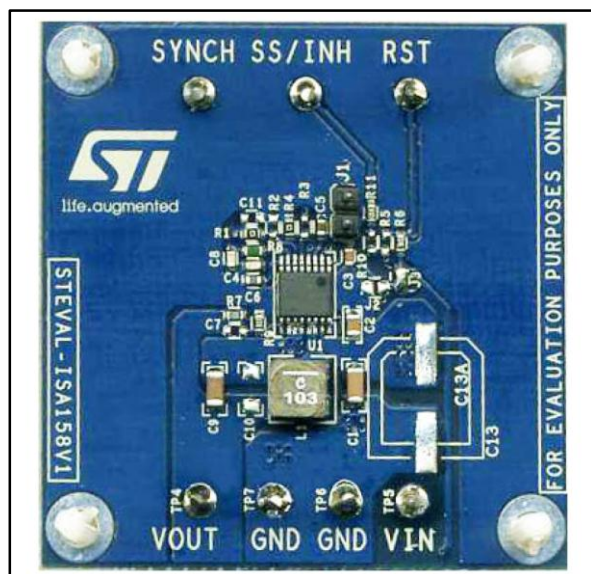


## 38 V, 2 A synchronous step-down switching regulator evaluation board based on the A6986

Data brief



### Description

The STEVAL-ISA158V1 is a product evaluation board based on ST's A6986, a 38 V, 2 A synchronous step-down switching regulator with 30  $\mu$ A of quiescent current. It is designed for automotive system battery-powered applications. It can be used in low consumption mode (LCM) such as in car body implementations, or in low noise mode (LNM) such as in car audio applications.

### Features

- 4 V to 38 V operating input voltage
- Low consumption mode or low noise mode
- 30  $\mu$ A  $I_Q$  at light load (LCM  $V_{OUT} = 3.3$  V)
- 5  $\mu$ A  $I_{Q-SHTDWN}$
- Adjustable  $f_{SW}$  (250 kHz - 2 MHz)
- Output voltage adjustable from 0.85 V to  $V_{IN}$
- Embedded output voltage supervisor
- Synchronization
- Adjustable soft-start time
- Internal current limiting
- Overvoltage protection
- Output voltage sequencing
- Peak current mode architecture
- $R_{DS(on)HS} = 180$  m $\Omega$ ;  $R_{DS(on)LS} = 150$  m $\Omega$
- Thermal shutdown
- RoHS compliant

