

## MAX14585/MAX14585A

### 高速USB和音频开关， 可处理负信号并提供高压VBUS检测

#### 概述

MAX14585/MAX14585A是具有高ESD保护的双刀双掷(DPDT)开关，可以切换多路高速(480Mbps) USB和模拟信号(如交流耦合音频信号或视频信号)。这些器件具备便携式电子产品对高性能开关所需的低导通电容( $C_{ON}$ )、低导通电阻( $R_{ON}$ )，内部负电源允许通过低于地电位至-1.8V的音频信号。器件还可处理低速/全速USB信号，工作电压为2.7V至5.5V。

器件具有VBUS检测输入( $V_B$ )，可处理高达28V的电压，一旦检测到有效的VBUS信号( $V_B > V_{BDET}$ )，将自动切换到USB信号通路。当电池过放电时，如果 $V_B$ 大于4.5V，可由 $V_B$ 为器件供电。MAX14585在音频通路具有内部旁路电阻，可减小输出端的咔嗒/噼噓声。

MAX14585/MAX14585A采用节省空间的10引脚、1.4mm x 1.8mm UTQFN封装，工作在-40°C至+85°C温度范围。

#### 应用

蜂窝电话  
PDA和手持设备  
平板PC

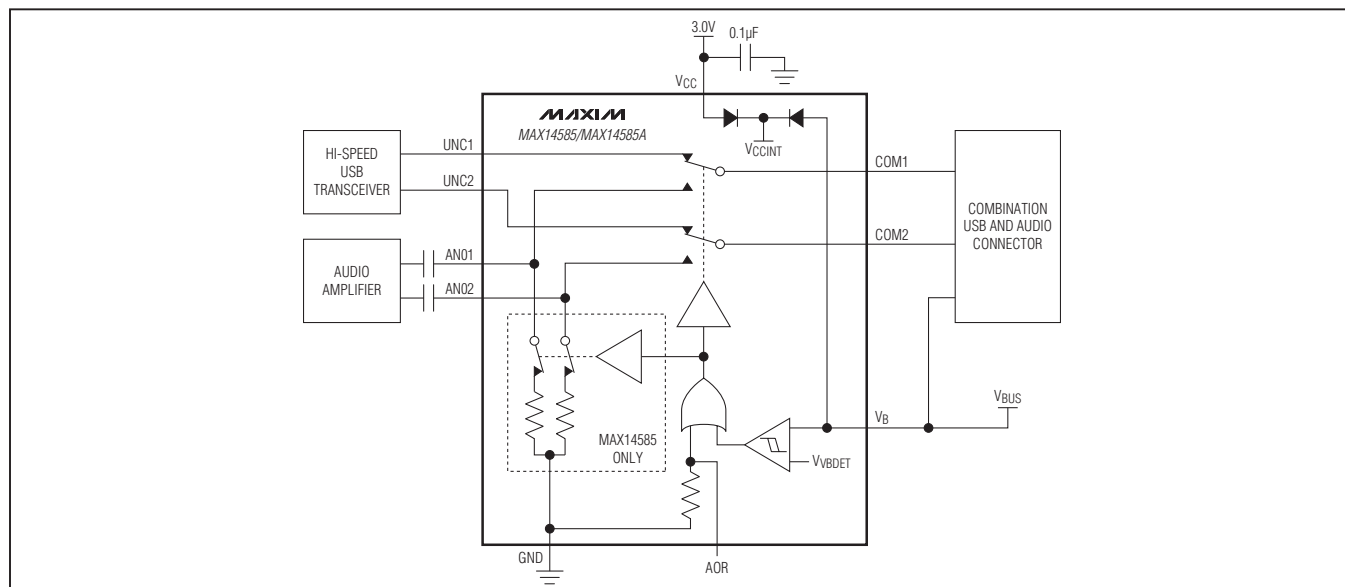
#### 优势和特性

- ◆ 低功耗
  - ◇ 低电源电流：7 $\mu$ A (典型值)
  - ◇ 2.7V至5.5V单电源 $V_{CC}$ 供电
- ◆ 设计灵活
  - ◇ 双电源架构： $V_B$ 和 $V_{CC}$
  - ◇ ANO\_通道优先控制输入
- ◆ 高度集成
  - ◇  $V_B$ 输入可达28V，VBUS检测自动选择UNC\_
  - ◇ 两个通道(UNC\_和ANO\_)均具有低电容特性，支持高速USB
  - ◇ ANO\_通道可无失真通过低至-1.8V的负信号
  - ◇ 3 $\Omega$  (典型值)导通电阻
  - ◇ 960MHz带宽
  - ◇ 音频通道具有0.04% THD+N
  - ◇ COM1、COM2提供 $\pm 15$ kV人体模式(HBM) ESD保护
- ◆ 节省电路板面积
  - ◇ 内部旁路电阻减小咔嗒/噼噓声(MAX14585)
  - ◇ 10引脚、1.4mm x 1.8mm UTQFN封装

订购信息在数据资料的最后给出。

相关型号以及配合该器件使用的推荐产品，请参见：[china.maxim-ic.com/MAX14585.related](http://china.maxim-ic.com/MAX14585.related)。

#### 典型工作电路



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### ABSOLUTE MAXIMUM RATINGS

(Voltages referenced to GND.)

$V_{CC}$ , AOR ..... -0.3V to +6V  
 $V_B$  ..... -0.3V to +30V  
UNC<sub>-</sub>, ANO<sub>-</sub>, COM<sub>-</sub> ( $V_{CC} \geq 2.7V$ ) ... -1.9V to min( $V_{CC} + 0.3V$ , 3.7V)  
UNC<sub>-</sub>, COM<sub>-</sub> ( $V_B \geq 4.5V$ ,  $V_{CC} < 2.7V$ ) ..... -0.3V to +3.7V  
UNC<sub>-</sub>, ANO<sub>-</sub>, COM<sub>-</sub> ( $V_{CC} < 2.7V$ ).. -0.3V to min( $V_{CC} + 0.3V$ , 3.7V)  
UNC<sub>-</sub>, ANO<sub>-</sub>, COM<sub>-</sub> ( $V_{CC} = 0V$ ,  $V_B = 0V$ ) ..... -0.3V to +6V  
Continuous Current into Any Pin .....  $\pm 100mA$

Continuous Power Dissipation ( $T_A = +70^\circ C$ )

UTQFN (derate 7mW/ $^\circ C$  above  $+70^\circ C$ ) ..... 559mW  
Operating Temperature Range .....  $-40^\circ C$  to  $+85^\circ C$   
Junction Temperature Range .....  $-40^\circ C$  to  $+150^\circ C$   
Storage Temperature Range .....  $-65^\circ C$  to  $+150^\circ C$   
Lead Temperature (soldering, 10s) .....  $+300^\circ C$   
Soldering Temperature (reflow) .....  $+260^\circ C$

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

### PACKAGE THERMAL CHARACTERISTICS (Note 1)

UTQFN

Junction-to-Ambient Thermal Resistance ( $\theta_{JA}$ ) ..... 143.2 $^\circ C/W$

Junction-to-Case Thermal Resistance ( $\theta_{JC}$ ) ..... 20.1 $^\circ C/W$

**Note 1:** Package thermal resistances were obtained using the method described in JEDEC specification JESD51-7, using a four-layer board. For detailed information on package thermal considerations, refer to [china.maxim-ic.com/thermal-tutorial](http://china.maxim-ic.com/thermal-tutorial).

