SLIC Evaluation Board

SMART 4265 V1.2

Wired Communications

Infineon technologies

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Table of Contents **Page**

List of Figures **Page**

List of Tables

Page

Preface

Organization of this Document

This Hardware User's Manual is divided into 5 chapters. It is organized as follows:

- **Chapter 1**, **Introduction**
  Gives an overview of the SMART 4265 V1.2.

- **Chapter 2**, **Operational Description**
  Deals with the operational modes of the SMART 4265.

- **Chapter 3**, **Circuitry**
  Describes the board circuitry, its components and interfaces.

- **Chapter 4**, **Connector Pin-outs**
  Describes the board connector pin-outs.

- **Chapter 5**, **Bill of Material**
  Deals with the Bill of material and the source of the components including the floor plan.

Related Documentation

The SMART 4265 Hardware User's Manual does not include technical details of the chip set itself. Recommended documentation for the chipset includes:

- High voltage SLIC, PEB 4264.
- High voltage SLIC, PEB 4265.
- High voltage SLIC, PEB 4266.

Your Comments

We welcome your comments on this document. We are continuously trying improving our documentation. Please send your remarks and suggestions by e-mail to

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Please provide in the *subject* of your e-mail:
device name (SLIC), device number (SMART 4265.), device version (V1.2...),

and in the *body* of your e-mail:
document type (Hardware User's Manual), issue date (2002-01-22) and document revision number (DS1).

Warning:

The SLICs on the SMART 4265 Evaluation Board can be fed with a Battery voltage up to -150V referred to BGND. This DC Voltage is touchable on top of the SLICs, the power connector and the soldering side of the board.

When the board is under voltage, do not touch any components on the board because of hazardous voltages.

1 Introduction

1.1 The SMART 4265 Version 1.2

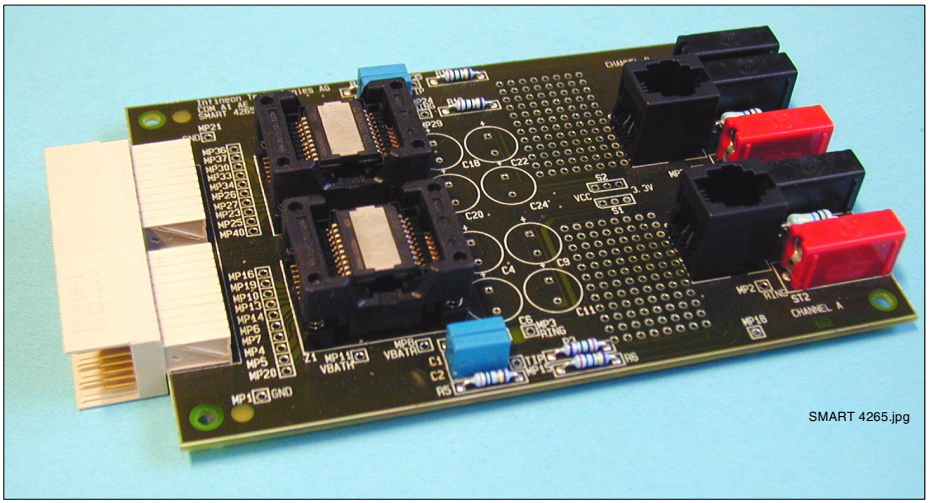

Figure 1 SLIC Board SMART 4265 V1.2

The new SMART 4265 shall be used as a SLIC testboard for the DuSLIC or the new VINETIC chipset. This board is designed for internal use and for customers. It allows to run 2 POTS lines in parallel. Additionally a DuSLIC Evaluation Board (SMART 3265 V2.1) or a VINETIC Evaluation Board (SMART 3324 V1.1) has to be connected.

The SLIC Board SMART 4265 V1.1 is prepared to operate with three different versions of Infineon Technologies SLICs:

- PEB4264/-2 P-DSO20-5
- PEB4265/-2 P-DSO20-5
- PEB4266 P-DSO20-5

All SLICs in P-DSO20-5 package are pin-compatible except NC pins for different power supply options. All these SLICs can be mounted into the provided sockets on the board SMART 4265 V1.2. The SLIC Board SMART 4265 can only be operated with the same SLICs populated on both sockets. When the SLICs have to be exchanged to another type the supply voltages have to be set according to the SLIC requirements.

