



UMX4215

CMOS IC

LOW ON-RESISTANCE WIDE BANDWIDTH SINGLE 2:1 MUX/DEMUX ANALOG SWITCH

DESCRIPTION

The **UMX4215** is a Rail-to-Rail 1-port 2:1 Multiplexer /demultiplexer switch designed with advanced CMOS technology. The wide bandwidth of this switch allows signals to pass with minimum distortion. The device is specified to operate over 1.65V to 5.5V V_{DD} operating range. It is bidirectional and designed for low bit-to-bit skew, high channel-to-channel noise isolation.

FEATURES

- * Useful in Both Analog and Digital Applications
- * V_{DD} Supply Range : 1.65V to 5.5V
- * Rail-to-Rail Signal Handling
- * Low On-Resistance : 5Ω at $V_{DD}=4.5V$
- * High Off-Isolation : -66dB at 10MHz
- * Low Crosstalk: -60dB at 10Mhz

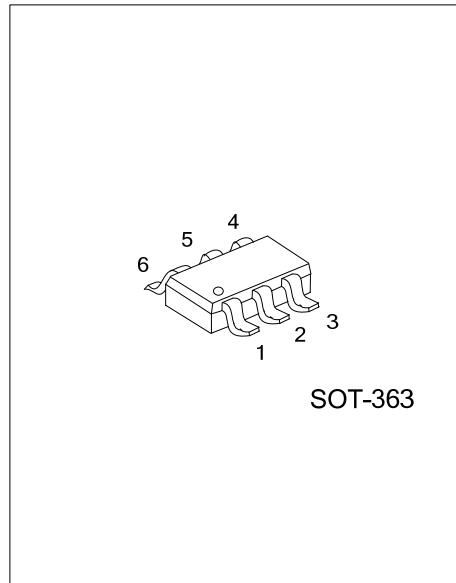
APPLICATIONS

- * Audio, Video Switching and Routing
- * Portable Instrumentation
- * Computer Peripheral
- * Battery-Powered Communication Systems

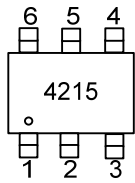
ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
UMX4215L-AL6-R	UMX4215G-AL6-R	SOT-363	Tape Reel

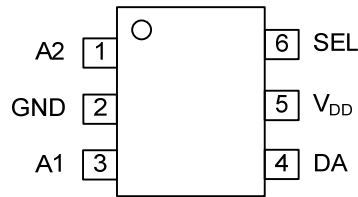
<p>UMX4215G-AL6-R</p> <pre> graph TD A[UMX4215G-AL6-R] --- B["(1)Packing Type"] A --- C["(2)Package Type"] A --- D["(3)Green Package"] </pre>	<p>(1) R: Tape Reel</p> <p>(2) AL6: SOT-363</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING



■ PIN CONFIGURATION



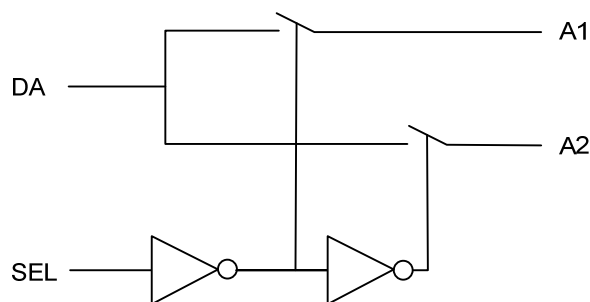
■ PIN DESCRIPTION

PIN NO	PIN Name	DESCRIPTION
1/3	A1, A2	Analog Data I/O
4	DA	Analog Data I/O
6	SEL	Logic Control
5	V _{DD}	Power
2	GND	Ground