### ELECTRICAL CHARACTERISTICS

( $T_A = -40^\circ C$  to  $+85^\circ C$ , unless otherwise noted. Typical values are at  $V_{CC} = 3V$ ,  $T_A = +25^\circ C$ .) (Note 2)

| PARAMETER                                                | SYMBOL                       | CONDITIONS                                                                                                   | MIN  | TYP | MAX                     | UNITS    |
|----------------------------------------------------------|------------------------------|--------------------------------------------------------------------------------------------------------------|------|-----|-------------------------|----------|
| <b>POWER SUPPLY</b>                                      |                              |                                                                                                              |      |     |                         |          |
| Power-Supply Range                                       | $V_{CC}$                     |                                                                                                              | 2.7  |     | 5.5                     | V        |
| Supply Current                                           | $I_{SUPPLY}$                 | $V_{CC} = 4.2V$ , $0V < V_{AOR} < 0.4V$ ,<br>$V_{AOR} \geq 1.4V$                                             |      | 7   | 14                      | $\mu A$  |
| Power-Supply Rejection Ratio                             | PSRR                         | $f = 10kHz$ , $V_{CC} = 3.0 \pm 0.3V$ ,<br>$R_{COM\_} = 50\Omega$                                            |      | 100 |                         | dB       |
| $V_B$ Detect Threshold                                   | $V_{VBDET}$                  | $V_{BUS}$ rising, $V_{CC} \geq 2.7V$                                                                         | 3    | 3.3 | 3.6                     | V        |
| $V_B$ Detect Hysteresis                                  | $V_{VBDET\_H}$               | $V_{BUS}$ falling, $V_{CC} \geq 2.7V$                                                                        |      | 0.2 |                         | V        |
| $V_B$ Detect Leakage Current                             |                              | $V_B = 5.5V$                                                                                                 |      |     | 40                      | $\mu A$  |
| <b>ANALOG SWITCH</b>                                     |                              |                                                                                                              |      |     |                         |          |
| Analog-Signal Range                                      | $V_{UNC\_}$                  | $V_{CC} \geq 2.7V$ for UNC <sub>-</sub>                                                                      | 0    |     | min(3.6V,<br>$V_{CC}$ ) | V        |
|                                                          | $V_{ANO\_}$ ,<br>$V_{COM\_}$ | $V_{CC} \geq 2.7V$ for ANO <sub>-</sub> , COM <sub>-</sub>                                                   | -1.8 |     | min(3.6V,<br>$V_{CC}$ ) |          |
| ANO <sub>-</sub> On-Resistance                           | $R_{ON(NO)}$                 | $V_{CC} = 3V$ , $V_{ANO\_} = -1.5V$ , $+1.5V$<br>$I_{COM\_} = 10mA$                                          |      | 3   | 6                       | $\Omega$ |
| UNC <sub>-</sub> On-Resistance                           | $R_{ON(NC)}$                 | $V_{CC} = 3V$ , $V_{UNC\_} = 0V$ to $V_{CC}$ ,<br>$I_{COM\_} = 10mA$                                         |      | 3   | 6                       | $\Omega$ |
|                                                          |                              | $V_B = 4.5V$ , $V_{CC} = 0V$ to $5.5V$ , $V_{UNC\_} = 0V$<br>to $2.5V$ , $V_{AOR} = 0V$ , $I_{COM\_} = 10mA$ |      | 3   | 6                       |          |
| ANO <sub>-</sub> On-Resistance Match<br>Between Channels | $\Delta R_{ON(NO)}$          | $V_{CC} = 3V$ , $V_{ANO\_} = 0V$ , $I_{COM\_} = 10mA$<br>(Note 3)                                            |      | 0.2 |                         | $\Omega$ |

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## ELECTRICAL CHARACTERISTICS (continued)

(T<sub>A</sub> = -40°C to +85°C, unless otherwise noted. Typical values are at V<sub>CC</sub> = 3V, T<sub>A</sub> = +25°C.) (Note 2)