1.2 SMART 4265 Features

- compatible to SMART 3265 DuSLIC Evaluation Board V2.1
- compatible to SMART 3324 VINETIC Evaluation Board
- SLIC Board is equipped with sockets for the following types of SLICs (P-DSO-20):

  PEB 4264/-2 (SLIC-S)

  PEB 4265/-2 (SLIC-E)

  PEB 4266 (SLIC-P)
- Power supply selection for SLICs: +3.3 V and +5 V
- Wire-Wrap area for each channel
- Test pins for each signal
- Banana plugs and Western plugs for each line
- pin-out of western plugs can be selected via solder jumpers

2 Operational Description

2.1 SMART 4265 V1.2 with SMART 3265 V2.1 (DuSLIC)

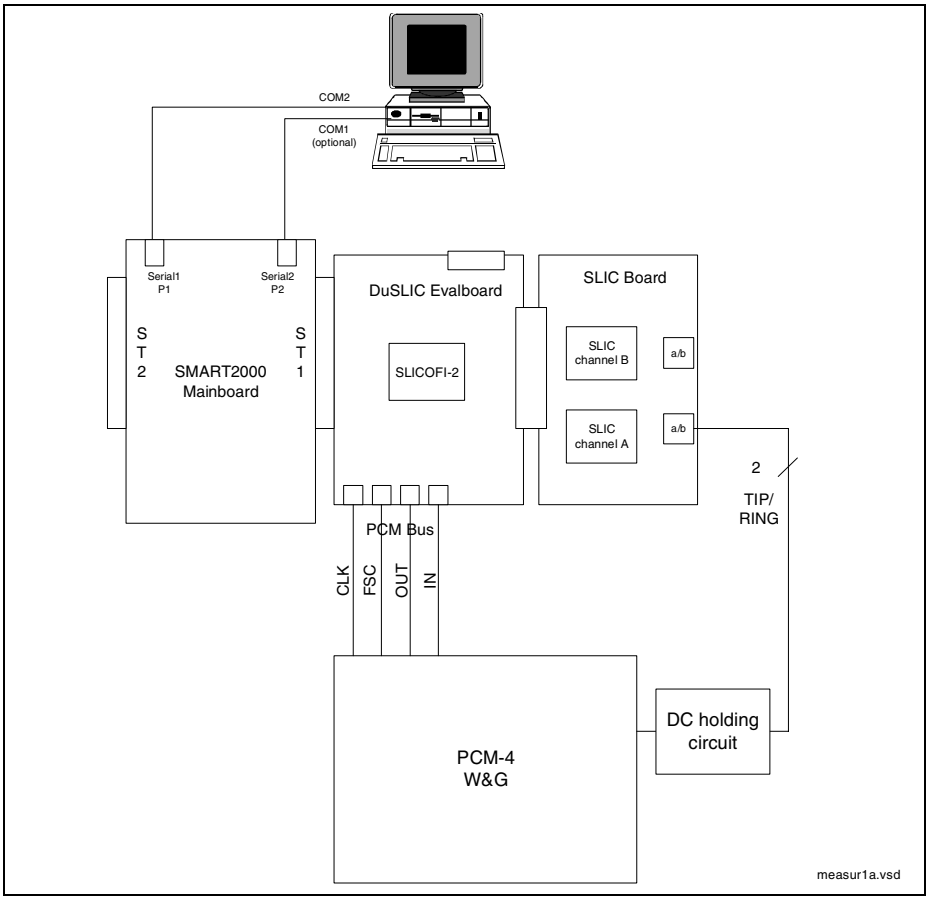

Figure 2 SMART 4265 V1.2 with SMART 3265 V2.1 and SMART2000

This setup shows the DuSLIC Evaluation board SMART3265 V2.1 and the SLIC Evaluation board. The DuSLIC supports two SLICs provided at the SLIC Board. The DuSLIC Evaluation Board is configured and controlled by the SMART2000 Mainboard. The Mainboard is controlled by the PC via the RS232-interface. All necessary power

supply voltages are connected to the DuSLIC Evaluation board. The Mainboard is powered seperately.

