

四通道、宽带宽、单刀双掷 (SPDT) 视频模拟开关

UM330EEUE TSSOP16

描述

UM330EEUE是一款四通道、双向、单刀双掷 (SPDT)视频模拟开关，可由 +5V 单电源供电。该设备适用于 RGB 和复合视频切换应用。视频开关可由RAMDAC电流输出或复合视频源电压输出驱动。

UM330EEUE 采用四路具有 6Ω R_{ON} (TYP) SPDT 开关，具有 500MHz 带宽和低串扰特性。该器件为不同视频源之间的切换提供了高性能、低成本的解决方案。该器件采用无铅 TSSOP16 封装。

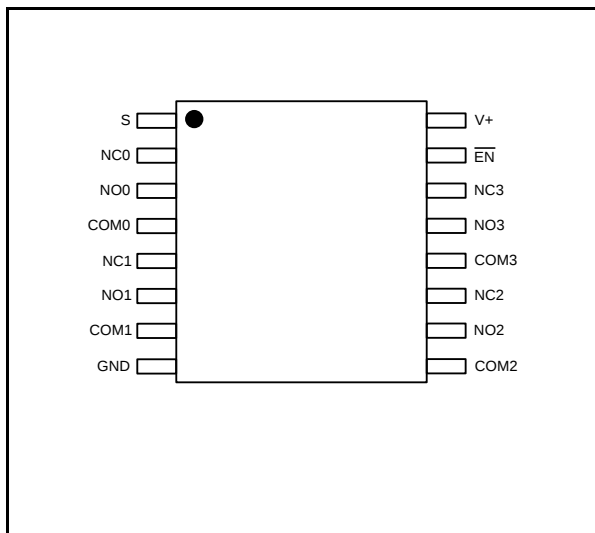
应用

- 个人视频录像机
- 地面数字机顶盒
- 硬盘录像机
- DVD 播放器
- 游戏机
- 数字录像机
- 桌面视频编辑器
- 音频和视频切换

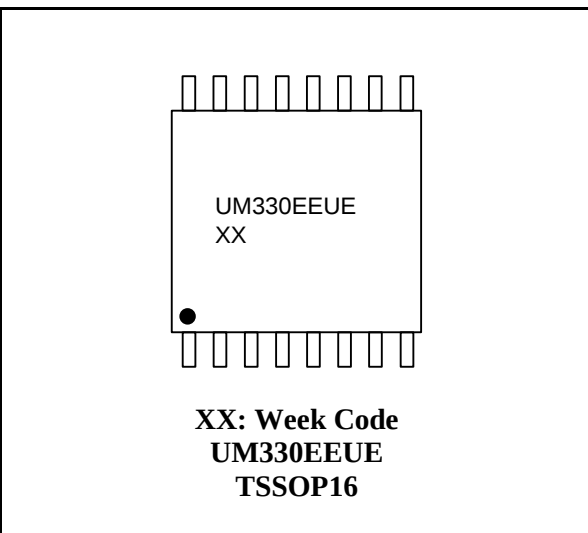
特性

- 宽带宽：500MHz (典型值)
- 低导通电阻： 6Ω (典型值)
- 单电源运行：5V
- 快速切换时间
- 轨对轨运行
- 典型功耗：5 μ W
- 兼容 TTL/CMOS
- 低串扰：-60dB (10MHz)
- 热插拔功能 (电源路径需要额外保护)
- 小型封装：TSSOP16

引脚配置



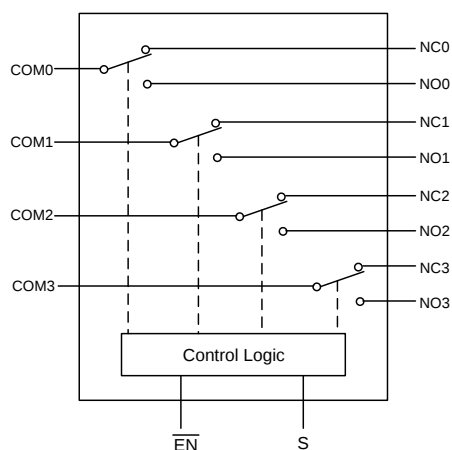
顶部视图



Pin Description

Name	Function
NC0, NC1, NC2, NC3, NO0, NO1, NO2, NO3	Analog Video I/O
S	Select Input
EN	Switch-Enable Input
COM0, COM1, COM2, COM3	Analog Video I/O
GND	Ground
V ₊	Power Supply

