

## High Speed, Low Voltage, Dual, DPDT Analog Switch

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

### General Description

The UM3670/3670A is a high speed, dual, dual-pole/double-throw (DPDT) analog switch operates from a single +1.8V to +5.5V power supply. The UM3670/3670A features dual 5Ω R<sub>ON</sub> (TYP) DPDT switches with 300MHz bandwidth and low crosstalk. The switch offers a high-performance, low-cost solution to switch between video sources. The switch is available in Pb-free QFN16 package.

### Applications

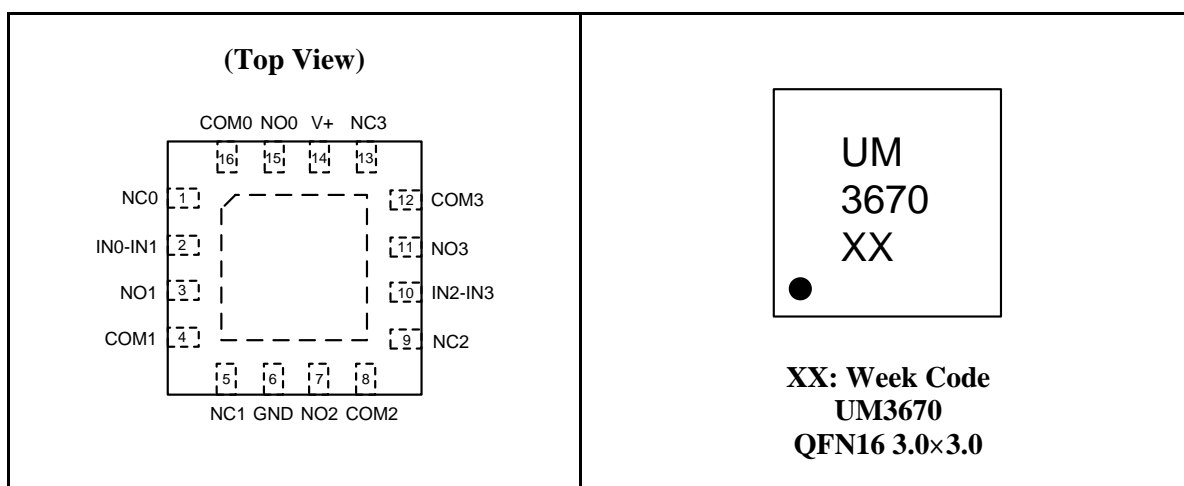
- Communication System
- Cell Phone
- Portable Instrumentation
- Audio Signal Routing
- Audio and Video Switching
- PCMCIA Cards
- Computer Peripherals
- Modems
- PDAs