■ TRUTH TABLE

SEL	Function
L	A1 connected to DA
H	A2 connected to DA

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage to Ground Potential		-0.5 ~ +7.0	V
DC Input Voltage	V _{IN}	-0.5 ~ +7.0	V
DC Output Current	V _{OUT}	120	mA
Power Dissipation	P _D	0.25	W
Ambient Temperature with Power applied		-40 ~ +85	°C
Storage Temperature	T _{STG}	-65 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ DC ELECTRICAL CHARACTERISTICS (T_A=-40~+85°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP (Note1)	MAX	UNIT
SUPPLY POWER						
Supply Current	V _{DD}		1.65		5.5	V
Power Supply Current	I _S	V _{DD} =5.5V			1	μA
Analog Signal Range	V _{SWITCH}		0		V _{DD}	V
Input HIGH Voltage	V _H	V _{DD} =1.65V~2.3V	0.75			V
		V _{DD} =2.3V~5.5V	0.7×			V
Input LOW Voltage	V _L	V _{DD} =1.65V~5.5V			0.25	V
Input HIGH Current	I _H	V _{DD} =5.0V, V _{IN} =V _{DD}			±1	μA
Input LOW Current	I _L	V _{DD} =5.0V, V _{IN} =GND			±1	μA
Analog I/O Leakage Current	I _{LK}	V _{DD} =5.0V, V _{INPUT} =0~5V Switch ON			±1	μA
ON-Resistance	R _{ON}	V _{DD} =4.5V, V _{INPUT} =0V, I _O =-30mA		4.2		Ω
		V _{DD} =4.5V, V _{INPUT} =2.4V, I _O =-30mA		6.0		Ω
		V _{DD} =4.5V, V _{INPUT} =4.5V, I _O =-30mA		5.5		Ω
Match Between Channels	ΔR _{ON}	V _{DD} =4.5V, V _{INPUT} =0~4.5V, I _O =-30mA		0.1		Ω
Ron Flatness	R _{FLAT}	V _{DD} =4.5V, V _{INPUT} =0~4.5V, I _O =-30mA		2.5		Ω

Note: T_A=25°C ambient and maximum loading, unless otherwise specified.

■ DYNAMIC CHARACTERISTICS ($V_{DD}=5.0V$, $T_A=-40\sim+85^{\circ}C$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP (Note1)	MAX	UNIT
Propagation Delay	t_{PD}	$R_L=50\Omega$, $C_L=10pF$ (Note 2), seeFig.1		0.25		ns
Turn On Time	t_{ON}	$R_L=50\Omega$, $C_L=10pF$ (Note 2), seeFig.2		4		ns
Turn OFF Time	t_{OFF}	$R_L=50\Omega$, $C_L=10pF$ (Note 2), seeFig.2		4		ns
Break-Before-Make Time	t_{BBM}	$R_L=50\Omega$, $C_L=10pF$ (Note 2), seeFig.3	0.5			ns
Capacitance, switch ON	$C_{(ON)}$	$V_{IN}=0V$, $f=1MHz$		6.5		pF
Bandwidth	BW	See Fig.4		400		MHz
Off Isolation	Q_{IRR}	10MHz, see Fig.5		-66		dB
Crosstalk	X_{TALK}	10MHz, see Fig.6		-60		dB

Notes: 1. $T_A=25^{\circ}C$ ambient and maximum loading, unless otherwise specified.

2. C_L includes probe and jig capacitance.

3. All input pulses are supplied by generators having the following characteristics : $Z_O=50\Omega$, $t_r \leq 8ns$, $t_f \leq 8ns$.

