



Please note that Cypress is an Infineon Technologies Company.

The document following this cover page is marked as “Cypress” document as this is the company that originally developed the product. Please note that Infineon will continue to offer the product to new and existing customers as part of the Infineon product portfolio.

Continuity of document content

The fact that Infineon offers the following product as part of the Infineon product portfolio does not lead to any changes to this document. Future revisions will occur when appropriate, and any changes will be set out on the document history page.

Continuity of ordering part numbers

Infineon continues to support existing part numbers. Please continue to use the ordering part numbers listed in the datasheet for ordering.



S6SAL211A31SA2001, S6SAL211A31SA3001

4ch 72W LED Driver and Communication Board Operation Guide

Document Number: 002-08632 Rev. *B

Cypress Semiconductor
198 Champion Court
San Jose, CA 95134-1709
www.cypress.com

© Cypress Semiconductor Corporation, 2015-2019. This document is the property of Cypress Semiconductor Corporation and its subsidiaries (“Cypress”). This document, including any software or firmware included or referenced in this document (“Software”), is owned by Cypress under the intellectual property laws and treaties of the United States and other countries worldwide. Cypress reserves all rights under such laws and treaties and does not, except as specifically stated in this paragraph, grant any license under its patents, copyrights, trademarks, or other intellectual property rights. If the Software is not accompanied by a license agreement and you do not otherwise have a written agreement with Cypress governing the use of the Software, then Cypress hereby grants you a personal, non-exclusive, nontransferable license (without the right to sublicense) (1) under its copyright rights in the Software (a) for Software provided in source code form, to modify and reproduce the Software solely for use with Cypress hardware products, only internally within your organization, and (b) to distribute the Software in binary code form externally to end users (either directly or indirectly through resellers and distributors), solely for use on Cypress hardware product units, and (2) under those claims of Cypress’s patents that are infringed by the Software (as provided by Cypress, unmodified) to make, use, distribute, and import the Software solely for use with Cypress hardware products. Any other use, reproduction, modification, translation, or compilation of the Software is prohibited.

TO THE EXTENT PERMITTED BY APPLICABLE LAW, CYPRESS MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARD TO THIS DOCUMENT OR ANY SOFTWARE OR ACCOMPANYING HARDWARE, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. No computing device can be absolutely secure. Therefore, despite security measures implemented in Cypress hardware or software products, Cypress shall have no liability arising out of any security breach, such as unauthorized access to or use of a Cypress product. CYPRESS DOES NOT REPRESENT, WARRANT, OR GUARANTEE THAT CYPRESS PRODUCTS, OR SYSTEMS CREATED USING CYPRESS PRODUCTS, WILL BE FREE FROM CORRUPTION, ATTACK, VIRUSES, INTERFERENCE, HACKING, DATA LOSS OR THEFT, OR OTHER SECURITY INTRUSION (collectively, “Security Breach”). Cypress disclaims any liability relating to any Security Breach, and you shall and hereby do release Cypress from any claim, damage, or other liability arising from any Security Breach. In addition, the products described in these materials may contain design defects or errors known as errata which may cause the product to deviate from published specifications. To the extent permitted by applicable law, Cypress reserves the right to make changes to this document without further notice. Cypress does not assume any liability arising out of the application or use of any product or circuit described in this document. Any information provided in this document, including any sample design information or programming code, is provided only for reference purposes. It is the responsibility of the user of this document to properly design, program, and test the functionality and safety of any application made of this information and any resulting product. “High-Risk Device” means any device or system whose failure could cause personal injury, death, or property damage. Examples of High-Risk Devices are weapons, nuclear installations, surgical implants, and other medical devices. “Critical Component” means any component of a High-Risk Device whose failure to perform can be reasonably expected to cause, directly or indirectly, the failure of the High-Risk Device, or to affect its safety or effectiveness. Cypress is not liable, in whole or in part, and you shall and hereby do release Cypress from any claim, damage, or other liability arising from any use of a Cypress product as a Critical Component in a High-Risk Device. You shall indemnify and hold Cypress, its directors, officers, employees, agents, affiliates, distributors, and assigns harmless from and against all claims, costs, damages, and expenses, arising out of any claim, including claims for product liability, personal injury or death, or property damage arising from any use of a Cypress product as a Critical Component in a High-Risk Device. Cypress products are not intended or authorized for use as a Critical Component in any High-Risk Device except to the limited extent that (i) Cypress’s published data sheet for the product explicitly states Cypress has qualified the product for use in a specific High-Risk Device, or (ii) Cypress has given you advance written authorization to use the product as a Critical Component in the specific High-Risk Device and you have signed a separate indemnification agreement.

Cypress, the Cypress logo, Spansion, the Spansion logo, and combinations thereof, WICED, PSoC, CapSense, EZ-USB, F-RAM, and Traveo are trademarks or registered trademarks of Cypress in the United States and other countries. For a more complete list of Cypress trademarks, visit cypress.com. Other names and brands may be claimed as property of their respective owners.

Preface



This manual explains how to use the evaluation board. Be sure to read this manual before using the product. For this product, please consult with sales representatives or support representatives.

Handling and Use

Handling and use of this product and notes regarding its safe use are described in the manuals.

Follow the instructions in the manuals to use this product.

Keep this manual at hand so that you can refer to it anytime during use of this product.

Notice on This Document

All information included in this document is current as of the date it is issued. Such information is subject to change without any prior notice.

Please confirm the latest relevant information with the sales representatives.

Cautions



Caution of the Products Described in This Document

The following precautions apply to the product described in this manual.

| | |
|--|---|
|  WARNING | Indicates a potentially hazardous situation which could result in death or serious injury and/or a fault in the user's system if the product is not used correctly. |
|  WARNING | Do not look directly at LED. There is a possibility that your eye is hurt. |

| | |
|-------------------------------|--|
| Electric shock, Damage | Before performing any operation described in this manual, turn off all the power supplies to the system. Performing such an operation with the power on may cause an electric shock or device fault. |
| Electric shock, Damage | Once the product has been turned on, do not touch any metal part of it. Doing so may cause an electric shock or device fault. |

| | |
|--|--|
|  CAUTION | Indicates the presence of a hazard that may cause a minor or moderate injury, damages to this product or devices connected to it, or may cause to loose software resources and other properties such as data, if the device is not used appropriately. |
|--|--|

| | |
|---------------------|---|
| Cuts, Damage | Before moving the product, be sure to turn off all the power supplies and unplug the cables. Watch your step when carrying the product. Do not use the product in an unstable location such as a place exposed to strong vibration or a sloping surface. Doing so may cause the product to fall, resulting in an injury or fault. |
| Cuts | The product contains sharp edges that are left unavoidably exposed, such as jumper plugs. Handle the product with due care not to get injured with such pointed parts. |
| Damage | Do not place anything on the product or expose the product to physical shocks. Do not carry the product after the power has been turned on. Doing so may cause a malfunction due to overloading or shock. |
| Damage | Since the product contains many electronic components, keep it away from direct sunlight, high temperature, and high humidity to prevent condensation. Do not use or store the product where it is exposed to much dust or a strong magnetic or electric field for an extended period of time. Inappropriate operating or storage environments may cause a fault. |
| Damage | Use the product within the ranges given in the specifications. Operation over the specified ranges may cause a fault. |
| Damage | To prevent electrostatic breakdown, do not let your finger or other object come into contact with the metal parts of any of the connectors. Before handling the product, touch a metal object (such as a door knob) to discharge any static electricity from your body. |
| Damage | When turning the power on or off, follow the relevant procedure as described in this document. Before turning the power on, in particular, be sure to finish making all the required connections. Furthermore, be sure to configure and use the product by following the instructions given in this document. Using the product incorrectly or inappropriately may cause a fault. |
| Damage | Because the product has no casing, it is recommended that it be stored in the original packaging. Transporting the product may cause a damage or fault. Therefore, keep the packaging materials and use them when re-shipping the product. |

Contents



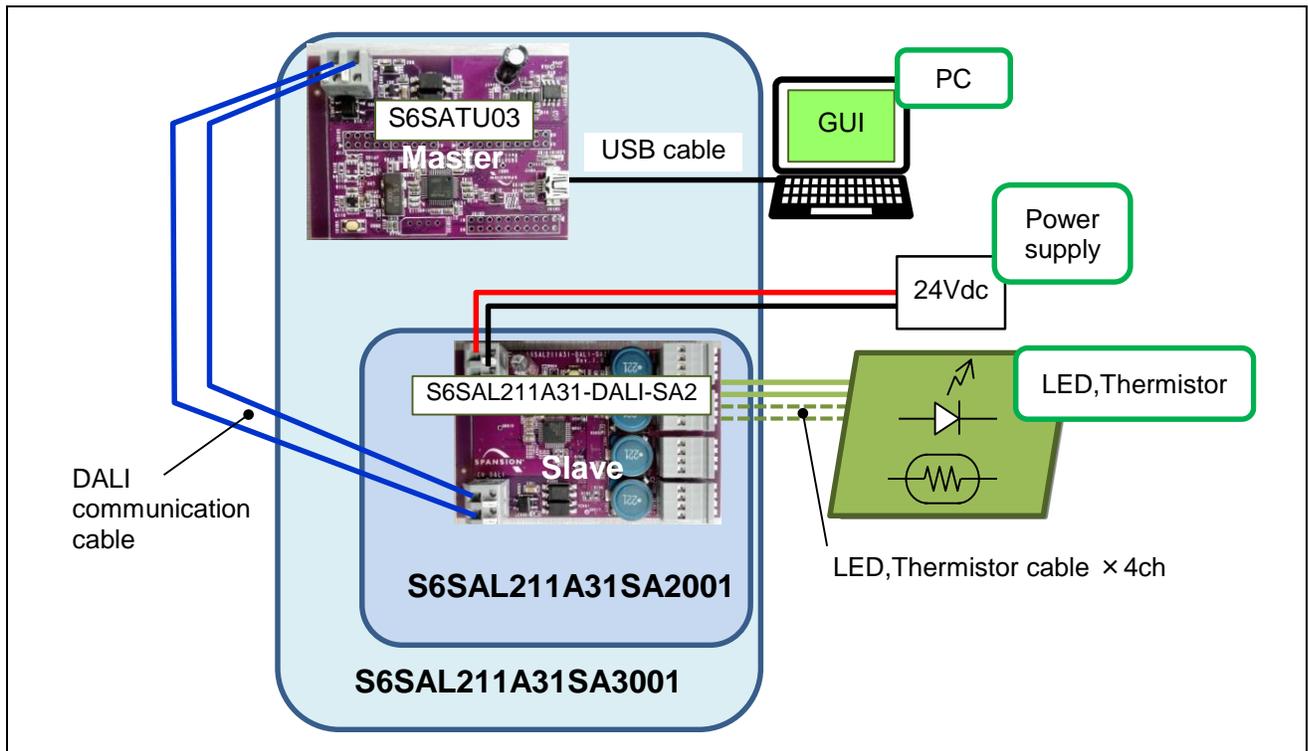
| | |
|--|-----------|
| 1. Description | 6 |
| 2. S6SAL211A31-DALI-SA2 Board Specification | 7 |
| 3. PIN Descriptions | 8 |
| 3.1 Input/Output Connector Descriptions | 8 |
| 3.2 Switch Descriptions | 8 |
| 4. Setup and Verification | 9 |
| 4.1 Contents in a Package | 9 |
| 4.2 Evaluation with DALI Communication for S6SAL211A31SA3001 | 11 |
| 5. Layout | 21 |
| 5.1 S6SAL211A31-DALI-SA2 Component Layout | 21 |
| 5.2 S6SAL211A31-DALI-SA2 Wiring Layout | 22 |
| 5.3 S6SATU03 Component Layout | 24 |
| 6. Circuit Schematic | 25 |
| 6.1 S6SAL211A31-DALI-SA2 Schematic | 25 |
| 6.2 S6SATU03 Schematic | 29 |
| 7. Component List | 30 |
| 7.1 S6SAL211A31-DALI-SA2 Components List | 30 |
| 7.2 S6SATU03 Components List | 33 |
| 8. S6SAL211A31-DALI-SA2 Property Data | 34 |
| 9. Board Picture | 36 |
| 9.1 S6SAL211A31-DALI-SA2 Board Picture | 36 |
| 9.2 S6SATU03 Board Picture | 37 |
| 10. Ordering Information | 38 |
| Revision History | 39 |
| Document Revision History | 39 |

1. Description



S6SAL211A31SA2001 and S6SAL211A31SA3001 are starter kit tool for DALI communication system.
A master board (S6SATU03) and a slave board (S6SAL211A31-DALI-SA2) are included in S6SAL211A31SA3001.
A slave board (S6SAL211A31-DALI-SA2) is included in S6SAL211A31SA2001.
Master board implements the communication circuits for DALI.
Slave board is LED control board of 4CH 72W for intelligent LED lighting driver IC S6AL211A31.
It is necessary to prepare a PC, 24V power supply, software, LED module and connection cable.
When using S6SAL211A31SA2001, please prepare DALI Master additionally.

