

Power management system IC

Data brief

Features

- One 5 V low-drop voltage regulator (100 mA, continuous mode)
- Low standby current: V_{BAT} -standby, 7 μ A; V_1 -standby, 45 μ A
- Window watchdog and fail-safe functionality
- Configurable fail safe output
- Programmable reset threshold (4.6 V, 3.5 V)
- VS monitoring / temperature measurement
- LIN 2.1 compliant (SAEJ2602 compatible) transceiver
- High-speed LIN Flash mode up to 100 kbit/s
- ST SPI interface for mode control and diagnostic
- 2 high-side drivers for e.g. LED or HALL ($R_{DSon,typ} = 7 \Omega$)
- 2 relay drivers ($R_{DSon,typ} = 2 \Omega$)
- Outputs are short-circuit protected
- Direct drive feature for high-sides
- Temperature warning and thermal shutdown



Applications

- Automotive ECU such as door zone and body control modules.

Description

The L99PM60J is a power management system IC containing one low-drop regulator direct drive feature for high-side drivers and a LIN 2.1 compliant SAEJ602 transceiver.

The integrated standard serial peripheral interface (SPI) controls all L99PM60J operation modes and provides driver diagnostic functions.

Table 1. Device summary

Package	Order codes	
	Tube	Tape and reel
PowerSSO-16	L99PM60J	L99PM60JTR

Contents

1 Block diagram 3

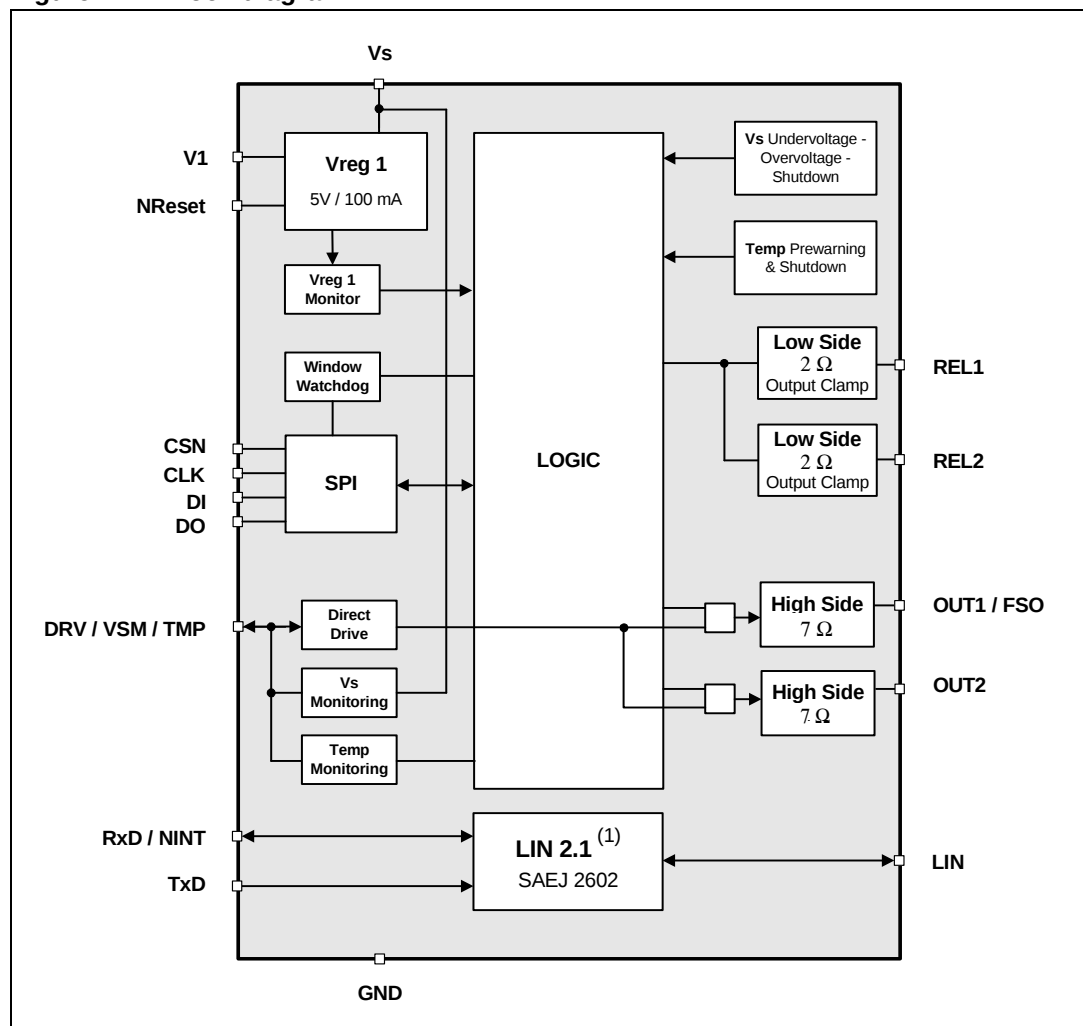
2 Pin definitions and functions 4

3 Revision history 5



1 Block diagram

Figure 1. Block diagram



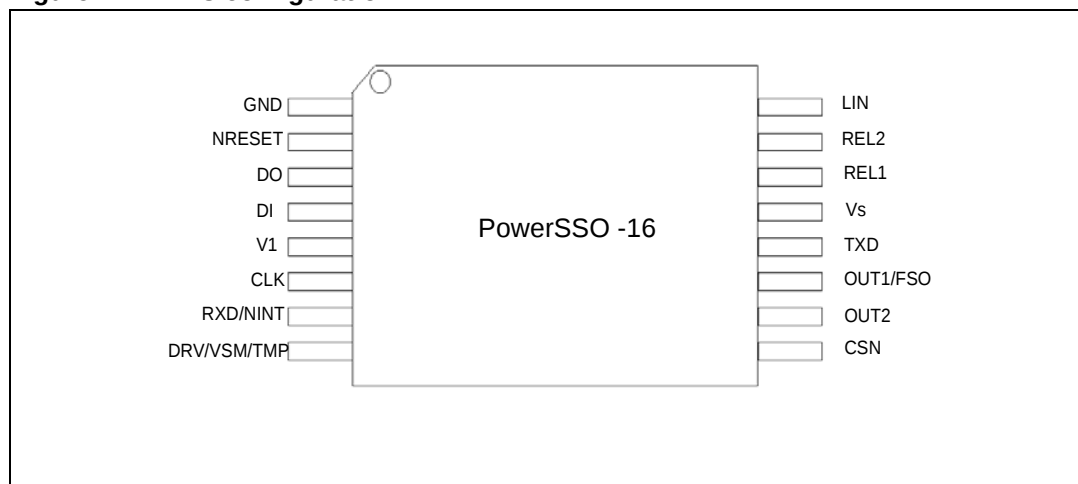
1. LIN 2.1 compliant

2 Pin definitions and functions

Table 2. Pins definitions and functions

Pin	Symbol	Function
1	GND	Ground
2	NRESET	NRESET output to microcontroller; internal pull-up of typ. 100 K Ω (reset state = low)
3	DO	SPI: serial data output
4	DI	SPI: serial data input
5	V ₁	Voltage regulator 1 output: 5 V supply e.g. microcontroller
6	CLK	SPI: serial clock input
