

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_{ON} (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

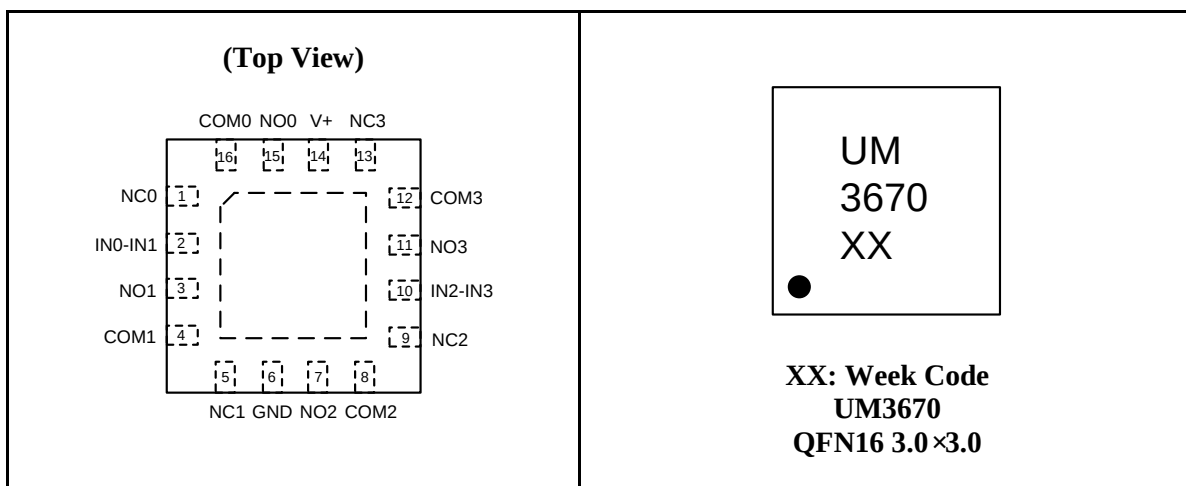
- Communication System
- Cell Phone
- Portable Instrumentation
- Audio Signal Routing
- Audio and Video Switching
- PCMCIA Cards
- Computer Peripherals
- Modems
- PDAs

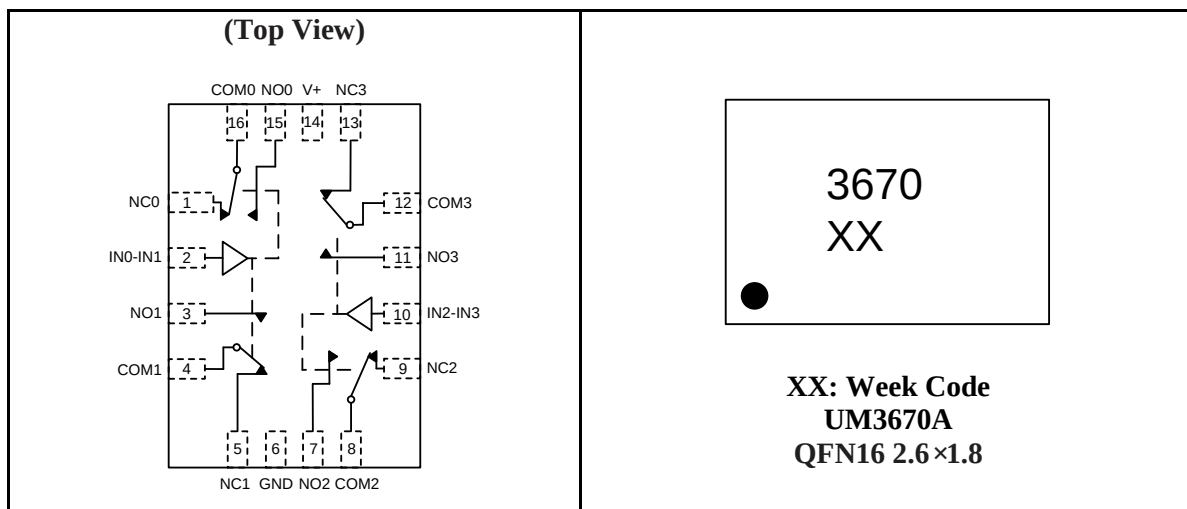
Features

- Wide Bandwidth: 300MHz
- Low On-Resistance: 5Ω (TYP)
- Single-Supply Operation: 1.8V to 5.5V
- Power OFF Protection:
When V_{CC}=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





