

General Description

The AOZ6115 is a high performance single-pole single-throw (SPST), low power, TTL-compatible bus switch.

The AOZ6115 can handle analog and digital signals. Signals with voltages up to V_{CC} (1.65V to 5.5V) can be transmitted in either direction.

When the Select pin is HIGH, A is connected to the output B pin. The path that is open will have a high-impedance state with respect to the output.

Features

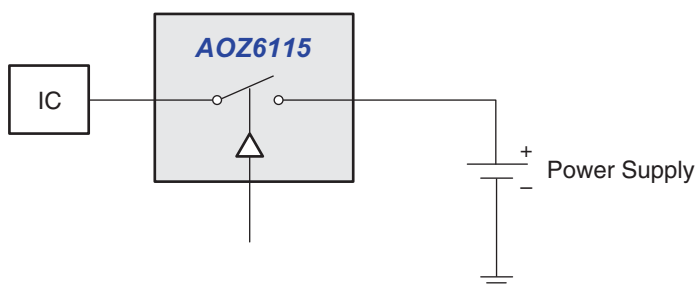
- SOT-23 5-Lead Package
- 1.65V to 5.5V V_{CC} operation
- Low C_{ON} : 18pF

Applications

- Audio and Video Signal Routing
- Battery Operated Equipment
- Communications Circuit
- Relay Replacement
- Power Routing



Typical Application



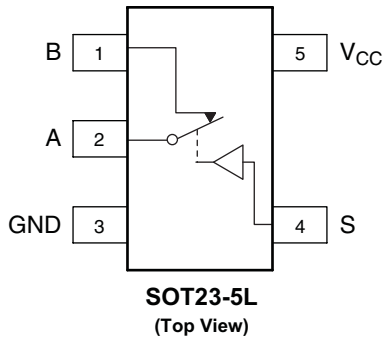
Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ6115CI	-40°C to +85°C	SOT-23 5-Lead	RoHS Compliant Green Product



AOS Green Products use reduced levels of Halogens, and are also RoHS compliant.
Please visit www.aosmd.com/web/quality/rohs_compliant.jsp for additional information.

Pin Configuration



Truth Table

Logic S Input	Function
0	No Connection
1	A Connected to B

Absolute Maximum Ratings

Exceeding the Absolute Maximum ratings may damage the device.

Symbol	Parameter	Rating
V_{CC}	Supply Voltage	-0.5V to + 6V
V_S	Switch Voltage ⁽¹⁾	-0.5V to $V_{CC} + 0.5V$
V_{IN}	Input Voltage ⁽¹⁾	-0.5V to V_{CC}
I_{IK}	Minimum Input Diode Current	-50mA
I_{SW}	Switch Current	130mA
I_{SWPEAK}	Peak Switch Current (Pulsed at 1ms, <10% Duty Cycle)	260mA
T_{STG}	Storage Temperature Range	-65°C to 150°C
P_D	SOT23-5 Power Dissipation at 85°C ⁽²⁾	180mW
ESD	Human Body Model (JESD22A-114E)	8000V

Notes:

1. Signals on A, or B or S exceeding V+ will be clamped by internal diodes. Limit forward diode current to maximum current ratings.
2. All leads welded or soldered to PC Board.

Electrical Characteristics (Continued)

Unless otherwise indicated, specifications indicate a temperature range of -40°C to +85°C

