

## 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

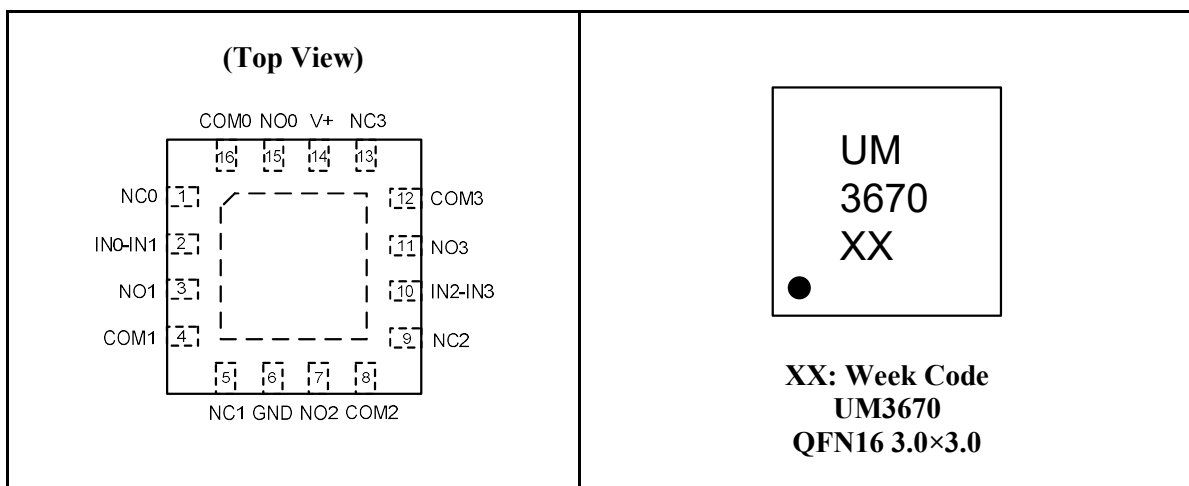
- Communication System
- Cell Phone
- Portable Instrumentation
- Audio Signal Routing
- Audio and Video Switching
- PCMCIA Cards
- Computer Peripherals
- Modems
- PDAs

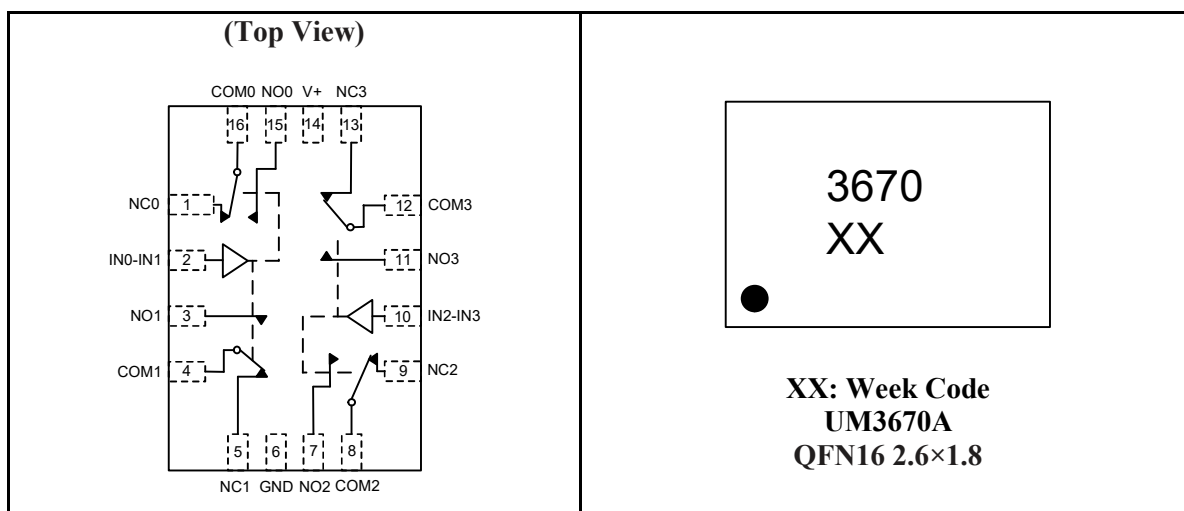
### Features

- 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





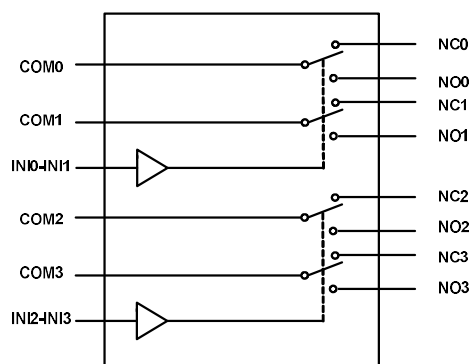
### Order Information

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+	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 V <sub>+</sub> +0.3	
V <sub>IN</sub>	Select Input Voltage	-0.3 to V <sub>+</sub> +0.3	
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**