2.2 SMART4265 V1.2 with EASY 334 (VINETIC)

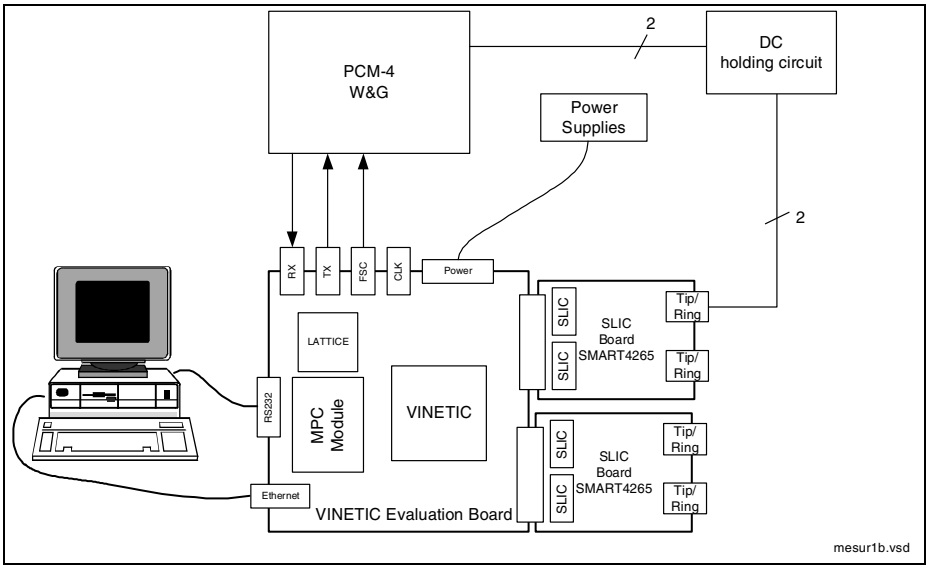

Figure 3 SMART4265 V1.2 with EASY 334

This setup shows the VINETIC Evaluation board EASY334 V1.1 and the SLIC Evaluation board. The VINETIC supports up to four SLICs. Therefore, two SLIC Boards can be connected to one VINETIC Evaluation Board. The VINETIC Evaluation Board is configured and controlled by the MPC862 piggy-Back Board. The PC controls the system via an Ethernet interface. All necessary power supply voltages are connected to the VINETIC Evaluation Board.

2.3 Configuration of the Power Supply VDD

The power supply VDD of the SLIC can be selected by two switches S1 and S2 (not mounted). In parallel the resistors R8, R9 for SLIC channel A and R21, R22 for SLIC channel B are placed. The switch selects +5 V or +3.3 V for the V_{DD} supply of the SLICs. Some SLIC versions allow to be operated with either +5 V or +3.3 V. When replacing the SLICs, please check the SLIC specification and configure the SLIC board accordingly.

Table 1 Power Supply VDD Selection

channel	Switch	R8/R21	R9/R22	Power Supply
channel A	S1 (2-3)[1)]	-	-	+5 V
	S1 (1-2)[1)]	-	-	+3.3 V
	-	R8 = 0R mounted	-	+5 V
	-	-	R9 = 0R mounted	+3.3 V
channel B	S2 (2-3)1)	-	-	+5 V
	S2 (1-2)[1)]	-	-	+3.3 V
	-	R21 = 0R mounted	-	+5 V
	-	-	R22 = 0R mounted	+3.3 V

1) When mounting the switches S1 or S2, please remove the respective resistors R8, R9, R21 and R22.

2.4 Configuration of the Pin-out of the Western Plugs

There are different pin-outs of the western plugs in the field. The selection is done via two solder jumpers for each line.

Either the inner or outer pins can be used of the western plugs. Two solder jumpers per western plug select the used pins. Jumper J3 and J4 select the pinout for channel A and J1 and J2 for channel B.

The default configuration is the use of the inner lines.