Figure 1-1 DALI System Outline



2. S6SAL211A31-DALI-SA2 Board Specification



Figure 2-1 S6SAL211A31-DALI-SA2 Board Specification

| Item | Symbol | Min. | Typ. | Max. | Unit |
|--|---------|------|------|------|------|
| Input voltage | VIN | 22 | 24 | 26 | V |
| Input current (VIN = 24V, ACTUAL LEVEL = 254 (max.)) | IIN | - | 3.1 | - | A |
| Input current (VIN = 24V, LED OFF, Include LED001 indicator current (1.7 mA)) | IINoff | - | 3 | - | mA |
| Output LED voltage | VLEDout | 0 | 18 | VIN | V |
| Output LED current (Each channel, ACTUAL LEVEL = 254 (max.)) | ILEDout | - | 1000 | - | mA |
| Efficiency (VIN = 24V, ACTUAL LEVEL = 254 (max.)) | η | - | 95.8 | - | % |

The board size: 53 mm × 71.5 mm

POWE ON LEVEL: 0.4% (*1)

SYSTEM FAILRE LEVEL: 31% (*1)

*1: The specification of DALI is 100%, but it's changed because it's safe.

3. PIN Descriptions



3.1 Input/Output Connector Descriptions

Table 3-1 S6SAL211A31-DALI-SA2 Input/Output Pin Descriptions

| Connector Symbol | I/O | Function Description |
|-------------------------|-----|------------------------------------|
| CN_VIN | I | 24Vdc power supply terminal |
| CN101,CN201,CN301,CN401 | I/O | CH1 -CH4 LED , thermistor terminal |
| CN_DALI | I/O | DALI communication terminal |

Table 3-2 S6SATU03 Input/Output Pin Descriptions

| Connector Symbol | I/O | Function Description |
|------------------|-----|-----------------------------|
| CN101 | I/O | Mini USB connector |
| CN_DALI | I/O | DALI communication terminal |

3.2 Switch Descriptions

Table 3-3 S6SAL211A31-DALI-SA2 Switch Descriptions

| Switch | Description | Initial Setting |
|--------|---|-----------------|
| SW081 | DALI short address physical selection Push in physical selection | - |

Table 3-4 S6SATU03 Switch Descriptions

| Switch | Description | Initial Setting |
|--------|---------------------------|-----------------|
| SW101 | Reset push switch for MCU | - |

4. Setup and Verification



4.1 Contents in a Package

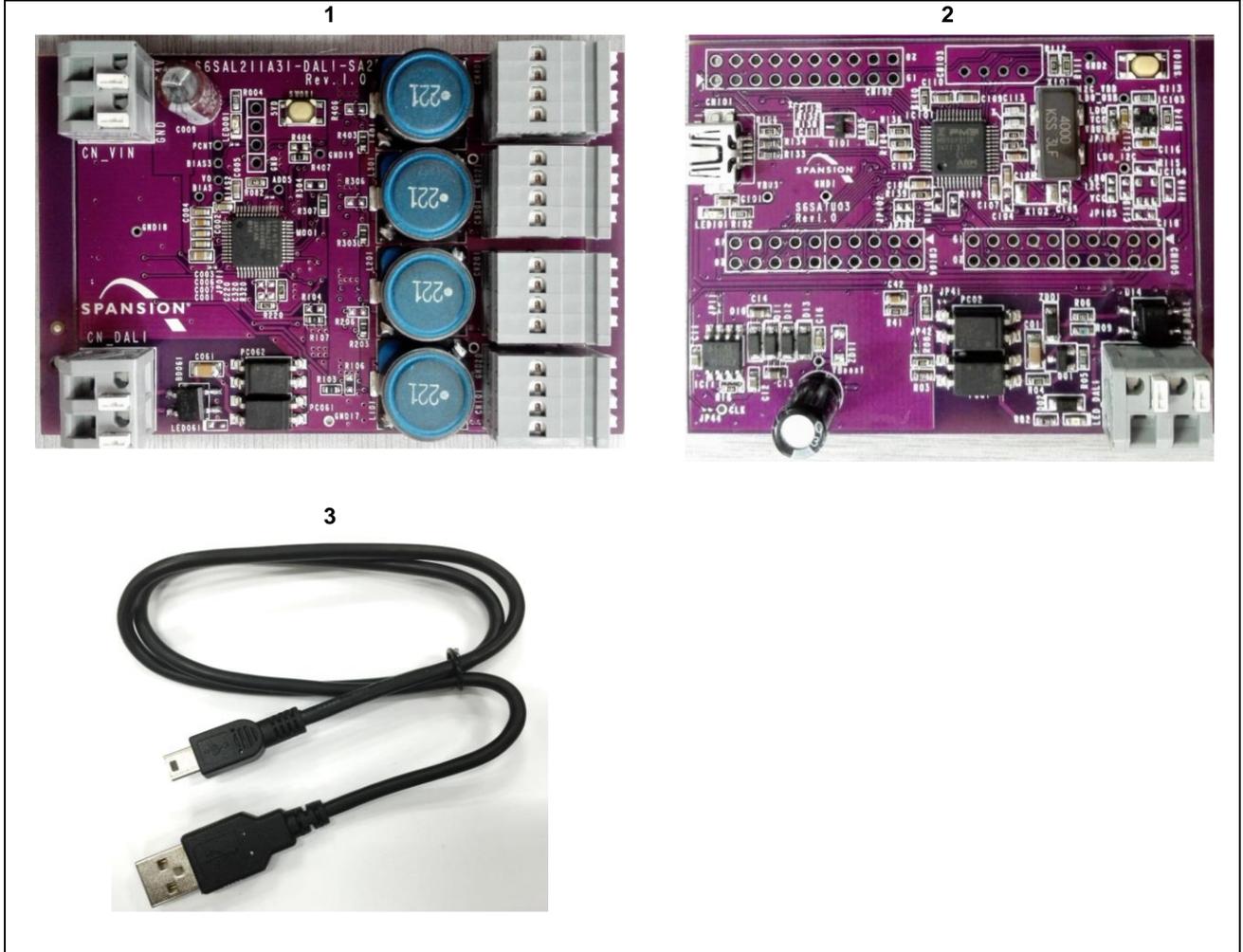
Table 4-1 S6SAL211A31SA3001 Contents List

| No. | Contents | Description | Quantity | Notes |
|-----|----------------------|--|----------|-------|
| 1 | S6SAL211A31-DALI-SA2 | LED control board of 4CH 72W with S6AL211A31 | 1 | - |
| 2 | S6SATU03 | DALI and USB communication board with FM3 | 1 | - |
| 3 | USB cable | USB to USB mini B cable | 1 | - |

Table 4-2 S6SAL211A31SA2001 Contents List

| No. | Contents | Description | Quantity | Notes |
|-----|----------------------|--|----------|-------|
| 1 | S6SAL211A31-DALI-SA2 | LED control board of 4CH 72W with S6AL211A31 | 1 | - |

Figure 4-1 Contents Picture



4.2 Evaluation with DALI Communication for S6SAL211A31SA3001

Using Items for Evaluation with I²C Control

| | |
|--|-----------|
| ■ S6SAL211A31-DALI-SA2 | 1pic (*1) |
| ■ S6SATU03 | 1pic (*1) |
| ■ USB cable | 1pic (*1) |
| ■ PC installed Windows7 or later OS | 1pic (*2) |
| ■ Driver file | 1pic (*3) |
| ■ DALI communication software | 1pic (*3) |
| ■ 24V power supply | 1pic (*2) |
| ■ LED module(I _F ≥ 1A, V _F ≈ 3.2V, 5 series × 4ch) | 1set (*2) |
| ■ Connection cable | 1set (*2) |

*1: Included in a package.

*2: Please prepare.

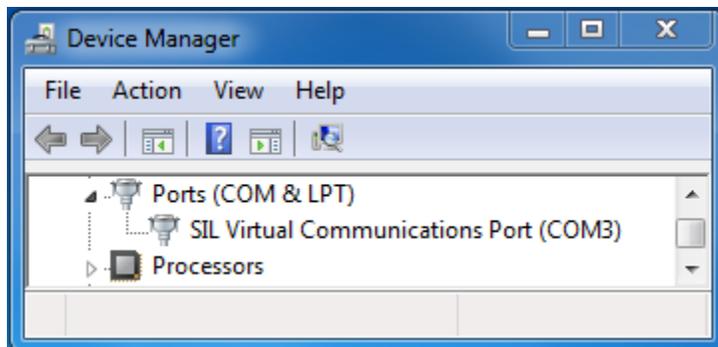
*3: Please download it from our device home page,

| | | |
|-------------|-----------------------------|--|
| S6AL211A31: | Driver file | install.bat in S6AL211_DALI_drivers.cab |
| | DALI communication software | S6AL211_DALI_GUI.exe in S6AL211_DALI_GUI.cab |

4.2.1 PC Setup for S6SATU03

1. Unpack the driver file to a folder of PC running Windows 7 or later version OS, and run install.bat file.
2. Connect S6SATU03 to PC using USB cable.
3. After installed a device, open the device manager and confirm the new COM port.

Start menu → Control panel → Device manager



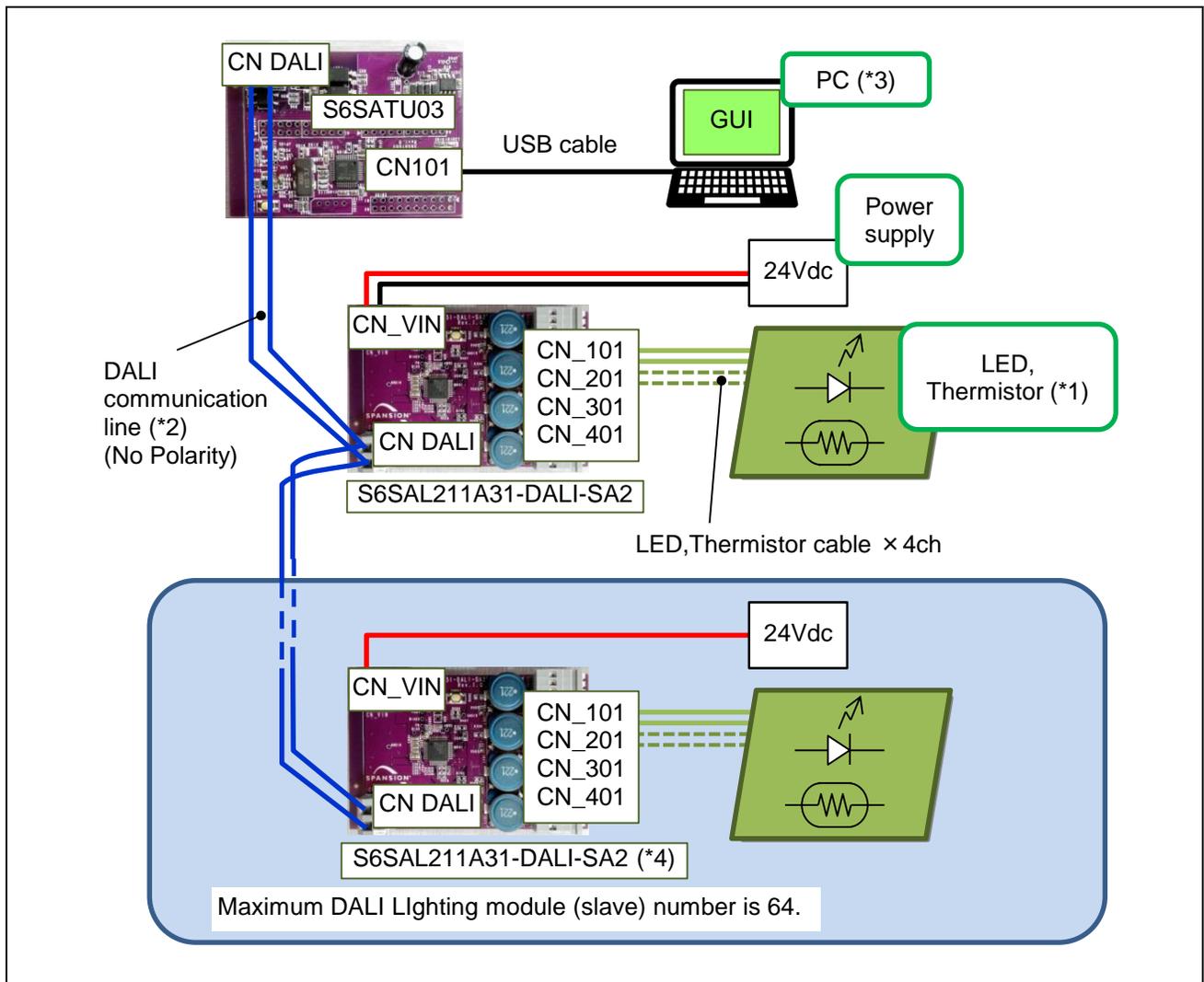
4. PC Setup is success if you can see "SIL Virtual Communication Port(COMx)" in Ports(COM & LPT).