Block Diagram



Function Table

$\overline{\text{EN}}$	S	COM0	COM1	COM2	COM3	Function
H	X	Hi-Z	Hi-Z	Hi-Z	Hi-Z	Disable
L	L	NC0	NC1	NC2	NC3	S=0
L	H	NO0	NO1	NO2	NO3	S=1

Ordering Information

Part Number	Packaging Type	Marking Code	Shipping Qty
UM330EEUE	TSSOP16	UM330EEUE	3000pcs/13 Inch Tape & Reel

Absolute Maximum Ratings

Symbol	Parameter	Limit	Unit
V ₊	Supply Voltage	-0.3 to +6.0	V
V _{IN}	Select Input Voltage	-0.3 to +6.0	
V _I	Analog I/O Input Voltage	-0.3 to +6.0	
I _{OC}	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	Junction Lead Temperature (Soldering, 10 Seconds)	+300	
ESD	ESD Method 3015.7	4000	V

DC Electrical Characteristics

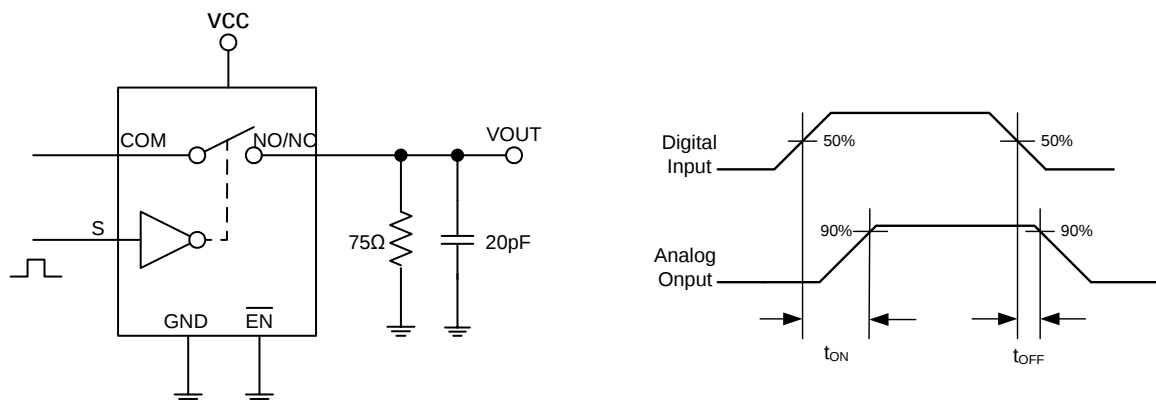
(Over the Operating Range, V₊=+5V ±10%, T_A=-40 °C to +85 °C.)

Symbol	Parameter	Test Conditions	Limits (-40 °C to 85 °C)			Unit
			Min	Typ	Max	
V _{ANALOG}	Analog Signal Range		0		V ₊	V
R _{ON}	On Resistance	V ₊ =4.5V, V _I =1.0V, R _L =75Ω, I _{ON} =13mA		6	9	Ω
		V ₊ =4.5V, V _I =2.0V, R _L =75Ω, I _{ON} =26mA		7	10	Ω
I _{CC}	Quiescent Power Supply Current	V ₊ =5.5V, V _{IN} = GND or 5V		0.1	1	μA
I _{CCCT}	Transience Power Supply Current	V ₊ =4.3V, V _{IN} =1.8V		11	20	μA
Δ I _{CC}	Supply Current per Input @ TTL HIGH	V ₊ =5.5V, V _{IN} =3.4V			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
I _{OS}	Short Circuit Current			230		mA
V _{IH}	Input High Voltage		2			V
V _{IL}	Input Low Voltage		-0.5		0.8	V
V _{IK}	Clamp Diode Voltage	V ₊ =4.5V, I _{IN} =-18mA	-0.7	-0.9		V
V _H	Input Hysteresis at Control Pins			200		mV

