

LED Drivers for LCD Backlights

Multifunction Backlight LED Drivers for Small LCD Panels (Charge Pump Type)



BD6081GU, BD6081GVW

No.11040EAT27

●Description

BD6081GU / BD6081GVW is compound LED Driver which is the most suitable for the cellular phone.

Main LCD Back Light LED Driver (Max 4 Light), Sub LCD Back Light LED Driver (Max 2 Light), 2 system RGB LED Drivers, 2Ch LDO (2.8V/1.8V) included. This is PMIC (Power Management IC) that is the most suitable for "the indication part" of the cellular phone. A charge pump form is adopted, and a coil is never used for the part DC/DC. This IC achieves compact size with the chip size package (VCSP85H3). [BD6081GU] This IC solves a mounting problem by BGA package (SBGA063W060). [BD6081GVW]

●Features

- 1) Main LCD Back Light LED Driver (Max 4 Light)
4 Lighting / 3 Lighting can be chosen (register setting)
- 2) Sub LCD Back Light LED Driver (Max 2 Light)
2 Lighting / 1 Lighting can be chosen (register setting)
- 3) RGB LED Driver (2 System)
Slope control is built in. (2 system independence can be controlled.)
LED connection (for G1LED, G2LED, B1LED, B2LED) can be set up in the battery or the DC/DC output. (register setting)
LED connection (for R1LED, R2LED) can be set up in the battery only.
- 4) 2ch Series Regulator
2.8V output I_{max}=150mA
1.8V output I_{max}=150mA (normal mode)
1.8V output low current consumption mode / normal mode Switching is possible. (The outside pin control / register setting)
- 5) Charge Pump DC/DC
Soft start Functions
Over voltage protection (Auto-return type)
Over current protection (Auto-return type)
- 6) Thermal shutdown (Auto-return type)
- 7) I²C BUS Fast-mode (max 400kHz) Writing

*This chip is not designed to protect itself against radioactive rays.

*This material may be changed on its way to designing.

*This material is not the specification.

●Absolute Maximum Ratings (Ta=25 °C)

| Parameter | Symbol | Ratings | Unit |
|-----------------------------|------------------|----------------------------|------|
| Maximum Applied voltage | V _{MAX} | 7 | V |
| Power Dissipation | BD6081GU | P _d 1725 note1) | mW |
| | BD6081GVW | P _d 1060 note2) | mW |
| Operating Temperature Range | T _{opr} | -25 ~ +85 | °C |
| Storage Temperature Range | T _{stg} | -55 ~ +150 | °C |

cote1) Power dissipation deleting is 13.8mW/ °C, when it's used in over 25 °C.
(It's deleting is on the board that is ROHM's standard))

Note2) Power dissipation deleting is 8.48mW/ °C, when it's used in over 25 °C.
(It's deleting is on the board that is ROHM's standard))

●Operating conditions (V_{BAT} ≥ V_{I/O}, Ta = -25 ~ 85 °C)

| Parameter | Symbol | Ratings | Unit |
|--------------------------------|------------------|------------|------|
| V _{BAT} input voltage | V _{BAT} | 2.7 ~ 5.5 | V |
| V _{I/O} pin voltage | V _{I/O} | 1.65 ~ 3.3 | V |

● **Electrical Characteristics** (Unless otherwise specified, Ta=25°C, VBAT=3.6V, VIO=1.8V)