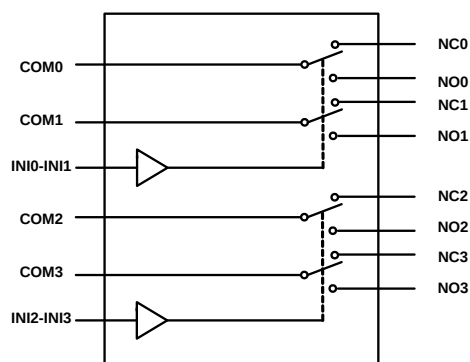
Order Information

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 ₊	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	
I _O	Continuous Current	±200	mA
T _O	Operating Temperature Range	-40 to +85	°C
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

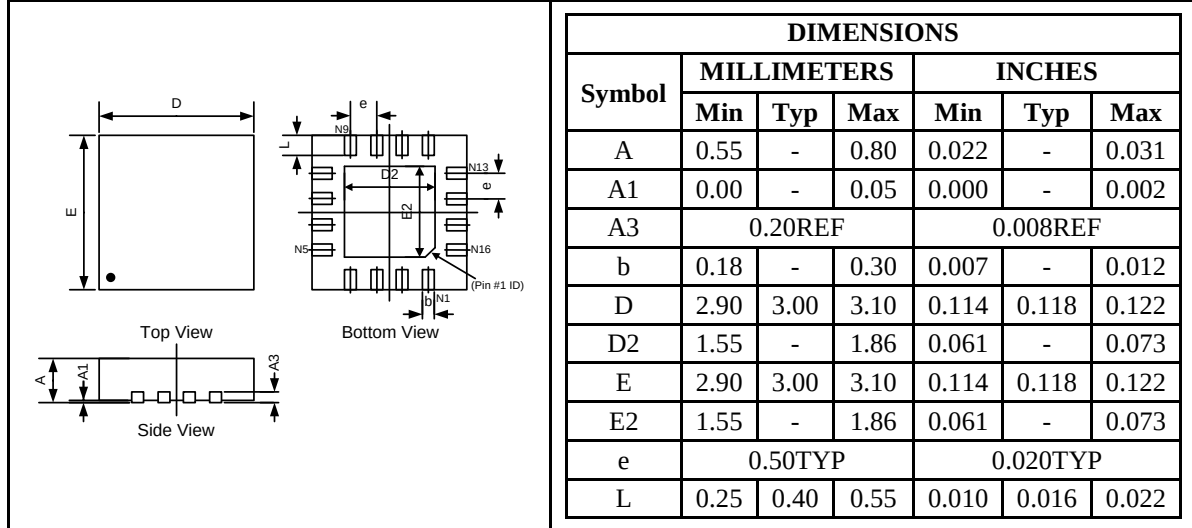
(Over the Operating Range, $V_+ = +5V \pm 10\%$, $T_A = -40^\circ\text{C}$ to $+85^\circ\text{C}$.)

Symbol	Parameter	Test Conditions	Limits (-40 °C to 85 °C)			Unit
			Min	Typ	Max	
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
ΔICC	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