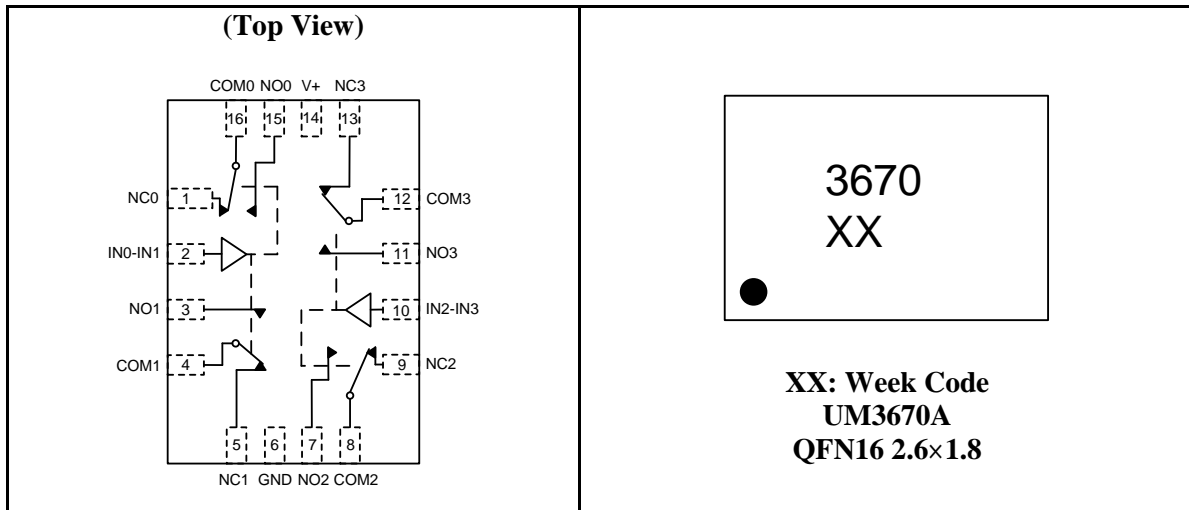
### Features

- Wide Bandwidth: 300MHz
- Low On-Resistance: 5Ω (TYP)
- Single-Supply Operation: 1.8V to 5.5V
- Power OFF Protection:  
When V<sub>CC</sub>=0V, Input Signal can Tolerate up to 5V
- Fast Switching Time
- Rail-to-Rail Operation
- Typical Power Consumption (0.5μW)
- TTL/CMOS Compatible
- Low Crosstalk: -60dB (10MHz)
- Micro Size Package:  
UM3670, QFN16 3.0×3.0  
UM3670A, QFN16 2.6×1.8

### Pin Configurations

### Top View





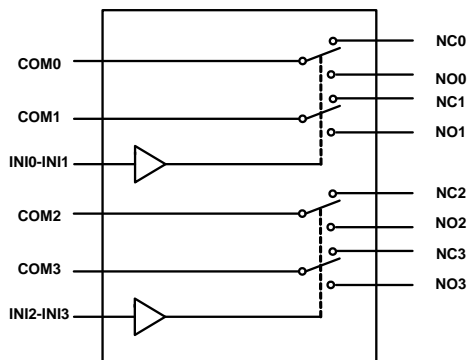
### Order Information

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 <sub>+</sub>	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 <sub>+</sub>	Supply Voltage	-0.3 to +6.0	V
V <sub>S</sub>	COM_, NC_, NO_ Input Voltage	-0.3 to +6.0	
IN	Select Input Voltage	-0.3 to +6.0	
I <sub>O</sub>	Continuous Current	±200	mA
T <sub>O</sub>	Operating Temperature Range	-40 to +85	°C
T <sub>J</sub>	Junction Temperature	+150	
T <sub>STG</sub>	Storage Temperature Range	-65 to +150	
T <sub>L</sub>	Junction Lead Temperature (Soldering, 10 Seconds)	+300	
ESD	ESD Method 3015.7	>4000	V

## Electrical Characteristics

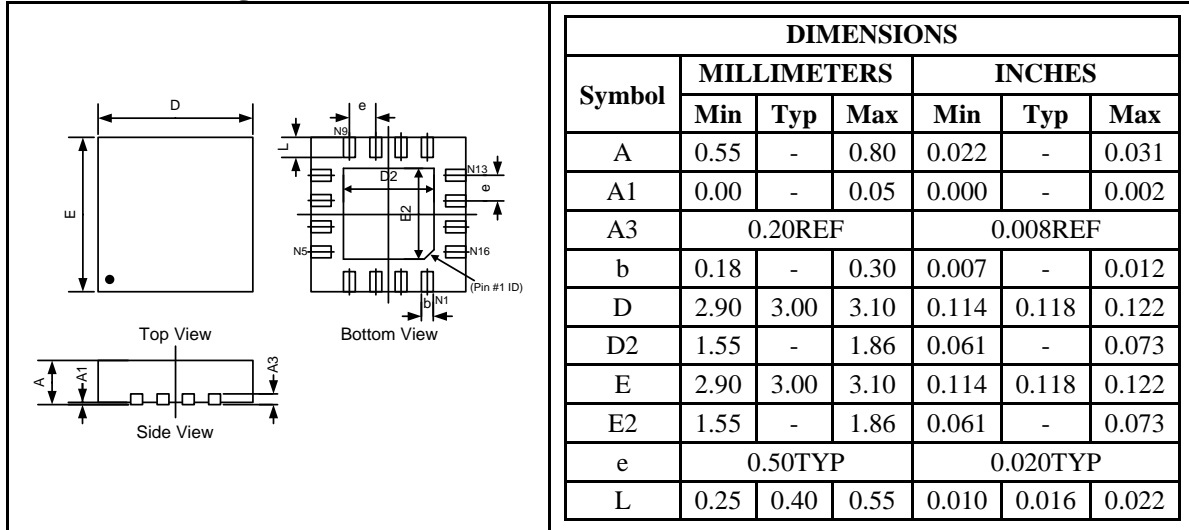
(Over the Operating Range, V<sub>+</sub>=+5V±10%, T<sub>A</sub>=-40°C to +85°C.)

