



Application Note

AN001003

AS8579

SPI Configuration (Quick Setup)

v1-00 • 2020-Dec-24

Content Guide

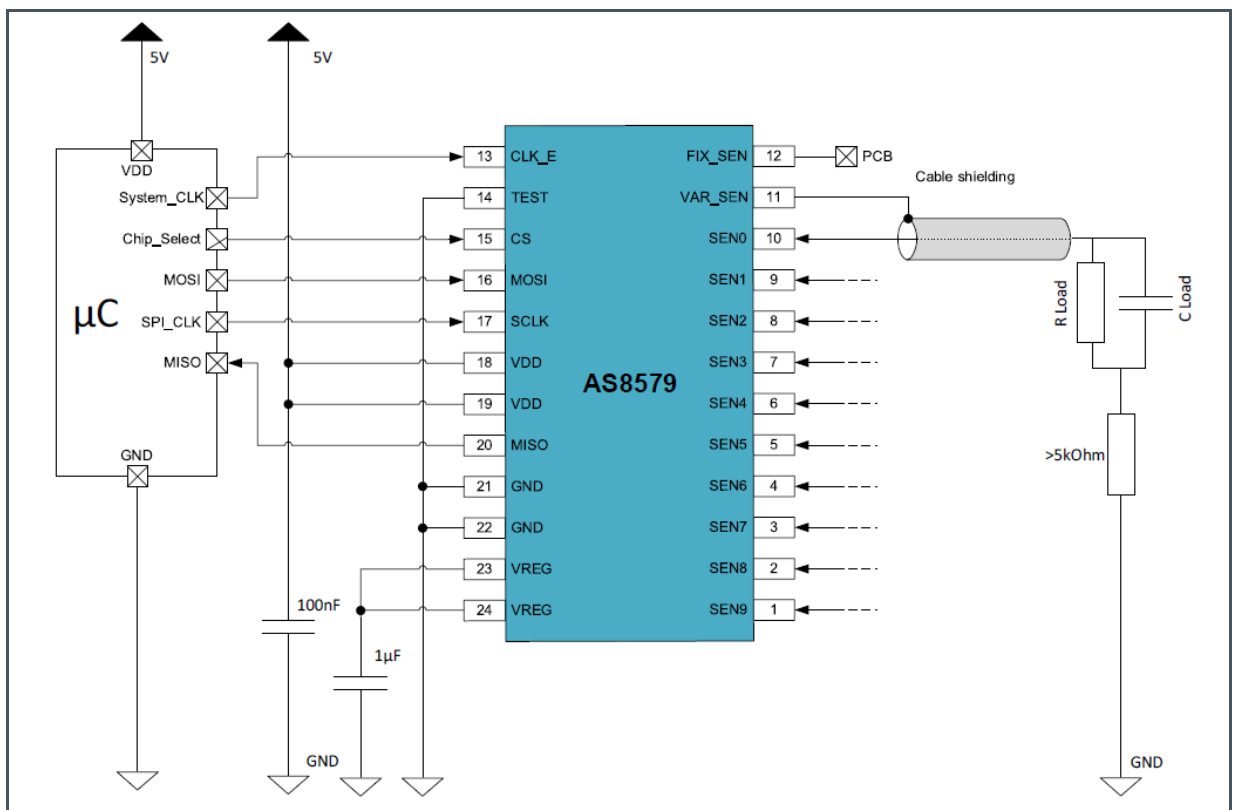
1	Introduction	3	4	Revision Information	9
2	System Parameters Overview	4	5	Legal Information.....	10
3	Initialization.....	5			
3.1	Example.....	6			

1 Introduction

This application note describes minimum necessary configuration for measurement setup and gives a rough overview of configurable parameters, which can be set over SPI Interface.

The parameter values are dependent on the load and its application. This application note gives a general overview and help at first quick evaluation.