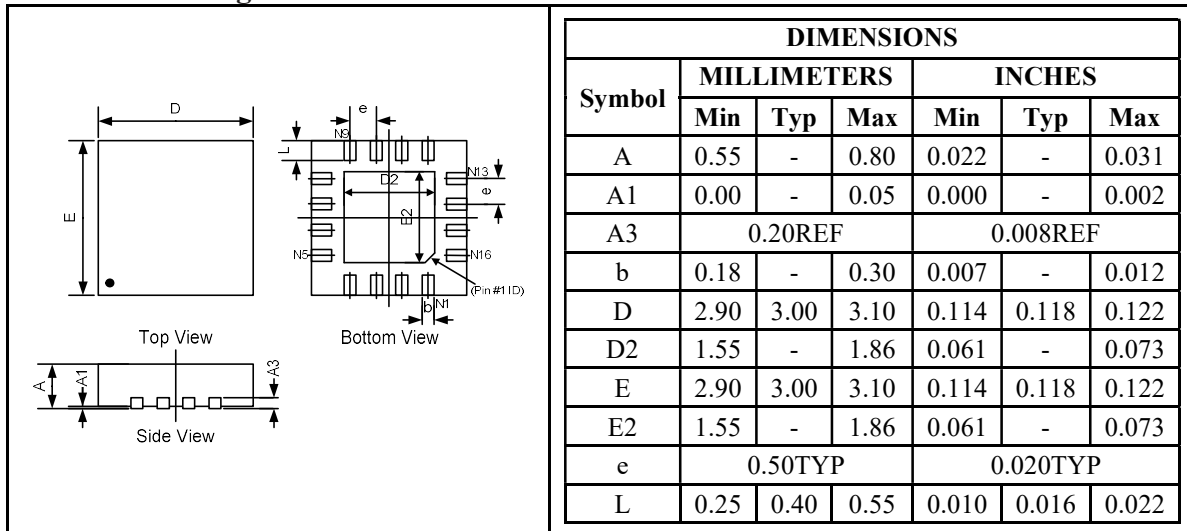
 (Over the Operating Range,  $V_+ = +5V \pm 10\%$ ,  $T_A = -40^\circ\text{C}$  to  $+85^\circ\text{C}$ .)