■ TEST CIRCUIT AND WAVEFORMS

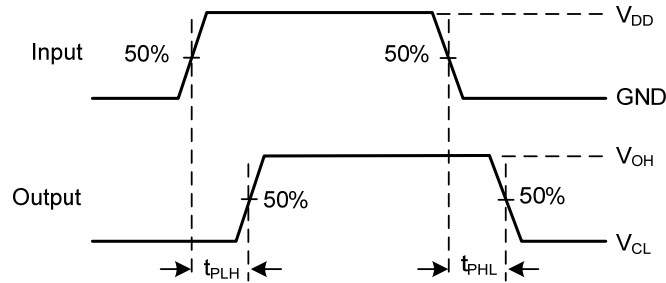


Fig. 1 Propagation Delay

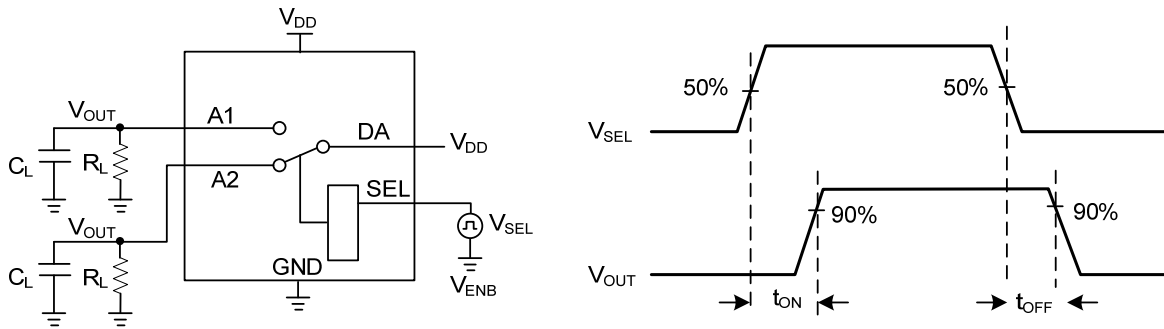


Fig. 2 Switching Time

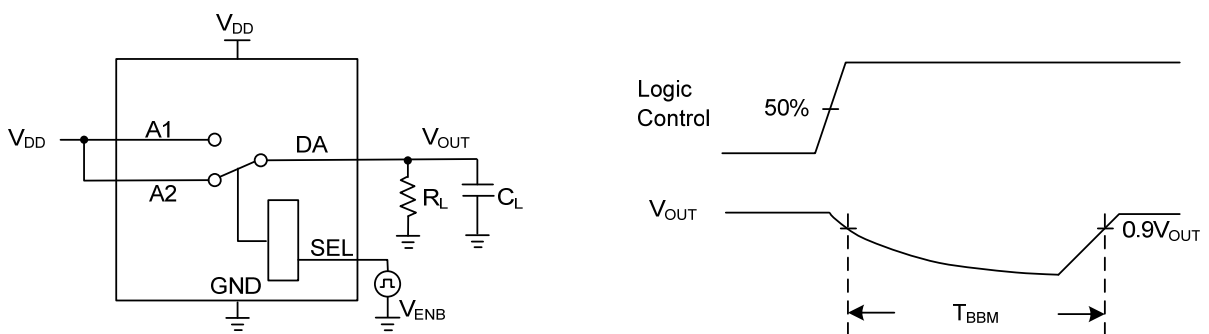


Fig. 3 Break-Before-Make Interval Time

■ TEST CIRCUIT AND WAVEFORMS (Cont.)

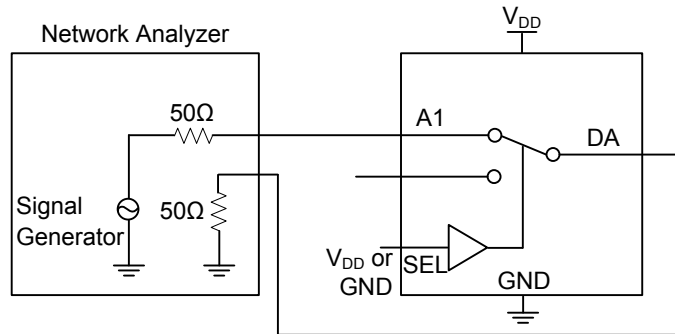


Fig. 4 Bandwidth

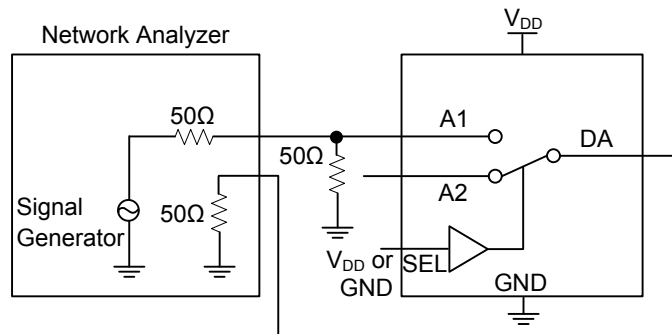


Fig. 5 Off Isolation

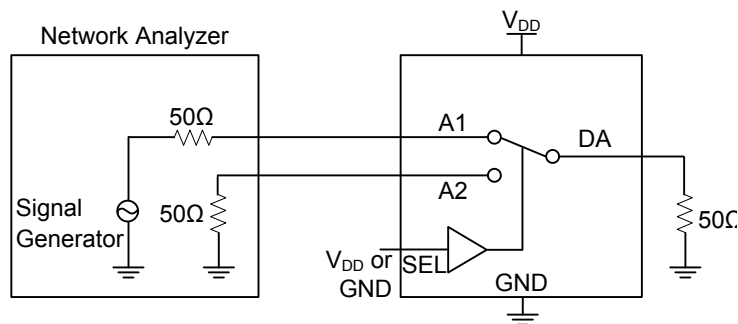


Fig. 6 Crosstalk

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