Figure 1:
Application Circuitry – Minimum Circuitry for Evaluation



2 System Parameters Overview

Figure 2:
Block Diagram and Configurable Parameters

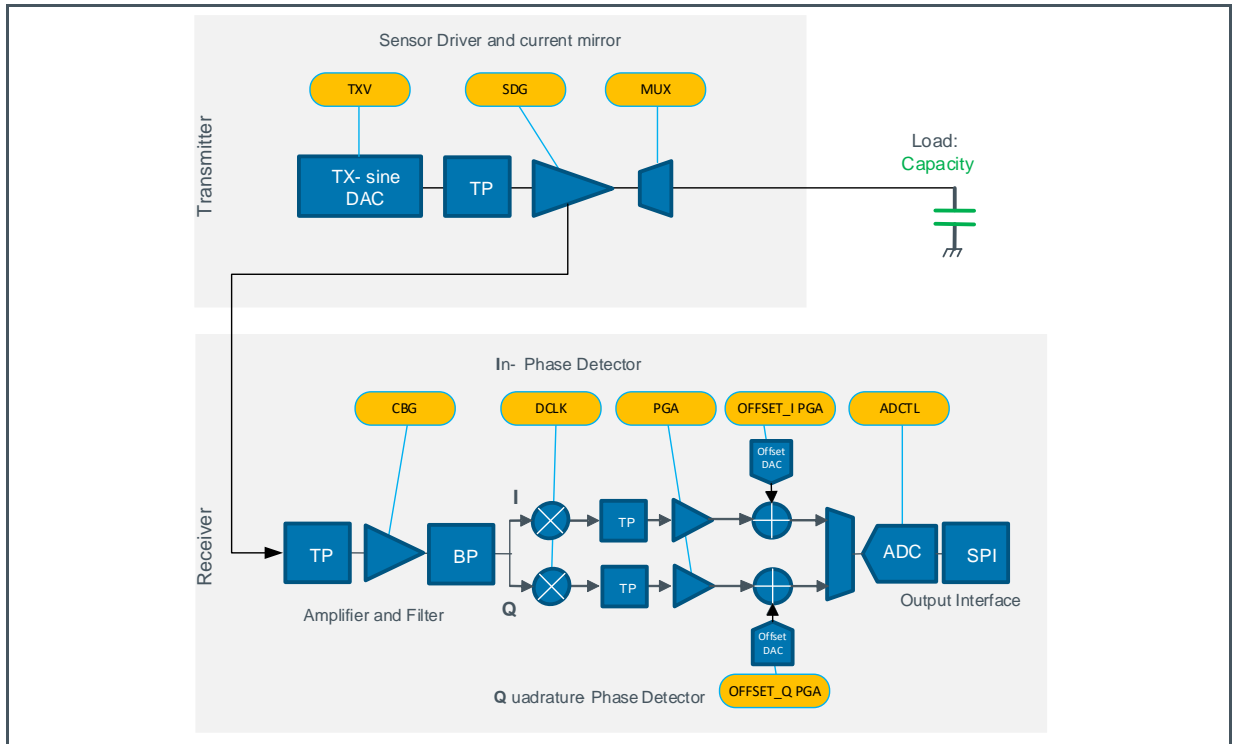
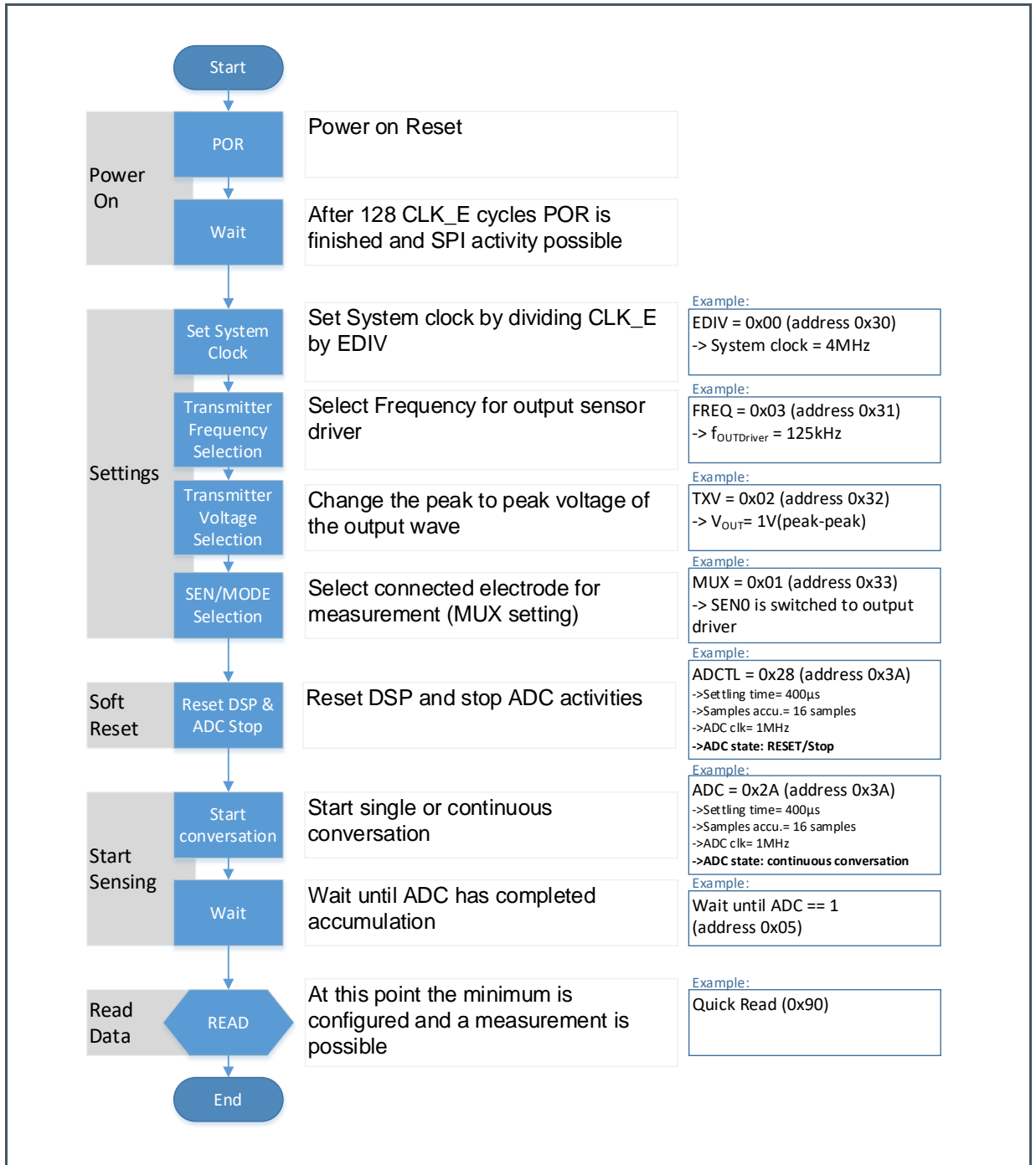