| PARAMETER                                 | SYMBOL                 | CONDITIONS                                                                                               |                                                                                                                                                                                                  | MIN  | TYP  | MAX  | UNITS      |
|-------------------------------------------|------------------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|------------|
| UNC_ On-Resistance Match Between Channels | $\Delta R_{ON(NC)}$    | V <sub>CC</sub> = 3V, V <sub>UNC_</sub> = 0V, I <sub>COM_</sub> = 10mA (Note 3)                          |                                                                                                                                                                                                  |      | 0.2  |      | $\Omega$   |
| ANO_ On-Resistance Flatness               | R <sub>FLAT(NO)</sub>  | V <sub>CC</sub> = 3V, I <sub>COM_</sub> = 10mA, V <sub>ANO_</sub> = -1.5V to +1.5V (Note 4)              |                                                                                                                                                                                                  |      | 0.04 | 0.2  | $\Omega$   |
| UNC_ On-Resistance Flatness               | R <sub>FLAT(NC)</sub>  | V <sub>CC</sub> = 3V, I <sub>COM_</sub> = 10mA, V <sub>UNC_</sub> = 0V to V <sub>CC</sub> (Note 4)       |                                                                                                                                                                                                  |      | 0.04 | 0.2  | $\Omega$   |
| Shunt Switch Resistance                   | R <sub>SH</sub>        | I <sub>ANO_</sub> = 2mA, V <sub>CC</sub> ≥ 2.7V                                                          |                                                                                                                                                                                                  |      | 700  | 1300 | $\Omega$   |
| AOR Pulldown Resistor                     | R <sub>AOR</sub>       |                                                                                                          |                                                                                                                                                                                                  | 250  |      | 1200 | k $\Omega$ |
| UNC_ Off-Leakage Current                  | I <sub>UNC_(OFF)</sub> | Switch open, V <sub>UNC_</sub> = 2.5V, 0V<br>V <sub>COM_</sub> = -1.5V, 2.5V, V <sub>CC</sub> = 3V       |                                                                                                                                                                                                  | -100 |      | +100 | nA         |
| ANO_ Off-Leakage Current                  | I <sub>ANO_(OFF)</sub> | MAX14585A, switch open, V <sub>ANO_</sub> = 2.5V, 0V, V <sub>COM_</sub> = 0V, 2.5V, V <sub>CC</sub> = 3V |                                                                                                                                                                                                  | -100 |      | +100 | nA         |
| COM_ Off-Leakage Current                  | I <sub>COM_(OFF)</sub> | V <sub>CC</sub> = 0V, V <sub>COM_</sub> = 3.6V,<br>V <sub>UNC_</sub> = V <sub>ANO_</sub> = unconnected   |                                                                                                                                                                                                  | -10  |      | +800 | $\mu$ A    |
| COM_ On-Leakage Current                   | I <sub>COM_(ON)</sub>  | USB mode                                                                                                 | V <sub>CC</sub> = 3V, V <sub>ANO_</sub> = 0V, 2.5V, unconnected, V <sub>COM_</sub> = 0V, 2.5V                                                                                                    | -200 |      | +200 | nA         |
|                                           |                        | Audio mode                                                                                               | V <sub>CC</sub> = 3V, V <sub>UNC_</sub> = 0V, 2.5V, unconnected, V <sub>COM_</sub> = -1.5V, 2.5V                                                                                                 | -200 |      | +200 | nA         |
| Turn-On Time                              | t <sub>ON</sub>        | ANO_ to COM_, Figure 1                                                                                   | V <sub>CC</sub> = 3V, V <sub>ANO_</sub> = 1.5V, R <sub>L</sub> = 50 $\Omega$ ; V <sub>AOR</sub> = 0V, V <sub>B</sub> = 0V to 5V or V <sub>B</sub> = 5V, V <sub>AOR</sub> = 0V to V <sub>CC</sub> |      | 45   | 120  | $\mu$ s    |
|                                           |                        | UNC_ to COM_, Figure 1                                                                                   | V <sub>CC</sub> = 3V, V <sub>UNC_</sub> = 1.5V, R <sub>L</sub> = 50 $\Omega$ ; V <sub>AOR</sub> = 0V, V <sub>B</sub> = 0V to 5V                                                                  |      | 45   | 120  | $\mu$ s    |
| Turn-Off Time                             | t <sub>OFF</sub>       | ANO_ from COM_, Figure 1                                                                                 | V <sub>CC</sub> = 3V, V <sub>ANO_</sub> = 1.5V, R <sub>L</sub> = 50 $\Omega$ ; V <sub>AOR</sub> = 0V, V <sub>B</sub> = 0V to 5V                                                                  |      | 8    | 40   | $\mu$ s    |
|                                           |                        | UNC_ from COM_, Figure 1                                                                                 | V <sub>CC</sub> = 3V, V <sub>UNC_</sub> = 1.5V, R <sub>L</sub> = 50 $\Omega$ ; V <sub>AOR</sub> = 0V, V <sub>B</sub> = 0V to 5V or V <sub>B</sub> = 5V, V <sub>AOR</sub> = 0V to V <sub>CC</sub> |      | 8    | 40   | $\mu$ s    |
| Break-Before-Make Time Delay              | t <sub>D</sub>         | R <sub>L</sub> = 50 $\Omega$ , time delay between one side of the switch open and the other side closed  |                                                                                                                                                                                                  |      | 28   |      | $\mu$ s    |
| Output Skew (Same Switch)                 | t <sub>SK(P)</sub>     | Figure 2                                                                                                 |                                                                                                                                                                                                  |      | 40   |      | ps         |
| Output Skew Between Switches              | t <sub>SK(O)</sub>     | Figure 2                                                                                                 |                                                                                                                                                                                                  |      | 40   |      | ps         |
| ANO_ Off-Capacitance                      | C <sub>NO_(OFF)</sub>  | V <sub>ANO_</sub> = 0.5V <sub>P-P</sub> , DC bias = 0V, f = 1MHz                                         |                                                                                                                                                                                                  |      | 2.5  |      | pF         |
| UNC_ Off-Capacitance                      | C <sub>NC_(OFF)</sub>  | V <sub>UNC_</sub> = 0.5V <sub>P-P</sub> , DC bias = 0V, f = 1MHz                                         |                                                                                                                                                                                                  |      | 2.5  |      | pF         |

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## ELECTRICAL CHARACTERISTICS (continued)

( $T_A = -40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ , unless otherwise noted. Typical values are at  $V_{CC} = 3\text{V}$ ,  $T_A = +25^{\circ}\text{C}$ .) (Note 2)

| PARAMETER                            | SYMBOL                | CONDITIONS                                                                                                     | MIN | TYP   | MAX | UNITS |
|--------------------------------------|-----------------------|----------------------------------------------------------------------------------------------------------------|-----|-------|-----|-------|
| On-Capacitance                       | C <sub>COM_(ON)</sub> | V <sub>COM_</sub> = 0.5V <sub>P-P</sub> , DC bias = 0V, f = 240MHz, R <sub>L</sub> = 50Ω                       |     | 6.7   |     | pF    |
| AC PERFORMANCE                       |                       |                                                                                                                |     |       |     |       |
| ANO_ -3dB Bandwidth                  | BW <sub>NO</sub>      | R <sub>S</sub> = R <sub>L</sub> = 50Ω, V <sub>ANO_</sub> = 0dBm, Figure 3                                      |     | 960   |     | MHz   |
| UNC_ -3dB Bandwidth                  | BW <sub>NC</sub>      | R <sub>S</sub> = R <sub>L</sub> = 50Ω, V <sub>UNC_</sub> = 0dBm, Figure 3                                      |     | 960   |     | MHz   |
| Off-Isolation                        |                       | f = 100kHz, V <sub>COM_</sub> = 1V <sub>RMS</sub> , R <sub>L</sub> = 50Ω, Figure 3                             |     | -84   |     | dB    |
| Crosstalk                            |                       | f = 100kHz, V <sub>COM_</sub> = 1V <sub>RMS</sub> , R <sub>L</sub> = 50Ω, Figure 3 (Note 5)                    |     | -86   |     | dB    |
| Total Harmonic Distortion Plus Noise | THD+N                 | ANO_ to COM_, f = 20Hz to 20kHz, V <sub>COM_</sub> = 0.5V <sub>P-P</sub> , DC bias = 0V, R <sub>L</sub> = 600Ω |     | 0.042 |     | %     |
| LOGIC INPUT                          |                       |                                                                                                                |     |       |     |       |
| AOR Input Logic-High                 | V <sub>IH</sub>       | V <sub>CC</sub> ≥ 2.7V                                                                                         | 1.4 |       |     | V     |
| AOR Input Logic-Low                  | V <sub>IL</sub>       | V <sub>CC</sub> ≥ 2.7V                                                                                         |     |       | 0.4 | V     |
| AOR Input Leakage Current            | I <sub>IN</sub>       | V <sub>AOR</sub> = 0V or V <sub>CC</sub> , V <sub>CC</sub> ≥ 2.7V                                              | -22 |       | +22 | μA    |
| ESD PROTECTION                       |                       |                                                                                                                |     |       |     |       |
| COM1, COM2                           |                       | Human Body Model                                                                                               | ±15 |       |     | kV    |
|                                      |                       | IEC 61000-4-2 Air Gap Discharge                                                                                | ±8  |       |     |       |
|                                      |                       | IEC 61000-4-2 Contact Discharge                                                                                | ±8  |       |     |       |
| All Other Pins                       |                       | Human Body Model                                                                                               | ±2  |       |     | kV    |

**Note 2:** All devices are 100% production tested at  $T_A = +25^{\circ}\text{C}$ . Limits over the operating temperature range are guaranteed by design; not production tested.