AC Electrical Characteristics

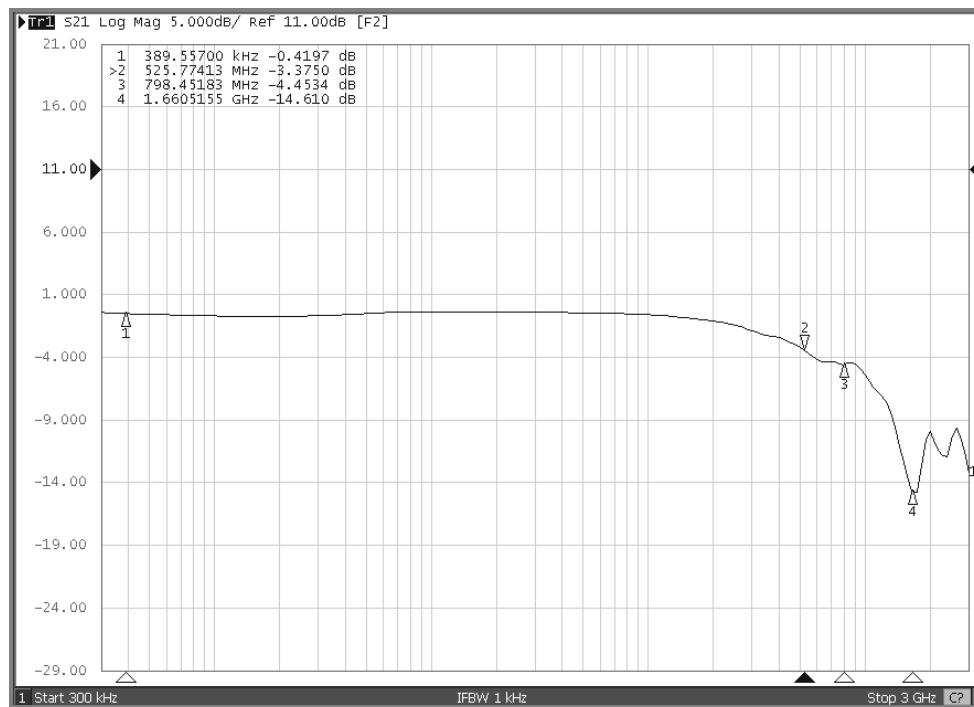
Symbol	Parameter	Test Conditions	Limits (-40 °C to 85 °C)			Unit
			Min	Typ	Max	
t_{ON}	Turn On Time	$R_L=75\Omega$, $C_L=20pF$		14	17	ns
t_{OFF}	Turn Off Time	$R_L=75\Omega$, $C_L=20pF$		4	7	ns
V_{ISO}	Off Isolation	$R_L=150\Omega$, $f=10MHz$		-50		dB
V_{CT}	Crosstalk	$R_{IN}=10\Omega$, $R_L=150\Omega$, $f=10MHz$		-60		dB
BW	-3dB Bandwidth	$R_L=150\Omega$		500		MHz
DG	Differential Gain	$R_L=150\Omega$, $f=3.58MHz$		0.51		%
DP	Differential Phase	$R_L=150\Omega$, $f=3.58MHz$		0.01		°
I_{CCD}	Supply Current per Input per MHz	$V+=5.5V$, NO, NC and COM Pins Open, EN=GND, Control Input Toggling 50% Duty Cycle		0.25		mA/MHz
Capacitance						
C_{IN}	Input/Enable Capacitance	$V_{IN}=0V$, $f=1MHz$		5		pF
C_{OFF}	Switch Off Capacitance	$V_{IN}=0V$, $f=1MHz$		5		pF
C_{ON}	Switch On Capacitance	$V_{IN}=0V$, $f=1MHz$		10		pF

