议通过适当的预防措施处理所有集成电路。如果不遵守正确的处理和安装程序，可能会损坏集成电路。

ESD 的损坏小至导致微小的性能降级，大至整个器件故障。精密的集成电路可能更容易受到损坏，这是因为非常细微的参数更改都可能会导致器件与其发布的规格不相符。

### 8.6 术语表

[TI 术语表](#) 本术语表列出并解释了术语、首字母缩略词和定义。

## 9 修订历史记录

注：以前版本的页码可能与当前版本的页码不同

### Changes from Revision K (April 2024) to Revision L (July 2024) Page

- 更新了热性能指标  $R_{\theta JA}$  的值：D 封装从 73 更新为 93.8，RGY 封装从 39 更新为 52.9，所有值均以 °C/W 为单位.....6

### Changes from Revision J (June 2013) to Revision K (April 2024) Page

- 添加了 [器件信息表](#)、[引脚功能表](#)、[ESD 等级表](#)、[热性能信息表](#)、[典型特性](#)、[器件功能模式](#)、[应用和实施方案](#)、[器件和文档支持](#) 部分以及 [机械](#)、[封装和订购信息](#) 部分..... 1
- 将  $I_{OH}$  最大值从 -50mA 改为 -0.05μA.....5
- 在 [建议运行条件表](#) 中将  $I_{OH}$  和  $I_{OL}$  的单位从 mA (毫安) 更改为 μA (微安) ..... 5

- 将  $I_{OL}$  最大值从 50 mA 改为 0.05  $\mu$ A.....5
  - 将 PW 封装的热性能指标  $R_{\theta JA}$  的值从 108 更新为 135.9，所有值均以  $^{\circ}\text{C/W}$  为单位..... 6
- 

## 10 机械、封装和订购信息

下述页面包含机械、封装和订购信息。这些信息是所指定器件的最新数据。数据如有变更，恕不另行通知，且不会对此文档进行修订。有关此数据表的浏览器版本，请查阅左侧的导航栏。

**PACKAGING INFORMATION**

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead finish/ Ball material (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
5962-9764201Q2A	ACTIVE	LCCC	FK	20	55	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962- 9764201Q2A SNJ54AHC 157FK	<a href="#">Samples</a>
5962-9764201QEA	ACTIVE	CDIP	J	16	25	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-9764201QE A SNJ54AHC157J	<a href="#">Samples</a>
5962-9764201QFA	ACTIVE	CFP	W	16	25	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-9764201QF A SNJ54AHC157W	<a href="#">Samples</a>
SN74AHC157D	OBSOLETE	SOIC	D	16		TBD	Call TI	Call TI	-40 to 125	AHC157	
SN74AHC157DBR	ACTIVE	SSOP	DB	16	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 125	HA157	<a href="#">Samples</a>
SN74AHC157DGVR	ACTIVE	TVSOP	DGV	16	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 125	HA157	<a href="#">Samples</a>
SN74AHC157DR	ACTIVE	SOIC	D	16	2500	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 125	AHC157	<a href="#">Samples</a>
SN74AHC157N	ACTIVE	PDIP	N	16	25	RoHS & Green	NIPDAU	N / A for Pkg Type	-40 to 125	SN74AHC157N	<a href="#">Samples</a>
SN74AHC157NSR	ACTIVE	SO	NS	16	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 125	AHC157	<a href="#">Samples</a>
SN74AHC157PW	OBSOLETE	TSSOP	PW	16		TBD	Call TI	Call TI	-40 to 125	HA157	
SN74AHC157PWR	ACTIVE	TSSOP	PW	16	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 125	HA157	<a href="#">Samples</a>
SN74AHC157PWRG3	ACTIVE	TSSOP	PW	16	2000	RoHS & Green	SN	Level-1-260C-UNLIM	-40 to 125	HA157	<a href="#">Samples</a>
SN74AHC157RGYR	ACTIVE	VQFN	RGY	16	3000	RoHS & Green	NIPDAU	Level-2-260C-1 YEAR	-40 to 125	HA157	<a href="#">Samples</a>
SNJ54AHC157FK	ACTIVE	LCCC	FK	20	55	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962- 9764201Q2A SNJ54AHC 157FK	<a href="#">Samples</a>
SNJ54AHC157J	ACTIVE	CDIP	J	16	25	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-9764201QE A SNJ54AHC157J	<a href="#">Samples</a>
SNJ54AHC157W	ACTIVE	CFP	W	16	25	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-9764201QF A	<a href="#">Samples</a>

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead finish/ Ball material (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
										SNJ54AHC157W	

(1) The marketing status values are defined as follows:

**ACTIVE:** Product device recommended for new designs.

**LIFEBUY:** TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

**NRND:** Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

**PREVIEW:** Device has been announced but is not in production. Samples may or may not be available.

**OBSELETE:** TI has discontinued the production of the device.

(2) **RoHS:** TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".