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

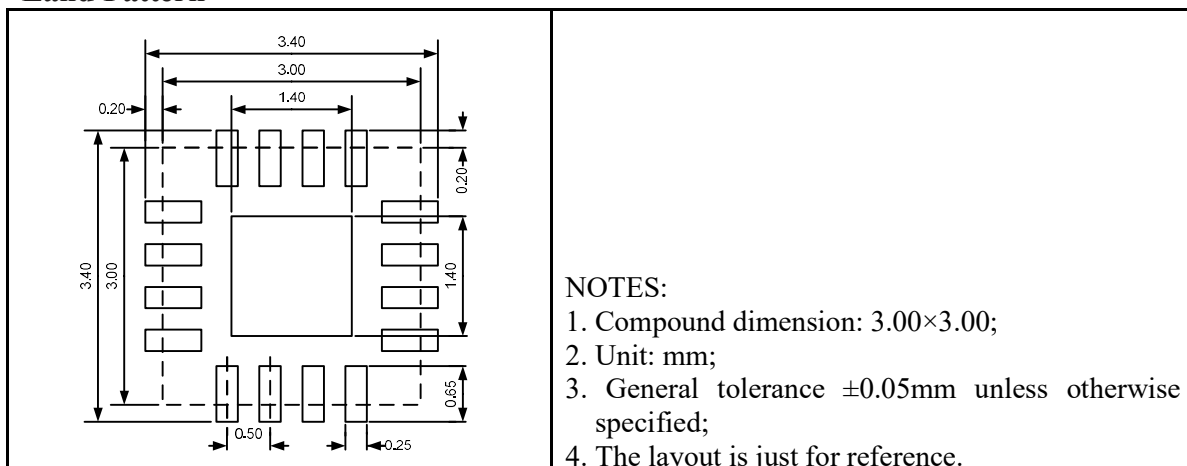
## Package Information

### UM3670 QFN16 3.0×3.0

#### Outline Drawing



#### Land Pattern

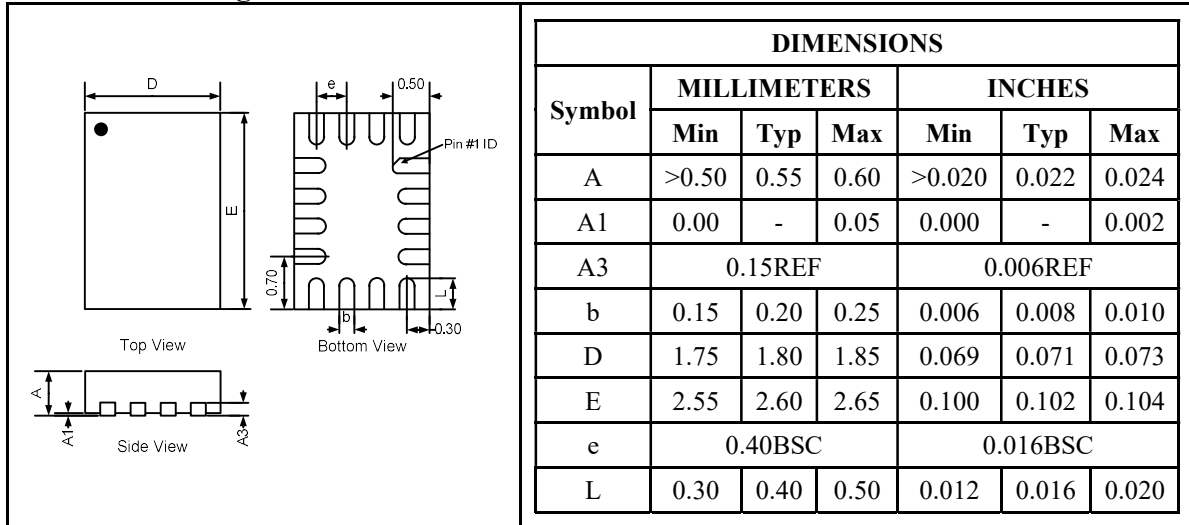


#### Tape and Reel Orientation

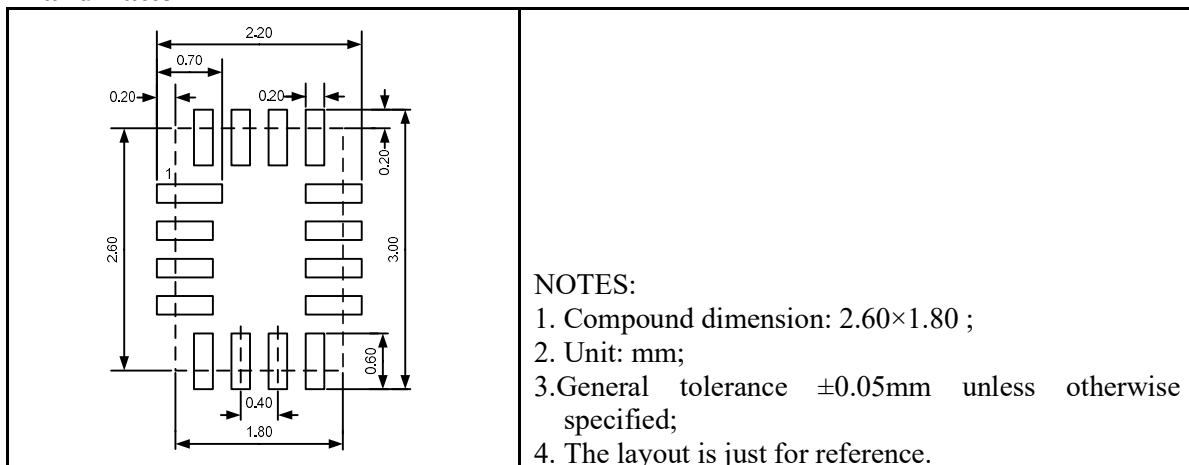


## UM3670A QFN16 2.6×1.8

### Outline Drawing



### Land Pattern



### Tape and Reel Orientation



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