4.2.2 Operation Check When Using S6SATU03

| | | |
|--|----------------|--|
| | WARNING | Do not look directly at LED. There is a possibility that your eye is hurt. |
|--|----------------|--|

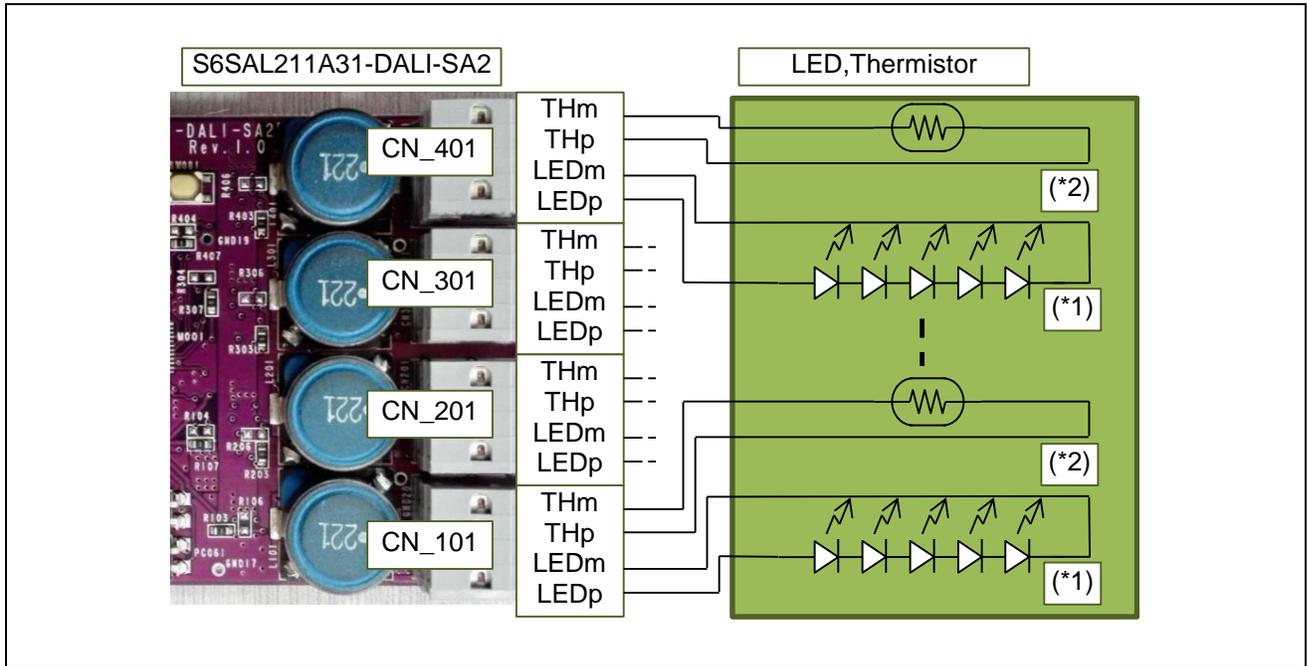
1. Connect CN_101,201,301,401 of S6SAL211A31-DALI-SA2 and LED by connection cable. *1
2. Connect CN_DALI of S6SATU03 and CN_DALI of S6SAL211A31-DALI-SA2 by DALI cable. *2
3. Connect CN101 of S6SATU03 and PC by USB cable. (LED101 near CN101 of S6SATU03 on board will shine in red.)
4. Run DALI communication software.
5. 24Vdc is applied to CN_VIN of S6SAL211A31-DALI-SA2.
6. LED of all channel are lighting. (Bright level is set POWER ON LEVEL of DALI command)
7. Send DALI command DAPC to BROADCAST ADDRESS from S6SATU03. You can control LED brightness. (Look at "Control Lighting by the broadcast")

Figure 4-2 Board Connection



- *1: Connect LED to all CH from CN_101 to CN_401. Refer to Figure 4-3.
- *2: S6SATU03 can provide power to DALI communication lines from CN_DALI. This current limit is 50 mA (Supply voltage = 12V-20V). We must consider this current when determining the number of connected DALI Slave. We have to select the cable in consideration of the rated current and then rated voltage
- *3: Beforehand, make a setup of PC and install software.
- *4: A board of S6SAL211A31-DALI-SA2 is possible to buy as single item. (Part Number: S6SAL211A31SA2001)

Figure 4-3 Connection of 6SAL211A31-DALI-SA2 and LED



- *1: Connect LED to all CH from CN_101 to CN_401. LED module($I_F \geq 1A$, $V_F \approx 3.2V$, 5- series) Be careful about polarity.
- *2: Thermistor (THp,THm) is an option. Even if that isn't connected, a board operates.

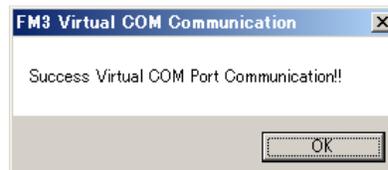
4.2.3 GUI Control Function When Using S6SATU03

4.2.3.1 Preparing the Control GUI

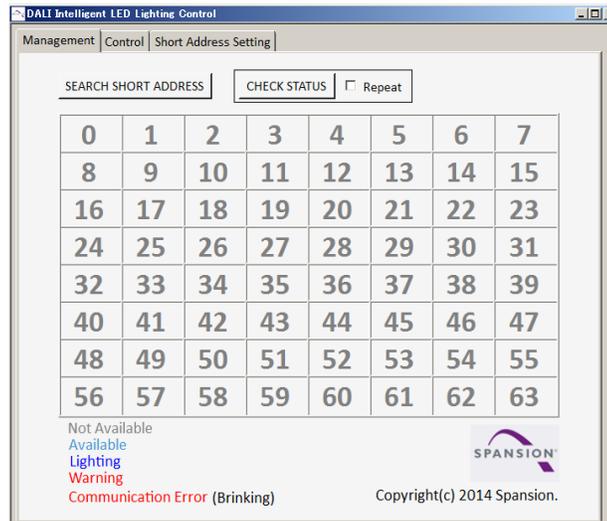
Run DALI communication software (S6AL211_DALI_GUI.exe) after connecting the USB cable.

Show the message box below if the connecting GUI and DALI controller is success.

Otherwise, check USB cable connection or installation of the device driver.



Later a few second, GUI shows the dialog box.

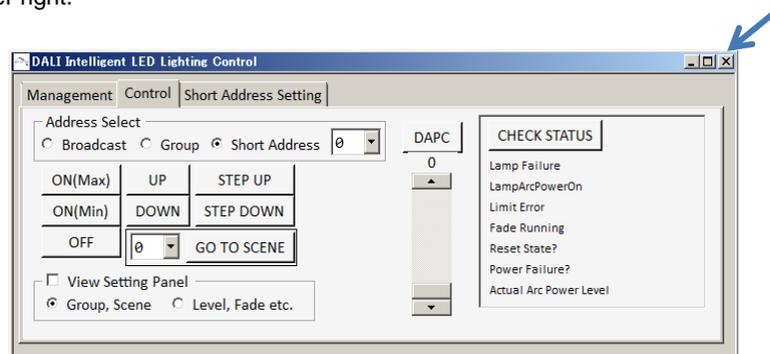


Complete preparation.

Note: Don't disconnect the USB cable while this GUI is running. Because it breaks down.

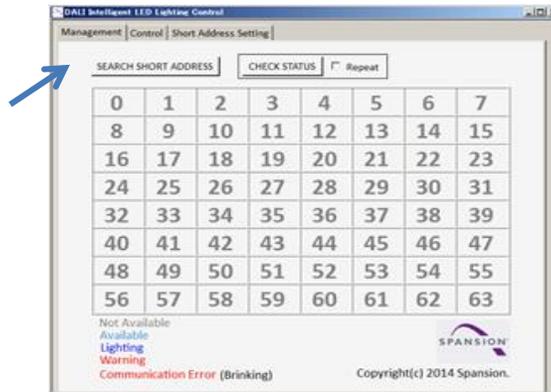
4.2.3.2 Exiting the Control GUI

Crick "x" mark in the upper right.



4.2.3.3 Checking State of the DALI Slave

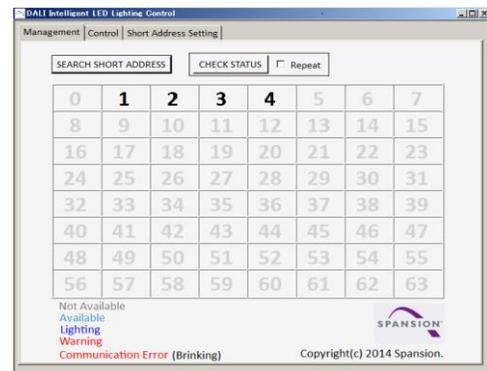
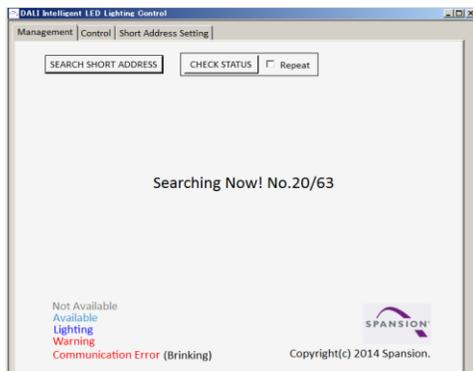
You can check the state of connecting DALI slaves in "Management" tab.



Click "SEARCH SHORT ADDRESS" button, then GUI will search some connected DALI slave.

If you see no highlighted number, Please refer to 4.2.3.6 Control Lighting by the Short Address.

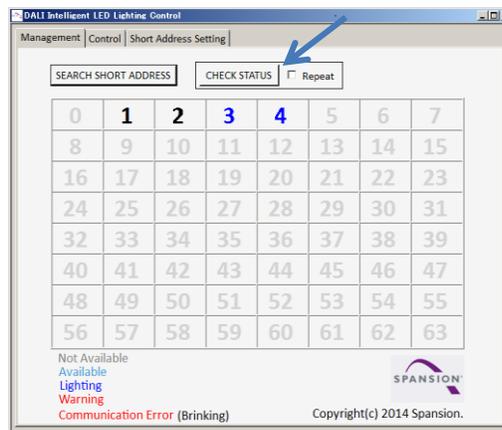
And set the address.



GUI found 4 DALI slaves above picture.

Click "CHECK STATUS" button, then GUI will show some connected DALI slave.

If you click "CHECK STATUS" button after checking "Repeat" check box, this GUI will update status of DALI slaves every second.



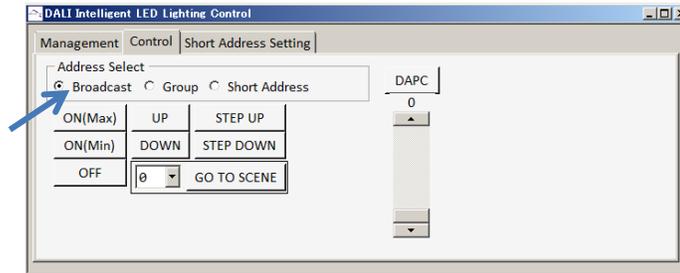
GUI shows you that 2 DALI slaves are bright above picture.

4.2.3.4 Control Lighting by the Broadcast

DALI MASTER send to all connected DALI SLAVE by the broadcast in "control" tab.

(Selected "BroadCast" Radio button in "Address Select" Group)

Click Some Button and you can control lighting.



ON(Max) button:

Lighting starts at maximum level(default level 254).

ON(Min) button:

Lighting starts at minimum level(default level 1).

OFF button:

turn off lighting.

UP:

Increase lighting level at some pitch with fade.

DOWN:

reduce at some pitch with fade.

STEP UP:

One step up the lighting level.

STEP DOWN:

One step down the lighting level.

DAPC:

Direct Arc Power Control. Push this button after choosing the number (0-254) of the vertical scrollbar.

Lighting level will set on the chosen number.

GO TO SCENE:

Set the lighting level to some scene after choosing number (0-15) of the drop box at left this button.

Show later for "SCENE".

Show below message box by selecting "Broadcast" radio button in "Address Select" group.

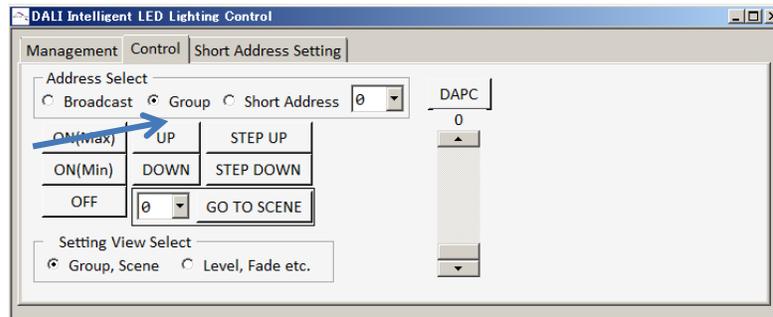


If you select "Yes", you can use "CHECK STATUS" button and "SCENE".

*Later mention: "CHECK STATUS", "SCENE". These functions by broadcast address can work correctly in the case of connecting only one DALI slave

4.2.3.5 Control Lighting by the Group

DALI MASTER sends to each DALI group in "control" tab.
 (Selected "Group" Radio button in "Address Select" Group)
 Click Some Button and you can control lighting.