Symbol	Parameter	Test Conditions	Min.	Typ. ⁽¹⁾	Max.	Units	
DC CHARACTERISTICS							
V _{IH}	Input Voltage High	V _{CC} = 2.7V to 3.6V	1.5			V	
		V _{CC} = 4.5V to 5.5V	2.0				
V _{IL}	Input Voltage Low	V _{CC} = 2.7V to 3.6V			0.6	V	
		V _{CC} = 4.5V to 5.5V			0.8		
R _{ON}	On Resistance	V _{CC} = 2.7V, I _{OUT} = 100mA, B = 1.5V		3.0	4.0	Ω	
		V _{CC} = 4.5V, I _{OUT} = 100mA, B = 3.5V		2.0	3.0		
R _{FLAT}	On Resistance Flatness	V _{CC} = 4.5V, I _{OUT} = 100mA, B = 0V, 1V, 2V		0.8		Ω	
I _{IN}	Input Leakage Current	V _{IN} = 0V or V _{CC}	-1.0		1.0	μA	
I _{B(off)}	Off Stage Switch Leakage	V _{CC} = 5.5V, A = 1V, 4.5V, B = 4.5V, 1V	-100	4	100	nA	
I _{A(on)}	On State Switch Leakage	V _{CC} = 5.5V, A = 1V, 4.5V, B = floating	-20	1	20	nA	
POWER SUPPLY							
V _{CC}	Power Supply Range		1.65		5.5	V	
I _{CCQ}	Quiescent Supply Current	V _{CC} = 5.5V, V _{IN} = 0V or V _{CC} , I _{OUT} = 0V		0.5	1	μA	
I _{CCT}	Increase in I _{CC} per Input	V _{CC} = 3.6V, V _{IN} = 2.0V		3.3	10	μA	
		V _{CC} = 5.5V, V _{IN} = 2.4V		20	30		
AC CHARACTERISTICS							
t _{ON}	Turn-On Time	B = 1.5V, R _L = 50Ω, C _L = 35pF	V _{CC} = 2.7V to 3.6V		20	65	ns
			V _{CC} = 4.5V to 5.5V		10	40	
t _{OFF}	Turn-Off Time	B = 1.5V, R _L = 50Ω, C _L = 35pF	V _{CC} = 2.7V to 3.6V		20	30	ns
			V _{CC} = 4.5V to 5.5V		10	20	
Q	Charge Injection	C _L = 1.0nF, V _{GE} = 0V, R _{GEN} = 0Ω	V _{CC} = 2.7V to 3.6V		1		pC
			V _{CC} = 4.5V to 5.5V		2		
ANALOG SWITCH CHARACTERISTICS							
OIRR	Off Isolation	R _L = 50Ω, f = 1MHz		-70		dB	
BW	-3dB Bandwidth	R _L = 50Ω		300		MHz	
THD	Total Harmonic Distortion	V _{CC} = 5V, R _L = 600Ω, C _L = 50pF, f = 20Hz to 20kHz		0.005		%	
CAPACITANCE							
C _{IN}	Control Pin Capacitance	V _{CC} = 0V, f = 1MHz		2		pF	
C _{OFF}	B Port Off Capacitance	V _{CC} = 4.5V, f = 1MHz		7.5		pF	
C _{ON}	A Port Capacitance When Switch Enable	V _{CC} = 4.5V, f = 1MHz		18		pF	

Note:

