

# Analog Switch Datasheet

## Analog Switch IP Core

### Overview

This Analog Switch IP contains 3 cells of Charge Pump, 500Ω Switch and 2kΩ Switch.

To ensure the characteristics of the on-resistance at lower power supply voltage, output of the Charge Pumps are used as power supply for analog switches.

- Analog switch :
  - On Resistance 500Ω : AT4UFASW0000AS500TOP
  - 2kΩ : AT4UFASW0000AS2KTOP
- Charge Pump : AT4UFASW0000VMTOP

### Key Features

#### General

- Extreme high temperature operation up to 125degreeC.
- 500Ω on resistance, maximum. (AT4UFASW0000AS500TOP)
- 2kΩ on resistance, maximum. (AT4UFASW0000AS2KTOP)
- Rail-to-rail input and output of the Analog Switch.
- Charge pump operates from 1.6V to 3.6V, and the output is 2.69V to 3.6V.
- Charge pump can operate on various clock frequency(250kHz~2MHz).

*\*This IP is contract design IP. Please contact for detail.*

## Block diagram

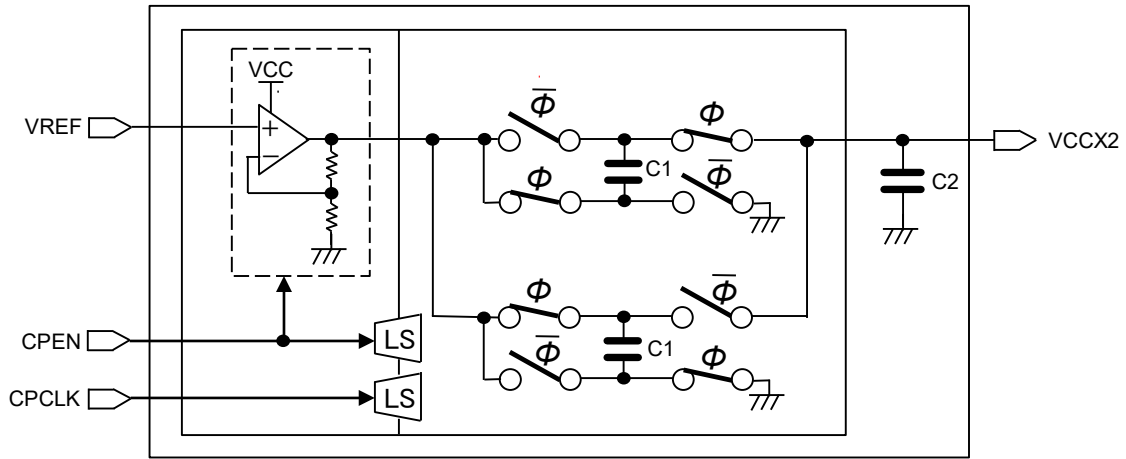


Figure 1. AT4UFASW0000VMTOP

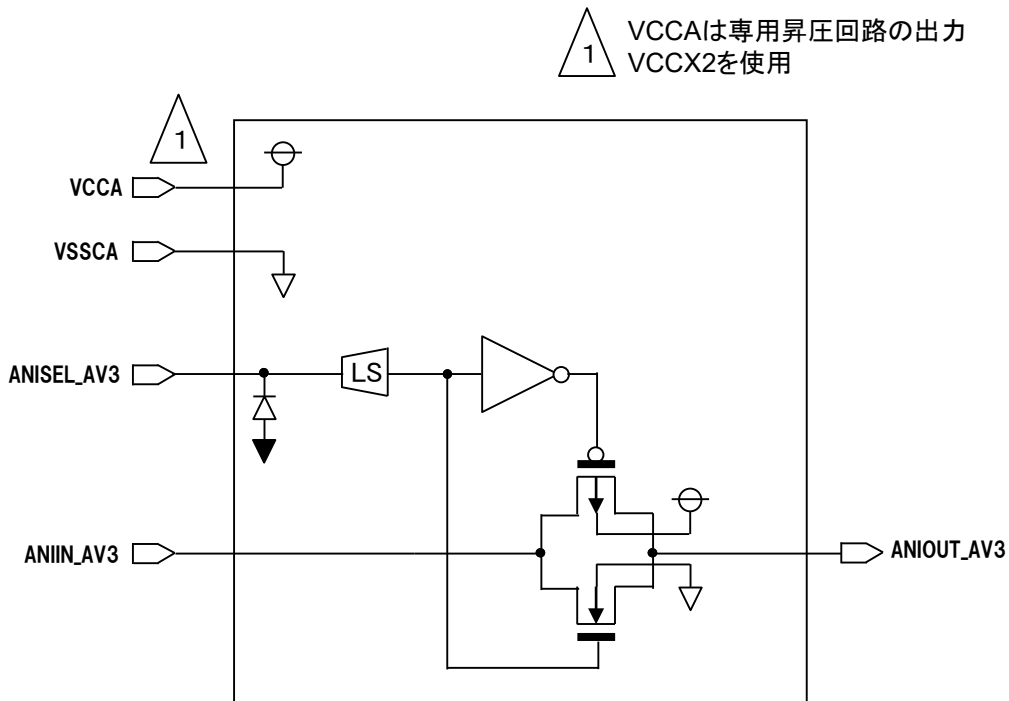


Figure 2. AT4UFASW0000AS500TOP,  
AT4UFASW0000AS2KTOP

## Electrical characteristics

**Table 1. AT4UFASW0000VMTOP**

parameter		symbol	Target Spec.			Unit	Note
			min	typ	max		
Supply voltage		VCCA	1.6	3.3	3.6	V	
Reference voltage		VREF	–	0.8	–	V	