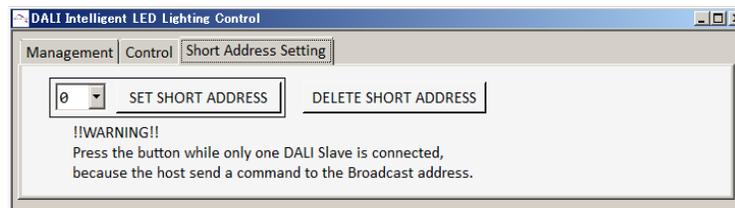
The operations of each button (ON, OFF, (STEP) UP, (STEP) DOWN, DAPC, SCENE function) are same in broadcast.
 Group setting method is shown in "For the Group" of "Control Lighting by the short address".

4.2.3.6 Control Lighting by the Short Address

DALI MASTER send to the particular DALI SLAVE by the short address.

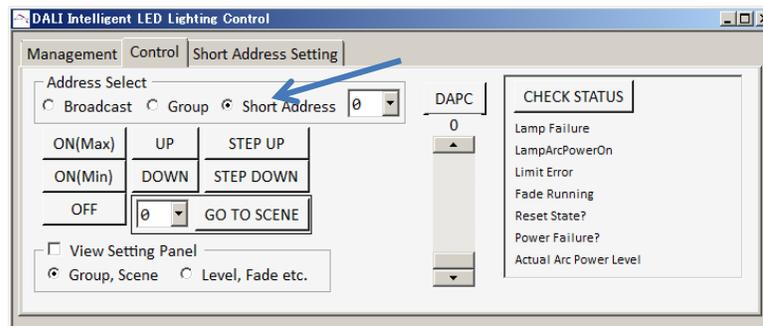
DALI SLAVE needs to choose short address number.

Crick "Short Address Setting" tab.



Push "SET SHORT ADDRESS" button after choosing from the drop box of left button.
 Short address selection is completed.

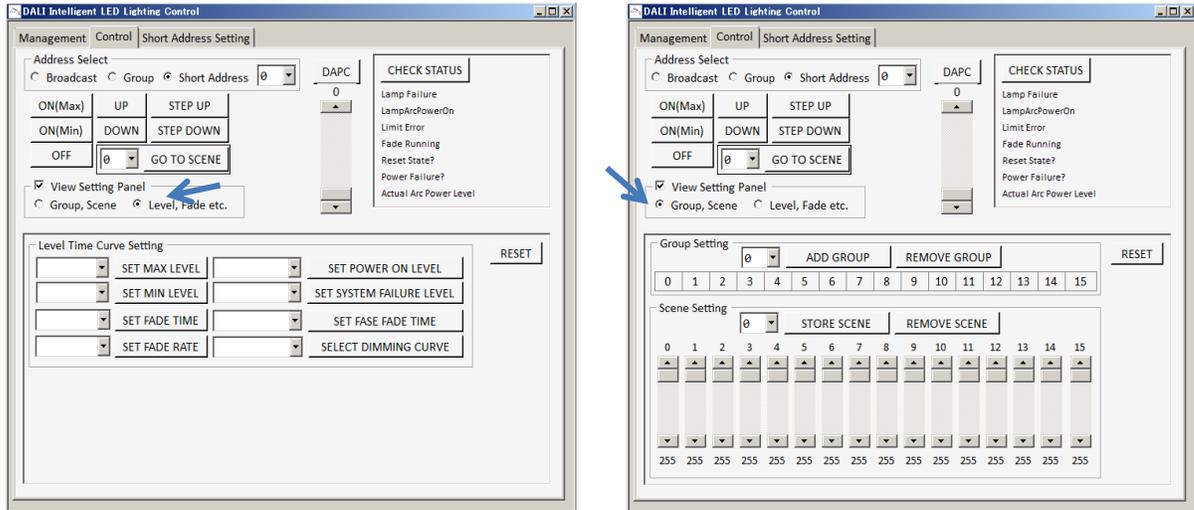
Show blow window after choosing "Short Address" Radio button in "Address Select" Group



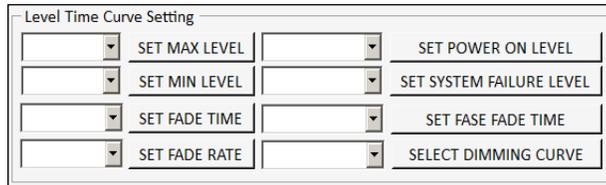
Choose the short address the drop box in "Address Select" group, and you can control the lighting that have same short address.

CHECK STATUS: Show the status of DALI slave.

View Setting Panel: You can set SCENE, GROUP and each item by checking this check box. GUI will show the dialog box below



Setting Panel Level, Fade, etc.



For the LEVEL

You can set each level from 1 to 254. (MAX LEVEL, MIN LEVEL, POWER ON LEVEL, SYSTEM FAILURE LEVEL).

The fade time affects DAPC and SCENE. The fade rate affects UP and DOWN.

For the FADE

You can set the fade time and the fade rate.

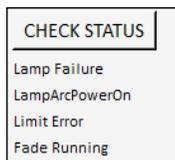
The fade time affects DAPC and SCENE. The fade rate affects UP and DOWN.

Setting the FADE TIME

1. Select the fade time number (No fade-90.5sec) by drop box at left "SET FADE TIME" button.
2. Push "SET FADE TIME" button.

You can confirm in running the fade function as pushing "CHECK STATUS" button.

If DALI slave is in the fade function, "Fade Running" indicates "Running".



Setting the FAST FADE TIME

1. Select the fast fade time number (<25ms - 675msec) by drop box at left "SET FAST FADE TIME" button with choosing No fade by SET FADE TIME.
2. Push "SET FAST FADE TIME" button.

Setting the FADE RATE

1. Select the fade time number (1-15) by drop box at left "SET FADE RATE" button.
2. Push "SET FADE RATE" button.

Select DIMMING CURVE

You can select dimming curve, Logarithm or linear

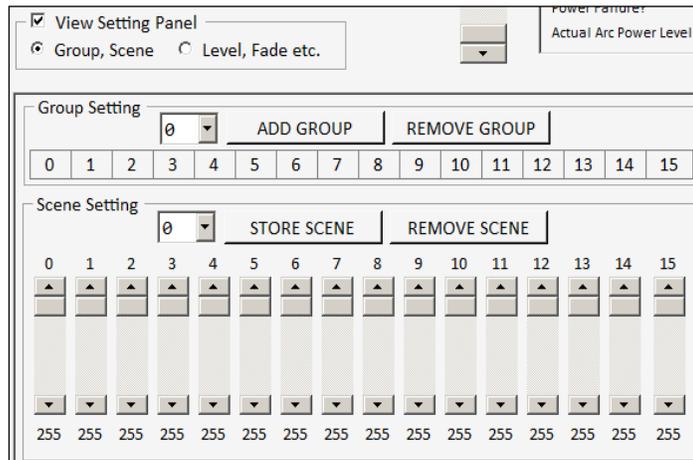
For the SCENE

You can set lighting level as scene from 0 to 15.

You can select lighting level in 1 action as choosing the scene number without using UP, DOWN, DPAC and etc.

Using the SCENE

You can set 16 scenes lighting level by below window.

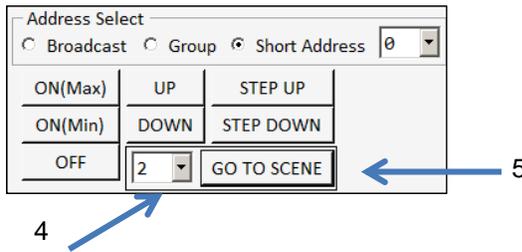


Example: Setting 125 in SCENE 2

1. Set Lighting level (0-254) to 125 by No. 2 Vscroll bar.
2. Select "2" scene number by drop box at left "STORE SCENE" button.
3. Push "STORE SCENE" button.



4. Select "2" scene number by drop box at left "GOTO SCENE" button.
5. Push "GO TO SCENE" button, then the lighting level will be set to 125.



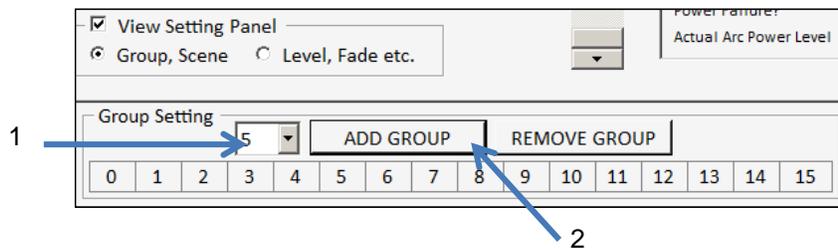
For the GROUP

You can set lighting group from 0 to 15.

Example: Setting group to No.5.

1. Select "5" group number by drop box at left "ADD GROUP" button.
2. Push "ADD GROUP" button.

You can set group more than one for one DALI slave.



RESET Button

GUI shows "RESET" button with checking "View Setting Panel" check box.

You can reset DALI slave with pushing "RESET" button.



Note: This operation causes the lighting maximum level of LED.

Below each level are reset by "RESET" button.

(Example: MAX LEVEL=254, MIN LEVEL=1,
POWER ON LEVEL=254, SYSTEM FAILURE LEVEL=254

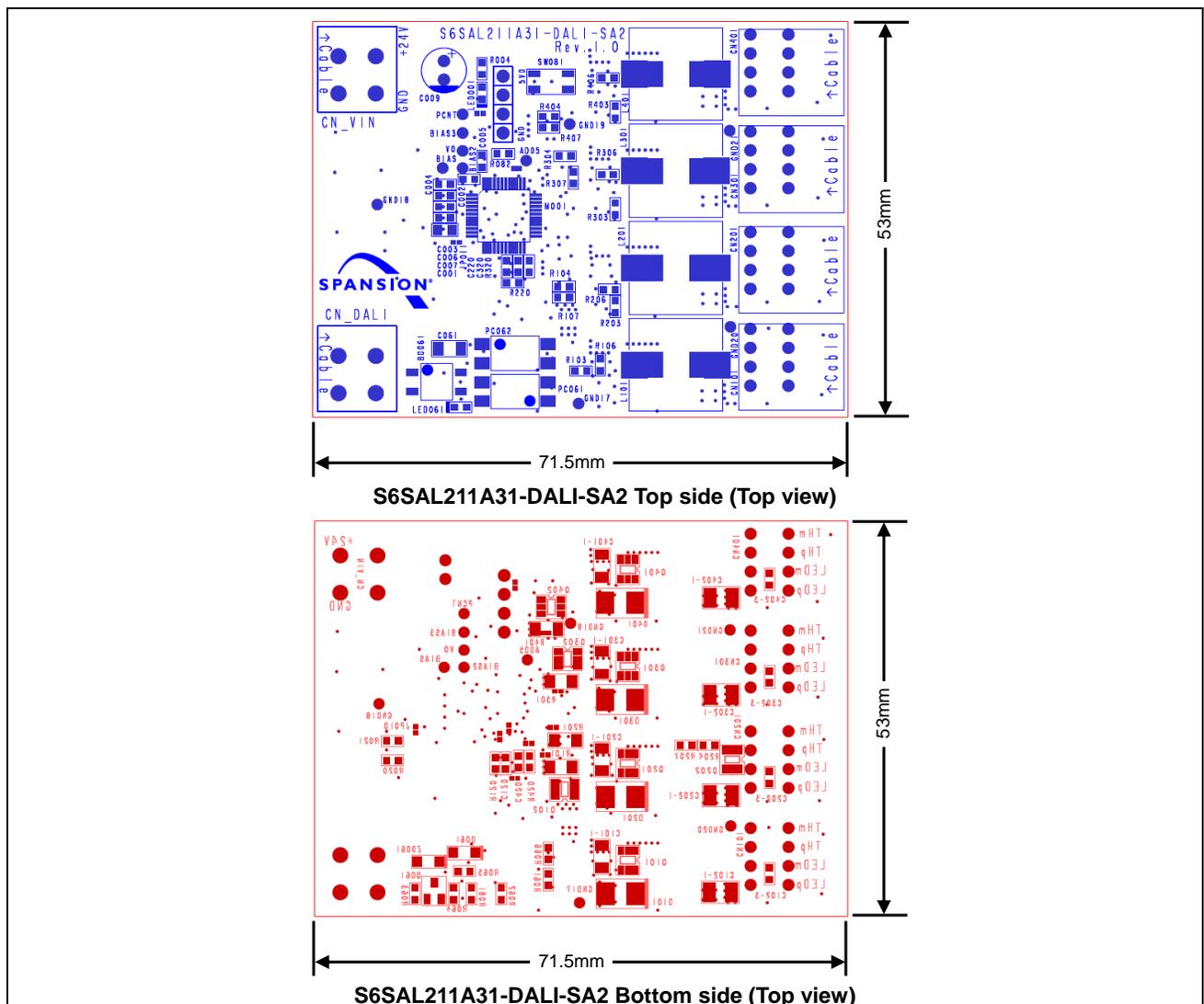
At the time of 6SAL211A31-DALI-SA2 shipment,
POWER ON LEVEL=1, SYSTEM FAILURE LEVEL=80)

