# *高速、低压、双通道、双刀双掷模拟开关*

**UM3670 *QFN16 3.0×3.0***
**UM3670A *QFN16 2.6×1.8***

## 描述

UM3670/3670A是一款高速、双通道双刀双掷（DPDT）模拟开关，采用+1.8V至+5.5V单电源供电。该器件具有带宽高（300MHz）、导通电阻低（5Ω典型值）、串扰低的特点，为视频源之间的切换提供了高性能、低成本的解决方案，采用无铅QFN16封装。

## 应用

- 通信系统
- 手机
- 便携式仪表
- 音频信号路由
- 音频和视频切换
- PCMCIA 卡
- 电脑外设
- 调制解调器
- 掌上电脑

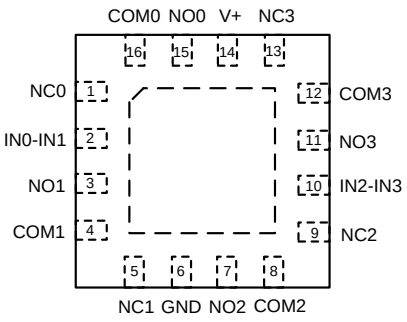
## 特性

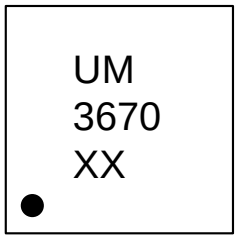
- 高带宽：300MHz
- 低导通电阻：5Ω (典型值)
- 单电源供电：1.8V 至 5.5V
- 断电保护：当 $V_{CC}$=0 时，输入信号可承受高达 5V 电压
- 快速开关时间
- 支持轨到轨操作
- 功耗：0.5μW (典型值)
- 兼容 TTL/CMOS 电平
- 低串扰：-60dB (输入信号频率为 10MHz)
- 小型封装：
  UM3670：QFN16 3.0×3.0
  UM3670A：QFN16 2.6×1.8

## 引脚配置

## 俯视图

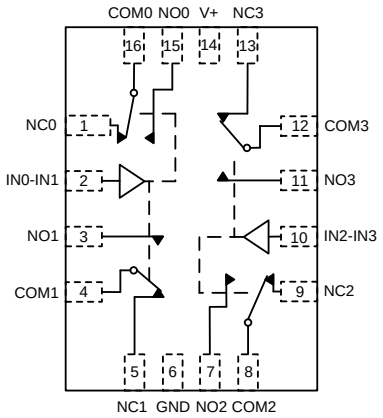
**(Top View)**

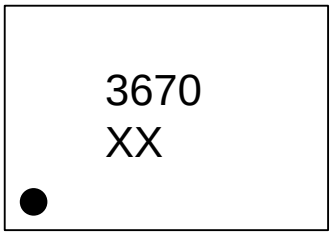



**XX: Week Code**
**UM3670**
**QFN16 3.0×3.0**

**(Top View)**




**XX: Week Code**
**UM3670A**
**QFN16 2.6×1.8**

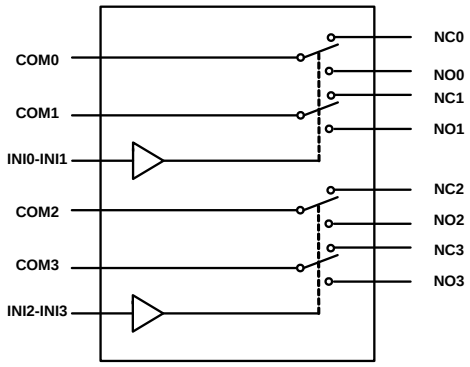
## Order Information

| Part Number | Packaging Type | Marking Code | Shipping Qty |
|---|---|---|---|
| UM3670 | QFN16 3.0×3.0 | UM3670 | 3000pcs/13 Inch Tape & Reel |
| UM3670A | QFN16 2.6×1.8 | 3670 | 3000pcs/7 Inch Tape & Reel |

## Pin Description

| Name | Function |
|---|---|
| NC0, NC1, NC2, NC3, NO0, NO1, NO2, NO3 | Analog I/O |
| IN0_IN1, IN2_IN3 | Select Input |
| COM0, COM1, COM2, COM3 | Analog I/O |
| GND | Ground |
| $V_+$ | Power Supply |

## Block Diagram




## Function Table

| IN0-IN1 | Function | |
|---|---|---|
| | NC0&NC1 | NO0&NO1 |
| 0 | ON | OFF |
| 1 | OFF | ON |

| IN2-IN3 | Function | |
|---|---|---|
| | NC2&NC3 | NO2&NO3 |
| 0 | ON | OFF |
| 1 | OFF | ON |