**Note 3:**  $\Delta R_{\text{ON}}(\text{MAX}) = \text{ABS}(R_{\text{ON}}(\text{CH1}) - R_{\text{ON}}(\text{CH2}))$ .

**Note 4:** Flatness is defined as the difference between the maximum and minimum value of on-resistance, as measured over specified analog-signal ranges.

**Note 5:** Between two switches.

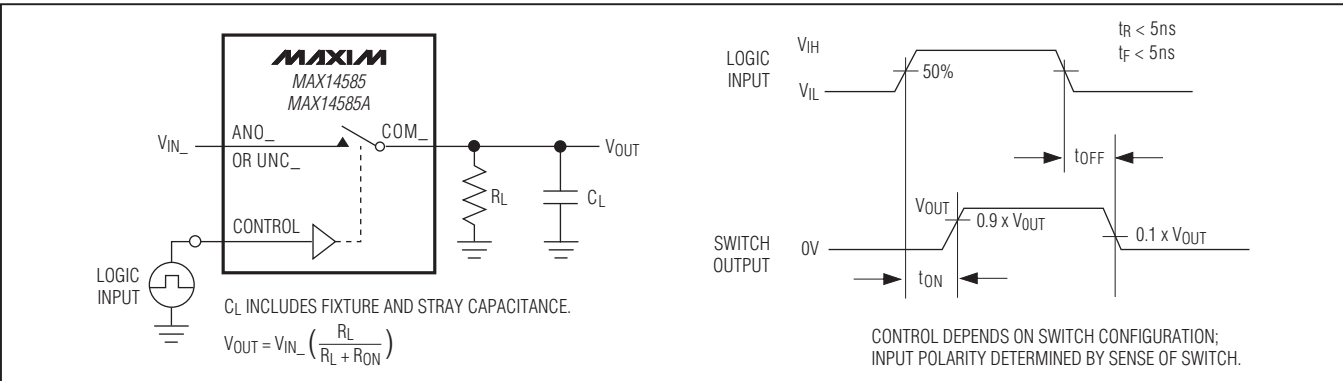


图1. 开关时间

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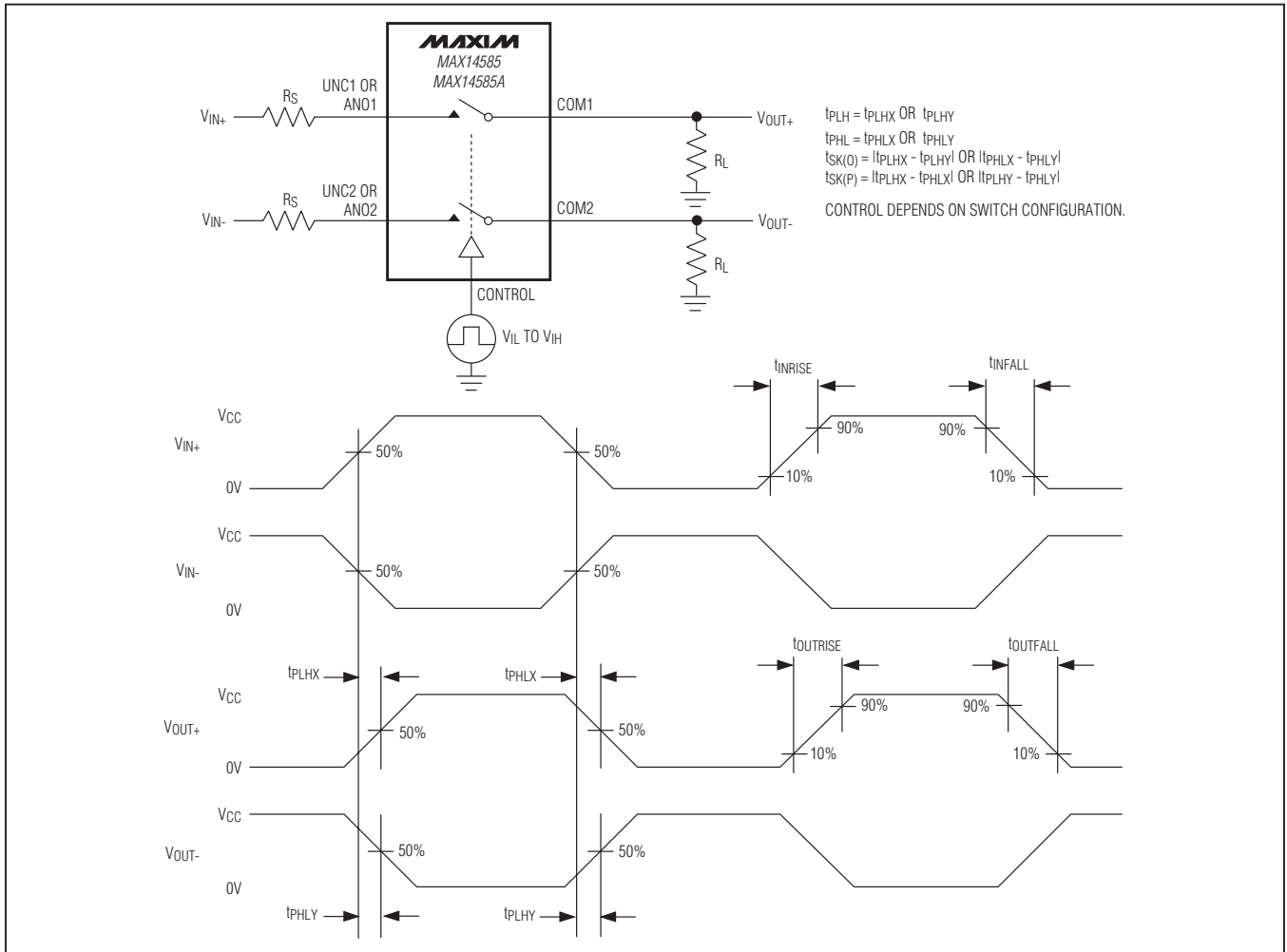