1. Typical values:

AC Loading and Waveforms

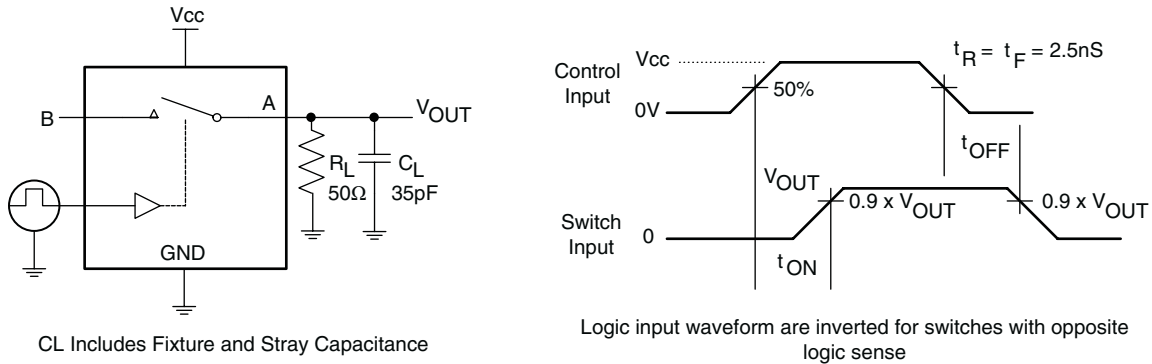


Figure 1. Turn-On/Turn-Off Timing

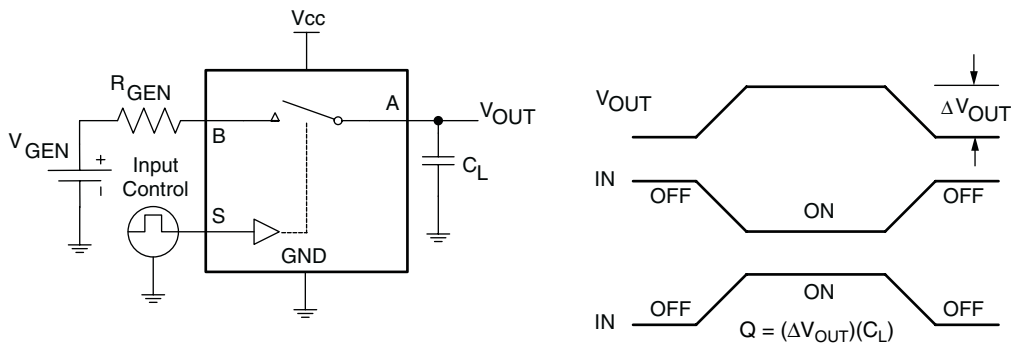


Figure 2. Charge Injection

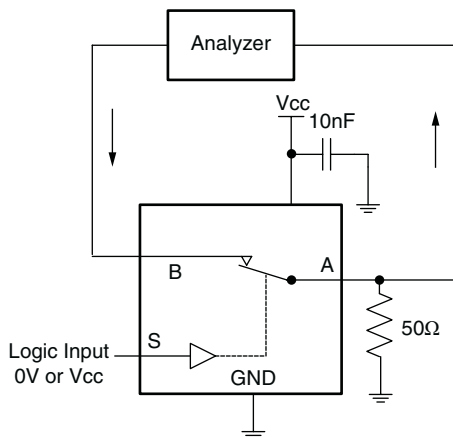


Figure 3. Bandwidth

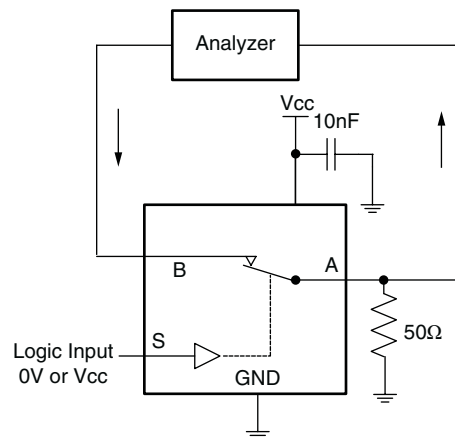


Figure 4. Harmonic Distortion

AC Loading and Waveforms (Continued)