## Absolute Maximum Ratings

| Symbol | Parameter | Limit | Unit |
|---|---|---|---|
| $V_+$ | Supply Voltage | -0.3 to +6.0 | V |
| $V_S$ | COM_, NC_, NO_ Input Voltage | -0.3 to $V_+$+0.3 | |
| IN | Select Input Voltage | -0.3 to $V_+$+0.3 | |
| Io | Continuous Current | ±200 | mA |
| $T_O$ | Operating Temperature Range | -40 to +85 | ℃ |
| $T_J$ | Junction Temperature | +150 | |
| $T_{STG}$ | Storage Temperature Range | -65 to +150 | |
| $T_L$ | Lead Temperature for Soldering 10 Seconds | +260 | |
| ESD | ESD Method 3015.7 | ＞4000 | V |

## Electrical Characteristics

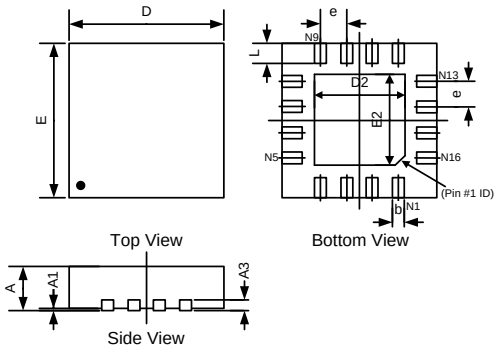
(Over the Operating Range, $V_+$=+5V ±10%, $T_A$=-40 ℃ to +85 ℃.)

| Symbol | Parameter | Test Conditions | Limits (-40 ℃ to 85 ℃) | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min | Typ | Max | |
| **DC ELECTRICAL CHARACTERISTICS** | | | | | | |
| $V_{ANALOG}$ | Analog Signal Range | | 0 | | V+ | V |
| $R_{ON}$ | On-Resistance | $V_+$=4.5V,$V_I$=1.0V, $I_{ON}$=13mA | | 5 | 9 | Ω |
| | | $V_+$=4.5V,$V_I$=2.0V, $I_{ON}$=26mA | | 5 | 10 | Ω |
| $I_{CC}$ | Quiescent Power Supply Current | $V_+$=5.5V, $V_{IN}$=GND or 5V | | 0.1 | 1 | μA |
| $I_{CCT}$ | Transience Power Supply Current | $V_+$=4.3V, $V_{IN}$=1.8V | | 11 | 20 | μA |
| △ICC | Supply Current per Input @ TTL HIGH | $V_+$=5.5V, $V_{IN}$=3.4V | | 6 | 15 | μA |
| $I_{IH}$ | Input High Current | $V_+$=5.5V, $V_{IN}$=$V_+$ | | | ±1 | μA |
| $I_{IL}$ | Input Low Current | $V_+$=5.5V, $V_{IN}$=GND | | | ±1 | μA |
| $I_O$ | Analog Output Leakage Current | 0≤NO, NC or COM≤$V_+$, Switch OFF | | | ±1 | μA |
| $V_{IH}$ | Input High Voltage | $V_+$=+5V | 2.5 | | | V |
| | | $V_+$=+3.3V | 1.65 | | | V |
| | | $V_+$=+2.5V | 1.25 | | | V |
| | | $V_+$=+1.8V | 0.9 | | | V |
| $V_{IL}$ | Input Low Voltage | $V_+$=+5V | | | 0.8 | V |
| | | $V_+$=+3.3V | | | 0.8 | V |
| | | $V_+$=+2.5V | | | 0.4 | V |
| | | $V_+$=+1.8V | | | 0.4 | V |
| $V_{HYS}$ | Input Hysteresis at Control Pins | | | 200 | | mV |
| **DYNAMIC CHARACTERISTICS** | | | | | | |
| $t_{ON}$ | Turn On Time | $R_L$=50Ω, $C_L$=20pF | | 15 | 20 | ns |
| $t_{OFF}$ | Turn Off Time | $R_L$=50Ω, $C_L$=20pF | | 6 | 10 | ns |
| $V_{ISO}$ | Off Isolation | $R_L$=50Ω, f=10MHz | | -55 | | dB |
| $V_{CT}$ | Crosstalk | $R_L$=50Ω, f=10MHz | | -60 | | dB |
| BW | -3dB Bandwidth | $R_L$=50Ω | | 300 | | MHz |
| $C_{IN}$ | Input/Enable Capacitance | $V_{IN}$=0V, f=1MHz | | 6 | | pF |
| $C_{OFF}$ | Switch Off Capacitance | $V_{IN}$=0V, f=1MHz | | 9 | | pF |
| $C_{ON}$ | Switch On Capacitance | $V_{IN}$=0V, f=1MHz | | 18 | | pF |

