AS2M1 – Tact switch (toggle) controller, SPDT analog switch

Features

- Anti-bounce . . . . . > 80 ms (typ)
- Flexible control
- High-voltage . . . . . +-12V
- Analog switch

Applications

- Industrial control
- Music devices
- HMI

AS2M1D

SOIC-8 150mil, 1.27 mm

General Description

The AS2M1 is a tact switch controller with anti-bounce block, which "converts" tact switch into toggle switch and controls SPDT analog switch with (LED) indication on digital output status of toggle switch.

During Power-On NC input is connected to COM and OUT is switched to +Vcc. If "high-current"-signal is applied to SW, after anti-bounce delay (approximately 80 ms) , internal trigger change it's status and switching SPDT switch and Out.

Inputs SW and R are current inputs. If current flowing out from SW or R is less than 100 uA, then input level is high. If external circuit sources from those inputs more than 100 uA, then input level is low.

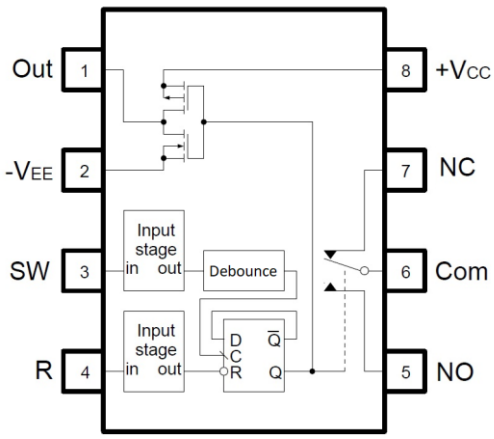
Transition from high level to low level leads to change of status of internal trigger (after anti-bounce delay).

Low level on Reset input resets internal trigger to initial state. During low level on Reset input controller don't response on SW input.

Pin Information

Pin No	Pin Name	Description
1	Out	Digital output
2	-Vee	Negative supply
3	SW	Switch control
4	R	Reset
5	NO	Normally open terminal , can be an input or output.
6	Com	Common terminal , can be an input or output.
7	NC	Normally closed terminal, can be an input or output..
8	+Vcc	Positive supply

Pinout



Absolute Maximum Ratings

Unless otherwise specified, T_A = 25ºC

Parameters	Symbol	Value	Units
Supply Voltage	$+V_{CC}$, $-V_{EE}$	+13, -13	V
Input, Output Voltages	V_I , V_O	V- ~ V+	V
Input Current (SW, R)	I_{IH}	200	µA
Output Current	I_{OH} , I_{OL}	10	mA
Storage Temperature Range	Tstg	-65~+150	ºC
Operating Temperature Range	Topr	-40~+85	ºC
Junction Temperature Range	Tj	-65~+150	ºC

Electrical Characteristics

($+V_{CC}$ = +12 V, $-V_{EE}$ =-12V, -40°C < T_A < +85°C using typical application circuit , typical specifications apply at T_A = +25°C.)

Parameters	Symbol	Conditions	Min	Typ	Max	Units
POWER SUPPLIES						
Supply Voltage Range (Bipolar) Supply Voltage Range (Unipolar) Supply Current	$+V_{CC}$, $-V_{EE}$ I_S		±4 8		±12 24 0.35	V V mA
DIGITAL CONTROL						
INPUT CURRENT (SW, R) Input Current (Low logic level) Input Current (High logic level) **OUTPUT VOLTAGE (Fig. 2)** Output voltage high Output voltage low	 I_{IL} I_{IH} U_{OH} U_{OL}	 V_{IN} = -11V V_{IN} = +11V R_L=6.8 kOhm R_L=6.8 kOhm	 120 9		 150 20 -9	 µA µA V V
ANALOG SWITCH						
Switch Off Leakage Current Switch On-Resistance	$I_{S(off)}$, $I_{D(off)}$ $R_{DS(on)}$		2	3,5 300	5	nA Ohm
DYNAMIC CHARACTERISTICS						
Debounce delay	T_{HZ}		50		150	ms

Note 1: if input (SW, R) is open , i.e. I_{IL} = 0 then input voltage on these input becomes $+V_{CC}$.

Input stage

Input stage of AS2M1 works in current mode. It allows flexibility in applications. Internal current source Ic1 sources to input approximately 10uA. If external network Is open, then input current I41 of CM (current mirror) is approximately zero. As a result, I42 (output current of CM) is also approximately zero. Ic2 is internal current source 30-50uA. Result of subtraction of currents I42 and Ic2 gives low level Ubuf for logic cell. In case, if external network sinks more than 100 uA, Ubuf changes to high level.
Ri resistor can be used just for protection purposes during power-on process and for defined Uref allow turn-on current flow.