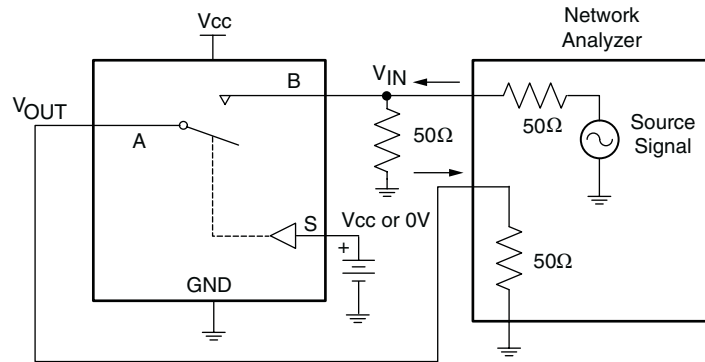


Figure 5. Off Isolation

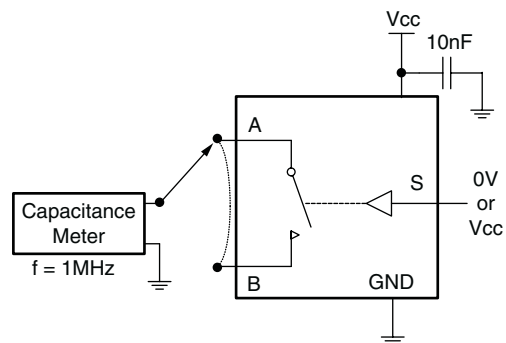
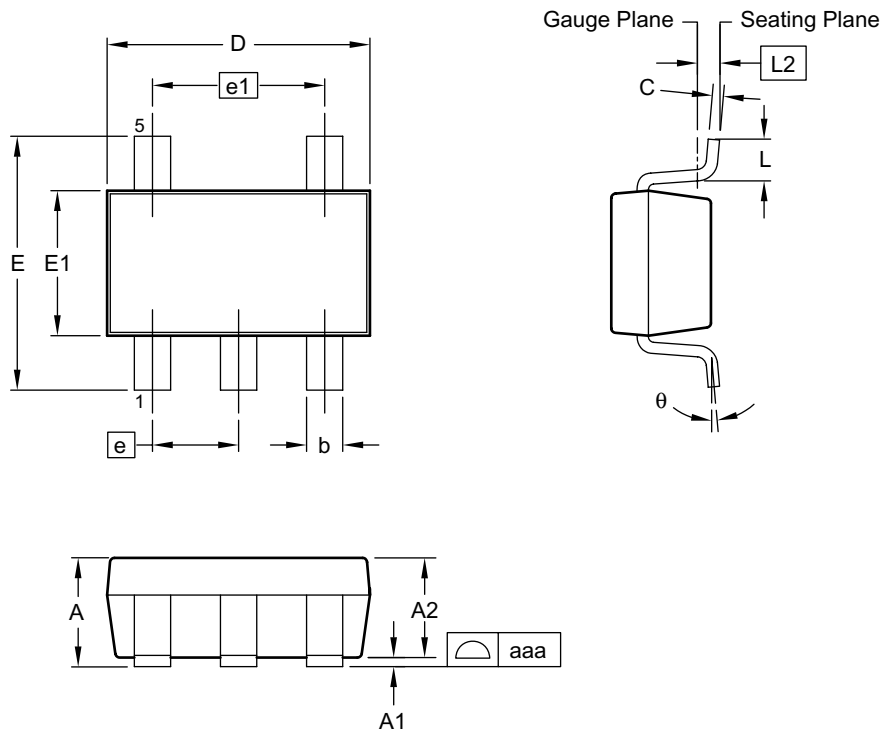
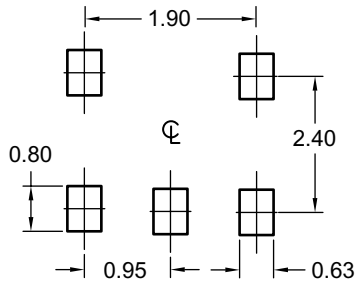


Figure 6. ON/Off Capacitance Measurement

Package Dimensions, SOT23-5L



RECOMMENDED LAND PATTERN



UNIT: mm

Dimensions in millimeters

Dimensions in inches

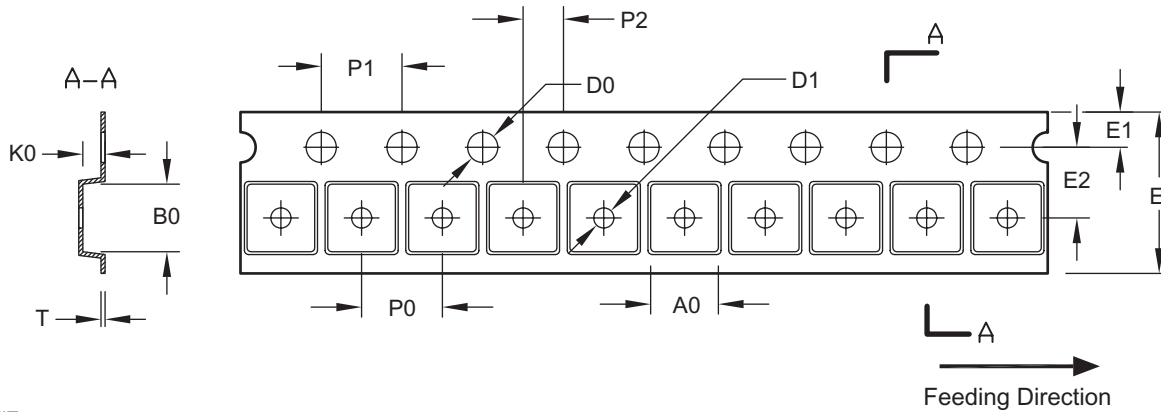
Symbols	Min.	Nom.	Max.	Symbols	Min.	Nom.	Max.
A	—	—	1.00	A	—	—	0.039
A1	0.00	—	0.10	A1	0.00	—	0.004
A2	0.70	0.88	0.95	A2	0.028	0.035	0.037
b	0.35	0.40	0.50	b	0.014	0.016	0.020
C	0.10	0.13	0.20	C	0.004	0.005	0.008
D	2.80	2.90	3.00	D	0.110	0.114	0.118
E	2.60	2.80	3.00	E	0.102	0.110	0.118
E1	1.50	1.60	1.70	E1	0.059	0.063	0.067
e	0.95 BSC			e	0.037 BSC		
e1	1.90 BSC			e1	0.075 BSC		
L	0.30	0.40	0.60	L	0.012	0.016	0.024
L2	0.25 BSC			L2	0.010 BSC		
aaa	0.10			aaa	0.004		
θ	0°	—	8°	θ	0°	—	8°

Notes:

1. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 5 mils.
2. Dimension "L" is measured in gauge plane.
3. Tolerance ±0.10mm (4 mil) unless otherwise specified
4. Refer to JEDEC MO-193C AB.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.

