

GL7101EVM User Guide

GL7101S Evaluation Module

NOTICE

This user’s guide describes the characteristics, operation, and use of the GL7101 evaluation module. This module is designed to evaluate the performance of the GL7101 as earth leakage current detector IC with self-test. This document also includes a schematic, printed-circuit board (PCB) layouts, and bill of materials (BOM) for the GL7101 evaluation module.

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1. Overview

The GL7101 is designed for use in earth leakage circuit interrupters for operation directly off the AC line in breakers. It contains pre-regulator, main regulator, subsequent(after) regulator, differential amplifier, level comparator, and latch circuit. The input in the differential amplifier is connected to the secondary node of zero current transformer. The level comparator generates high level when earth leakage current is greater than a certain level.

2. Hardware

The GL7101 Module is intended to provide basic functional evaluation for the GL7101 device. The fixture layout is not intended to be a model for the target circuit. GL7101 Module as the board is designed to connect to a high-power AC source. The entire board uses high-voltage, thus the parts of it are not safe to touch when it is connected to a live source. The GL7101 Module is not designed to actually break or interrupt the source voltage in case a fault current is detected.

2.1. Features

The GL7101 Module provides the following features:

- The device can operate with an input voltage ranging from 110VAC to 220VAC.
- Ease of access to device pins with test points and sockets pins.
- The setup process for testing is simple

* For additional detailed information on the leakage current detector IC, please refer to the GL7101 datasheet.

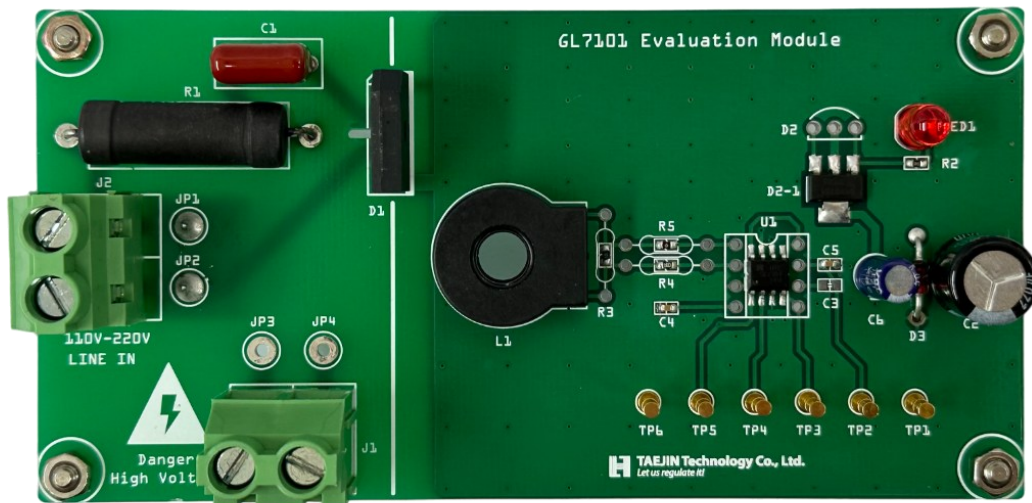


Figure 1. GL7101 Evaluation Module Image

3.1. Setup before testing

- Step 1. Prepare equipment for safe high-voltage test setup.
- Step 2. Ensure the GL7101 module is completely de-energized and not connected to any voltage source.
- Step 3. Make sure the screw terminal and source wire are connected according to Figure 2.



Figure 2. Hardware and Wire Setup

3.2. Testing trip current and operation for GL7101

The operation of the GL7101 can be tested by the following procedures.

This module is not designed to actually break or interrupt the source voltage in case a fault current is detected.

Step 1. Power off a voltage source.

Step 2. Verify that the setup in section 3.1 has been correctly completed.

Step 3. Turn on the voltage source between 110VAC and 220VAC. It is recommended to apply isolated voltage.

Step 4. Generate a leakage current from load AC Line to Earth Ground or from load between AC Lines.
Leakage current would be appropriate between 39 mA RMS and 48 mA RMS.

Step 5. Check the LED1. If the LED1 turns on, it means the GL7101 is operating normally. (Figure 3.)
If LED1 does not turn on, increase the leakage current and retest.