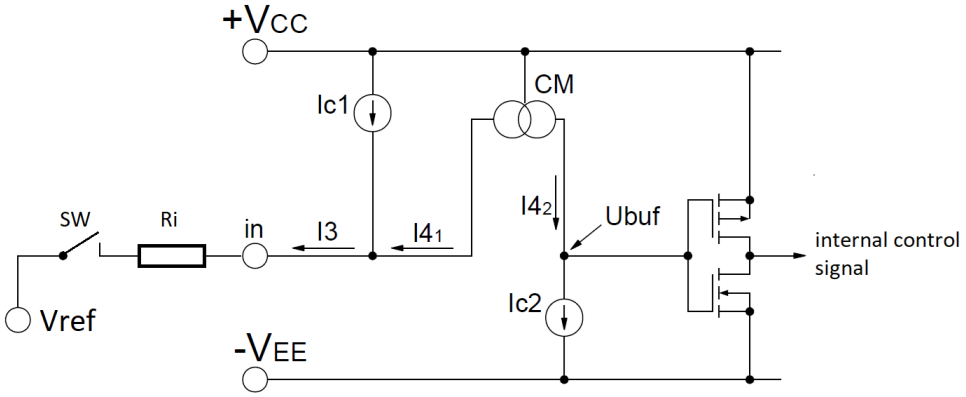


Fig. 1 Input stage

APPLICATION DIAGRAMS

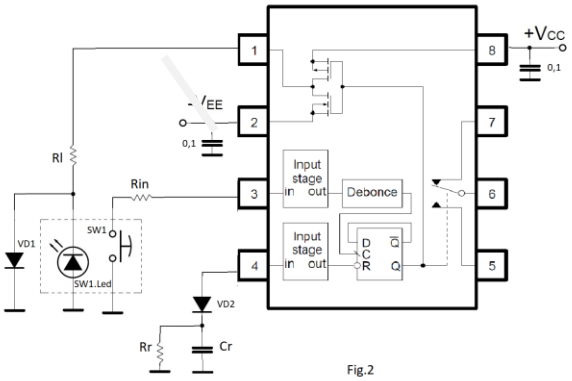


Fig.2

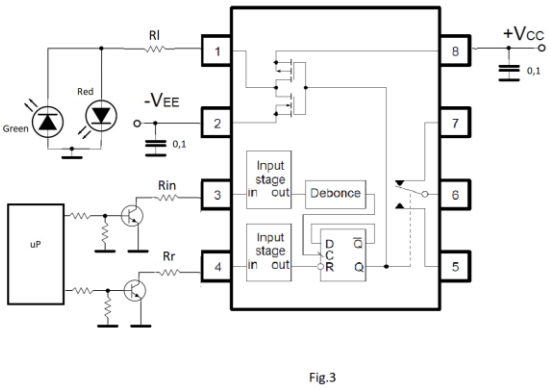


Fig.3

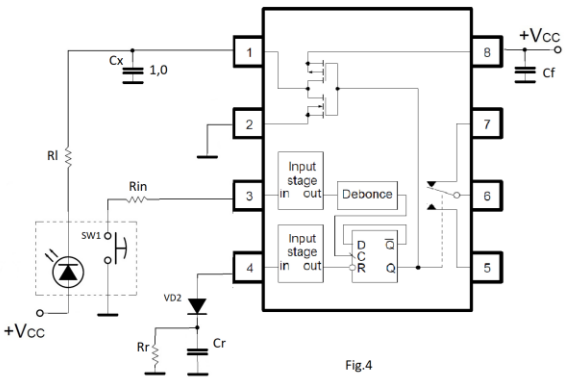


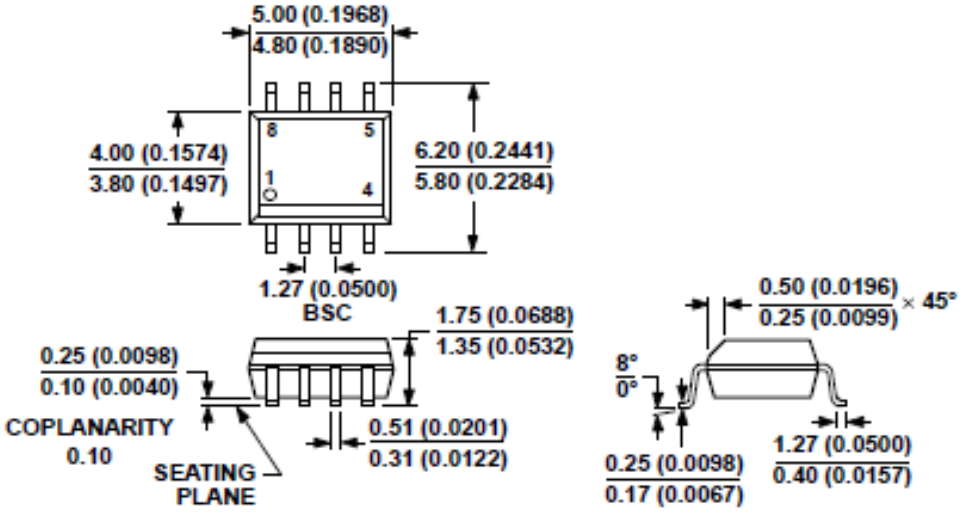
Fig.4

R_L =(+Vcc – V $_{Led\ forward}$)/0,0015
R_L=6.8 kOhm (for red Led)
Cx = 1.0 uF X7R (X5R) MLCC

Device type	Package
AS2M1D	SOIC-8 (150mil)

OUTLINE DIMENSIONS

Dimensions show in inches and (millimeters)



Revision history

Date	Revision	Changes
14-Jan-2022	1	Initial version