Junction temperature		Tj	–40	–	125	°C	
CPCLK	Input pulse width	tinpw_clk	100	–	–	ns	Include Jitter
VCCX2	Output voltage	VCCX	2.69	3.2	3.6	V	
	Output charge	QVCCX2	250	–	–	fC	
Charge-Pump Capacitor		C1	–	2	–	pF	
Stabilization capacity		C2	8.27	8.75	9.27	pF	VCCX2=2.7V時
Supply Current	CPEN=1 CPCLK =stop	IVCCstby	–	1.6	2.0	uA	
		IVDDX2stby	–	1	10	nA	
Size		–	28 × 131.46			um × um	

**Table 2. AT4UFASW0000AS500TOP**

parameter		symbol	Target Spec.			Unit	Note
			min	typ	max		
Junction temperature		Tj	–40	25	125	°C	
Supply voltage		VCCA	2.69	3.3	3.6	V	Using VCCX2
Input voltage range		Ain	0	–	VCCA	V	
On resistance		Ron	–	–	0.5	kΩ	
Off leak current		Ioff	–	–	10	nA	
Output capacitance		Cout	–	–	100	fF	
Supply current		Ivcca	–	–	T.B.D.	uA	
Standby current		Isba	–	–	T.B.D.	nA	
Size		Area	–	T.B.D.	–	mm <sup>2</sup>	@on silicon

**Table 3. AT4UFASW0000AS2KTOP**

parameter		symbol	Target Spec.			Unit	Note
			min	typ	max		
Junction temperature		Tj	–40	25	125	°C	
Supply voltage		VCCA	2.69	3.3	3.6	V	Using VCCX2
Input voltage range		Ain	0	–	VCCA	V	
On resistance		Ron	–	–	2	kΩ	
Off leak current		Ioff	–	–	3	nA	
Output capacitance		Cout	–	–	30	fF	
Supply current		Ivcca	–	–	T.B.D.	uA	
Standby current		Isba	–	–	T.B.D.	nA	
Size		Area	–	T.B.D.	–	mm <sup>2</sup>	@on silicon