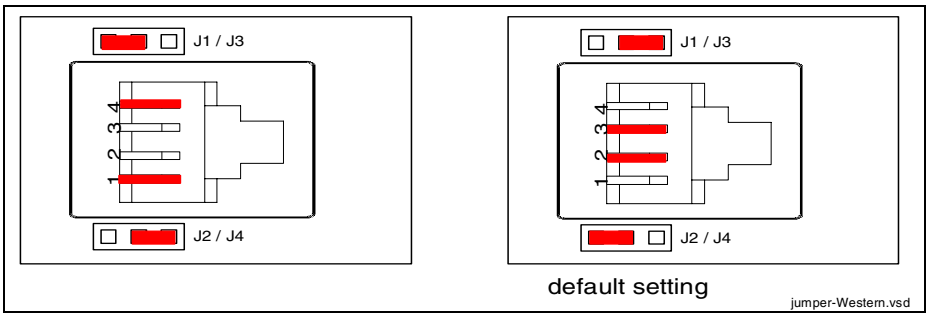

Figure 4 Solder Jumper Setting J1..J4

2.5 SLIC-Module ID Recognition

Every SLIC module has a resistor coded identification at four pins of the SLIC Connector. When no SLIC Module is connected to the DuSLIC/VINETIC Board, the ID is '1111_b'. The SMART4265 V1.2 has the ID number 0000_b. Therefore 4 resistors R11, R12, R13, R14 are connected to the SLIC connector to set the bits to '0'.

This feature is only for future use.

3 Circuitry

3.1 Block Diagram

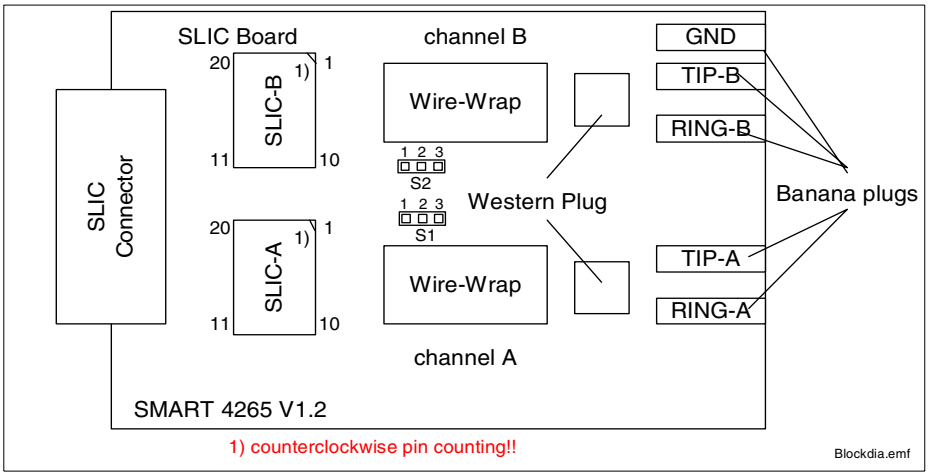

Figure 5 Block Diagram of the SMART 4265

The SMART 4265 consists of 4 main blocks:

- Two SLIC sockets
- SLIC Connector
- Line Connectors
- Wire-Wrap Filed

3.2 HV-SLIC Circuit

The board is populated with two HV-SLICs PEB4265. Each drivers one Tip/Ring line. The HV-SLIC is in a 20 pole PDSO package. (Attention: The pinning is different from normal devices: clockwise pin counting in contrast to counterclockwise counting). It can be placed in a socket or soldered directly onto the board if the socket is removed. The used power supplies are different for each SLIC version and described in **Chapter 3.7**.

3.3 SLIC Connector

The SMART 4265 Board is connected to the DuSLIC/VINETIC Evaluation Board via a 110 pole connector from AMP (Tyco). The connector at the SLIC board has the ordering number: AMP 106 015-1 (male).

The female type at the DuSLIC/VINETIC Board has the ordering number:

AMP 100 147-1.

3.4 Line Connectors

The board has two different connectors to connect the POTS line. A telephone can be connected via the 6/4 western plug. The second possibility is to use the banana plugs e.g. for test equippment.

3.5 Wire-Wrap Field

To test e.g. different overvoltage protection circuits a wire-wrap field is placed near the Tip/Ring lines. Each channel has its own field of 3 cm x 2 cm area.

3.6 Power Supply

The power supply voltages of the board are delivered via the SLIC Connector. No power supply connector or a power supply itself is placed on the board. Via the SLIC connector, all supply voltages for the different SLIC versions can be supplied. The used voltages and the used power supplies are described in the next chapter.