图2. 输出延迟

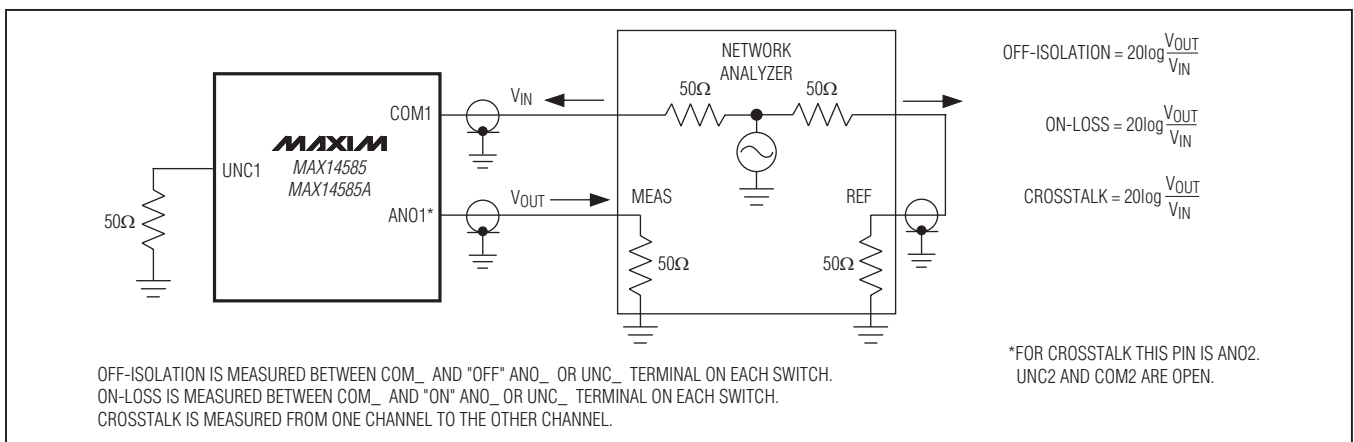


图3. 导通损耗、关闭隔离和串扰

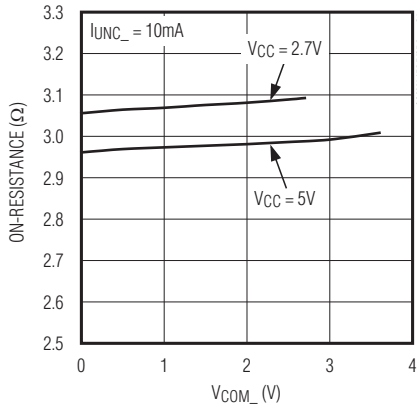
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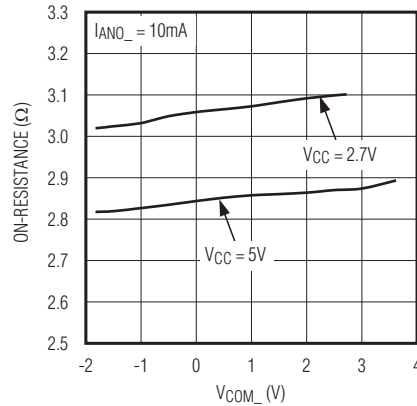
典型工作特性

( $V_{CC} = 3.0V$ ,  $T_A = +25^\circ C$ , unless otherwise noted.)

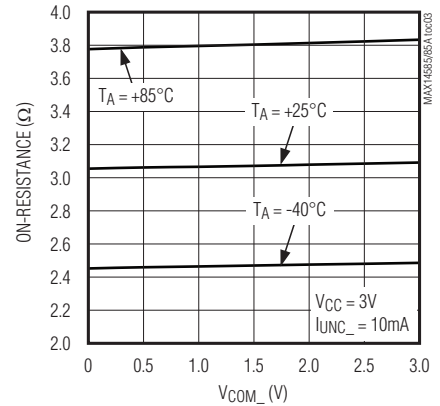
UNC\_ON-RESISTANCE vs. COM\_VOLTAGE



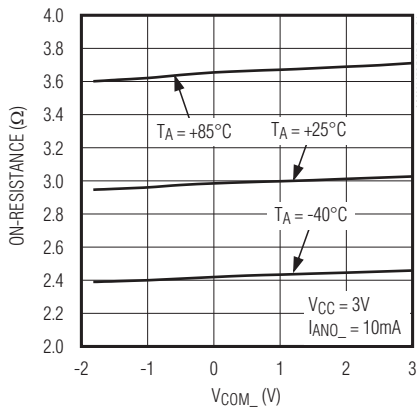
ANO\_ON-RESISTANCE vs. COM\_VOLTAGE



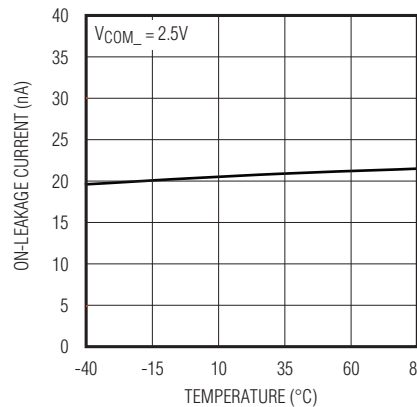
UNC\_ON-RESISTANCE vs. COM\_VOLTAGE



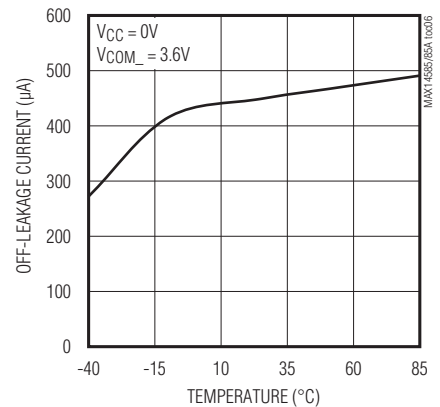
ANO\_ON-RESISTANCE vs. COM\_VOLTAGE



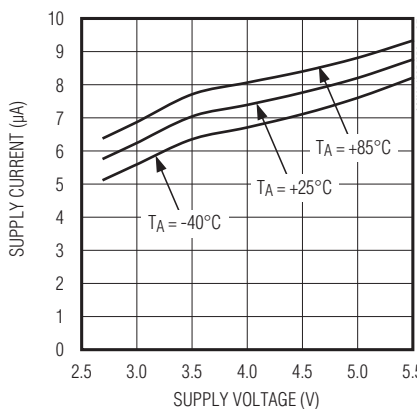
COM\_ON-LEAKAGE CURRENT  
vs. TEMPERATURE



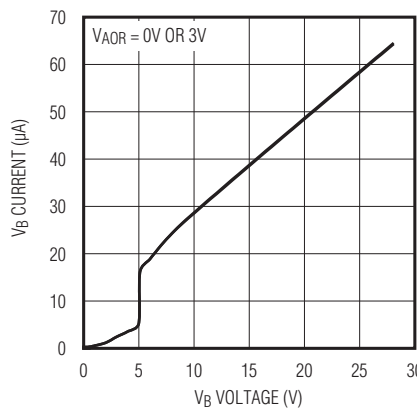
COM\_OFF-LEAKAGE CURRENT  
vs. TEMPERATURE