Switching Time Test



Typical Operating Characteristics

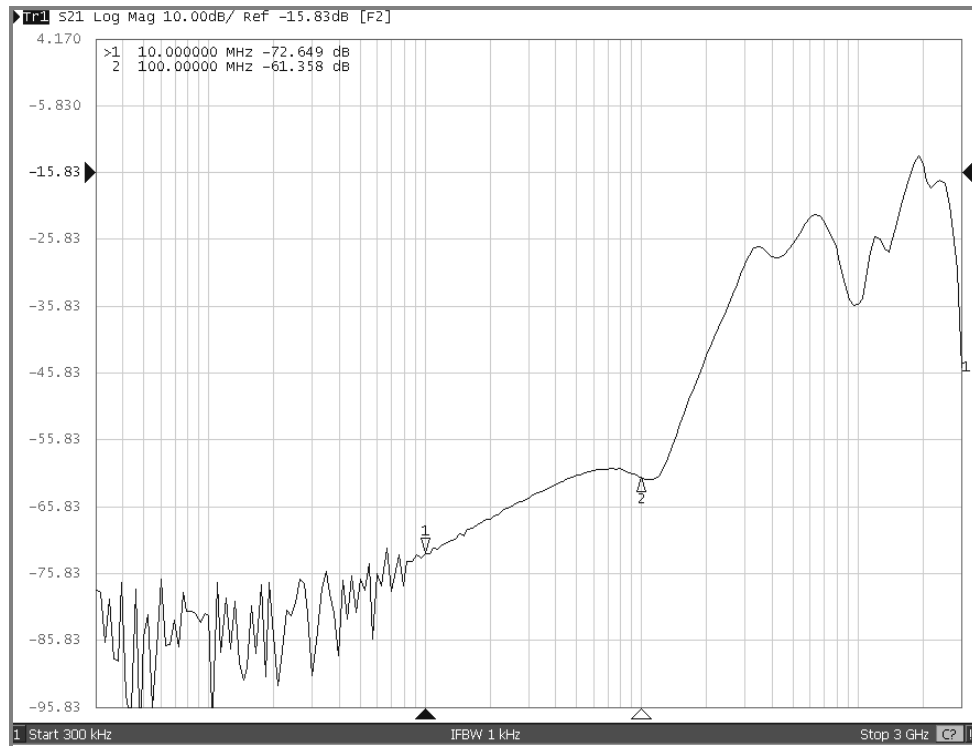
Bandwidth vs. Frequency



Off-Isolation vs. Frequency



Crosstalk vs. Frequency



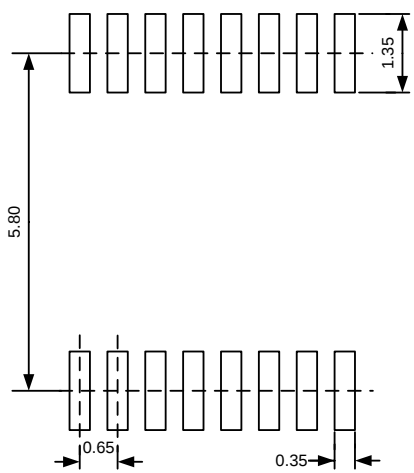
Package Information

UM330EEUE TSSOP16

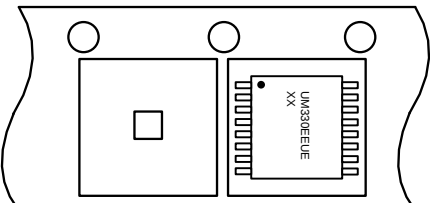
Outline Drawing

DIMENSIONS						
Symbol	MILLIMETERS			INCHES		
	Min	Typ	Max	Min	Typ	Max
A	-	-	1.20	-	-	0.047
A1	0.05	-	0.15	0.002	-	0.006
A2	0.80	-	1.05	0.031	-	0.041
A3	0.34	0.44	0.54	0.013	0.017	0.021
b	0.19	-	0.30	0.007	-	0.012
c	0.09	-	0.20	0.004	-	0.008
D	4.86	4.96	5.10	0.191	0.195	0.201
E	4.30	4.40	4.50	0.169	0.173	0.177
E1	6.20	6.40	6.60	0.244	0.252	0.260
e	0.65BSC			0.026BSC		
L	0.45	0.60	0.75	0.018	0.024	0.030
L1	1.00REF			0.039REF		
L2	0.25BSC			0.010BSC		
θ1	0°	-	8°	0°	-	8°
θ2	10°	12°	14°	10°	12°	14°
θ3	10°	12°	14°	10°	12°	14°

Land Pattern

	NOTES: 1. Compound dimension: 4.96×4.40. 2. Unit: mm. 3. General tolerance $\pm 0.05\text{mm}$ unless otherwise specified. 4. The layout is just for reference.
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Tape and Reel Orientation



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