7	RXD/NINT	Receiver output of the LIN 2.1 transceiver or interrupt:
8	DRV/VSM/TMP	Direct drive for high-side drivers OUT1/OUT2; V _S and temperature monitoring
9	CSN	SPI: chip select not input
10	OUT2	High-side drivers (7 Ω , typ.) : to supply e.g. LED's, HALL sensors, external contacts
11	OUT1/FSO	High-side driver (7 Ω , typ.) : to supply e.g. LED's, HALL sensors, external contacts. Default configuration is Fail Safe output.
12	TXD	Transmitter input of the LIN 2.1 transceiver
13	V _S	Power supply voltage
14	REL1	Low-side driver (2 Ω typ.): e.g. relay
15	REL2	Low-side driver (2 Ω typ.): e.g. relay
16	LIN	LIN bus line

Figure 2. Pins configuration



3 Revision history

Table 3. Document revision history

Date	Revision	Description of changes
08-Feb-2010	1	Initial release.
24-Sep-2013	2	Updated disclaimer.

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

ST PRODUCTS ARE NOT DESIGNED OR AUTHORIZED FOR USE IN: (A) SAFETY CRITICAL APPLICATIONS SUCH AS LIFE SUPPORTING, ACTIVE IMPLANTED DEVICES OR SYSTEMS WITH PRODUCT FUNCTIONAL SAFETY REQUIREMENTS; (B) AERONAUTIC APPLICATIONS; (C) AUTOMOTIVE APPLICATIONS OR ENVIRONMENTS, AND/OR (D) AEROSPACE APPLICATIONS OR ENVIRONMENTS. WHERE ST PRODUCTS ARE NOT DESIGNED FOR SUCH USE, THE PURCHASER SHALL USE PRODUCTS AT PURCHASER'S SOLE RISK, EVEN IF ST HAS BEEN INFORMED IN WRITING OF SUCH USAGE, UNLESS A PRODUCT IS EXPRESSLY DESIGNATED BY ST AS BEING INTENDED FOR "AUTOMOTIVE, AUTOMOTIVE SAFETY OR MEDICAL" INDUSTRY DOMAINS ACCORDING TO ST PRODUCT DESIGN SPECIFICATIONS. PRODUCTS FORMALLY ESCC, QML OR JAN QUALIFIED ARE DEEMED SUITABLE FOR USE IN AEROSPACE BY THE CORRESPONDING GOVERNMENTAL AGENCY.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2013 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Philippines - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com