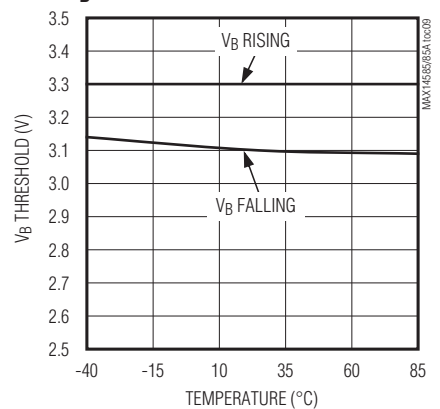
SUPPLY CURRENT vs. SUPPLY VOLTAGE



$V_B$  SUPPLY CURRENT vs. SUPPLY VOLTAGE



$V_B$  DETECT THRESHOLD vs. TEMPERATURE



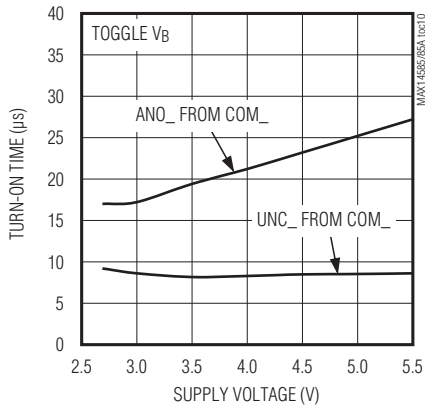
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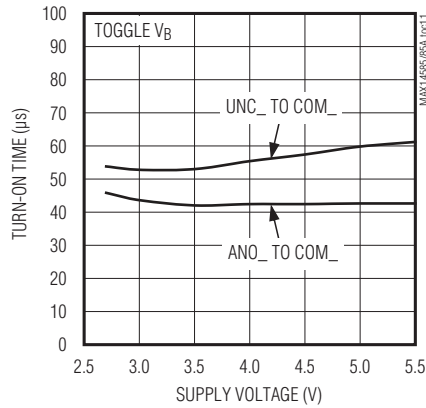
典型工作特性(续)

( $V_{CC} = 3.0V$ ,  $T_A = +25^\circ C$ , unless otherwise noted.)