Tape and Reel Dimensions, SOT23-5L

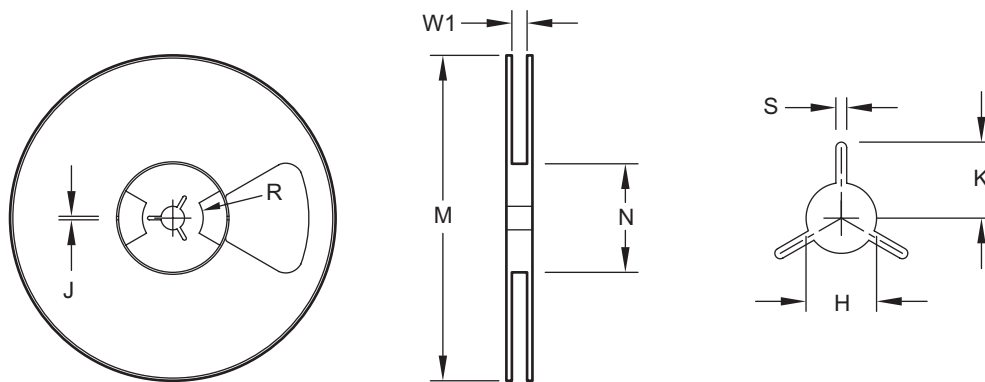
Tape



UNIT: mm

Package	A0	B0	K0	D0	D1	E	E1	E2	P0	P1	P2	T
SOT-23 5 & 6L LP	3.15 ±0.10	3.20 ±0.10	1.40 ±0.10	1.50 ±0.05	1.00 +0.10/-0.00	8.00 ±0.30	1.75 ±0.10	3.50 ±0.05	4.00 ±0.10	4.00 ±0.10	2.00 ±0.05	0.23 ±0.03

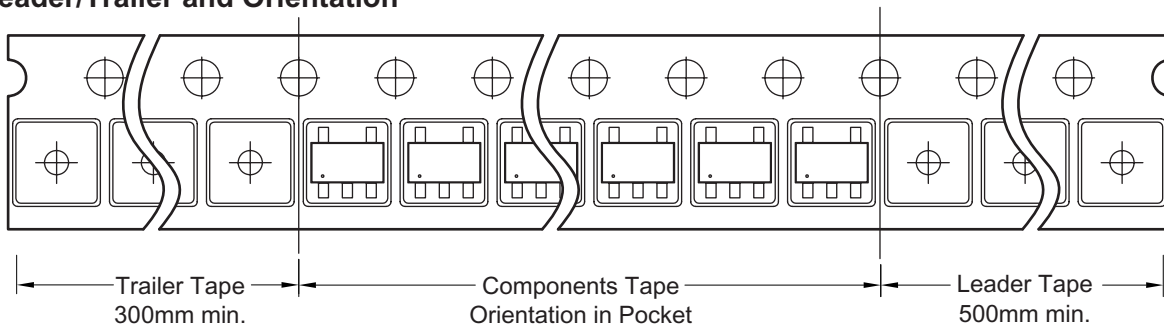
Reel



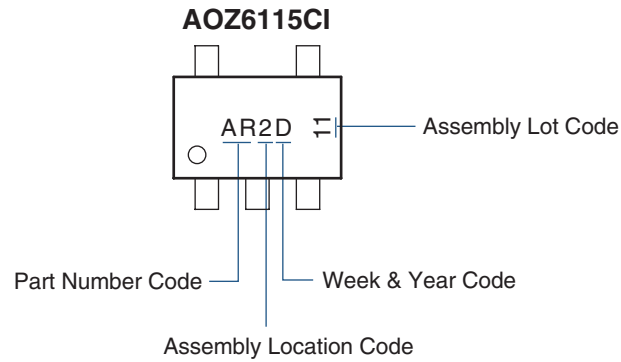
UNIT: mm

Tape Size	Reel Size	M	N	W1	H	S	K	R	J
8mm	ø177.8	ø177.8 Max.	55.0 Min.	8.4 +1.50 / -0.0	13.0 +0.5 / -0.2	1.5 Min	10.1 Min.	12.7	4.0 ±0.1

Leader/Trailer and Orientation



Part Marking



This datasheet contains preliminary data; supplementary data may be published at a later date. Alpha & Omega Semiconductor reserves the right to make changes at any time without notice.

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