User Guide

TS13120 Single Channel EVM

Rev 1.10

Introduction

The Semtech TS13102 single channel EVM is to emulate a mechanical relay. It's designed to drop-in replace the Panasonic TX Relays TX2 SA LT - 2.

Objectives

The objective of this User Guide is to provide a fast, easy and thorough method to experiment with and evaluate the Semtech solutions. Sufficient information is provided to support the engineer in all aspects of adding support to their products. Developers are provided with all the information on how this EVM was built as a starting point for their own designs based on the TS13102.
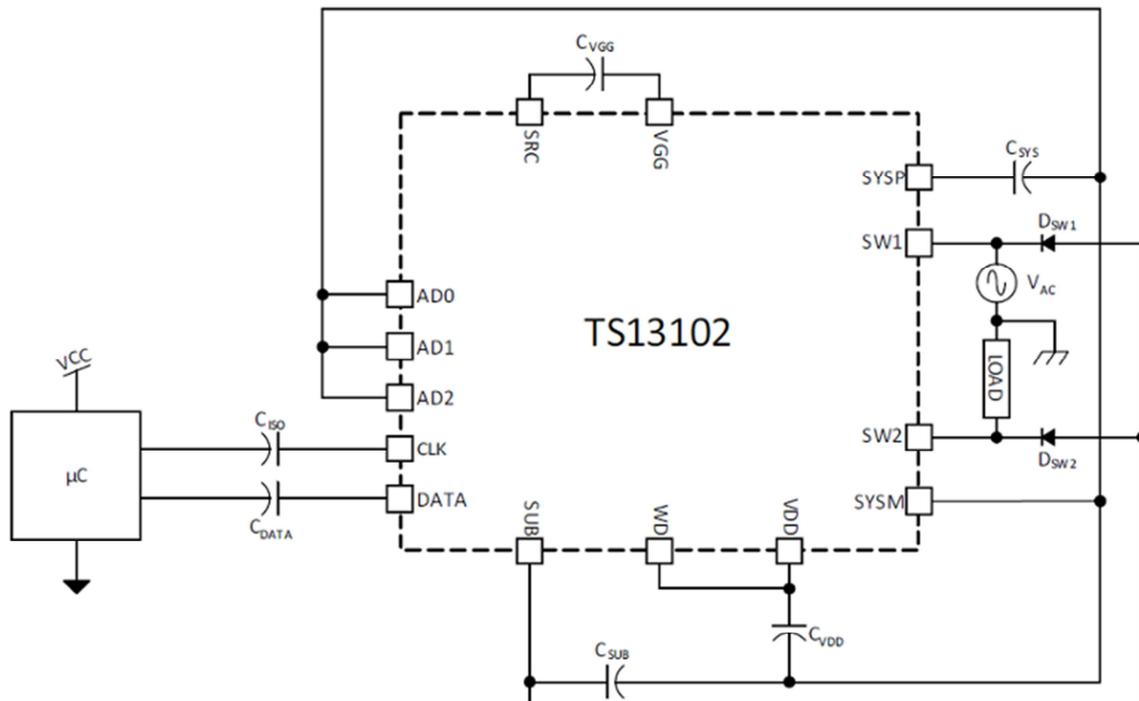
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Product Description

The TS13102 single channel EVM is to emulate a mechanical relay. It's designed to drop-in replace the Panasonic TX Relays TX2 SA LT - 2.

The TS13102 is a galvanically isolated 60V power switch device with bi-directional blocking. The device includes a single integrated 290mΩ high voltage switch allowing high efficiency switching of power loads or other high current applications. The single-pin CLK input pin controls the state of the switch through sequence options which control the way the device switches, including immediate on/off,

The TS13102 is ideal for the applications including power load / rail switching, isolated power supplies, solid state relays and HVAC control with the key advantage of no mechanical contact any more.

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EVM Schematic

C1
10V   DNI
1uF

INPUT1

P1
NC1   12 11
NC2   10 9
NC3   8   7
       6   5   NC4
       4   3
INPUT0 2   1   R2   0
Header 6X2

R1 0   DNI

TX2SA-LT-2

GND

C2
10V
1uF   DNI

R3   R4
10K   10K

R5   R6
10K   10K

D1   D2
         RED
GREEN

ADDR:000

U1
ADI   13   SW1   16   SW1
AD0   12   SW1   15
AD2/PS   14

P2
1 2
3 4
5 6
Header 3X2

VCC

U2
PB0   1   PB0   PB3   6
       2   GND   VCC   5   VCC
PB1   3   PB1   PB2   4
ATTINY10-TSHR

BT1
Battery

DAT1   100V
C3   680pF
100V
C4   100pF DAT2

CLK2   9   CLK

CLK1

DATA   8

WD   10
VDD   11

SW2   6
SW2   7

SW2

D3   D4
2 K 1   2 K 1

C6
100nF
10V   C9   100V
            100nF

C7
100V
100nF

1206
R7
100   SYSP

100
R10
1206   SYSM

C5
100nF
10V

SYSP   1   VGG   5
                        C8
                        1uF
                        10V

SYSM   2   SRC   4

C10
100nF
10V   SUB

PAD 17   SUB 3

TS13102

GND

GND

GND

R8   R9
10K   10K

S1

S2

GND

EVM board appearance

The EVM board includes two separated portions with pre-cut slots between them. The 'relay replacement board' is a pin to pin compatible and drop-in replacement for the Panasonic relay TX2 SA LT - 2. The 'debug board' provides a microcontroller program interface and two buttons with default functions is ON, OFF respectively.