| Parameter | Symbol | Limits | | | Unit | Condition |
|--|-----------------|---------|--------|-------|------|--|
| | | Min. | Typ. | Max. | | |
| 【Circuit Current】 | | | | | | |
| VBAT Circuit current 1 | IBAT1 | - | 0.1 | 3.0 | μA | RESET=0V, VIO=0V |
| VBAT Circuit current 2 | IBAT2 | - | 0.5 | 3.0 | μA | RESET=0V, VIO=1.8V |
| VBAT Circuit current 3 | IBAT3 | - | 6.2 | 9.5 | μA | REG2 low current consumption mode, Io=0mA |
| VBAT Circuit current 4 | IBAT4 | - | 100 | 150 | μA | REG2 normal mode, Io=0mA |
| VBAT Circuit current 5 | IBAT5 | - | 140 | 210 | μA | REG1, REG2 normal mode, Io=0mA |
| VBAT Circuit current 6 | IBAT6 | - | 63 | 95 | mA | DC/DC x1 mode, Io=60mA, VBAT=4.0V |
| VBAT Circuit current 7 | IBAT7 | - | 95 | 143 | mA | DC/DC x1.5 mode, Io=60mA, VBAT=3.6V |
| VBAT Circuit current 8 | IBAT8 | - | 125 | 188 | mA | DC/DC x2 mode, Io=60mA, VBAT=2.7V |
| 【LED Driver】 | | | | | | |
| LED current Step1 | ILEDSTP1 | 32 | | | Step | MLED1~4, SLED1~2 |
| LED current Step2 | ILEDSTP2 | 64 | | | Step | R1LED, G1LED, B1LED, R2LED, G2LED, B2LED (with 0mA setting) |
| LED Maximum setup current 1 | IMAX1 | - | - | 32 | mA | MLED1~4, SLED1~2, ISET=120kΩ |
| LED Maximum setup current 2 | IMAX2 | - | - | 31.5 | mA | R1LED, G1LED, B1LED, R2LED, G2LED, B2LED, ISET=120kΩ |
| LED current accurate | ILED | 18 | 20 | 22 | mA | ILED=20mA, ISET=120kΩ |
| LED current Matching | ILEDMT | - | 5 | 10 | % | Between MLED1~4 Between SLED1~2 Between R1LED, G1LED and B1LED Between R2LED, G2LED and B2LED |
| LED OFF Leak current | ILKLED | - | - | 1.0 | μA | |
| 【DC/DC(Charge Pump)】 | | | | | | |
| Output voltage | V ^{CP} | Vf+0.15 | Vf+0.2 | - | V | Vf is LED forward voltage |
| Current Load | IOUT | - | - | 255 | mA | VBAT≥3.2V, VOUT=4V |
| Oscillator frequency | fosc | 0.8 | 1.0 | 1.2 | MHz | |
| Over voltage protection detect voltage | OVP | - | 6.0 | 6.5 | V | |
| Over current protection detect current | OCP | - | 250 | 375 | mA | VOUT=0V |
| 【REG1】 | | | | | | |
| Output voltage | Vo1 | 2.716 | 2.80 | 2.884 | V | Io=150mA, VBAT≥3.1V |
| I/O voltage difference | Vsat1 | - | 0.2 | 0.3 | V | VBAT=2.5V, Io=150mA |
| Load stability | ΔVo11 | - | 10 | 60 | mV | Io=1~150mA |
| Input stability | ΔVo12 | - | 10 | 60 | mV | VBAT=3.2~5.5V, Io=150mA |
| Ripple Rejection Ratio | RR1 | 30 | 40 | - | dB | f=100Hz, Vin=200mVp-p |
| Short circuit current limit | Ilim01 | - | 225 | 450 | mA | Vo=0V |
| Discharge resister at OFF | ROFF1 | - | 1.0 | 1.5 | kΩ | |
| 【REG2】 | | | | | | |
| Output voltage 1 | Vo21 | 1.74 | 1.8 | 1.86 | V | Io=150mA (normal mode) |
| Output voltage 2 | Vo22 | 1.71 | 1.8 | 1.89 | V | Io=100μA (low current consumption mode) |
| Load stability | ΔVo21 | - | 10 | 60 | mV | Io=1~150mA |
| Input stability | ΔVo22 | - | 10 | 60 | mV | VBAT=3.2~5.5V, Io=150mA |
| Ripple Rejection Ratio | RR2 | 30 | 40 | - | dB | f=100Hz, Vin=200mVp-p |
| Short circuit current limit | Ilim02 | - | 225 | 450 | mA | Vo=0V |
| Discharge resister at OFF | ROFF2 | - | 1.0 | 1.5 | kΩ | |

