



STEVAL-IHT006V1

Electronic thermostat for refrigerator with LED light
based on the STM8S103F2P6, ACST830-8T and VIPer16LN

Data brief

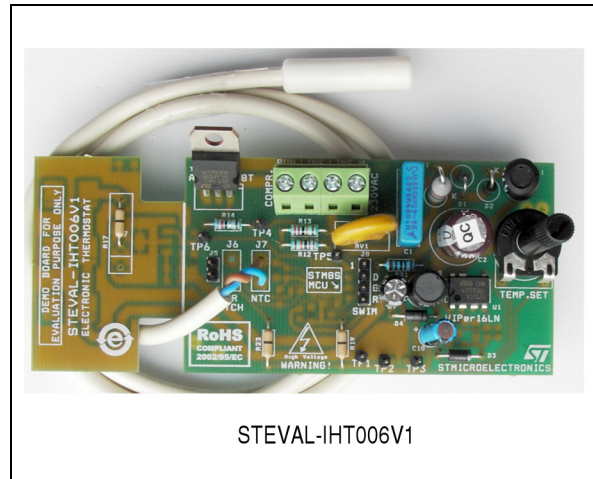
Features

- Input voltage range: 195-265 VAC, 50/60 Hz
- -12 V / -5 V 180 mA SMPS based on VIPer16LN (negative power supply)
- Standby power consumption below 170 mW at 220 VAC 50 Hz
- Maximum output power: 200 W
- 20-pin, 8-bit STM8S103F2 MCU as the main controller
- Zero-voltage switching (ZVS) to synchronize MCU events with the voltage mains
- Compressor run winding driven by the ACST8, an overvoltage-protected AC switch
- Cabinet temperature selectable using the potentiometer
- Cabinet temperature sensed by the NTC thermistor
- Three 0.5 W 100 mA LEDs as replacement of a 15 W incandescent light bulb
- Door switch input
- Standard in-circuit programming connector (SWIM - "single wire interface module")
- IEC 61000-4-4 pre-compliance test passed (burst up to 8 kV)
- IEC 61000-4-5 pre-compliance test passed (surge up to 2 kV)
- RoHS compliant

Description

The STEVAL-IHT006V1 is a low-cost demonstration board for the home appliance market. It is suitable to replace the mechanical thermostat and the incandescent light bulb in domestic refrigerators.

The system employs the 8-bit STM8S103F2 microcontroller running at 16 MHz and featuring 4 kB of Flash memory, a 10-bit A/D converter,



8/16-bit timers, communication interfaces and 640 bytes EEPROM.

The power supply circuitry is based on the VIPer16LN, an offline converter with an 800 V avalanche-rugged power section, operating at 60 kHz.

The STEVAL-IHT006V1 is designed to drive small-size or mid-size compressors up to 200 W using the ACST8, an 8 A 800 V overvoltage-protected AC switch.

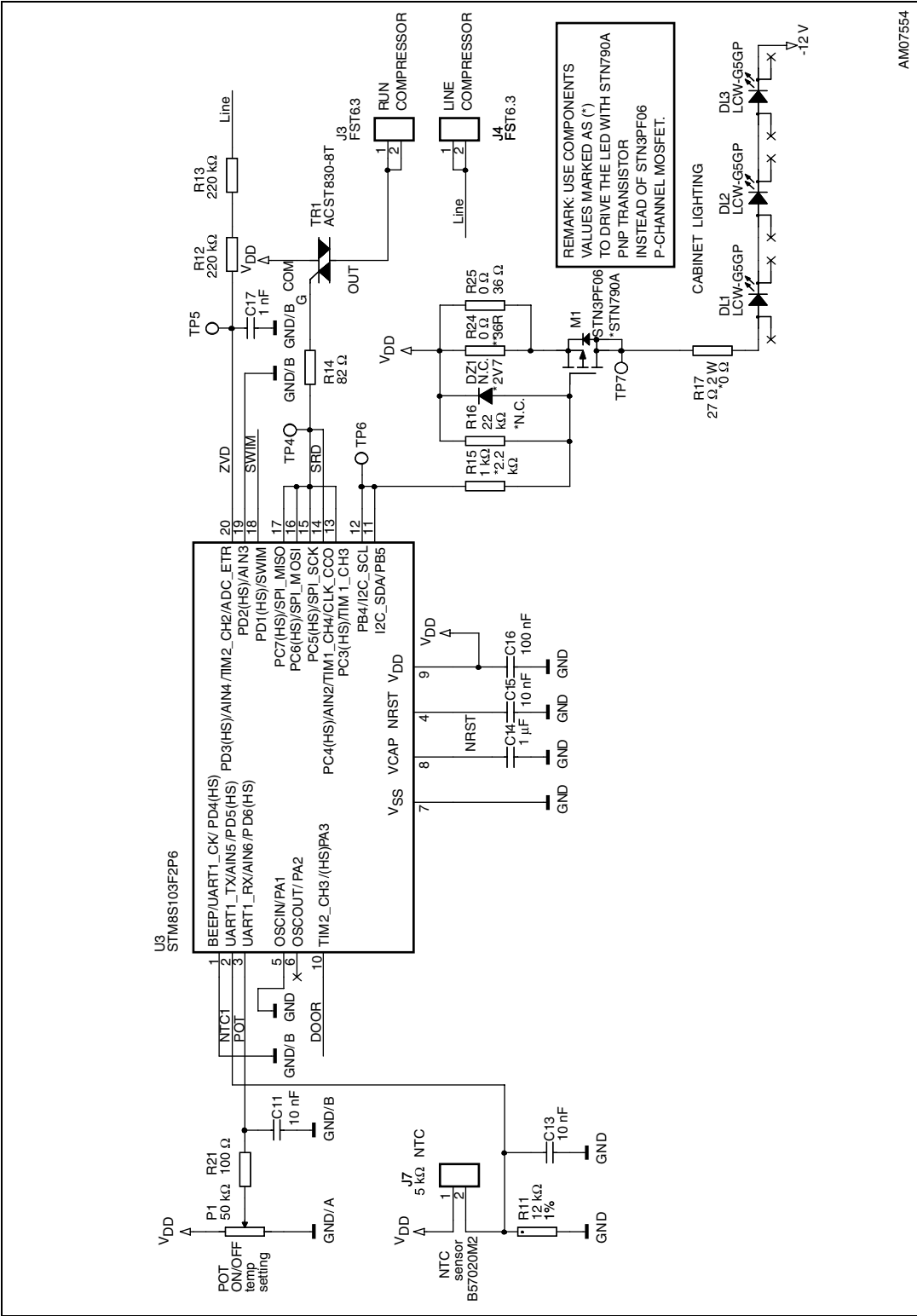
Three 100 mA LEDs efficiently replace a 15 W incandescent light bulb.