Figure 3:
Configurable Parameters

Name	Description
TXV	Sensor Driver Voltage Selection
SDG	Shield (VAR_SEN) Gain Selection: programmable scaling factor for shielding (e.g.: cable shielding)
MUX	Control of internal connection of SEN-channels
CBG	Current Buffer Gain Selection: programmable scaling factors for trans-impedance amplifier (current – voltage conversion)
DCLK	Demodulation clock frequency for I and Q-path
PGA	PGA voltage Gain. Adjusts the input voltage to the ADC to optimize its conversion resolution.
OFFSET_I PGA	The offset compensates for the parasitic offsets in the sensor system and allows shifting DC operating point in order to maximize the ADC range.
OFFSET_Q PGA	
ADCTL	ADC Control

3 Initialization

Figure 4:
Starting Sequence with Minimum Configurations

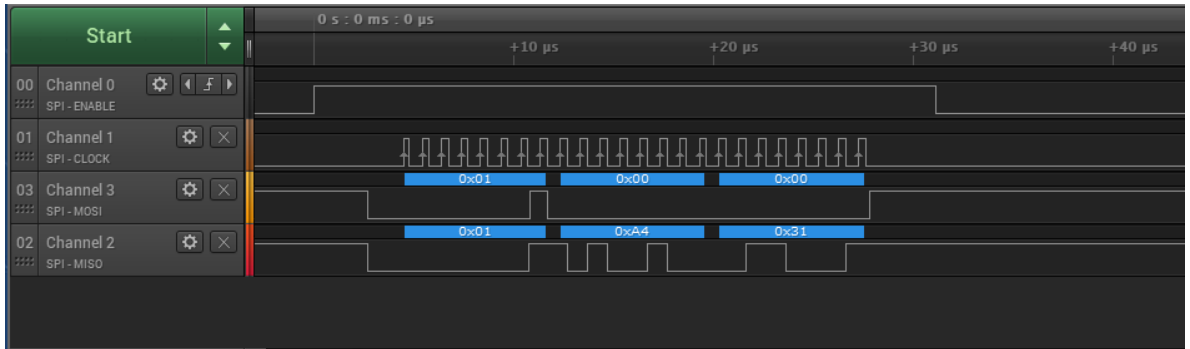


3.1 Example

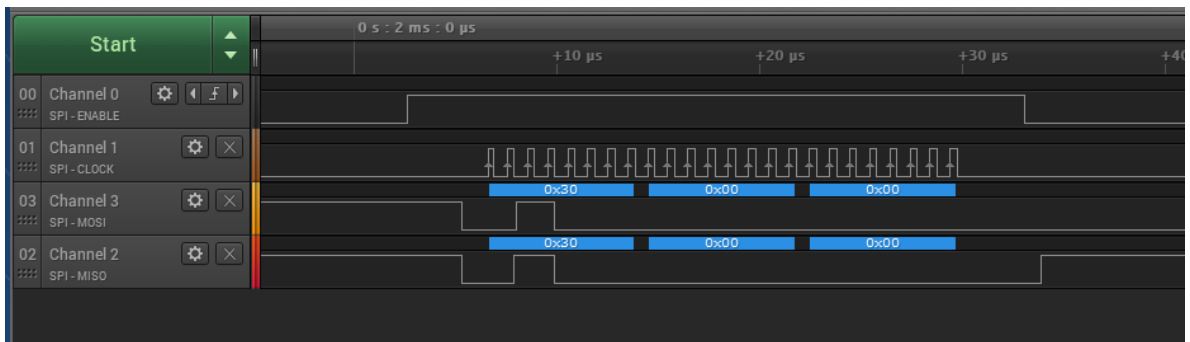
The AS8579 is using a standard SPI Interface to write and read the Registers. To configure the AS8579 properly for a continuous readout, please perform the following steps.

After configuring all this settings the sensor can be read out permanently.

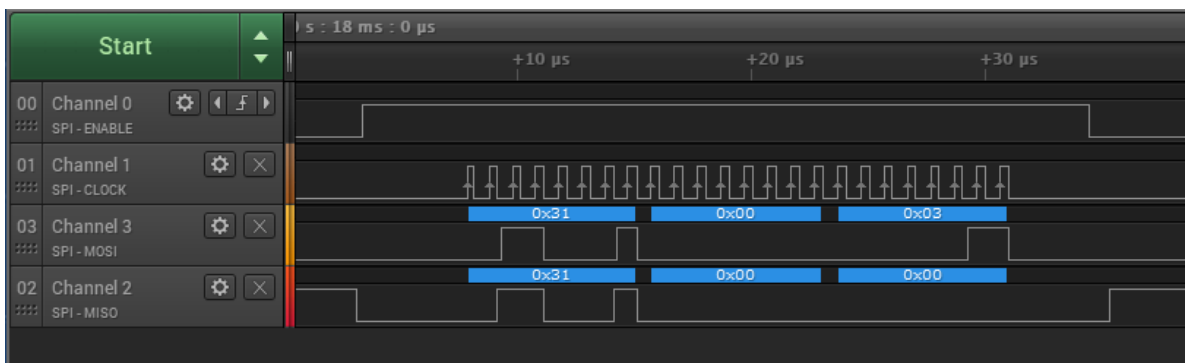
1. Verify SPI Communication (Read Sensor ID)



2. SET EDIV Register (Address 0x30) to 0x00 --> set ECLK=4 MHz



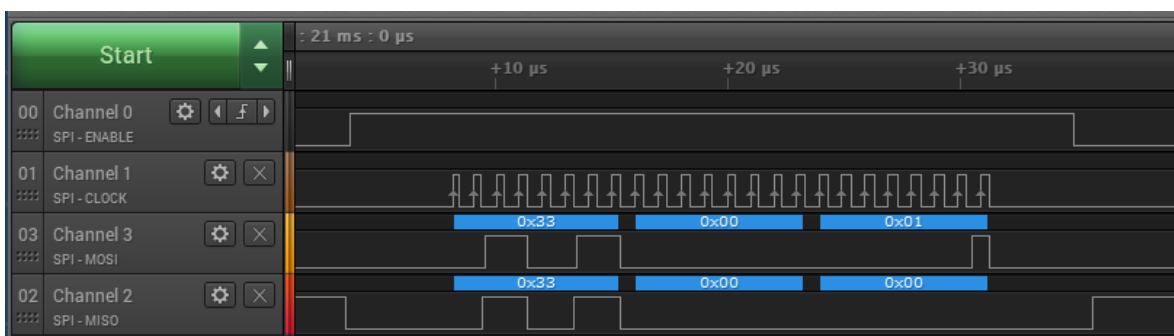
3. SET FREQ Register (Address 0x31) to 0x03 --> set $f_{OUTDriver}$ =125 kHz