Symbol	Parameter	Test Conditions	Limits (-40°C to 85°C)			Unit
			Min	Typ	Max	
<b>DC ELECTRICAL CHARACTERISTICS</b>						
V <sub>ANALOG</sub>	Analog Signal Range		0		V+	V
R <sub>ON</sub>	On-Resistance	V <sub>+</sub> =4.5V, V <sub>I</sub> =1.0V, I <sub>ON</sub> =13mA		5	9	Ω
		V <sub>+</sub> =4.5V, V <sub>I</sub> =2.0V, I <sub>ON</sub> =26mA		5	10	Ω
I <sub>CC</sub>	Quiescent Power Supply Current	V <sub>+</sub> =5.5V, V <sub>IN</sub> =GND or 5V		0.1	1	μA
I <sub>CCT</sub>	Transience Power Supply Current	V <sub>+</sub> =4.3V, V <sub>IN</sub> =1.8V		11	20	μA
Δ I <sub>CC</sub>	Supply Current per Input @ TTL HIGH	V <sub>+</sub> =5.5V, V <sub>IN</sub> =3.4V		6	15	μA
I <sub>IH</sub>	Input High Current	V <sub>+</sub> =5.5V, V <sub>IN</sub> =V <sub>+</sub>			±1	μA
I <sub>IL</sub>	Input Low Current	V <sub>+</sub> =5.5V, V <sub>IN</sub> =GND			±1	μA
I <sub>O</sub>	Analog Output Leakage Current	0≤NO, NC or COM≤V <sub>+</sub> , Switch OFF			±1	μA
V <sub>IH</sub>	Input High Voltage		2			V
V <sub>IL</sub>	Input Low Voltage				0.8	V
V <sub>H</sub>	Input Hysteresis at Control Pins			200		mV
<b>DYNAMIC CHARACTERISTICS</b>						
t <sub>ON</sub>	Turn On Time	R <sub>L</sub> =50Ω, C <sub>L</sub> =20pF		15	20	ns
t <sub>OFF</sub>	Turn Off Time	R <sub>L</sub> =50Ω, C <sub>L</sub> =20pF		6	10	ns
V <sub>ISO</sub>	Off Isolation	R <sub>L</sub> =50Ω, f=10MHz		-55		dB
V <sub>CT</sub>	Crosstalk	R <sub>L</sub> =50Ω, f=10MHz		-60		dB
BW	-3dB Bandwidth	R <sub>L</sub> =50Ω		300		MHz
C <sub>IN</sub>	Input/Enable Capacitance	V <sub>IN</sub> =0V, f=1MHz		6		pF
C <sub>OFF</sub>	Switch Off Capacitance	V <sub>IN</sub> =0V, f=1MHz		9		pF
C <sub>ON</sub>	Switch On Capacitance	V <sub>IN</sub> =0V, f=1MHz		18		pF