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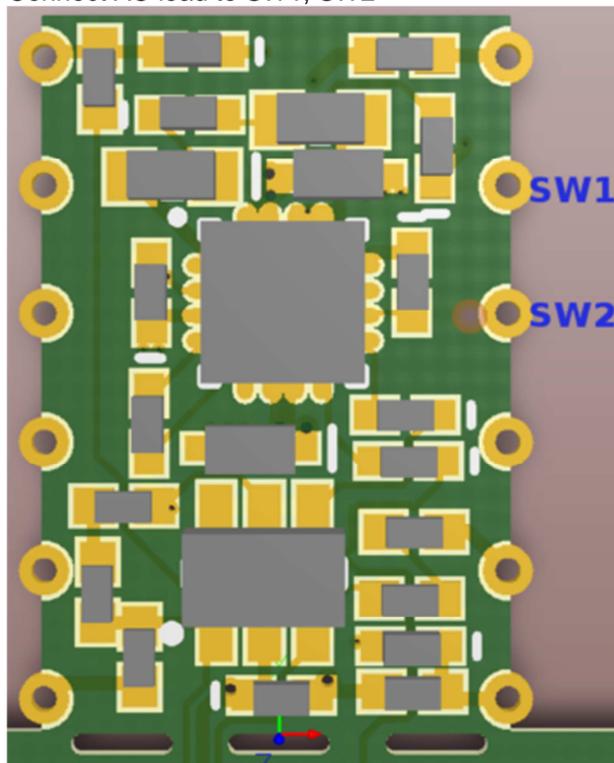**Semtech**
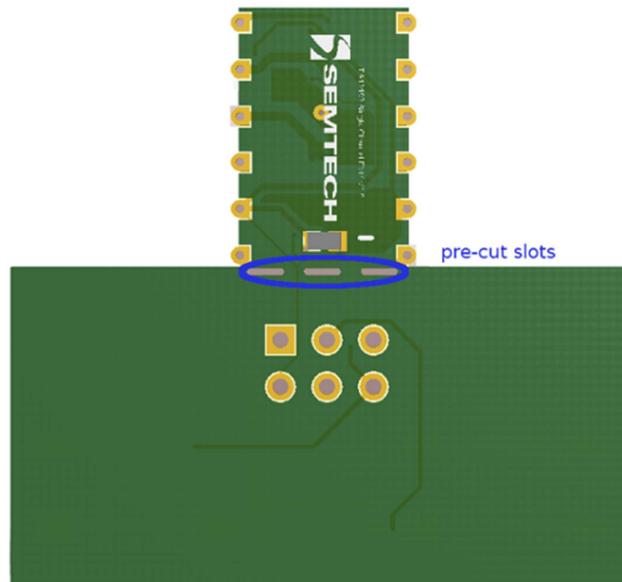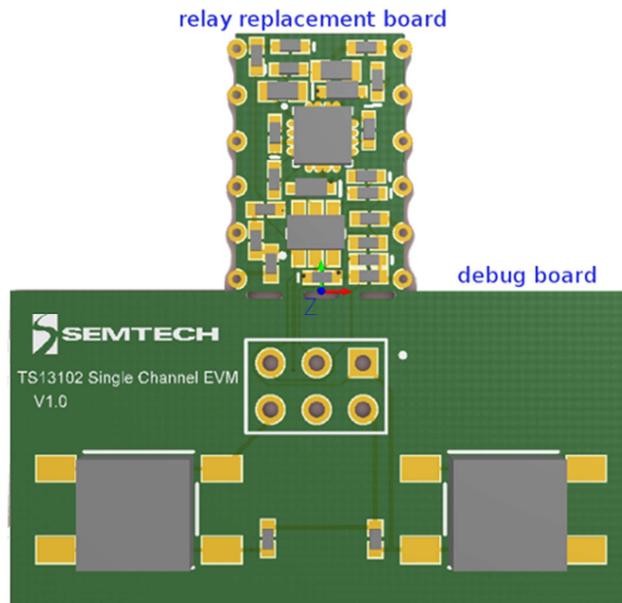
How to evaluate the EVM

A. With debug board

Follow below procedures to evaluate EVM with debug board.

1. Power EVM with VCC = +3.3V

2. Connect AC load to SW1, SW2

3. Press 'ON', 'OFF' switch to turn toggle the AC load.

B. Relay replecement

User just need to detach the 'relay replacement board' from EVM. Drop in to replace the Panasonic TX2 SA LT – 2 in any target PCB. TS13102 EVM is pin two pin compatible with above mechanical relay. Compare to the mechanical relay, TS13102 EVM has more advantage such as long operation life, no mechanical contact noise, low power consumption etc.

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