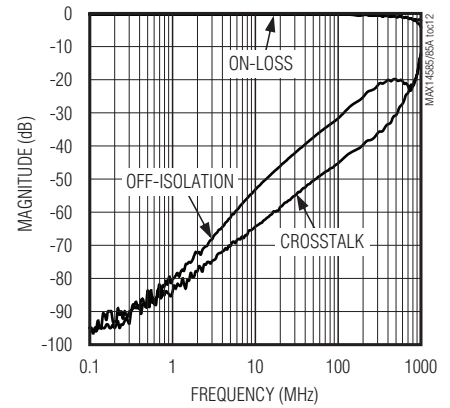
TURN-OFF TIME vs. SUPPLY VOLTAGE



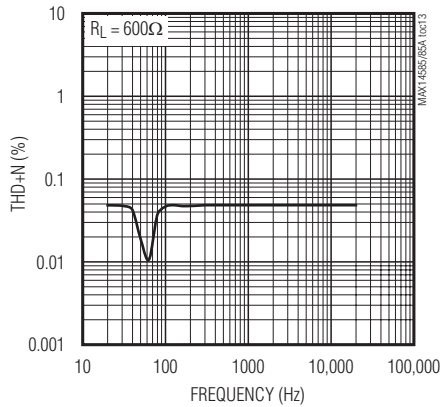
TURN-ON TIME vs. SUPPLY VOLTAGE



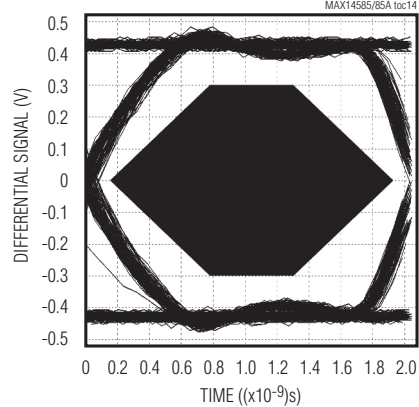
FREQUENCY RESPONSE



TOTAL HARMONIC DISTORTION PLUS NOISE  
vs. FREQUENCY



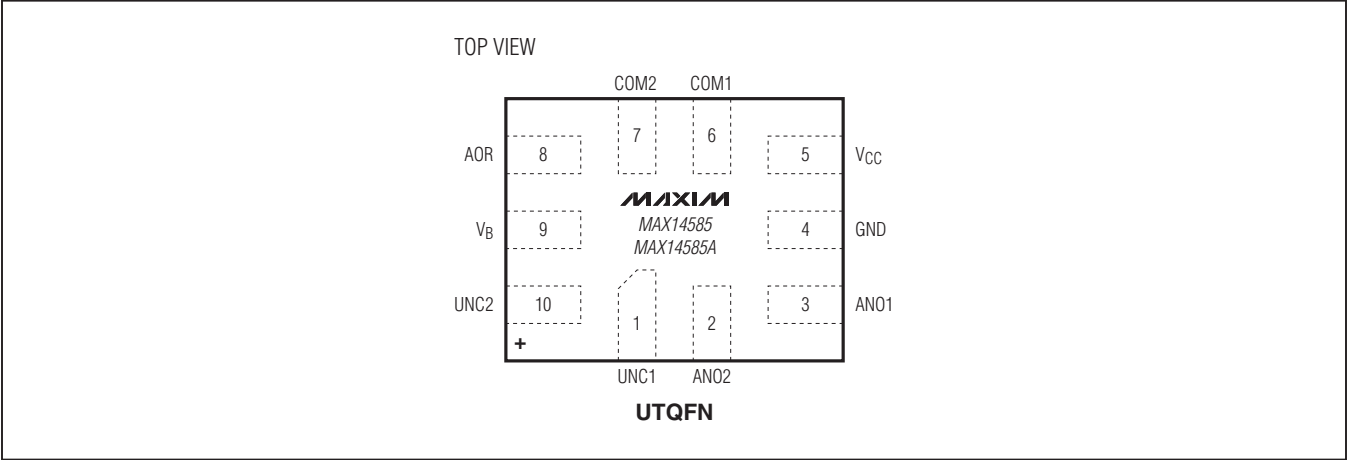
UNC\_ EYE DIAGRAM



# MAX14585/MAX14585A

高速USB和音频开关，  
可处理负信号并提供高压VBUS检测

## 引脚配置



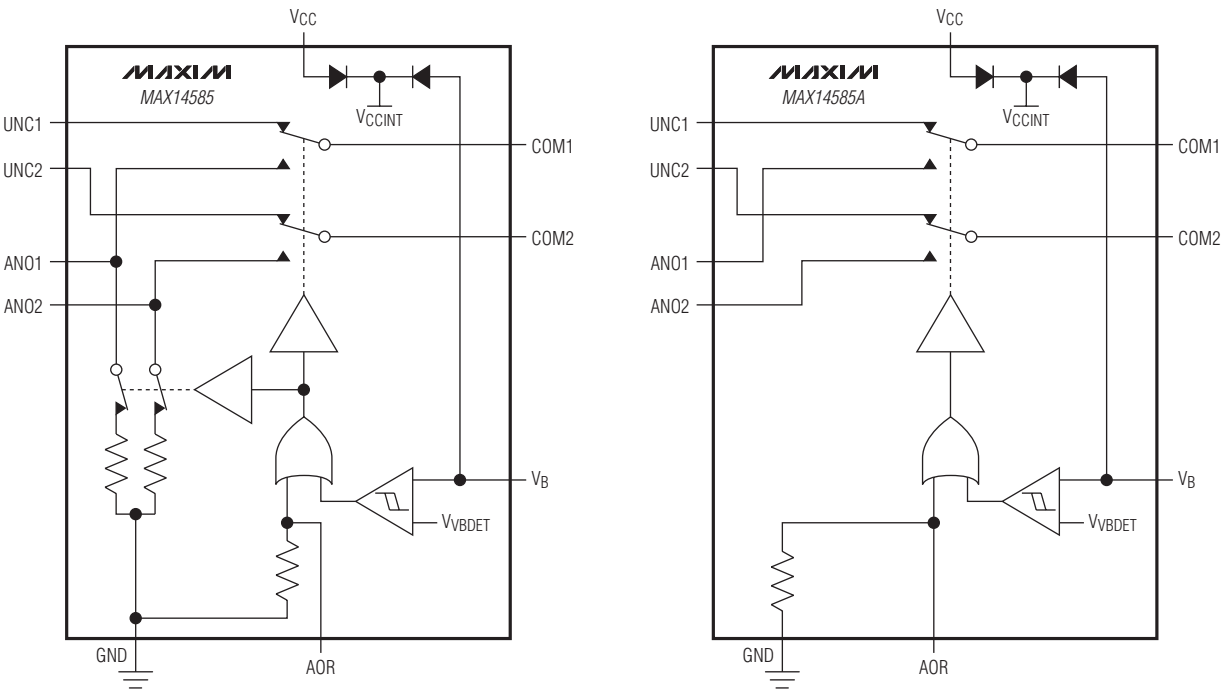
## 引脚说明

| 引脚 | 名称              | 功能                                                                                      |
|----|-----------------|-----------------------------------------------------------------------------------------|
| 1  | UNC1            | USB输入1，常闭端子，用于开关1。                                                                      |
| 2  | ANO2            | 音频输入2，常开端子，用于开关2。                                                                       |
| 3  | ANO1            | 音频输入1，常开端子，用于开关1。                                                                       |
| 4  | GND             | 地。                                                                                      |
| 5  | V <sub>CC</sub> | 正电源输入，利用0.1μF电容将V <sub>CC</sub> 旁路至GND，电容尽量靠近器件放置。                                      |
| 6  | COM1            | 公共端，用于开关1。                                                                              |
| 7  | COM2            | 公共端，用于开关2。                                                                              |
| 8  | AOR             | 音频屏蔽输入，将AOR驱动为低电平时，V <sub>B</sub> 控制开关；将AOR驱动为高电平时，COM_连接至ANO_。AOR具有内部电阻下拉至GND。         |
| 9  | V <sub>B</sub>  | V <sub>BUS</sub> 检测输入，如果V <sub>B</sub> ≥ V <sub>BDET</sub> ，COM_连接至UNC_；否则，COM_连接至ANO_。 |
| 10 | UNC2            | USB输入2，常闭端子，用于开关2。                                                                      |

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功能框图/真值表



| MAX14585/MAX14585A  |     |                  |                  | MAX14585  |
|---------------------|-----|------------------|------------------|-----------|
| V <sub>B</sub>      | AOR | UNC <sub>-</sub> | ANO <sub>-</sub> | ANO_SHUNT |
| > V <sub>BDET</sub> | 0   | ON               | OFF              | ON        |
| < V <sub>BDET</sub> | 0   | OFF              | ON               | OFF       |
| X                   | 1   | OFF              | ON               | OFF       |

X = DON'T CARE

## 详细说明

MAX14585/MAX14585A为单通道DPDT开关，具有较高的ESD保护，工作在2.7V至5.5V，设计用于切换高速USB信号和交流耦合模拟信号。这些开关具备高性能切换应用所需的低导通电容(C<sub>ON</sub>)和低导通电阻(R<sub>ON</sub>)，满足USB低速和全速信号的切换要求。模拟通道可处理负信号，可失真通过低于地电位的信号。

## 模拟信号电平

器件支持双向工作，允许ANO<sub>-</sub>、UNC<sub>-</sub>和COM<sub>-</sub>配置为输入或输出。注意，UNC<sub>-</sub>和ANO<sub>-</sub>仅提供最高±2kV (HBM)的ESD保护，作为输出端使用时，可能需要额外的ESD保护。器件内部的电荷泵产生负电源，V<sub>CC</sub>电源高于2.7V时，允许低至-1.8V的负模拟信号通过ANO<sub>-</sub>。因此，在单电源供电的条件下可以通过低于地电位的交流耦合信号。

# MAX14585/MAX14585A

## 高速USB和音频开关， 可处理负信号并提供高压VBUS检测

### 应用信息

$V_{CC}$ 低于2.7V且 $V_B$ 低于4.5V时，开关可接受0至3.6V的信号，但此时开关不再按照[功能框图/真值表](#)进行切换。

#### $V_{BUS}$ 检测输入

器件具有 $V_{BUS}$ 检测输入( $V_B$ )， $V_B$ 超过 $V_{BUS}$ 检测门限( $V_{BDET}$ )时，将COM\_连接至UNC\_。如果应用中始终连接 $V_{BUS}$ ，只要音频屏蔽输入(AOR)驱动为高电平，则将ANO\_连接至COM\_ (见[功能框图/真值表](#))；AOR驱动为低电平时，则由 $V_B$ 控制开关位置。满摆幅驱动AOR可以将功耗降至最低。

$V_B$ 输入能够处理高达28V电压，用于较高 $V_{BUS}$ 的环境。如果由于某种原因(例如电池耗尽)造成 $V_{CC}$ 掉电，如果 $V_B$ 高于4.5V，则由 $V_B$ 供电。

#### 咔嗒/噼噗声抑制(MAX14585)

MAX14585的700 $\Omega$  (典型值)开关旁路电阻自动对ANO\_端的所有电容(未连接至COM\_时)放电，可减小在USB与音频源之间切换时产生的咔嗒/噼噗声。