**RoHS Exempt:** TI defines "RoHS Exempt" to mean products that contain lead but are compliant with EU RoHS pursuant to a specific EU RoHS exemption.

**Green:** TI defines "Green" to mean the content of Chlorine (Cl) and Bromine (Br) based flame retardants meet JS709B low halogen requirements of <=1000ppm threshold. Antimony trioxide based flame retardants must also meet the <=1000ppm threshold requirement.

(3) MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead finish/Ball material - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead finish/Ball material values may wrap to two lines if the finish value exceeds the maximum column width.

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In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

**OTHER QUALIFIED VERSIONS OF SN54AHC157, SN74AHC157 :**

- Catalog : [SN74AHC157](#)

- Automotive : [SN74AHC157-Q1](#), [SN74AHC157-Q1](#)
- Military : [SN54AHC157](#)

NOTE: Qualified Version Definitions:

- Catalog - TI's standard catalog product
- Automotive - Q100 devices qualified for high-reliability automotive applications targeting zero defects
- Military - QML certified for Military and Defense Applications



**TAPE AND REEL INFORMATION**

**QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE**


\*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
SN74AHC157DBR	SSOP	DB	16	2000	330.0	16.4	8.35	6.6	2.4	12.0	16.0	Q1
SN74AHC157DGVR	TVSOP	DGV	16	2000	330.0	12.4	6.8	4.0	1.6	8.0	12.0	Q1
SN74AHC157DR	SOIC	D	16	2500	330.0	16.4	6.5	10.3	2.1	8.0	16.0	Q1
SN74AHC157DR	SOIC	D	16	2500	330.0	12.4	3.75	3.75	1.15	8.0	12.0	Q1
SN74AHC157DR	SOIC	D	16	2500	330.0	16.4	6.5	10.3	2.1	8.0	16.0	Q1
SN74AHC157NSR	SO	NS	16	2000	330.0	16.4	8.2	10.5	2.5	12.0	16.0	Q1
SN74AHC157PWR	TSSOP	PW	16	2000	330.0	12.4	6.9	5.6	1.6	8.0	12.0	Q1
SN74AHC157PWR	TSSOP	PW	16	2000	330.0	12.4	6.9	5.6	1.6	8.0	12.0	Q1
SN74AHC157PWRG3	TSSOP	PW	16	2000	330.0	12.4	6.9	5.6	1.6	8.0	12.0	Q1
SN74AHC157RGYR	VQFN	RGY	16	3000	330.0	12.4	3.8	4.3	1.5	8.0	12.0	Q1

**TAPE AND REEL BOX DIMENSIONS**


\*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74AHC157DBR	SSOP	DB	16	2000	356.0	356.0	35.0
SN74AHC157DGVR	TVSOP	DGV	16	2000	356.0	356.0	35.0
SN74AHC157DR	SOIC	D	16	2500	353.0	353.0	32.0
SN74AHC157DR	SOIC	D	16	2500	340.5	336.1	32.0
SN74AHC157DR	SOIC	D	16	2500	353.0	353.0	32.0
SN74AHC157NSR	SO	NS	16	2000	356.0	356.0	35.0
SN74AHC157PWR	TSSOP	PW	16	2000	356.0	356.0	35.0
SN74AHC157PWR	TSSOP	PW	16	2000	353.0	353.0	32.0
SN74AHC157PWRG3	TSSOP	PW	16	2000	364.0	364.0	27.0
SN74AHC157RGYR	VQFN	RGY	16	3000	360.0	360.0	36.0

**TUBE**


\*All dimensions are nominal

Device	Package Name	Package Type	Pins	SPQ	L (mm)	W (mm)	T (μm)	B (mm)
5962-9764201Q2A	FK	LCCC	20	55	506.98	12.06	2030	NA
5962-9764201QFA	W	CFP	16	25	506.98	26.16	6220	NA
SN74AHC157N	N	PDIP	16	25	506	13.97	11230	4.32
SN74AHC157N	N	PDIP	16	25	506	13.97	11230	4.32
SNJ54AHC157FK	FK	LCCC	20	55	506.98	12.06	2030	NA
SNJ54AHC157W	W	CFP	16	25	506.98	26.16	6220	NA



# PACKAGE OUTLINE

## NS0016A

### SOP - 2.00 mm max height

SOP



4220735/A 12/2021

#### NOTES:

1. All linear dimensions are in millimeters. Dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.15 mm, per side.
4. This dimension does not include interlead flash. Interlead flash shall not exceed 0.25 mm, per side.