5. Layout



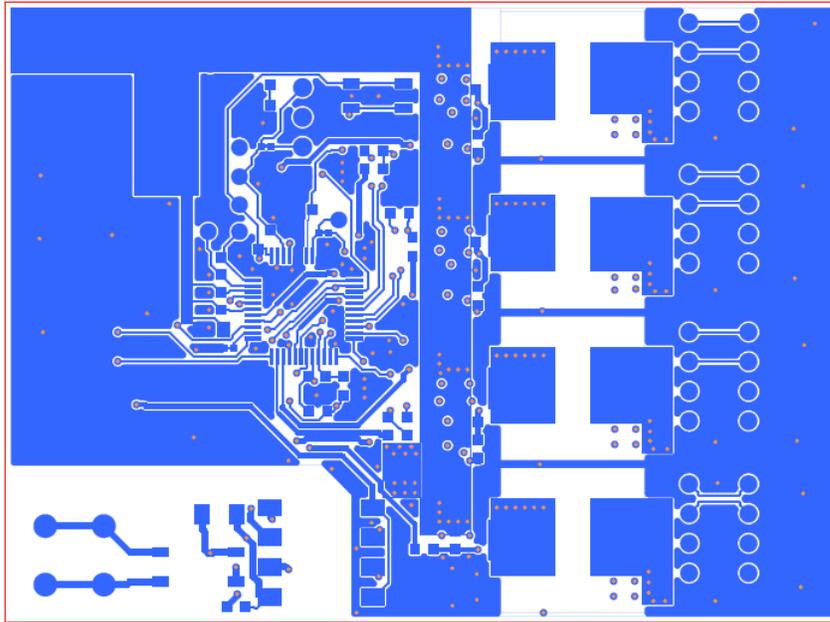
5.1 S6SAL211A31-DALI-SA2 Component Layout

Figure 5-1 S6SAL211A31-DALI-SA2 Component Layout

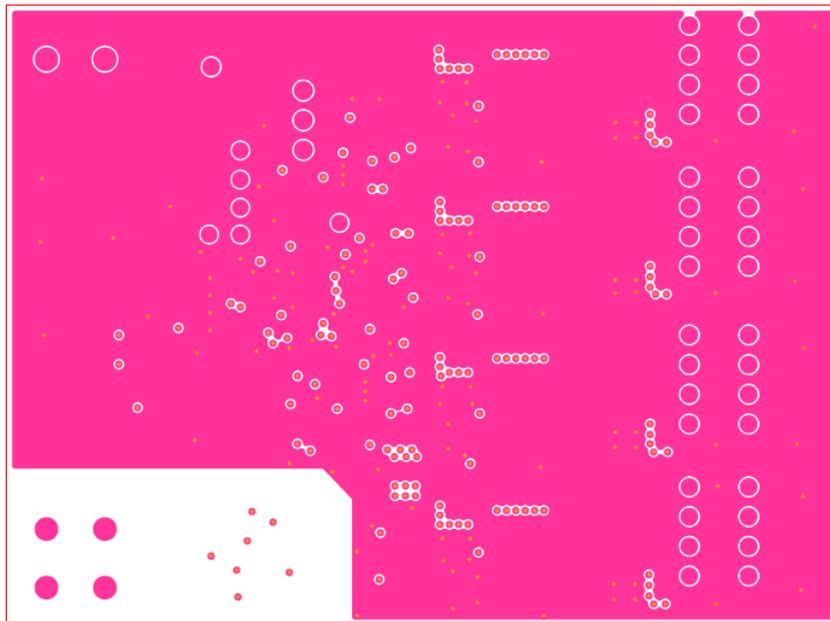


5.2 S6SAL211A31-DALI-SA2 Wiring Layout

Figure 5-2 S6SAL211A31-DALI-SA2 Wiring Layout (Layer 1, Layer 2)

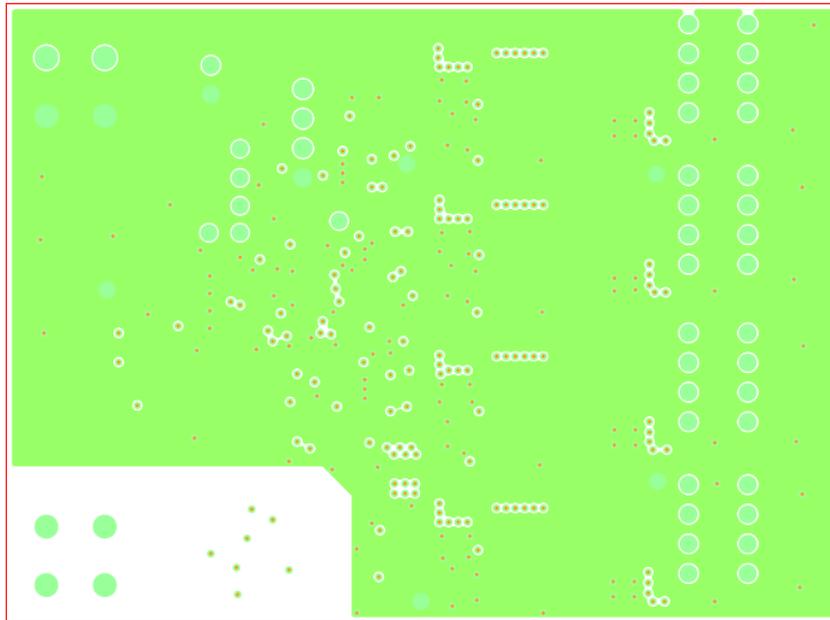


S6SAL211A31-DALI-SA2 Layer 1 (Top view)

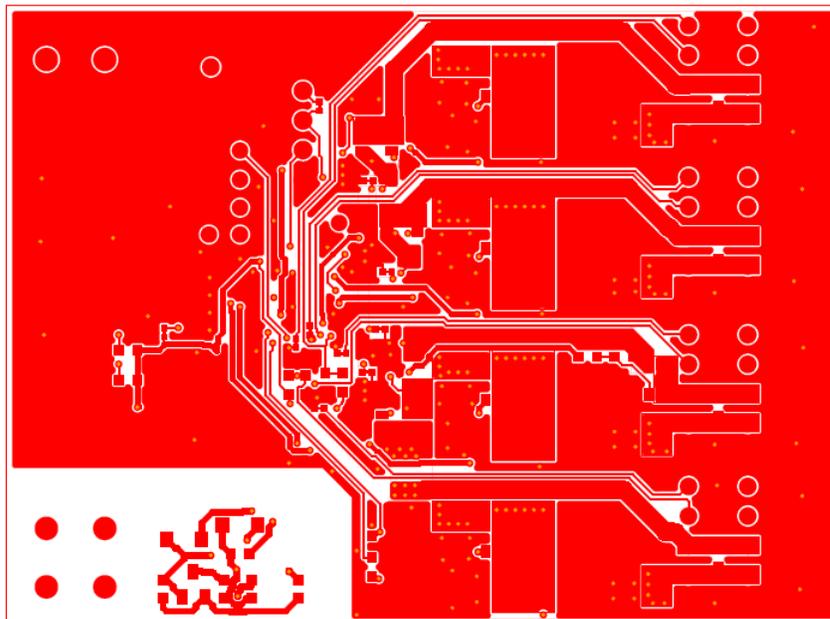


S6SAL211A31-DALI-SA2 Layer 2 (Top view)

Figure 5-3 S6SAL211A31-DALI-SA2 Wiring Layout (Layer 3, Layer 4)



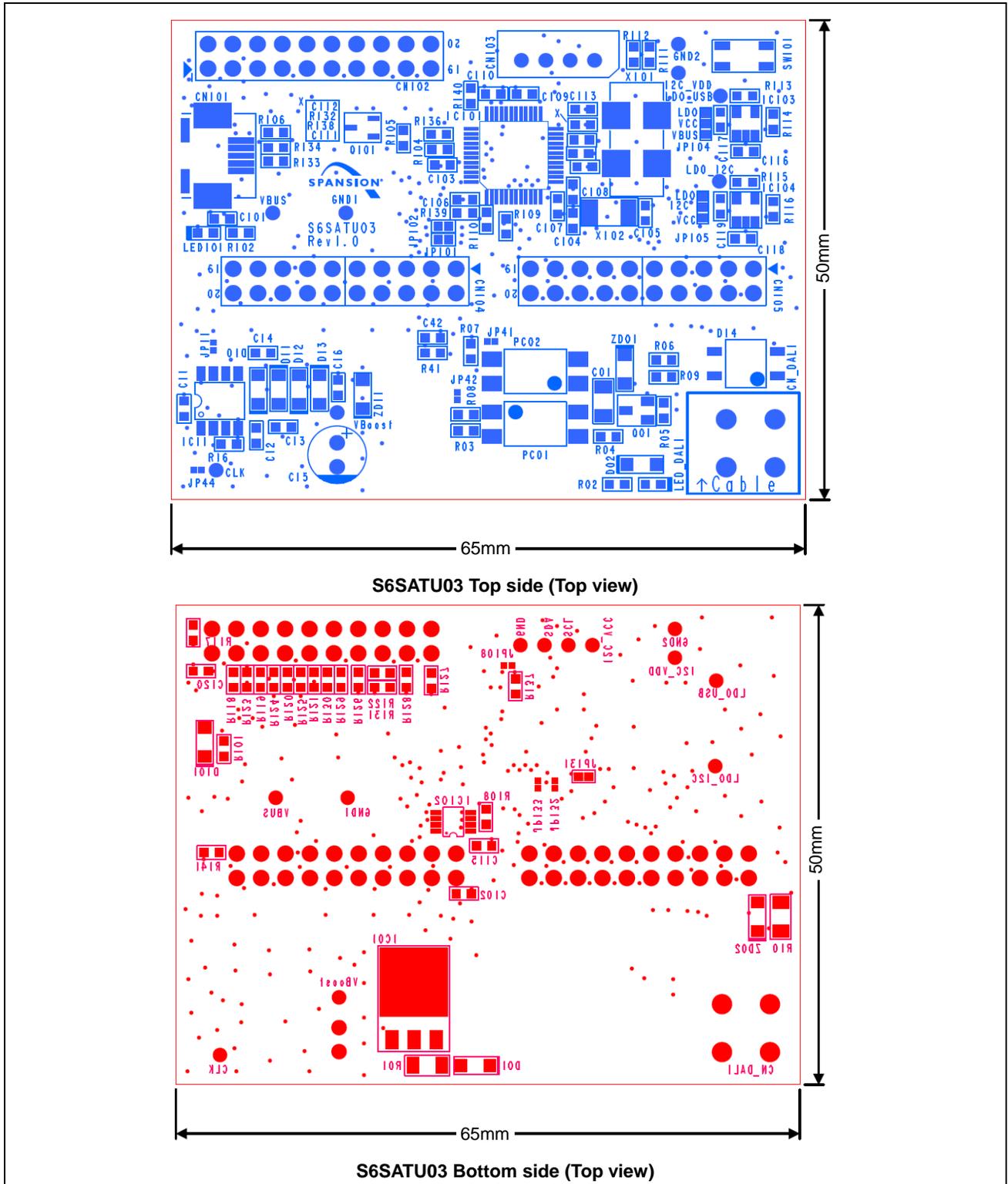
S6SAL211A31-DALI-SA2 Layer 3 (Top view)



S6SAL211A31-DALI-SA2 Layer 4 (Top view)