# 1 Schematic diagram

Figure 1: STEVAL-ISA158V1 circuit schematic

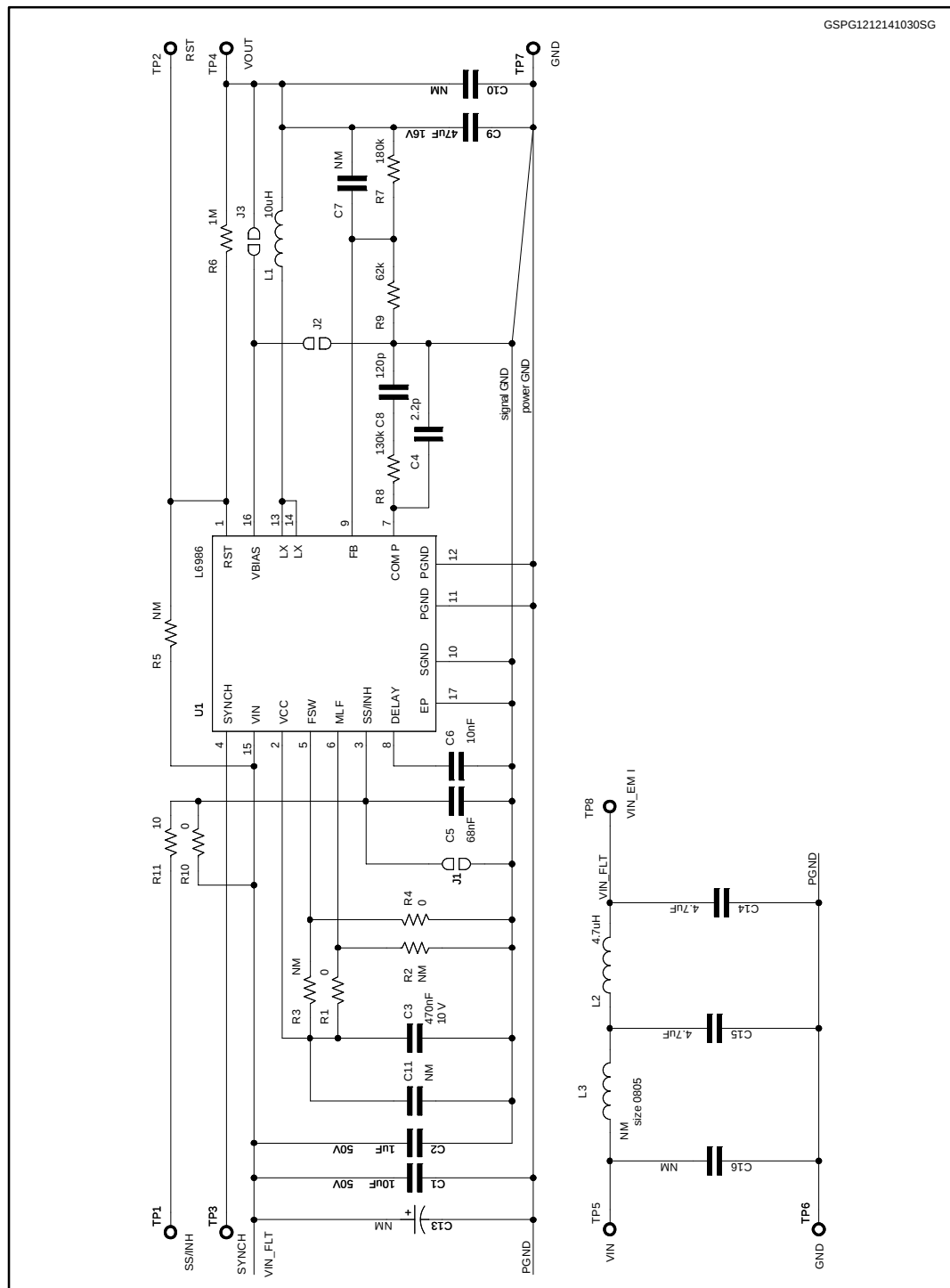


Table 1: BOM list

| Reference         | Part number         | Description                           | Manufact. |
|-------------------|---------------------|---------------------------------------|-----------|
| C1                | CGA5L3X5R1H106K     | 10 $\mu$ F - 1206 - 50 V - X7R - 10%  | TDK       |
| C2                | C2012X7S2A105K      | 1 $\mu$ F - 0805 - 50 V - X7S - 10%   | TDK       |
| C3                |                     | 470 nF - 50 V - 0603                  |           |
| C4                |                     | 2.2 pF - 50 V - 0603                  |           |
| C5                |                     | 68 nF - 50 V - 0603                   |           |
| C6                |                     | 10 nF - 50 V - 0603                   |           |
| C8                |                     | 120 pF - 50 V - 0603                  |           |
| C9                | C3216X5R1C476M      | 47 $\mu$ F - 1206 - 16 V - X5R - 20%  | TDK       |
| C14, C15, C16     | C3216X7R1H475K160AC | 4.7 $\mu$ F - 1206 - 50 V - X7R - 10% | TDK       |
| C7, C10, C11, C13 |                     | Not mounted                           |           |
| R1, R4            |                     | 0 R - 0603                            |           |
| R6                |                     | 1 M $\Omega$ - 1% - 0603              |           |
| R7                |                     | 180 k $\Omega$ - 1% - 0603            |           |
| R8                |                     | 130 k $\Omega$ - 1% - 0603            |           |
| R9                |                     | 62 k $\Omega$ - 1% - 0603             |           |
| R11               |                     | 10 $\Omega$ - 1% - 0603               |           |
| R2, R3, R5, R10   |                     | Not mounted                           |           |
| L1                | XAL5050-103MEC      | 10 $\mu$ H                            | Coilcraft |
| L2                | XAL5030-472MEC      | 4.7 $\mu$ H                           | Coilcraft |
| L3                | MPZ2012S221A        | EMC bead                              | TDK       |
| J1                | Open                |                                       |           |
| J2                | Open                |                                       |           |
| J3                | Closed              | Switchover                            |           |
| J4                | Open                |                                       |           |
| U1                | A6986               |                                       | ST        |

## 2 Revision history

Table 2: Document revision history

| Date        | Rev | Changes        |
|-------------|-----|----------------|
| 15-Jan-2015 | 1   | First release. |

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