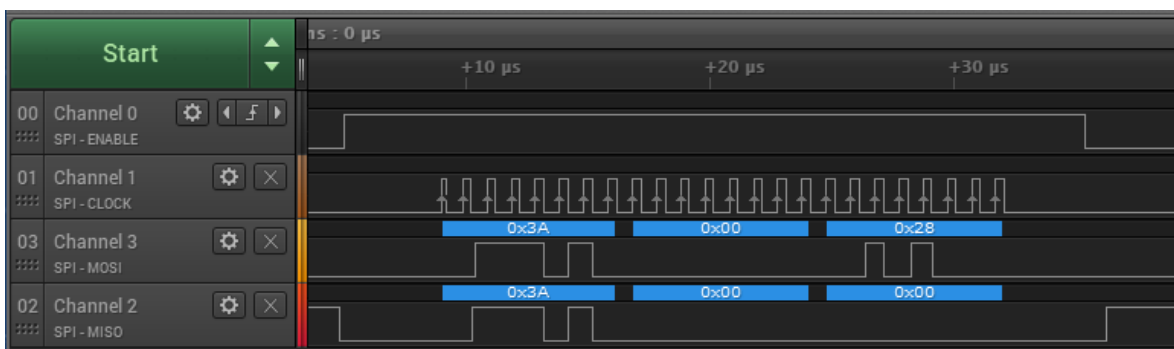
- SET TXV Register (Address 0x32) to 0x02 --> $V_{OUT}=1V_{p-p}$



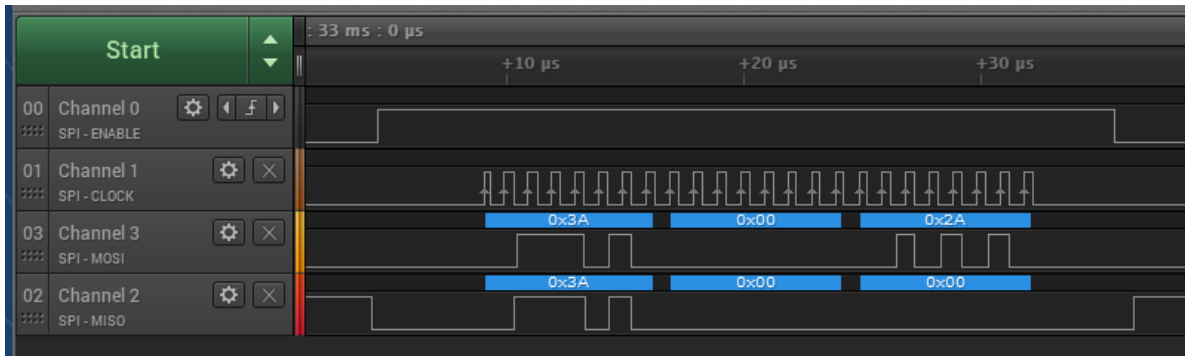
- SET SEN0 Line to the Sensor Driver (enable SEN0 Line) (Address 0x33; Value 0x01)



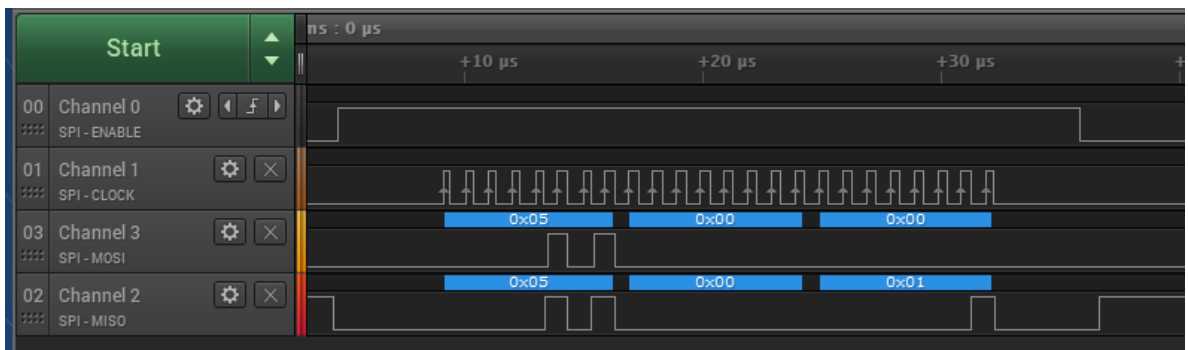
- Reset DSP & ADC Stop (Write 0x28 into Address 0x3A)