5.3 S6SATU03 Component Layout

Figure 5-4 S6SATU03 Component Layout



6. Circuit Schematic



6.1 S6SAL211A31-DALI-SA2 Schematic

Figure 6-1 S6SAL211A31-DALI-SA2 Circuit Schematic

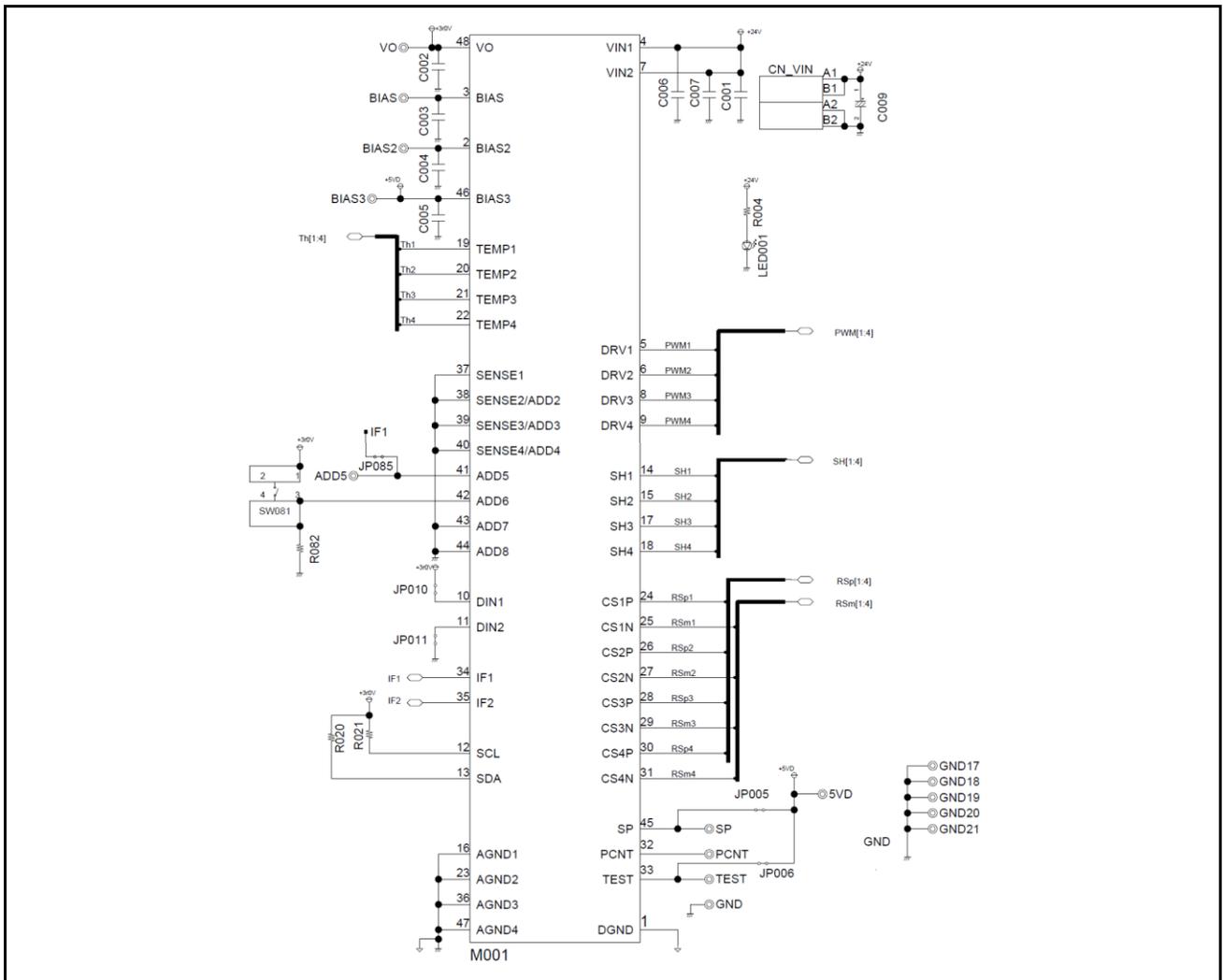


Figure 6-2 S6SAL211A31-DALI-SA2 Circuit Schematic

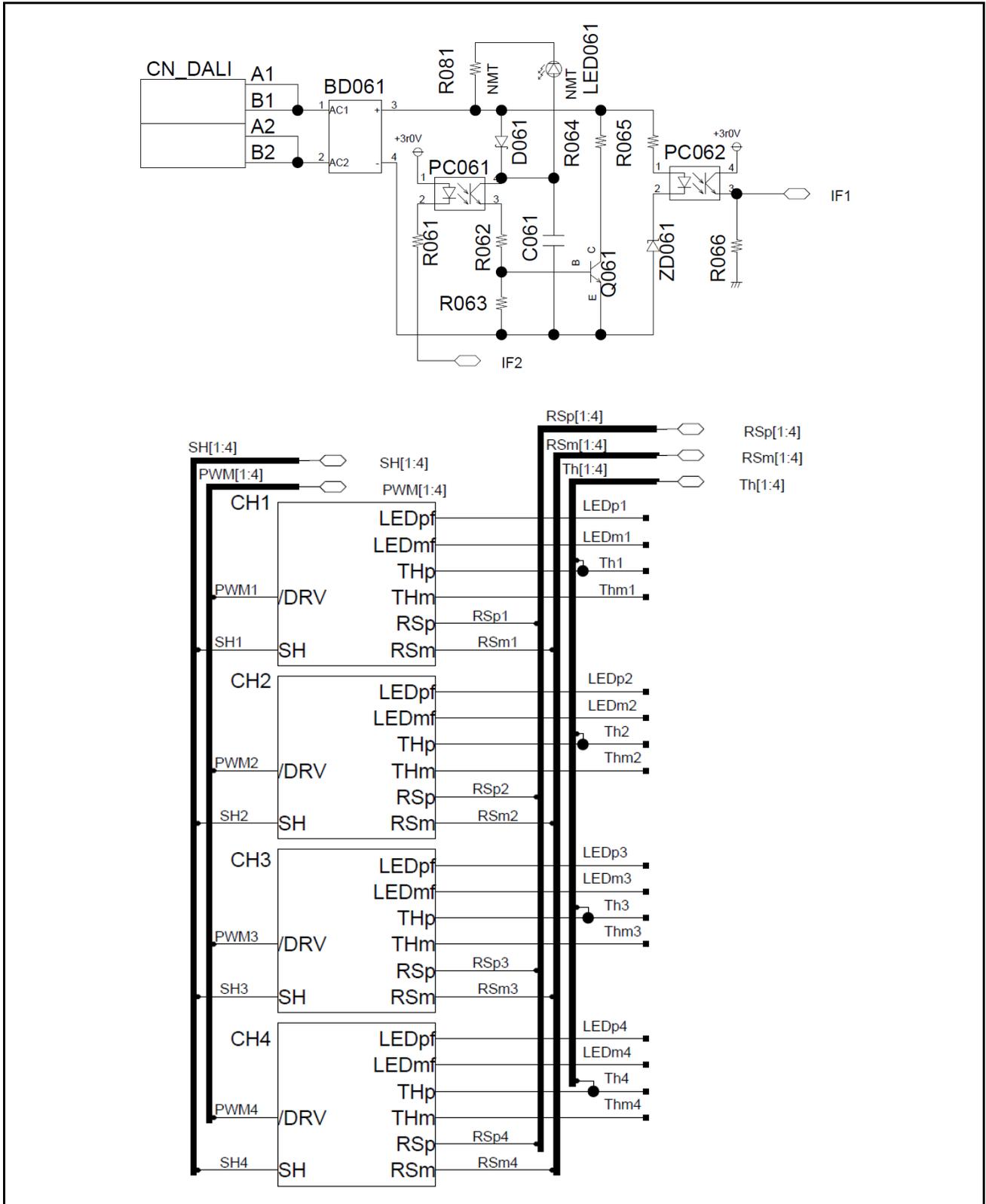
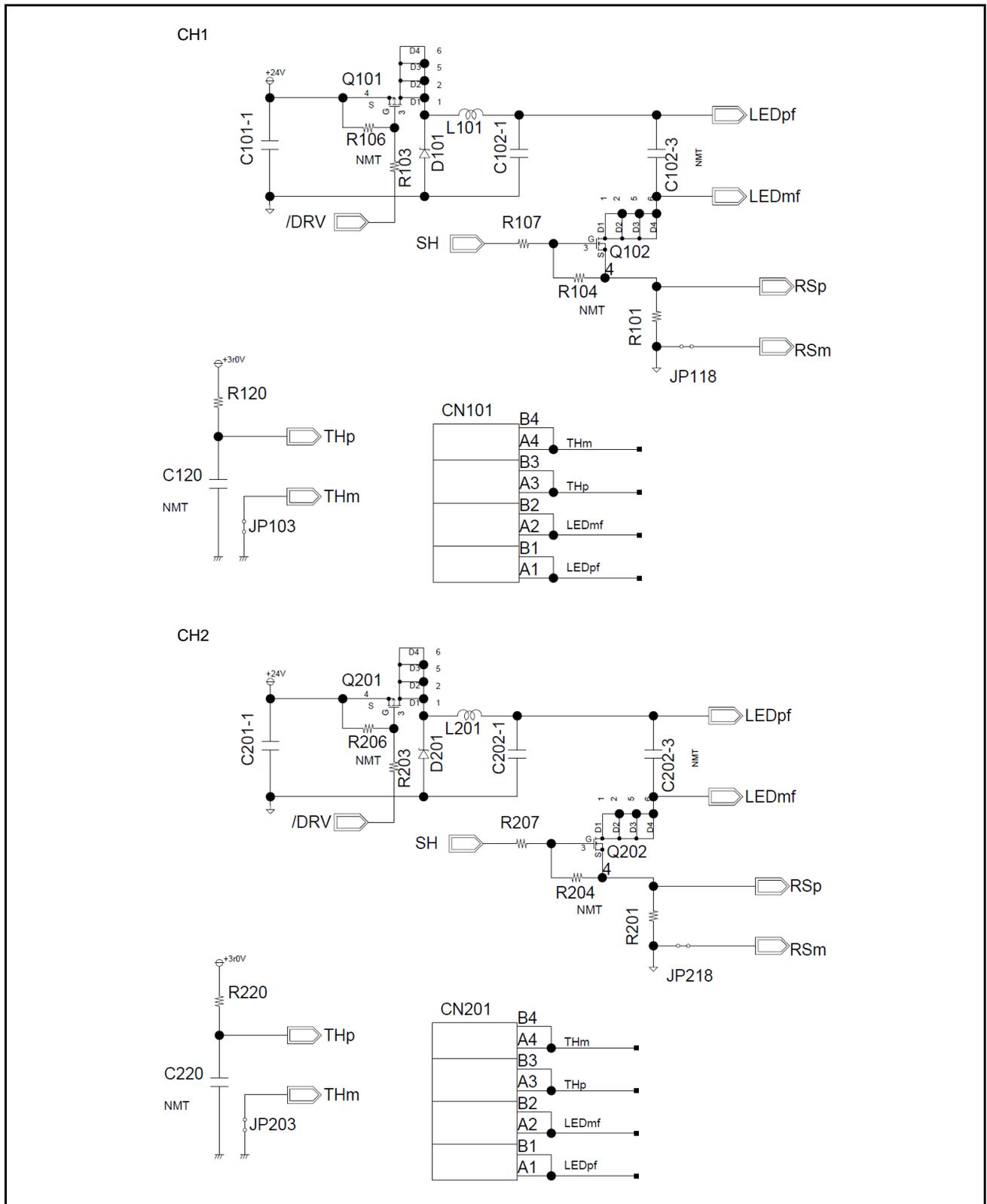
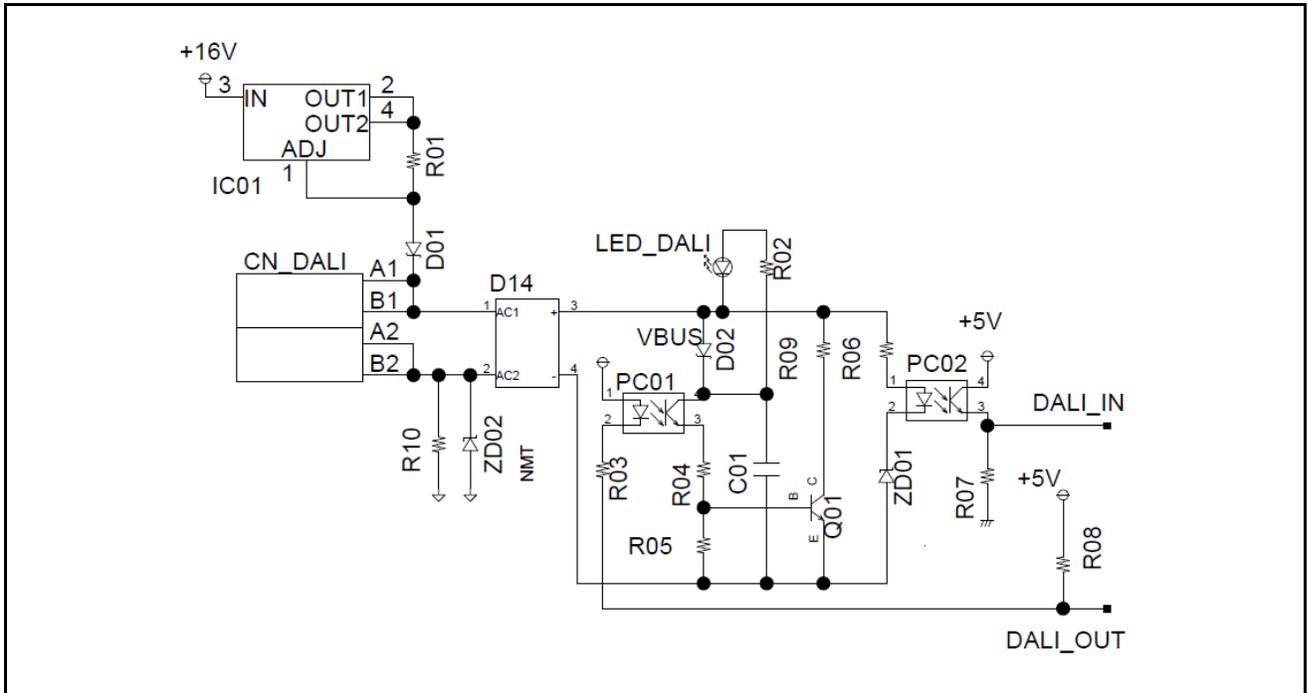