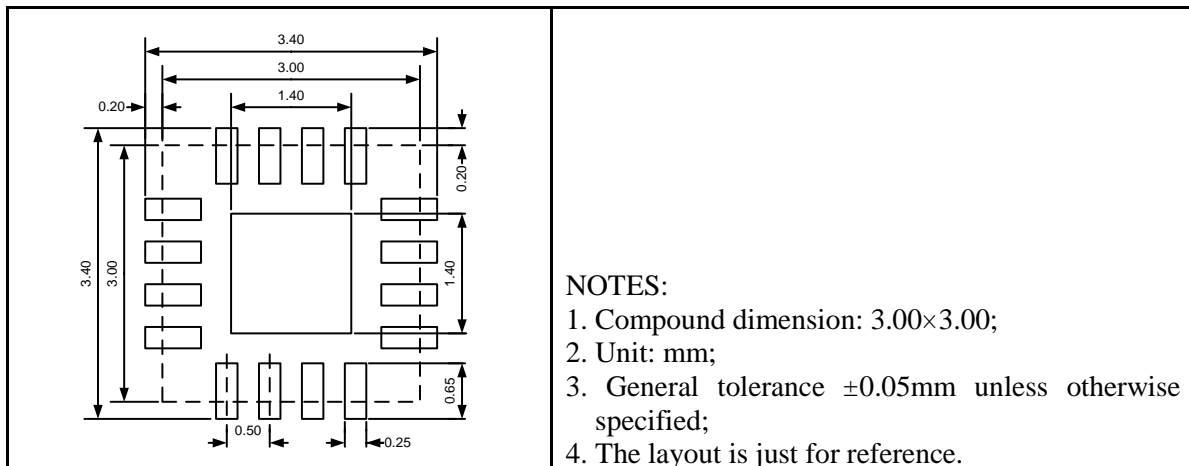
## Package Information

### UM3670 QFN16 3.0×3.0

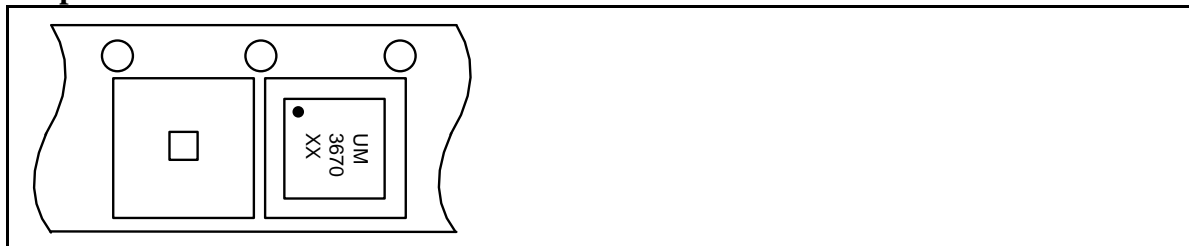
#### Outline Drawing



#### Land Pattern

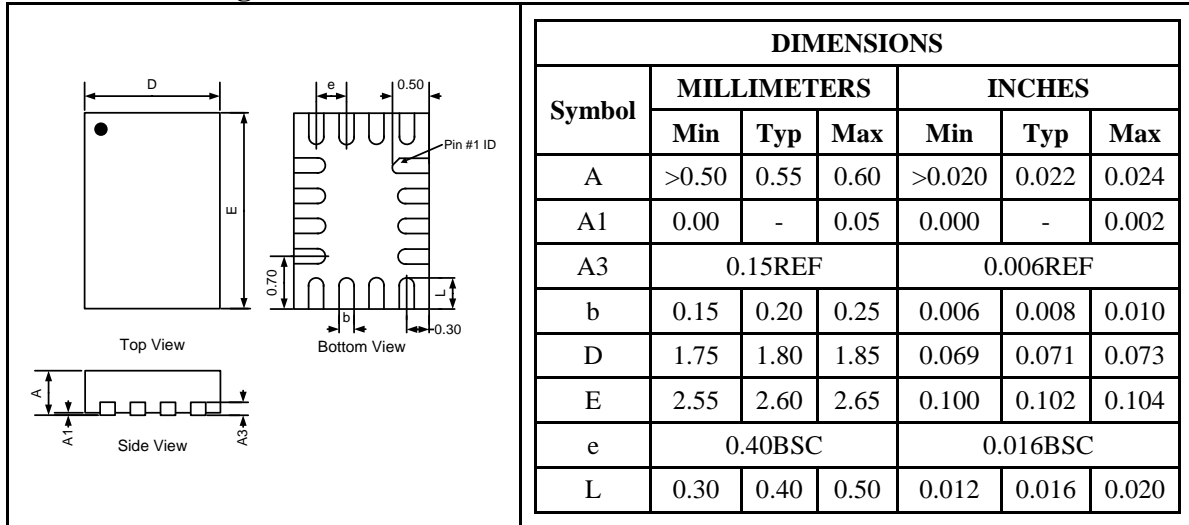


#### Tape and Reel Orientation

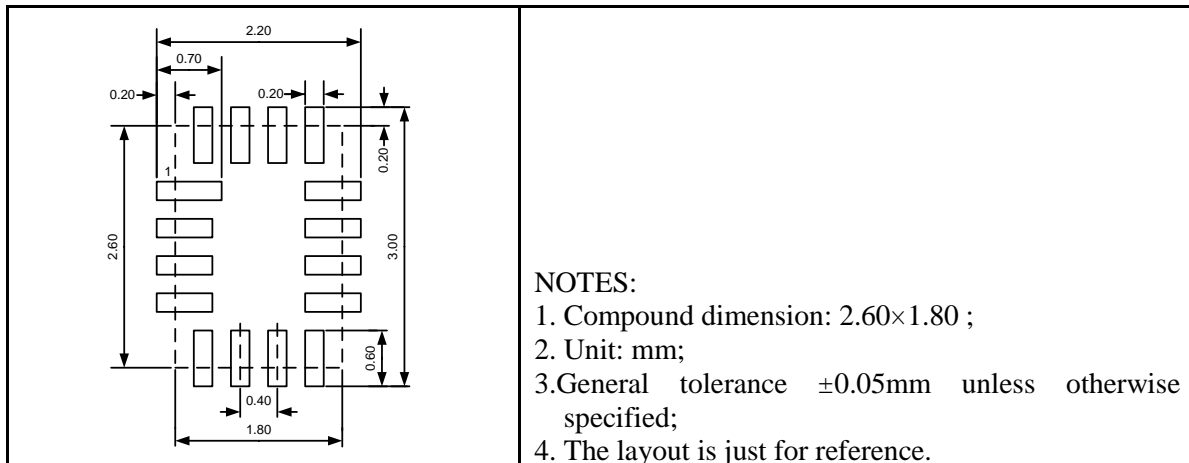


## UM3670A QFN16 2.6×1.8

### Outline Drawing



### Land Pattern



### Tape and Reel Orientation



---

## **GREEN COMPLIANCE**

Union Semiconductor is committed to environmental excellence in all aspects of its operations including meeting or exceeding regulatory requirements with respect to the use of hazardous substances. Numerous successful programs have been implemented to reduce the use of hazardous substances and/or emissions.

All Union components are compliant with the RoHS directive, which helps to support customers in their compliance with environmental directives. For more green compliance information, please visit:

[http://www.union-ic.com/index.aspx?cat\\_code=RoHSDeclaration](http://www.union-ic.com/index.aspx?cat_code=RoHSDeclaration)

## **IMPORTANT NOTICE**

The information in this document has been carefully reviewed and is believed to be accurate. Nonetheless, this document is subject to change without notice. Union assumes no responsibility for any inaccuracies that may be contained in this document, and makes no commitment to update or to keep current the contained information, or to notify a person or organization of any update. Union reserves the right to make changes, at any time, in order to improve reliability, function or design and to attempt to supply the best product possible.



Union Semiconductor, Inc

Add: Unit 606, No.570 Shengxia Road, Shanghai 201210

Tel: 021-51093966

Fax: 021-51026018

Website: [www.union-ic.com](http://www.union-ic.com)