3.7 SLIC Power Supply

The SLIC Connector provides all necessary power supplies. The used power supplies and the voltage ranges are shown in the next table.

Table 2 Power Supplies and Voltages Ranges for each Version

Supply	PEB 4264	PEB 4265	PEB4266
VDD	+5 V	+5 V	+5 V[1)]
VCCS	+3.3 V not used	not used	+3.3 V[1)]
VHR	+5 V...+45 V	+5 V...+85 V	not used
VBATL	-15 V...-60 V	-15 V...-80 V	-15 V...-140 V
VBATH	-15 V...-65 V	-15 V...-80 V	-15 V...-145 V
VBATR	not used	not used	-15 V...-150 V

1) selection via S1/S2

When applying supply voltages to the SLIC, please refer also to the absolute maximum ratings of the SLIC data sheet.

Following conditions for the supply voltages have to be kept:

PEB4264/-2, PEB4265/-2:

$$VBATL \geq VBATH$$

PEB4266:

$$VBATL \geq VBATH \geq VBATR$$

3.8 Measurement Points

The board has a lot of measurement points listed in the following table.

Table 3 Measurement Points Description

Pin	Function		Pin	Function
MP1	GND		MP2	RINGA Line
MP3	RINGA SLIC		MP4	ACPA
MP5	ACNA		MP6	DCPA
MP7	DCNA		MP8	VBATR
MP9	VHR		MP10	C1A
MP11	VBATH		MP12	GND
MP13	C2A		MP14	C3A/NC
MP15	TIPA SLIC		MP16	ITA
MP17	TIPA Line		MP18	GND
MP19	ILA		MP20	VCMSA
MP21	GND		MP22	RINGB Line
MP23	ACPB		MP24	RINGB SLIC
MP25	ACNB		MP26	DCPB
MP27	DCNB		MP28	VBATR
MP29	VHR		MP30	C1B
MP31	VBATHB		MP32	GND
MP33	C2B		MP34	C3B/NC
MP35	TIPB SLIC		MP36	ITB
MP37	ILB		MP38	TIPB Line
MP39	GND		MP40	VCMSB

4 Connector Pin-outs

4.1 SLIC Connector

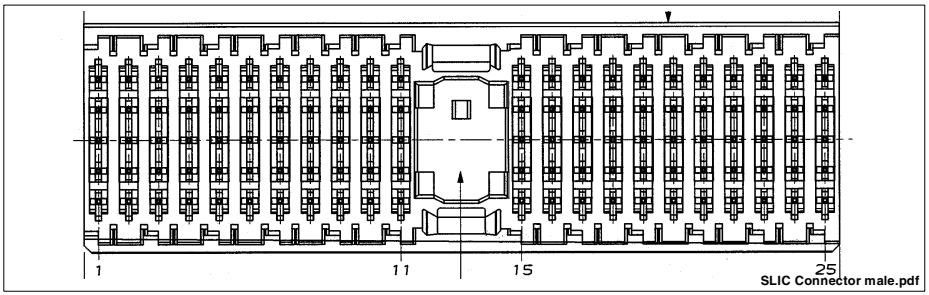

Figure 6 SLIC Connector

Table 4 SLIC Connector

Pin	Row A	Row B	Row C	Row D	Row E
1	TEST1	GND	ITACB	GND	GND
2	RINGCHB		GND	GND	ILB
3	ANALOG2B		ITB	GND	C1B
4	TEST2	GND	GND	IO2B	C2B
5		GND	DCPB	GND	DCNB
6	VCM	GND	ACNB	GND	ACPB
7		VCMITB	GND	VCMSB	GND
8					
9	VCC	V3V3	VHR	VHR	VHR
10	VCC	V3V3	VBATH	VBATH	VBATH
11	VCC	V3V3	VBATL	VBATL	BVATL
12			VBATR	VBATR	VBATR
13		ID0	ID1	ID2	ID3
14					
15					
16		GND	ITACA	GND	GND
17	ANALOG1A		GND	GND	ILA

Table 4 SLIC Connector

Pin	Row A	Row B	Row C	Row D	Row E
18	ANALOG2A		ITA	GND	C1A
19		GND	GND	IO2A	C2A
20		GND	DCPA	GND	DCNA
21		GND	ACNA	GND	ACPA
22		VCMITA	GND	VCMSA	GND