The demonstration board has passed the internal tests for EMC directives: IEC 61000-4-4 (burst up to 8 kV) and IEC 61000-4-5 (surge up to 2 kV).

In standby mode, the STEVAL-IHT006V1 has a standby power consumption below 170 mW at 220 VAC 50 Hz.

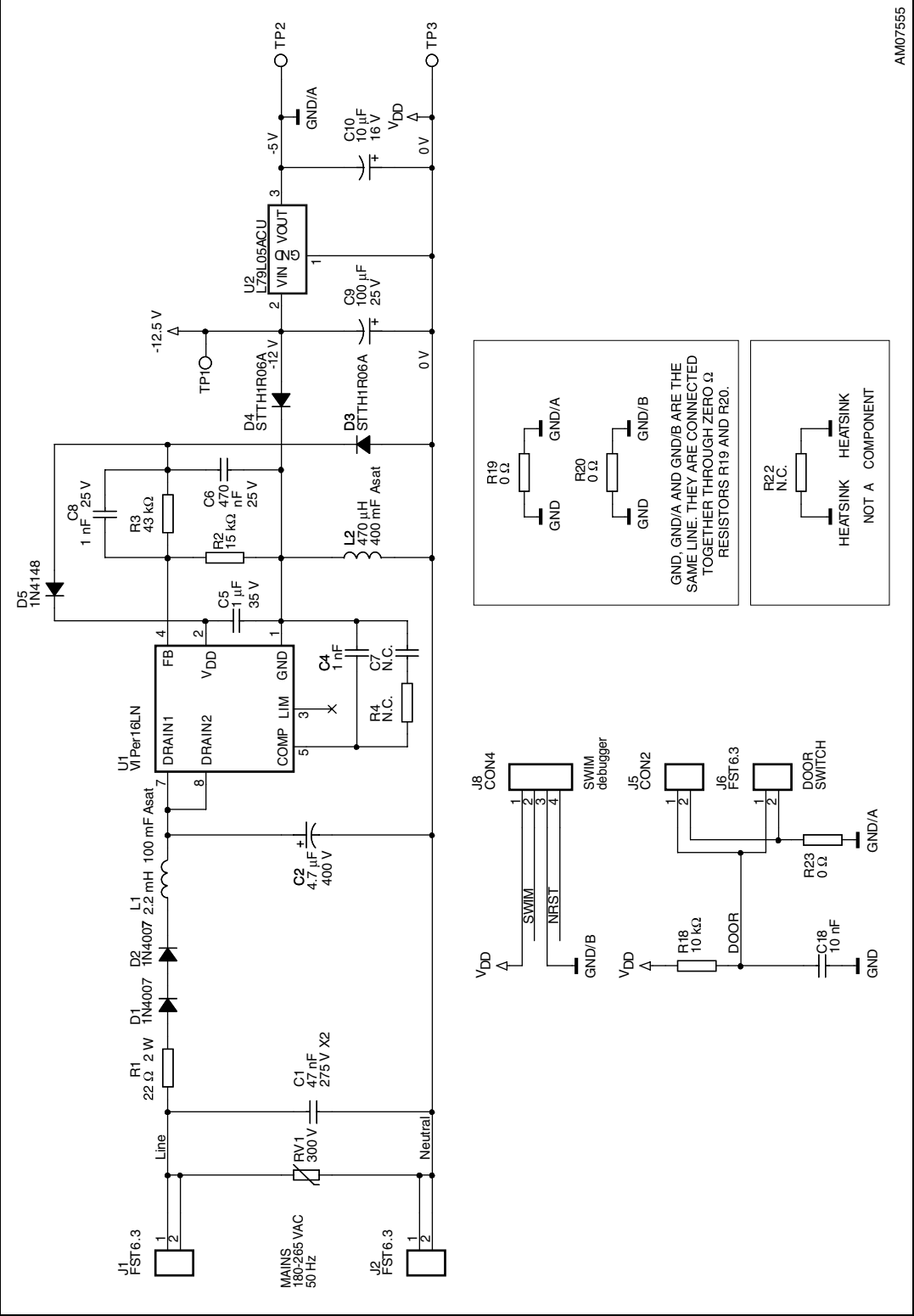
1 Schematic

Figure 1. Circuit schematic - part 1



AM07554

Figure 2. Circuit schematic - part 2



2 Revision history

Table 1. Document revision history

Date	Revision	Changes
10-Oct-2011	1	Initial release.
07-Dec-2011	2	<ul style="list-style-type: none">– Corrected the part number VIPER16LN in the features and description sections of the coverpage– Modified the titles of <i>Figure 1</i> and <i>2</i>

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