# EXAMPLE BOARD LAYOUT

NS0016A

SOP - 2.00 mm max height

SOP



4220735/A 12/2021

NOTES: (continued)

5. Publication IPC-7351 may have alternate designs.

6. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

# EXAMPLE STENCIL DESIGN

NS0016A

SOP - 2.00 mm max height

SOP



SOLDER PASTE EXAMPLE  
BASED ON 0.125 mm THICK STENCIL  
SCALE:7X

4220735/A 12/2021

NOTES: (continued)

7. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.
8. Board assembly site may have different recommendations for stencil design.

D (R-PDSO-G16)

PLASTIC SMALL OUTLINE



- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - C. Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.006 (0,15) each side.
  - D. Body width does not include interlead flash. Interlead flash shall not exceed 0.017 (0,43) each side.
  - E. Reference JEDEC MS-012 variation AC.



4220204/A 02/2017

NOTES:

1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.15 mm per side.
4. This dimension does not include interlead flash. Interlead flash shall not exceed 0.25 mm per side.
5. Reference JEDEC registration MO-153.



# EXAMPLE BOARD LAYOUT

PW0016A

TSSOP - 1.2 mm max height

SMALL OUTLINE PACKAGE



LAND PATTERN EXAMPLE  
EXPOSED METAL SHOWN  
SCALE: 10X



SOLDER MASK DETAILS

4220204/A 02/2017

NOTES: (continued)

- 6. Publication IPC-7351 may have alternate designs.
- 7. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

# EXAMPLE STENCIL DESIGN

PW0016A

TSSOP - 1.2 mm max height

SMALL OUTLINE PACKAGE



SOLDER PASTE EXAMPLE  
BASED ON 0.125 mm THICK STENCIL  
SCALE: 10X

4220204/A 02/2017

NOTES: (continued)

8. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.
9. Board assembly site may have different recommendations for stencil design.

# DB0016A



# PACKAGE OUTLINE

## SSOP - 2 mm max height

SMALL OUTLINE PACKAGE



4220763/A 05/2022

### NOTES:

1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.15 mm per side.
4. Reference JEDEC registration MO-150.

# EXAMPLE BOARD LAYOUT

DB0016A

SSOP - 2 mm max height

SMALL OUTLINE PACKAGE



LAND PATTERN EXAMPLE  
EXPOSED METAL SHOWN  
SCALE: 10X



4220763/A 05/2022

NOTES: (continued)

- 5. Publication IPC-7351 may have alternate designs.
- 6. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

# EXAMPLE STENCIL DESIGN

DB0016A

SSOP - 2 mm max height

SMALL OUTLINE PACKAGE



SOLDER PASTE EXAMPLE  
BASED ON 0.125 mm THICK STENCIL  
SCALE: 10X

4220763/A 05/2022

NOTES: (continued)

7. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.
8. Board assembly site may have different recommendations for stencil design.

# MECHANICAL DATA

NS (R-PDSO-G\*\*)

PLASTIC SMALL-OUTLINE PACKAGE

14-PINS SHOWN



- NOTES:
- A. All linear dimensions are in millimeters.
  - B. This drawing is subject to change without notice.
  - C. Body dimensions do not include mold flash or protrusion, not to exceed 0,15.

DGV (R-PDSO-G\*\*)

PLASTIC SMALL-OUTLINE

24 PINS SHOWN



- NOTES: A. All linear dimensions are in millimeters.  
 B. This drawing is subject to change without notice.  
 C. Body dimensions do not include mold flash or protrusion, not to exceed 0,15 per side.  
 D. Falls within JEDEC: 24/48 Pins – MO-153  
 14/16/20/56 Pins – MO-194

W (R-GDFP-F16)

CERAMIC DUAL FLATPACK



- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - C. This package can be hermetically sealed with a ceramic lid using glass frit.
  - D. Index point is provided on cap for terminal identification only.
  - E. Falls within MIL STD 1835 GDFP2-F16



## GENERIC PACKAGE VIEW

**FK 20**

**LCCC - 2.03 mm max height**

8.89 x 8.89, 1.27 mm pitch

LEADLESS CERAMIC CHIP CARRIER

This image is a representation of the package family, actual package may vary.  
Refer to the product data sheet for package details.