4.2 Tip/Ring Interface Connector (ST3, ST6)

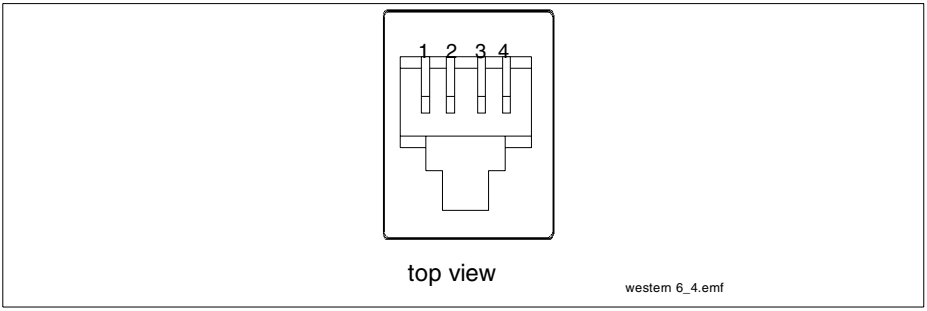

Figure 7 Western Plug 6/4 (ST3, ST6)

Table 5 Pinout of Western Plug 6/4 (ST3, ST6)

Pin	Function
1	Ring
2	Ring
3	Tip
4	Tip

Either the inner or outer pins can be used of the western plugs. Two solder jumpers per western plug select the used pins. Jumper J3 and J4 selects the pinout for channel A and J1 and J2 for channel B.

The default configuration is the use of the inner pins (2, 3).

Please see also **Chapter 2.4**.

5 Bill of Material

Table 6 List of Replaceable Parts of the SLIC Board SMART 4265

	Part Number	Description	Source
C1, C2, C14, C15	15nF /400V	MKT Capacitor, leaded RM 7.5, 15nF/400V, 20%	EPCOS
C3, C16	470nF	Ceramic Chip Capacitor, X7R, 100nF/16V 10%, SMD 0805	EPCOS
C13, C26	100nF	Ceramic Chip Capacitor, X7R, 100nF/50V 10%, SMD 0805	EPCOS
C5, C7, C10, C12, C19, C21, C23, C25	100nF	Ceramic Chip Capacitor, X7R, 100nF/200V 20%, SMD 1812	EPCOS
C8, C17	10µF	Tantalum Chip Capacitor 10µF,20V SMD A	EPCOS
D1, D2, D3, D4, D5, D6, D7, D8, D9, D10	BAS21		ITT
IC1, IC2	PEB 4264 or PEB 4265 or PEB4266	SLIC	Infineon Technologies
R1, R7, R!4, R20	10M	Resistor, 10M, 2%, leaed, 1/8W	e.g. Panasonic
R8, R11, R12, R13, R21, R24, R25, R26, R27, R28, R29, R30, R31, R32, R33, R34	0R	Resistor, 0R, SMD0805, 1/8W	e.g. Panasonic
R2, R5, R15, R18	30R	Resistor, 30R, 0.1%, leaded 0207, 1/4W	e.g. Panasonic
R3, R6, R16, R19	20R	Resistor, 20R, 0.1%, leaded 0207, 1/4W	e.g. Panasonic
R4, R10, R17, R23	47k	Resistor, 47k, 1%, SMD0805, 1/8W	e.g. Panasonic
R35, R36, R37	0R	Resistor, 0R, MiniMELF, 1/5W	e.g. Panasonic
S1, S2	Switch		APEM
ST1	AMP 106015-1	110 pole male header	TYCO AMP
ST2, ST5	testjack	RM17.5 / red	Tyco
ST3, ST6	Western plug	leaded jack, 6 / 4 pole	Tyco
ST4, ST7, ST8	testjack	RM17.5 / black	Tyco
MP16, MP17, MP18, MP19, MP20, MP36, MP37, MP38, MP39, MP40	measurement point	test point, leaded, 1.1 mm	Tyco