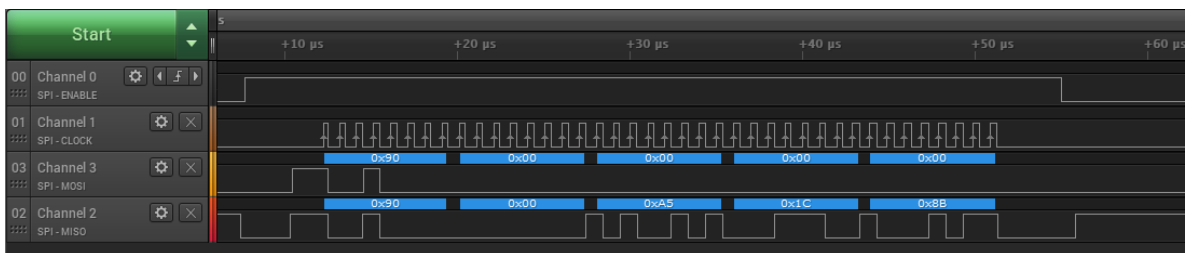
7. Start Continuous Conversation (write 0x2A into address 0x3A)



8. Wait for ADC complete Bit (Address: 0x05 / Value: 0x01)



9. Perform Readout (Command: 0x90 / 5 Bytes transferred)



4 Revision Information

Changes from previous version to current revision v1-00	Page
Initial version	

- Page and figure numbers for the previous version may differ from page and figure numbers in the current revision.
- Correction of typographical errors is not explicitly mentioned.

5 Legal Information

Copyrights & Disclaimer

Copyright ams AG, Tobelbader Strasse 30, 8141 Premstaetten, Austria-Europe. Trademarks Registered. All rights reserved. The material herein may not be reproduced, adapted, merged, translated, stored, or used without the prior written consent of the copyright owner.

Information in this document is believed to be accurate and reliable. However, ams AG does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

Applications that are described herein are for illustrative purposes only. ams AG makes no representation or warranty that such applications will be appropriate for the specified use without further testing or modification. ams AG takes no responsibility for the design, operation and testing of the applications and end-products as well as assistance with the applications or end-product designs when using ams AG products. ams AG is not liable for the suitability and fit of ams AG products in applications and end-products planned.

ams AG shall not be liable to recipient or any third party for any damages, including but not limited to personal injury, property damage, loss of profits, loss of use, interruption of business or indirect, special, incidental or consequential damages, of any kind, in connection with or arising out of the furnishing, performance or use of the technical data or applications described herein. No obligation or liability to recipient or any third party shall arise or flow out of ams AG rendering of technical or other services.

ams AG reserves the right to change information in this document at any time and without notice.

RoHS Compliant & ams Green Statement

RoHS Compliant: The term RoHS compliant means that ams AG products fully comply with current RoHS directives. Our semiconductor products do not contain any chemicals for all 6 substance categories plus additional 4 substance categories (per amendment EU 2015/863), including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, RoHS compliant products are suitable for use in specified lead-free processes.

ams Green (RoHS compliant and no Sb/Br/Cl): ams Green defines that in addition to RoHS compliance, our products are free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material) and do not contain Chlorine (Cl not exceed 0.1% by weight in homogeneous material).

Important Information: The information provided in this statement represents ams AG knowledge and belief as of the date that it is provided. ams AG bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. ams AG has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. ams AG and ams AG suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

Headquarters

ams AG
Tobelbader Strasse 30
8141 Premstaetten
Austria, Europe
Tel: +43 (0) 3136 500 0

Please visit our website at www.ams.com

Buy our products or get free samples online at www.ams.com/Products

Technical Support is available at www.ams.com/Technical-Support

Provide feedback about this document at www.ams.com/Document-Feedback

For sales offices, distributors and representatives go to www.ams.com/Contact

For further information and requests, e-mail us at ams_sales@ams.com