# APPLICATION NOTE

## ISL97635 SMBus LED Driver Programming Instruction

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- 1. Copy the ISL97635-20080614.zip file into hard drive, then unzip it. Once the file is unzipped, run setup.exe under the Package directory for s/w installation.
- 2. Connect the USB connector to the PC, or use a USB extension cable (not included).
- Refer to "ISL97635EVALZ Evaluation Board Schematic" on page 3.
- 4. Ensure JP1, JP2, JP3, JP4, JP5, JP6, JP7, JP8, JP9, JP23, and JP26 are ON.
- If the eval board does not have enough LED strings, users can connect external LED strings between VOUT (Anode) and IINx (Cathode) pins for the specific configurations.
- 6. Apply 0.6V to 21V at VIN and PGND.

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7. Apply 0.2V to 5.5V at PWMI/EN and GND. Optional PWM signal can be applied to the same pin for PWM dimming.

- Open the program at Start -> All Programs -> Intersil ISL97635 Eval Kit -> Intersil IS635 Eval Kit. Click *ISL97636* instead (This is a programming error that will be corrected in the next revision), the GUI is shown in Figure 1.
- 9. To program ISL97635 GUI, enter the data in Hex (0x00 to 0xFF) in registers 0x00 and 0x07. Other registers enter binary data. One example for checking the Backlight Control is to change bit 0 in register 0x01 to 1, then click the Write button. The LEDs should be on. Table 1 shows the Register map. For the complete command and data descriptions, see ISL97635 Table 2A and the associated sections.

(Note: Sometimes the USB driver needs to be reset; for normal operation, just cycle the  $V_{IN}$  power).

ISL 97635 SMB	Jus Interface Eval Software
0x00 PWM FF Write Read FF	0x08 7 1 CONFIG 6 1 5 1 4 1
0x01 7 0 DEVICE 6 0 CONTROL 4 0 PWM mode - 2 0	3 1 FSW - 2 1 En SC detect - 1 En high VSC - 1
PWM source sel - 1 0 Backlight Control - 0 0	0x09 Ch 7 1 1 0x09 Ch 6 1 1
0x02 7 0 FAULT/ 2_CH_SD 0 STAUTS 8L_STAT 0 OV_CURR 0 THRM_SHDN 0 FAULT 0	UNMASK/ Ch 5 1 FAULT Ch 4 1 FAULT Ch 3 1 READOUT Ch 2 1 Ch 1 1 Ch 0 1
0x03 DEVICE MFG - 6:3 0000 ID REV - 2:0 000	Any Register Access Addr 0 Value 0 Write Read
0x07 DC CURRENT FF Write Read FF	Global Read/Write Repetitive poll of all Fregisters

FIGURE 1. ISL97635 GUI



### ISL97635 SMBus LED Driver Programming Instruction

ADDRESS	REGISTER	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0	DEFAULT VALUE	SMBUS PROTOCOL
0x00	PWM Brightness Control	BRT7	BRT6	BRT5	BRT4	BRT3	BRT2	BRT1	BRT0	0XFF	Read and Write
0x01	Device Control	Reserved	Reserved	Reserved	Reserved	Reserved	PWM_MD	PWM_SEL	BL_cTL	0X00	Read and Write
0x02	Fault/Status	Reserved	Reserved	2_CH_SD	1_CH_SD	BL_STAT	OV_CURR	THRM_SHDN	FAULT	0x00	Read Only
0x03	Identification	LED Panel	MFG3	MFG2	MFG1	MFG0	REV2	REV1	REV0	0xC8	Read Only
0x07	DC Brightness Control	BRTDC7	BRTDC6	BRTDC5	BRTDC4	BRTDC3	BRTDC2	BRTDC1	BRTDC0	0xFF	Read and Write
0x08	Configuration	Reserved	Reserved	Reserved	Reserved	Reserved	FSW	VSC1	VSC0	0xXF	Read and Write
0x09	Output Channel	CH 7	CH6	CH5	CH4	СНЗ	CH2	CH1	CH0	0xFF	Read and Write