#### 增强ESD保护

器件所有引脚都具有高达 $\pm 2\text{kV}$  (HBM)的ESD保护，避免器件处理和组装期间由于受到静电冲击而损坏。COM1和COM2提供增强ESD防护，可承受高达 $\pm 15\text{kV}$  (HBM)静电冲击。ESD保护架构在正常工作模式，甚至器件断电情况下，均可承受较高的ESD。发生ESD冲击后，器件可继续工作，不会闭锁。

#### ESD测试条件

ESD性能依赖于各种条件。如需有关测试配置、测试方法及测试结果的可靠性报告，请联系Maxim。

#### 人体模式

[图4](#)所示为HBM测试模型，[图5](#)所示为对低阻放电时产生的电流波形。该模型包括一个100pF电容，首先将其充电至所要求的ESD电压，然后通过1.5k $\Omega$ 电阻对器件放电。

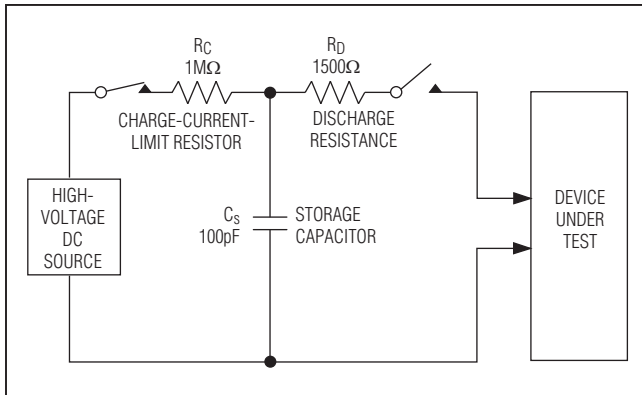


图4. 人体模式ESD测试模型

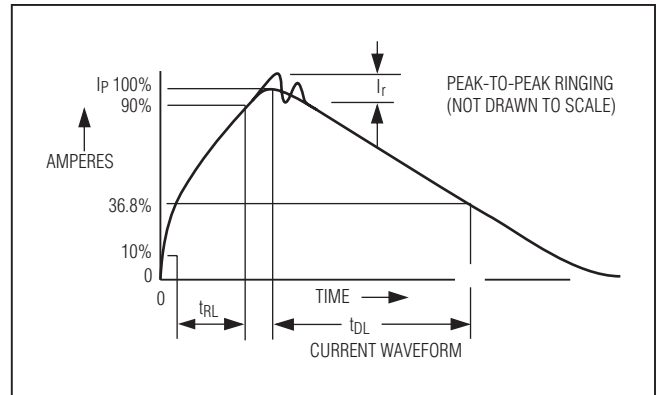


图5. 人体模式电流波形

# MAX14585/MAX14585A

## 高速USB和音频开关， 可处理负信号并提供高压VBUS检测

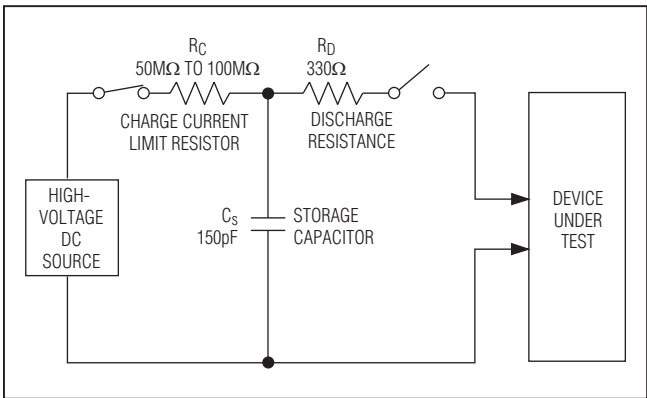


图6. IEC 61000-4-2 ESD测试模型

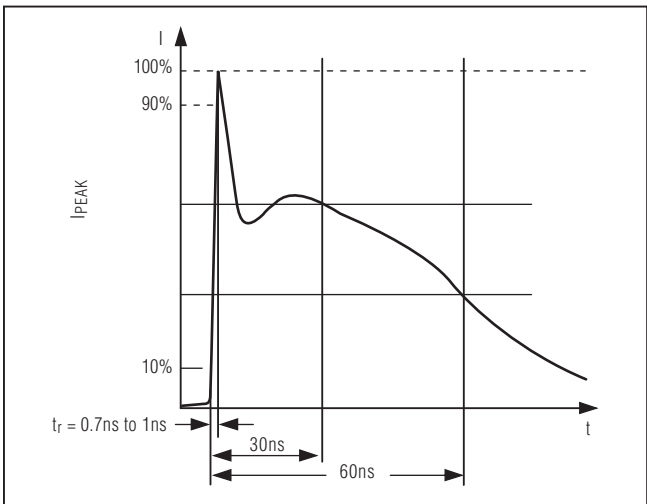


图7. IEC 61000-4-2 ESD发生器电流波形

### IEC 61000-4-2

IEC 61000-4-2标准涵盖了最终产品的ESD测试和性能，并非针对集成电路。采用HBM和IEC 61000-4-2测试的主要区别是IEC 61000-4-2的峰值电流较高，这是因为IEC 61000-4-2模型中的串联电阻较低。所以，按照IEC 61000-4-2标准测试的ESD电压通常低于HBM测试电压。[图6](#)所示为IEC 61000-4-2模型，[图7](#)所示为±8kV、IEC 61000-4-2、4级、ESD接触放电模式的电流波形。

### 布局

高速USB要求严谨的PCB布局，采用45Ω单端/90Ω差分、阻抗受控、长度相同的匹配走线。确保旁路电容尽量靠近器件放置，尽可能采用大面积接地。

### 订购信息/选型指南

| PART           | TOP MARK | SHUNT RESISTOR | PIN-PACKAGE |
|----------------|----------|----------------|-------------|
| MAX14585EVB+T  | AAY      | Yes            | 10 UTQFN    |
| MAX14585AEVB+T | AAZ      | No             | 10 UTQFN    |

注：所有器件均可工作在-40℃至+85℃温度范围。  
+表示无铅(Pb)/符合RoHS标准的封装。  
T = 卷带包装。

### 芯片信息

PROCESS: BiCMOS

### 封装信息

如需最近的封装外形信息和焊盘布局(占位面积)，请查询[china.maxim-ic.com/packages](http://china.maxim-ic.com/packages)。请注意，封装编码中的“+”、“#”或“-”仅表示RoHS状态。封装图中可能包含不同的尾缀字符，但封装图只与封装有关，与RoHS状态无关。

| 封装类型     | 封装编码       | 外形编号                    | 焊盘布局编号                  |
|----------|------------|-------------------------|-------------------------|
| 10 UTQFN | V101A1CN+1 | <a href="#">21-0028</a> | <a href="#">90-0287</a> |

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修订历史

| 修订号 | 修订日期 | 说明    | 修改页 |
|-----|------|-------|-----|
| 0   | 5/11 | 最初版本。 | —   |

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