Table 7 Components not mounted

	Part number	Description	Source
C4, C6, C9, C11, C18, C20, C22, C24	10µF	Electrolytic Capacitor, 10µF/160V leaded, RM5	EPCOS
MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8, MP9, MP10, MP11, MP12, MP13, MP14, MP15, MP21, MP22, MP23, MP24, MP25, MP26, MP27, MP28, MP29, MP30, MP31, MP32, MP33, MP34, MP35	measurement point	test point, leaded, 1.1mm	
R9, R22	0R	Resistor, 0R, SMD0805, 1/8W	e.g. Panasonic

5.1 Foor Plan of the SLIC Evaluation Board SMART 4265 V1.2

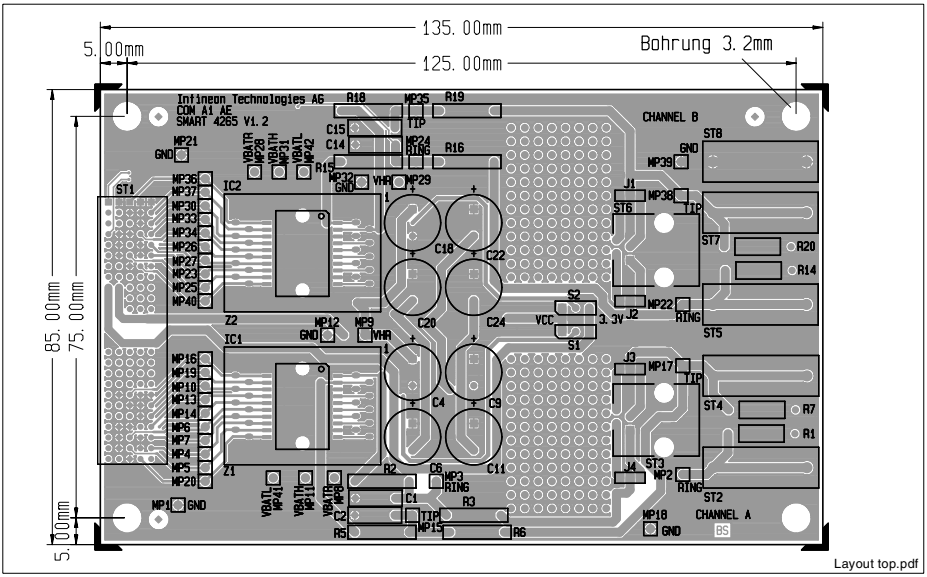

Figure 8 Floor Plan of the SLIC Evaluation Board V1.2 (Top View)

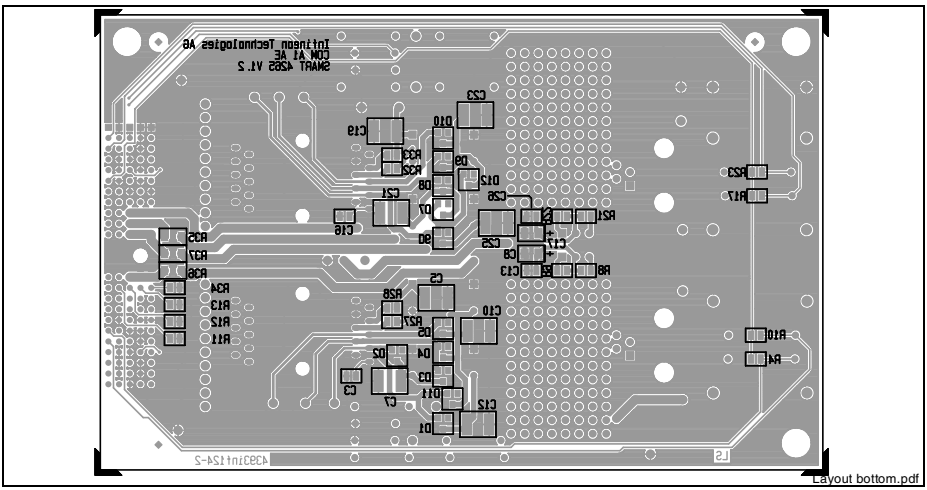

Figure 9 Floor Plan of the SLIC Evaluation Board V1.2 (Bottom View)

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“Business excellence means intelligent approaches and clearly defined processes, which are both constantly under review and ultimately lead to good operating results.
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