# ISL97635EVALZ Evaluation Board Schematic

Naes L1 chriets: 15: HHP-2228E001 Voltay Inductor, 8 2aHBA/24mm 2nd: REF020100K Inductor 6 8aH28:462 2mm 3rd- HHP-2250H01 Voltay Inductor, 4 7aH3A1.8mm(LowestProfile) DI choias: 1st- SSI5- Vishay Schotly Diode, SOVIA/SMA/23mm 2nd- ZHCS800 - Zatex Schotly Diode, 40//05A/SOF-231mm D TP10 (D2& C21 nd populated USBCON 82JH 47//50V 47050V 4.7650 4.7u50V C16 0 hF **IP** NPS 10.25V 10,250 ÷ MDA 500 USBOC 32 USBOM 31 USBOP 30 OSCOU OSCIN TPI2 (Å2 27 VSS 4 5 6 7 8 Vlogic TP2 C2USHOE VSSA PAOMICO Ż 22 PAISD WICDARA PAISD WICDARA PAISD WICDARA NC 25 NC 25 NC 25 PAISD WICDARA PAISO WICDARA 18010 IHDIS 11137 1HD16 1u50V 0 CORDI Ζ /RESET TP26 9 NC 10 PB/AN/ITI8 11 PB/AN/ITI8 12 VIP/IEST 13 VIP/IEST 14 PB/AN/ITI5 15 PB/AN/ITI5 15 PB/AN/I 15 PB/AN/I 16 PB/AN/I P9 SMBLK PONE Ş **¥**3 ₹. Ś ς. SMEDAT PGNE CI3 27nFSOV LHD18 LHD12 UHD30 PBI/AINI ΡWA ONP TP21 15197635 220xE50M PWMD IIN0 Æ LID13 SGND IN GND  $\downarrow$  $\overline{+}$ PWM/EN WM/E IIN2 SOND THDM HEIO\_CON\_MALE UI JP3 sŇ R2 345 LID# THD3 THD8 LIDI THD8 LID44 Connectone point at PCB 111127 LIDIS 

R12

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-2

THE STREET

TP

TP.

TR

11106

1HD67

LHD69

111072

RI:

MD

LHD7

LHD%

LHD77

LHD78

LHD79

LHD80

LHD81

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**FIGURE 2. EVALUATION BOARD SCHEMATIC** 

(CP & CD at populated)

\_\_\_\_\_C15 : 47\F

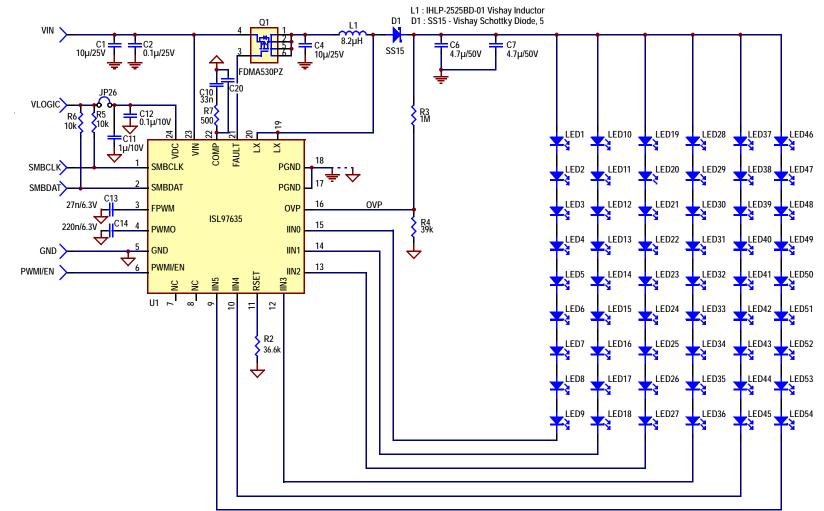
สมัก

R8 4.7k

C20 0.14F SOND

SOND

LED Driver Circuit



NOTES:

- 1. For two layer board, layout PGND (Noisy Ground) Top Layer and AGND (Quiet Ground) on Bottom Layer.
- 2. Tie PGND and AGND at one point only by doing the following: Bridge U1 PGND (Pins 18 and 19) and AGND (Pin 5) to the package thermal pad.
- 3. Put multiple vias on the thermal pad that connects to the bottom side AGND.

FIGURE 3. LED DRIVER CIRCUIT

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