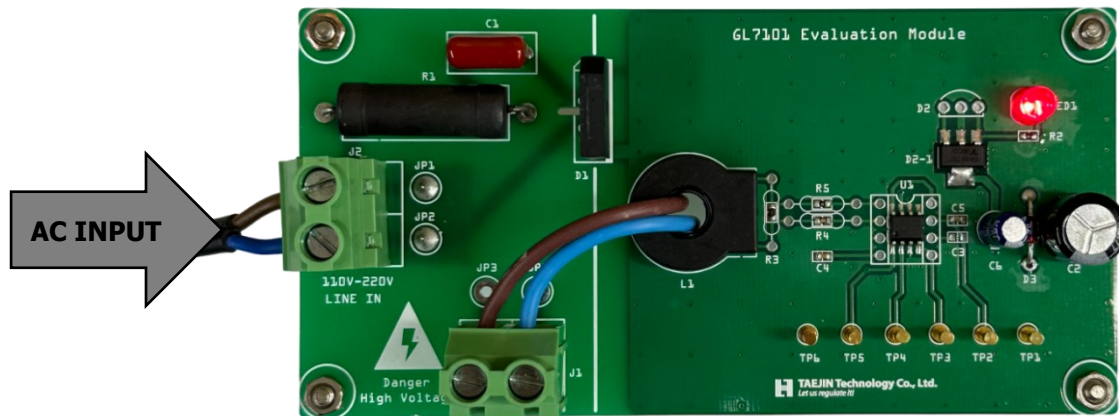


Figure 3. Check normal operation of GL7101

4. Schematic

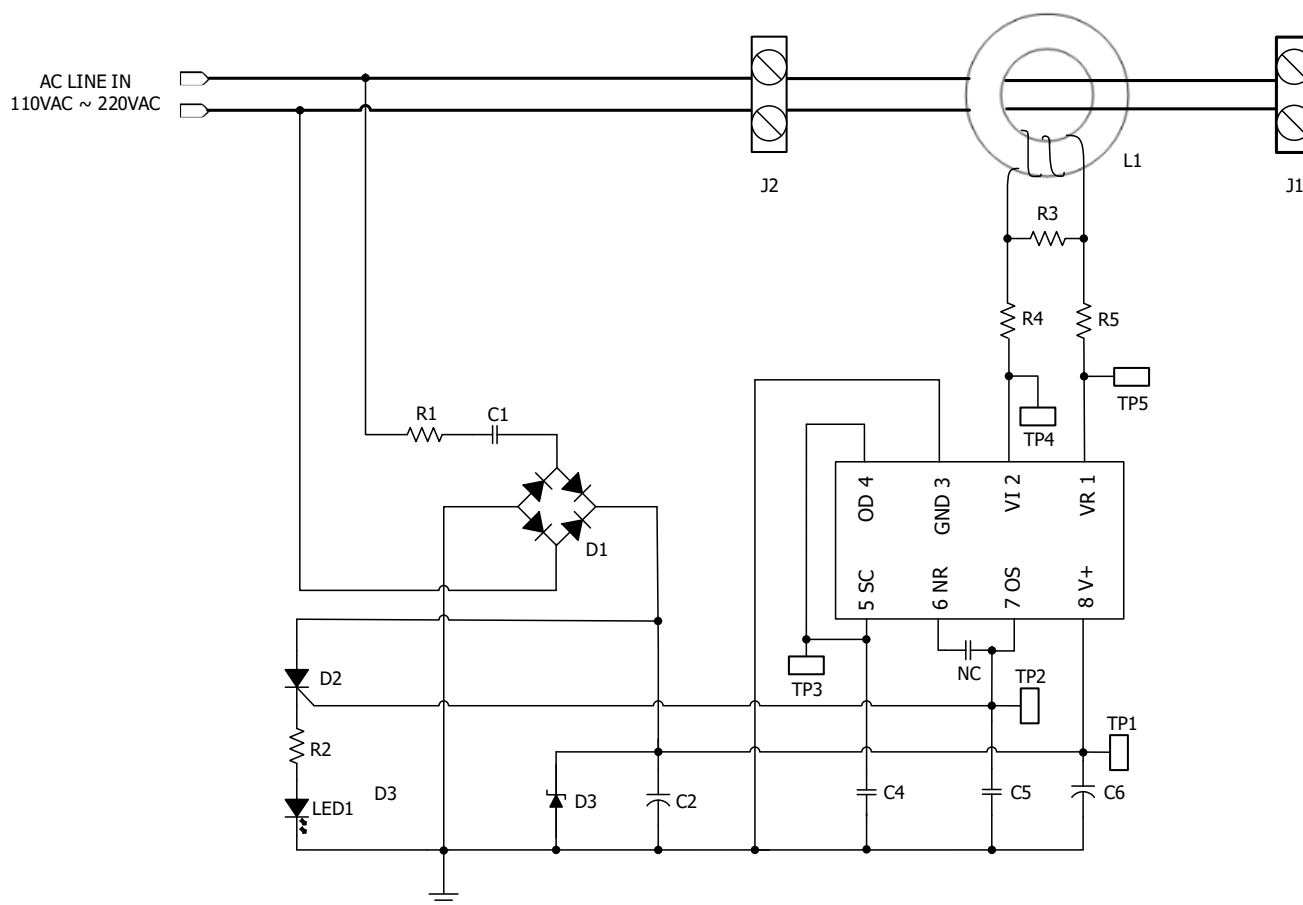


Figure 4. GL7101 Evaluation Module Schematic

5. Printed-circuit board (PCB) layouts

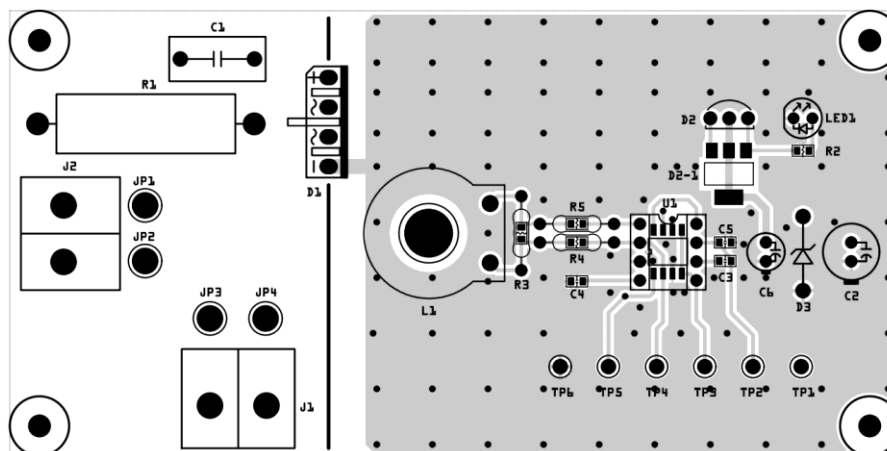


Figure 5. GL7101 Evaluation Module Top Layer

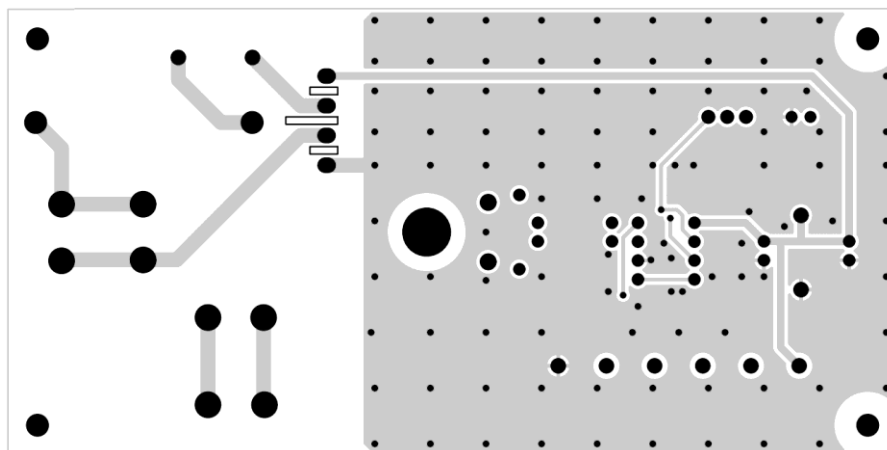


Figure 6. GL7101 Evaluation Module Bottom Layer

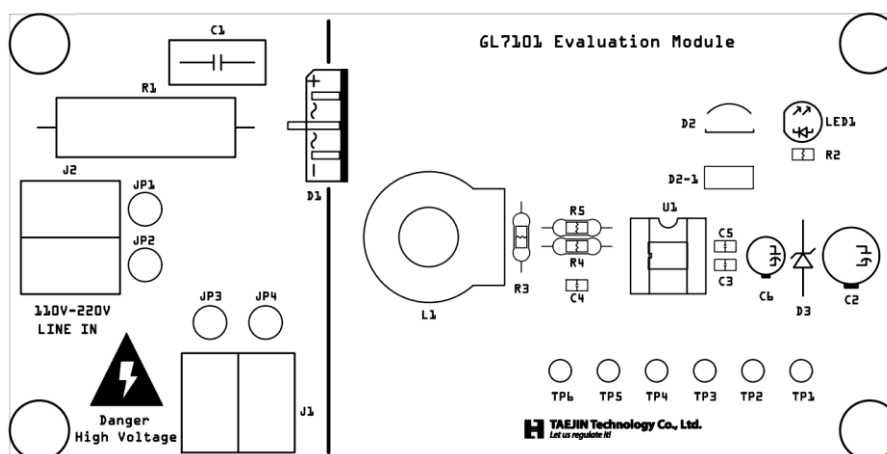


Figure 7. GL7101 Evaluation Module Top Silk

6. Bill of materials (BOM)

R. No	Description	Part Number	Package	Manufacturer
U1	Earth Leakage Current Detector	GL7101	SOP-8 / DIP-8	TAEJIN
L1	Zero-Phase Current Transformers	MR/C-01		Kemet
D1	2.0A Bridge Rectifier	KBP206G		Diodes
D2-1	0.8A Thyristors	S4X8TS1RP	SOT-223	Littlefuse
D3	15V Zener Diodes	1N4744A	DO-41	Vishay
R1	300Ω / 5W			
R2	1KΩ		0603	
R3	300Ω		0603	
R4	100Ω		0603	
R5	0Ω		0603	
C1	0.1uF / 400V			
C2	220uF / 25V	SHL		Samyoung
C3	NC			
C4	0.047uF / 50V	MLCC	0603	
C5	0.047uF / 50V	MLCC	0603	
C6	10uF / 50V	SHL		Samyoung
LED1	Red Led			
J1,J2	Screw Terminal Block			

7. Ordering Information

Part Number	GL7101EVM
Device	GL7101S Evaluation Module
Package	Assembled Module

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