## Package Information

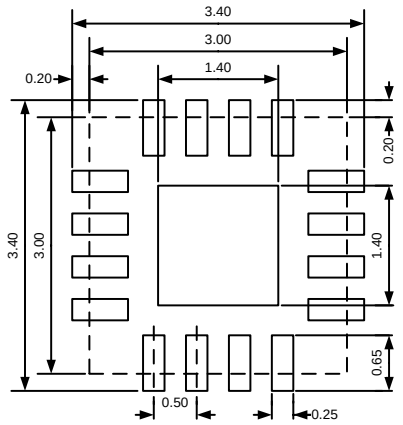
### QFN16 3.0×3.0

**Outline Drawing**




| Symbol | DIMENSIONS | | | | | |
|---|---|---|---|---|---|---|
| | MILLIMETERS | | | INCHES | | |
| | Min | Typ | Max | Min | Typ | Max |
| A | 0.55 | - | 0.80 | 0.022 | - | 0.031 |
| A1 | 0.00 | - | 0.05 | 0.000 | - | 0.002 |
| A3 | 0.20REF | | | 0.008REF | | |
| b | 0.18 | - | 0.30 | 0.007 | - | 0.012 |
| D | 2.90 | 3.00 | 3.10 | 0.114 | 0.118 | 0.122 |
| D2 | 1.55 | - | 1.86 | 0.061 | - | 0.073 |
| E | 2.90 | 3.00 | 3.10 | 0.114 | 0.118 | 0.122 |
| E2 | 1.55 | - | 1.86 | 0.061 | - | 0.073 |
| e | 0.50TYP | | | 0.020TYP | | |
| L | 0.25 | 0.40 | 0.55 | 0.010 | 0.016 | 0.022 |

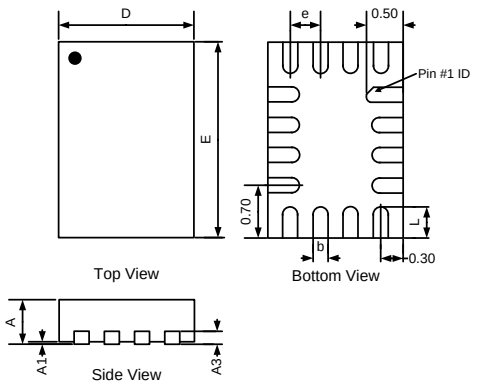
**Land Pattern**




NOTES:
1. Compound dimension: 3.00×3.00;
2. Unit: mm;
3. General tolerance ±0.05mm unless otherwise specified;
4. The layout is just for reference.

