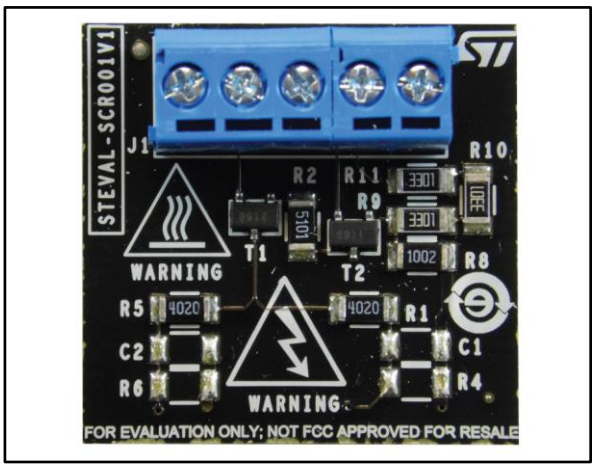
STEVAL-SCR001V1

Inrush current solution with bypass SCR

Data brief



Features

- Two high-temperature thyristors (SCR) in D²PAK package to bypass the inrush resistor
- Compact SMD solution: 26 x 26 mm (≈ 1 sq. in)
- Simple drive circuit: 2 low voltage transistors and 7 resistors (no MCU)
- Requires an unregulated power supply (12 V typ.; created from a secondary winding)
- Compatible with PFC and fly-back converter
- Suitable for applications from 50 W up to 800 W (230 V_{RMS}, T_{AMB} = 60 °C)
- Input voltage range: 90-265 V_{AC}, 50/60 Hz
- Robust and immune (2 kV IEC 61000-4-5, 2.5 kV IEC 61000-4-4) and low EMI noise (EN55014) solution
- RoHS compliant

Description

The STEVAL-SCR001V1 is a low cost evaluation board for testing ST inrush current limitation solutions.

Based on an analog control circuit with only discrete components, it offers a compact and reliable alternative to relays to bypass inrush current limiting resistors in power converters.

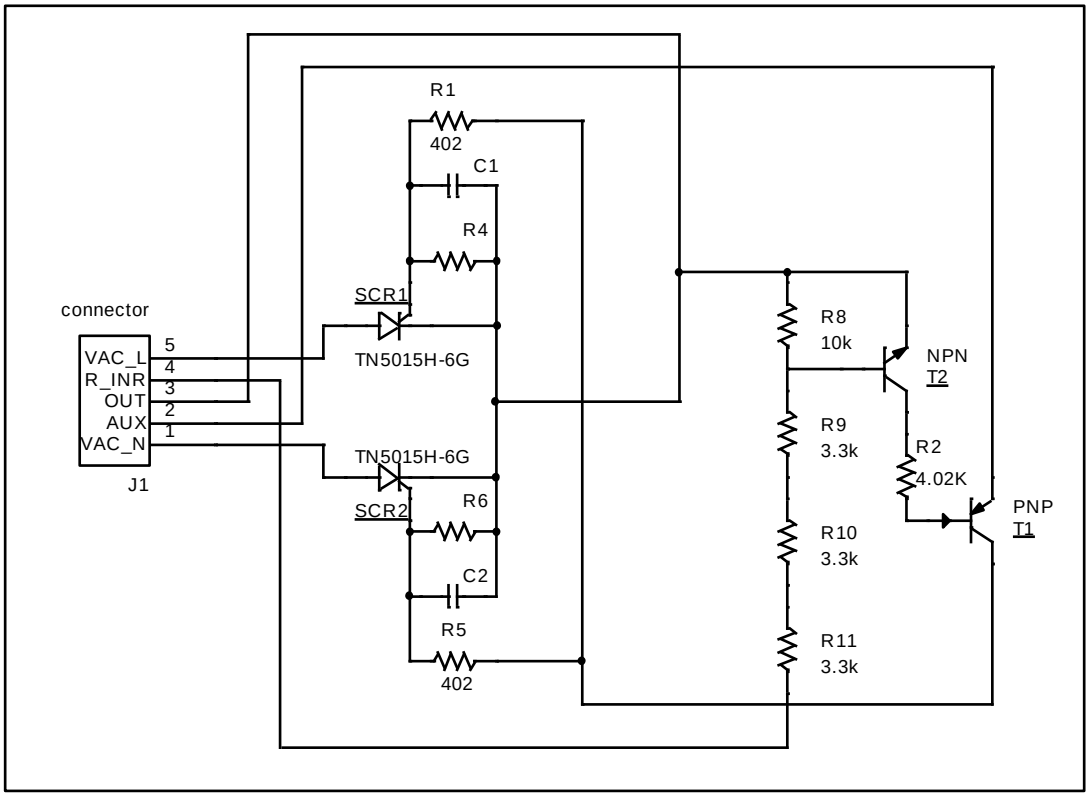
Its drive circuit is self-synchronized to the AC line. Working in pulsed mode, it allows low gate drive consumption and no SCR reverse losses. Additionally, the 50 mA SCR *TN5015H-6G* provides better immunity to Electrical Fast Transients (EFT).

The power supply of the circuit can be created from a secondary winding of a PFC or an auxiliary power supply used to drive transistor and power the system MCU. With no adjustment needed when 12 V unregulated power is supplied, and only 5 wires to connect, this board can be easily implemented on existing PFC or fly-back converters.

It is suitable for applications with peak current up to 5 A (at 60 °C ambient temperature).

1 Schematic diagrams

Figure 1: STEVAL-SCR001V1 circuit schematic



2 Revision history

Table 1: Document revision history

Date	Version	Changes
06-Nov-2017	1	Initial release.
05-Dec-2017	2	Fixed erroneous cover page Features and Description sections

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