Figure 6-3 S6SAL211A31-DALI-SA2 Circuit Schematic



6.2 S6SATU03 Schematic

Figure 6-5 S6SATU03 DALI Communication Circuit



7. Component List



7.1 S6SAL211A31-DALI-SA2 Components List

Table 7-1 S6SAL211A31-DALI-SA2 Components List

| No. | Component | Parts Number | Vendor | Value | Rated Voltage(V) | Rated Current(A) | Remarks |
|-----|-----------|---------------------|------------------|---------------|------------------|------------------|---------|
| 1 | BD061 | MB2S | FAIRCHILD | - | 200 | 500m | - |
| 2 | C001 | C2012X5R1V106K125AC | TDK | 10 μ F | 35 | - | - |
| 3 | C002 | C1608X5R1V475K | TDK | 4.7 μ F | 35 | - | - |
| 4 | C003 | C1608X5R1H104K080AA | TDK | 0.1 μ F | 50 | - | - |
| 5 | C004 | C1608X5R1V475K | TDK | 4.7 μ F | 35 | - | - |
| 6 | C005 | C1608X5R1V475K | TDK | 4.7 μ F | 35 | - | - |
| 7 | C006 | C1608CH1H101J | TDK | 100 pF | 50 | - | - |
| 8 | C007 | C1608CH1H101J | TDK | 100 pF | 50 | - | - |
| 9 | C009 | EKMG350ELL101MF11D | NIPPON-CHEMI-CON | 100 μ F | 35 | - | - |
| 10 | C061 | C3216X5R1V226M160AC | TDK | 22 μ F | 35 | - | - |
| 11 | C101-1 | C3216X5R1V475K160AB | TDK | 4.7 μ F | 35 | - | - |
| 12 | C102-1 | C3225X5R1H106K | TDK | 10 μ F | 50 | - | - |
| 13 | C102-3 | C1608CH1H102J | TDK | 0.001 μ F | 50 | - | NMT |
| 14 | C120 | C1608X5R1H104K080AA | TDK | 0.1 μ F | 50 | - | NMT |
| 15 | C201-1 | C3216X5R1V475K160AB | TDK | 4.7 μ F | 35 | - | - |
| 16 | C202-1 | C3225X5R1H106K | TDK | 10 μ F | 50 | - | - |
| 17 | C202-3 | C1608CH1H102J | TDK | 0.001 μ F | 50 | - | NMT |
| 18 | C220 | C1608X5R1H104K080AA | TDK | 0.1 μ F | 50 | - | NMT |
| 19 | C301-1 | C3216X5R1V475K160AB | TDK | 4.7 μ F | 35 | - | - |
| 20 | C302-1 | C3225X5R1H106K | TDK | 10 μ F | 50 | - | - |
| 21 | C302-3 | C1608CH1H102J | TDK | 0.001 μ F | 50 | - | NMT |
| 22 | C320 | C1608X5R1H104K080AA | TDK | 0.1 μ F | 50 | - | NMT |
| 23 | C401-1 | C3216X5R1V475K160AB | TDK | 4.7 μ F | 35 | - | - |
| 24 | C402-1 | C3225X5R1H106K | TDK | 10 μ F | 50 | - | - |
| 25 | C402-3 | C1608CH1H102J | TDK | 0.001 μ F | 50 | - | NMT |

| No. | Component | Parts Number | Vendor | Value | Rated Voltage(V) | Rated Current(A) | Remarks |
|-----|-----------|---------------------|-----------------|----------------|------------------|------------------|---------|
| 26 | C420 | C1608X5R1H104K080AA | TDK | 0.1 μ F | 50 | - | NMT |
| 27 | CN101 | ML-700-NH-4P | SATOPARTS | - | 50 | 3 | - |
| 28 | CN201 | ML-700-NH-4P | SATOPARTS | - | 50 | 3 | - |
| 29 | CN301 | ML-700-NH-4P | SATOPARTS | - | 50 | 3 | - |
| 30 | CN401 | ML-700-NH-4P | SATOPARTS | - | 50 | 3 | - |
| 31 | CN_DALI | ML-2100-2P | SATOPARTS | - | 300 | 7 | - |
| 32 | CN_VIN | ML-2100-2P | SATOPARTS | - | 300 | 7 | - |
| 33 | D061 | MBR140SFT1 | ONSEMICONDUCTOR | - | 30 | 500m | - |
| 34 | D101 | SS23 | FAIRCHILD | - | 30 | 2 | - |
| 35 | D201 | SS23 | FAIRCHILD | - | 30 | 2 | - |
| 36 | D301 | SS23 | FAIRCHILD | - | 30 | 2 | - |
| 37 | D401 | SS23 | FAIRCHILD | - | 30 | 2 | - |
| 38 | L101 | SLF12575T-221M1R3 | TDK | 220 μ H | - | 1.3 | - |
| 39 | L201 | SLF12575T-221M1R3 | TDK | 220 μ H | - | 1.3 | - |
| 40 | L301 | SLF12575T-221M1R3 | TDK | 220 μ H | - | 1.3 | - |
| 41 | L401 | SLF12575T-221M1R3 | TDK | 220 μ H | - | 1.3 | - |
| 42 | LED001 | OSHR1608C1A | OptoSupply | - | - | 30m | - |
| 43 | LED061 | OSTG1608C1A | OptoSupply | - | - | 30m | NMT |
| 44 | M001 | S6AL211A | SPANSION | - | - | - | - |
| 45 | PC061 | PS2561L-1-A | CEL | - | - | - | - |
| 46 | PC062 | PS2561L-1-A | CEL | - | - | - | - |
| 47 | Q061 | FMMT491A | DIODES | - | 40 | 1 | - |
| 48 | Q101 | FDC658AP | FAIRCHILD | - | 30 | 4 | - |
| 49 | Q102 | FDC8886 | FAIRCHILD | - | 30 | 6.5 | - |
| 50 | Q201 | FDC658AP | FAIRCHILD | - | 30 | 4 | - |
| 51 | Q202 | FDC8886 | FAIRCHILD | - | 30 | 6.5 | - |
| 52 | Q301 | FDC658AP | FAIRCHILD | - | 30 | 4 | - |
| 53 | Q302 | FDC8886 | FAIRCHILD | - | 30 | 6.5 | - |
| 54 | Q401 | FDC658AP | FAIRCHILD | - | 30 | 4 | - |
| 55 | Q402 | FDC8886 | FAIRCHILD | - | 30 | 6.5 | - |
| 56 | R004 | RR0816P-123-D | SSM | 12 k Ω | - | - | - |
| 57 | R020 | RR0816P-103-D | SSM | 10 k Ω | - | - | - |
| 58 | R021 | RR0816P-103-D | SSM | 10 k Ω | - | - | - |
| 59 | R061 | RR0816P-681-D | SSM | 680 Ω | - | - | - |
| 60 | R062 | RR0816P-331-D | SSM | 330 Ω | - | - | - |
| 61 | R063 | RR0816P-332-D | SSM | 3.3 k Ω | - | - | - |
| 62 | R064 | RK73H1JTDD4R70F | KOA | 4.7 Ω | - | - | - |
| 63 | R065 | RR0816P-103-D | SSM | 10 k Ω | - | - | - |
| 64 | R066 | RR0816P-562-D | SSM | 5.6 k Ω | - | - | - |
| 65 | R081 | RR0816P-103-D | SSM | 10 k Ω | - | - | NMT |
| 66 | R082 | RR0816P-104-D | SSM | 100 k Ω | - | - | - |
| 67 | R101 | RL1632R-R200-F | SSM | 200 m Ω | - | - | - |
| 68 | R103 | RK73Z1J | KOA | 0 Ω | - | 1 | - |

| No. | Component | Parts Number | Vendor | Value | Rated Voltage(V) | Rated Current(A) | Remarks |
|-----|-----------|-----------------|-----------|--------|------------------|------------------|---------|
| 69 | R104 | RK73H1JTDD1004F | KOA | 1 MΩ | - | - | NMT |
| 70 | R106 | RK73H1JTDD1004F | KOA | 1 MΩ | - | - | NMT |
| 71 | R107 | RK73Z1J | KOA | 0Ω | - | 1 | - |
| 72 | R120 | RR0816P-752-D | SSM | 7.5 kΩ | - | - | - |
| 73 | R201 | RL1632R-R200-F | SSM | 200 mΩ | - | - | - |
| 74 | R203 | RK73Z1J | KOA | 0Ω | - | 1 | - |
| 75 | R204 | RK73H1JTDD1004F | KOA | 1 MΩ | - | - | NMT |
| 76 | R206 | RK73H1JTDD1004F | KOA | 1 MΩ | - | - | NMT |
| 77 | R207 | RK73Z1J | KOA | 0Ω | - | 1 | - |
| 78 | R220 | RR0816P-752-D | SSM | 7.5 kΩ | - | - | - |
| 79 | R301 | RL1632R-R200-F | SSM | 200 mΩ | - | - | - |
| 80 | R303 | RK73Z1J | KOA | 0Ω | - | 1 | - |
| 81 | R304 | RK73H1JTDD1004F | KOA | 1 MΩ | - | - | NMT |
| 82 | R306 | RK73H1JTDD1004F | KOA | 1 MΩ | - | - | NMT |
| 83 | R307 | RK73Z1J | KOA | 0Ω | - | 1 | - |
| 84 | R320 | RR0816P-752-D | SSM | 7.5 kΩ | - | - | - |
| 85 | R401 | RL1632R-R200-F | SSM | 200 mΩ | - | - | - |
| 86 | R403 | RK73Z1J | KOA | 0Ω | - | 1 | - |
| 87 | R404 | RK73H1JTDD1004F | KOA | 1 MΩ | - | - | NMT |
| 88 | R406 | RK73H1JTDD1004F | KOA | 1 MΩ | - | - | NMT |
| 89 | R407 | RK73Z1J | KOA | 0Ω | - | 1 | - |
| 90 | R420 | RR0816P-752-D | SSM | 7.5 kΩ | - | - | - |
| 91 | SW081 | SKRSPACE010 | ALPS | - | - | 50m | - |
| 92 | ZD061 | MMSZ5229B | FAIRCHILD | - | - | - | - |

NMT: No mount.

These components are compliant with RoHS, and please ask each vendor for details if necessary.

7.2 S6SATU03 Components List

Table 7-2 S6SATU03 DALI Communication Components List

| No | Component | Parts Number | Vendor | Value | Rated Voltage(V) | Rated Current(A) | Remarks |
|----|-----------|---------------------|-----------------|----------------|------------------|------------------|---------|
| 1 | C01 | C3216X5R1V226M160AC | TDK | 22 μ F | 35 | - | - |
| 2 | D01 | MBR140SFT1 | ONSEMICONDUCTOR | - | 30 | 500m | - |
| 3 | D02 | MBR140SFT1 | ONSEMICONDUCTOR | - | 30 | 500m | - |
| 4 | D14 | MB2S | FAIRCHILD | - | 200 | 500m | - |
| 5 | IC01 | NJM317DL1 | NJR | - | 40 | 400m | - |
| 6 | LED_DALI | OSYG1608C1A | OptoSupply | - | - | 30m | - |
| 7 | R01 | RK73H2BTDD24R0F | KOA | 24 Ω | - | - | - |
| 8 | R02 | RR0816P-153-D | SSM | 15 k Ω | - | - | - |
| 9 | R03 | RR0816P-681-D | SSM | 680 Ω | - | - | - |
| 10 | R04 | RR0816P-331-D | SSM | 330 Ω | - | - | - |
| 11 | R05 | RR0816P-332-D | SSM | 3.3 k Ω | - | - | - |
| 12 | R06 | RR0816P-562-D | SSM | 5.6 k Ω | - | - | - |
| 13 | R07 | RR0816P-562-D | SSM | 5.6 k Ω | - | - | - |
| 14 | R08 | RR0816P-103-D | SSM | 10 k Ω | - | - | - |
| 15 | R09 | RK73H1JTDD4R70F | KOA | 4.7 Ω | - | - | - |
| 16 | R10 | RK73H2BTDD10R0F | KOA | 10 Ω | - | - | - |
| 17 | PC01 | PS2561L-1-A | CEL | - | - | - | - |
| 18 | PC02 | PS2561L-1-A | CEL | - | - | - | - |
| 19 | Q01 | FMMT491A | DIODES | - | 40 | 1 | - |
| 20 | ZD01 | MMSZ5229B | FAIRCHILD | 4.3 | - | - | - |
| 21 | ZD02 | MMSZ5229B | FAIRCHILD | - | - | - | NMT |
| 22 | CN_DALI | ML-2100-2P | SATOPARTS | - | 300 | 7 | - |