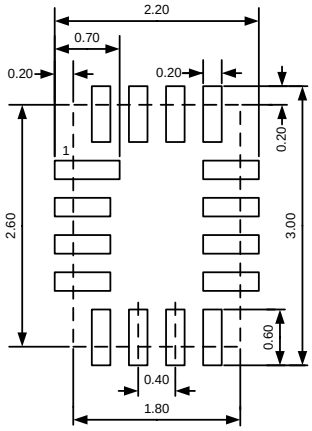
## QFN16 2.6×1.8

### Outline Drawing



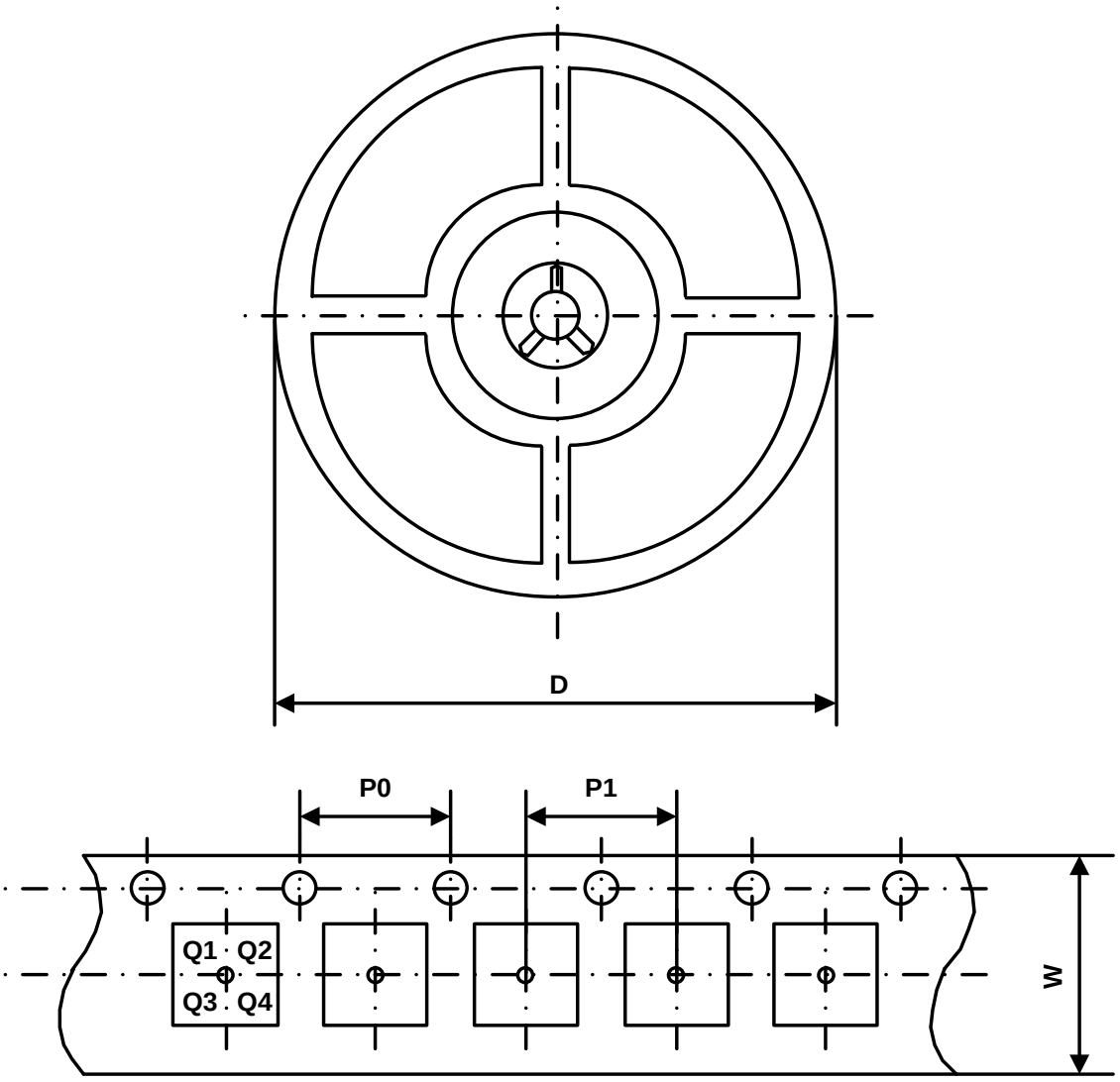

| DIMENSIONS | | | | | | |
|---|---|---|---|---|---|---|
| Symbol | MILLIMETERS | | | INCHES | | |
| | Min | Typ | Max | Min | Typ | Max |
| A | >0.50 | 0.55 | 0.60 | >0.020 | 0.022 | 0.024 |
| A1 | 0.00 | - | 0.05 | 0.000 | - | 0.002 |
| A3 | 0.15REF | | | 0.006REF | | |
| b | 0.15 | 0.20 | 0.25 | 0.006 | 0.008 | 0.010 |
| D | 1.75 | 1.80 | 1.85 | 0.069 | 0.071 | 0.073 |
| E | 2.55 | 2.60 | 2.65 | 0.100 | 0.102 | 0.104 |
| e | 0.40BSC | | | 0.016BSC | | |
| L | 0.30 | 0.40 | 0.50 | 0.012 | 0.016 | 0.020 |

### Land Pattern




NOTES:
1. Compound dimension: 2.60×1.80 ;
2. Unit: mm;
3.General tolerance ±0.05mm unless otherwise specified;
4. The layout is just for reference.

## Packing Information




| Part Number | Package Type | Carrier Width (W) | Pitch (P0) | Pitch (P1) | Reel Size (D) | PIN 1 Quadrant |
|---|---|---|---|---|---|---|
| UM3670 | QFN16 3.0×3.0 | 12 mm | 4 mm | 8 mm | 330 mm | Q1 |
| UM3670A | QFN16 2.6×1.8 | 8 mm | 4 mm | 4 mm | 180 mm | Q1 |

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