4229370VA\

# J (R-GDIP-T\*\*)

14 LEADS SHOWN

# CERAMIC DUAL IN-LINE PACKAGE



DIM \ PINS **	14	16	18	20
A	0.300 (7,62) BSC	0.300 (7,62) BSC	0.300 (7,62) BSC	0.300 (7,62) BSC
B MAX	0.785 (19,94)	.840 (21,34)	0.960 (24,38)	1.060 (26,92)
B MIN	—	—	—	—
C MAX	0.300 (7,62)	0.300 (7,62)	0.310 (7,87)	0.300 (7,62)
C MIN	0.245 (6,22)	0.245 (6,22)	0.220 (5,59)	0.245 (6,22)



4040083/F 03/03

- NOTES:
- All linear dimensions are in inches (millimeters).
  - This drawing is subject to change without notice.
  - This package is hermetically sealed with a ceramic lid using glass frit.
  - Index point is provided on cap for terminal identification only on press ceramic glass frit seal only.
  - Falls within MIL STD 1835 GDIP1-T14, GDIP1-T16, GDIP1-T18 and GDIP1-T20.

N (R-PDIP-T\*\*)

PLASTIC DUAL-IN-LINE PACKAGE

16 PINS SHOWN



- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - Falls within JEDEC MS-001, except 18 and 20 pin minimum body length (Dim A).
  - The 20 pin end lead shoulder width is a vendor option, either half or full width.

RGY (R-PVQFN-N16)

PLASTIC QUAD FLATPACK NO-LEAD



4203539-3/1 06/2011

- NOTES:
- All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M-1994.
  - This drawing is subject to change without notice.
  - QFN (Quad Flatpack No-Lead) package configuration.
  - The package thermal pad must be soldered to the board for thermal and mechanical performance.
  - See the additional figure in the Product Data Sheet for details regarding the exposed thermal pad features and dimensions.
  - Pin 1 identifiers are located on both top and bottom of the package and within the zone indicated. The Pin 1 identifiers are either a molded, marked, or metal feature.
  - Package complies to JEDEC MO-241 variation BA.

RGY (R-PVQFN-N16)

PLASTIC QUAD FLATPACK NO-LEAD

**THERMAL INFORMATION**

This package incorporates an exposed thermal pad that is designed to be attached directly to an external heatsink. The thermal pad must be soldered directly to the printed circuit board (PCB). After soldering, the PCB can be used as a heatsink. In addition, through the use of thermal vias, the thermal pad can be attached directly to the appropriate copper plane shown in the electrical schematic for the device, or alternatively, can be attached to a special heatsink structure designed into the PCB. This design optimizes the heat transfer from the integrated circuit (IC).

For information on the Quad Flatpack No-Lead (QFN) package and its advantages, refer to Application Report, QFN/SON PCB Attachment, Texas Instruments Literature No. SLUA271. This document is available at [www.ti.com](http://www.ti.com).

The exposed thermal pad dimensions for this package are shown in the following illustration.



Bottom View

Exposed Thermal Pad Dimensions

4206353-3/P 03/14

NOTE: All linear dimensions are in millimeters

RGY (R-PVQFN-N16)

PLASTIC QUAD FLATPACK NO-LEAD



- NOTES:
- A. All linear dimensions are in millimeters.
  - B. This drawing is subject to change without notice.
  - C. Publication IPC-7351 is recommended for alternate designs.
  - D. This package is designed to be soldered to a thermal pad on the board. Refer to Application Note, Quad Flat-Pack QFN/SON PCB Attachment, Texas Instruments Literature No. SLUA271, and also the Product Data Sheets for specific thermal information, via requirements, and recommended board layout. These documents are available at [www.ti.com](http://www.ti.com) <<http://www.ti.com>>.
  - E. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC 7525 for stencil design considerations.
  - F. Customers should contact their board fabrication site for minimum solder mask web tolerances between signal pads.

## 重要声明和免责声明

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