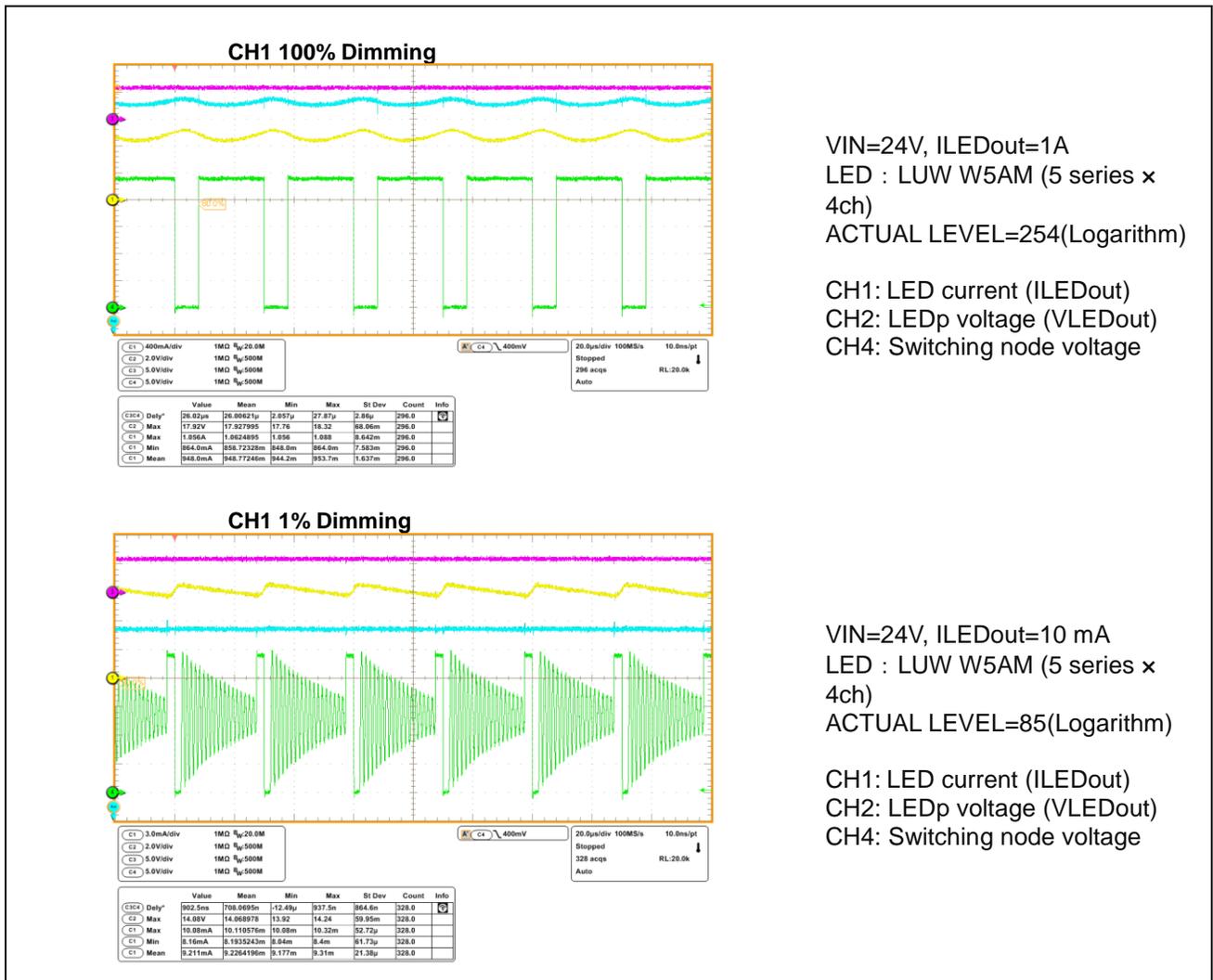
NMT: No mount.

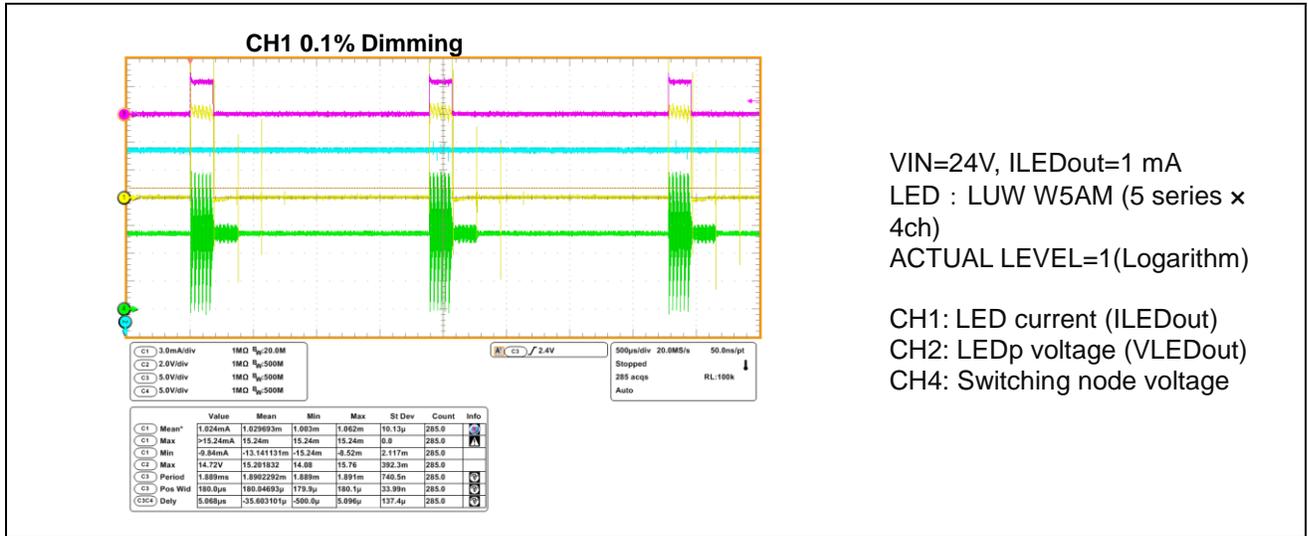
These components are compliant with RoHS, and please ask each vendor for details if necessary.

8. S6SAL211A31-DALI-SA2 Property Data



Figure 8-1 Switching Waveform



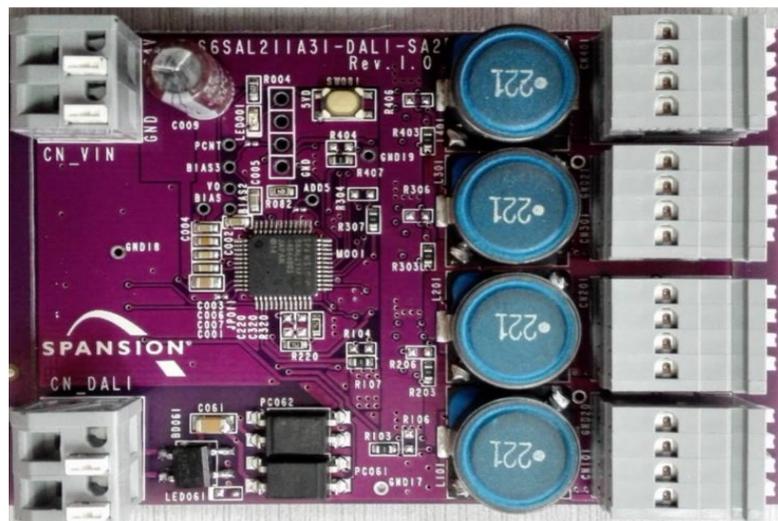


9. Board Picture

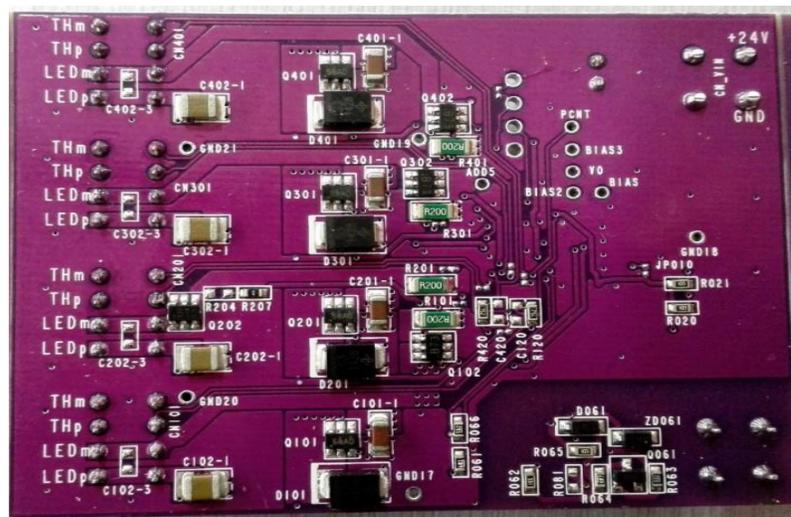


9.1 S6SAL211A31-DALI-SA2 Board Picture

Figure 9-1 S6SAL211A31-DALI-SA2 Board Picture



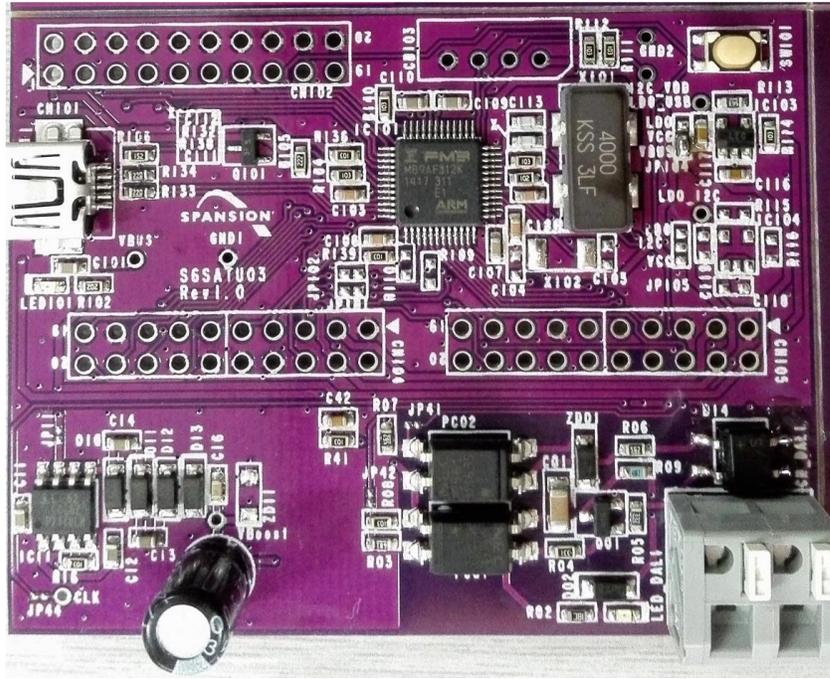
S6SAL211A31-DALI-SA2 (Top View)



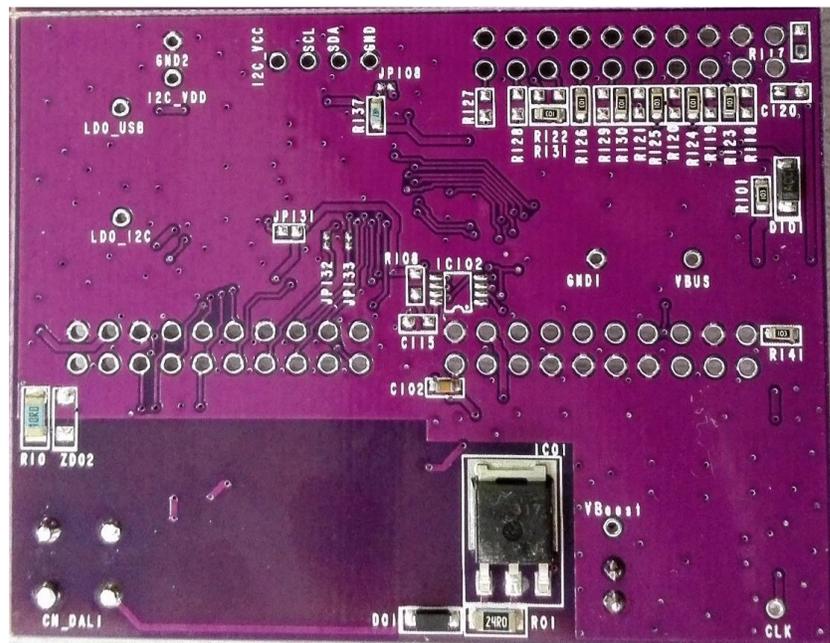
S6SAL211A31-DALI-SA2 (Bottom View)

9.2 S6SATU03 Board Picture

Figure 9-2 S6SATU03 Board Picture



S6SATU03 (Top View)



S6SATU03 (Bottom View)

10. Ordering Information



Table 10-1 Ordering Information

| Part Number | EVB Revision | Note |
|-------------------|--|------|
| S6SAL211A31SA3001 | S6SAL211A31-DALI-SA2 Rev1.0 S6SATU03 Rev1.0 | - |
| S6SAL211A31SA2001 | S6SAL211A31-DALI-SA2 Rev1.0 | - |

Revision History



Document Revision History

| Document Title: S6SAL211A31SA2001, S6SAL211A31SA3001 4ch 72W LED Driver and Communication Board Operation Guide | | | |
|---|------------|------------------|--|
| Document Number: 002-08632 | | | |
| Revision | Issue Date | Origin of Change | Description of Change |
| ** | 03/31/2015 | HSAT | Initial release |
| *A | 04/26/2016 | HSAT | Migrated Spansion Guide from S6SAL211A31SA3001_SS405-00003-1v0-E to Cypress format |
| *B | 04/04/2019 | ATTS | Updated Cypress logo and copyright |