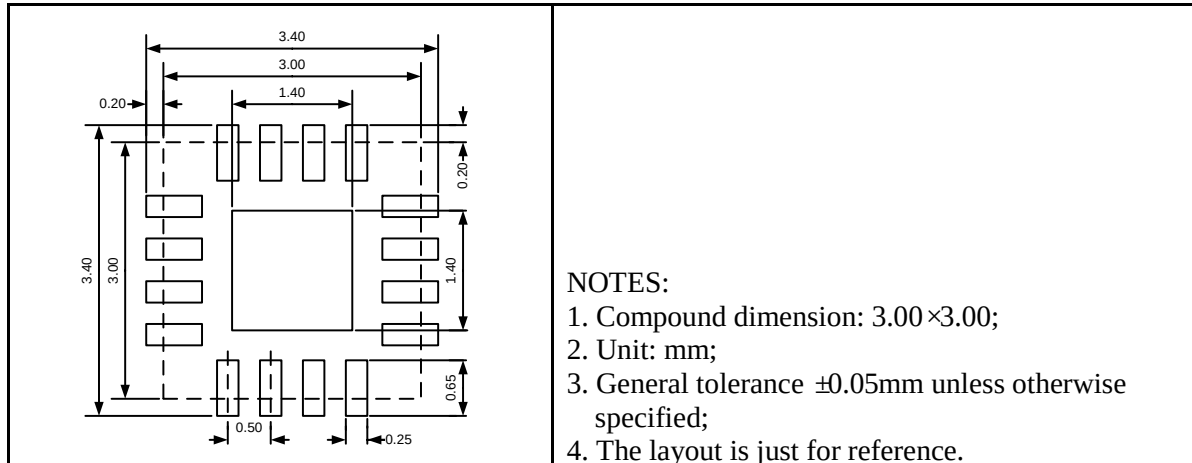
Package Information

QFN16 3.0×3.0

Outline Drawing



Land Pattern

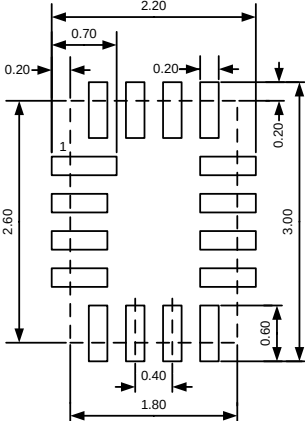


QFN16 2.6×1.8

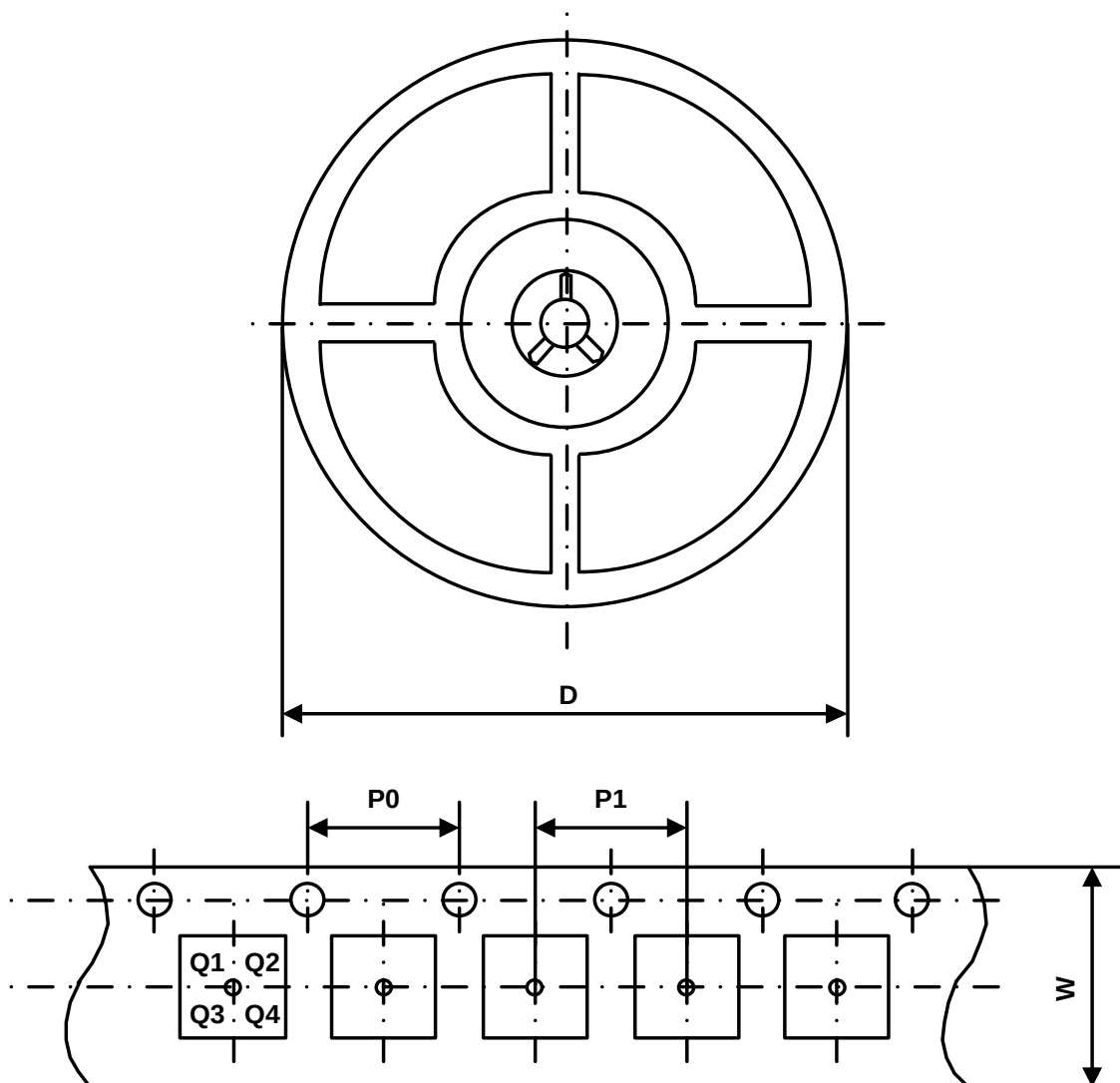
Outline Drawing

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: - Compound dimension: 2.60×1.80 ; - Unit: mm; - General tolerance ±0.05mm unless otherwise specified; - The layout is just for reference.
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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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