●Electrical Characteristics (Unless otherwise specified, Ta=25°C, VBAT=3.6V, VIO=1.8V)

| Parameter | Symbol | Limits | | | Unit | Condition |
|--|--------|-----------|------|-----------|------|--|
| | | Min. | Typ. | Max. | | |
| 【I²C Input (SDA, SCL)】 | | | | | | |
| LOW level input voltage | VIL | -0.3 | - | 0.25 ×VIO | V | |
| HIGH level input voltage | VIH | 0.75 ×VIO | - | VBAT+0.3 | V | |
| Hysteresis of Schmitt trigger input | Vhys | 0.05 ×VIO | - | - | V | |
| LOW level output voltage (SDA) at 3mA sink current | VOL | 0 | - | 0.3 | V | |
| Input current each I/O pin | lin | -10 | - | 10 | μA | Input voltage = 0.1×VIO~0.9×VIO |
| 【RESET, RGB1CNT, RGB2CNT】 | | | | | | |
| LOW level input voltage | VIL | -0.3 | - | 0.25 ×VIO | V | |
| HIGH level input voltage1 | VIH1 | 0.75 ×VIO | - | VBAT+0.3 | V | RESET Pin |
| HIGH level input voltage2 | VIH2 | 0.75 ×VIO | - | VIO+0.3 | V | RGB1CNT, RGB2CNT Pin |
| Input current each I/O pin1 | lin | -10 | - | 10 | μA | Input voltage = 0.1×VIO~0.9×VIO, RESET Pin |
| Input current each I/O pin2 | lin | - | 6 | 15 | μA | Input voltage = .9×VIO, RGB1CNT, RGB2CNT Pin |
| 【REG2EN, REG2MD】 | | | | | | |
| LOW level input voltage | VIL | -0.3 | - | 0.3 | V | |
| HIGH level input voltage | VIH | 1.4 | - | VBAT,+0.3 | V | |
| Input current each I/O pin | lin | - | 6 | 15 | μA | Vin=1.8V |

●Power dissipation (On the ROHM's standard board)

BD6081GU

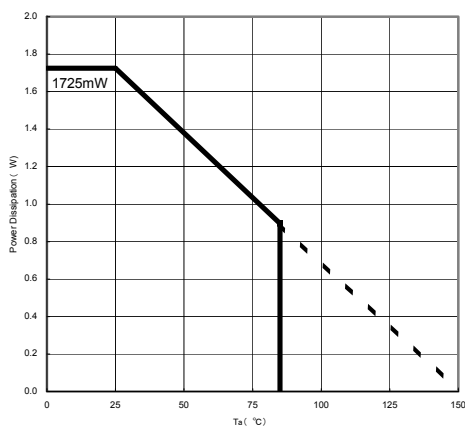


Fig.1

Information of the ROHM's standard board

Material: glass-epoxy
 Size: 50mm×58mm×1.75mm (8 Layer)

BD6081GVW

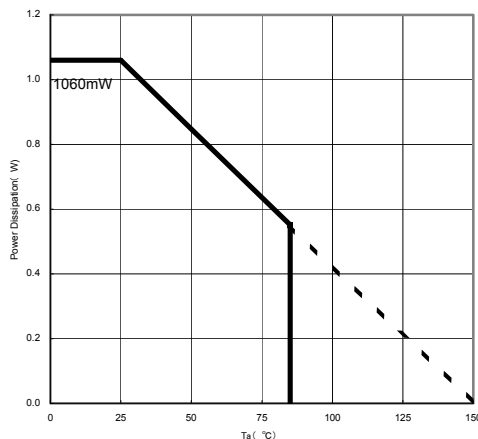


Fig.2

Information of the ROHM's standard board

Material: glass-epoxy
 Size: 114.3mm×76.2mm×1.6mm

Pattern of the board: Refer to it that goes later.

●Block Diagram / Application Circuit example

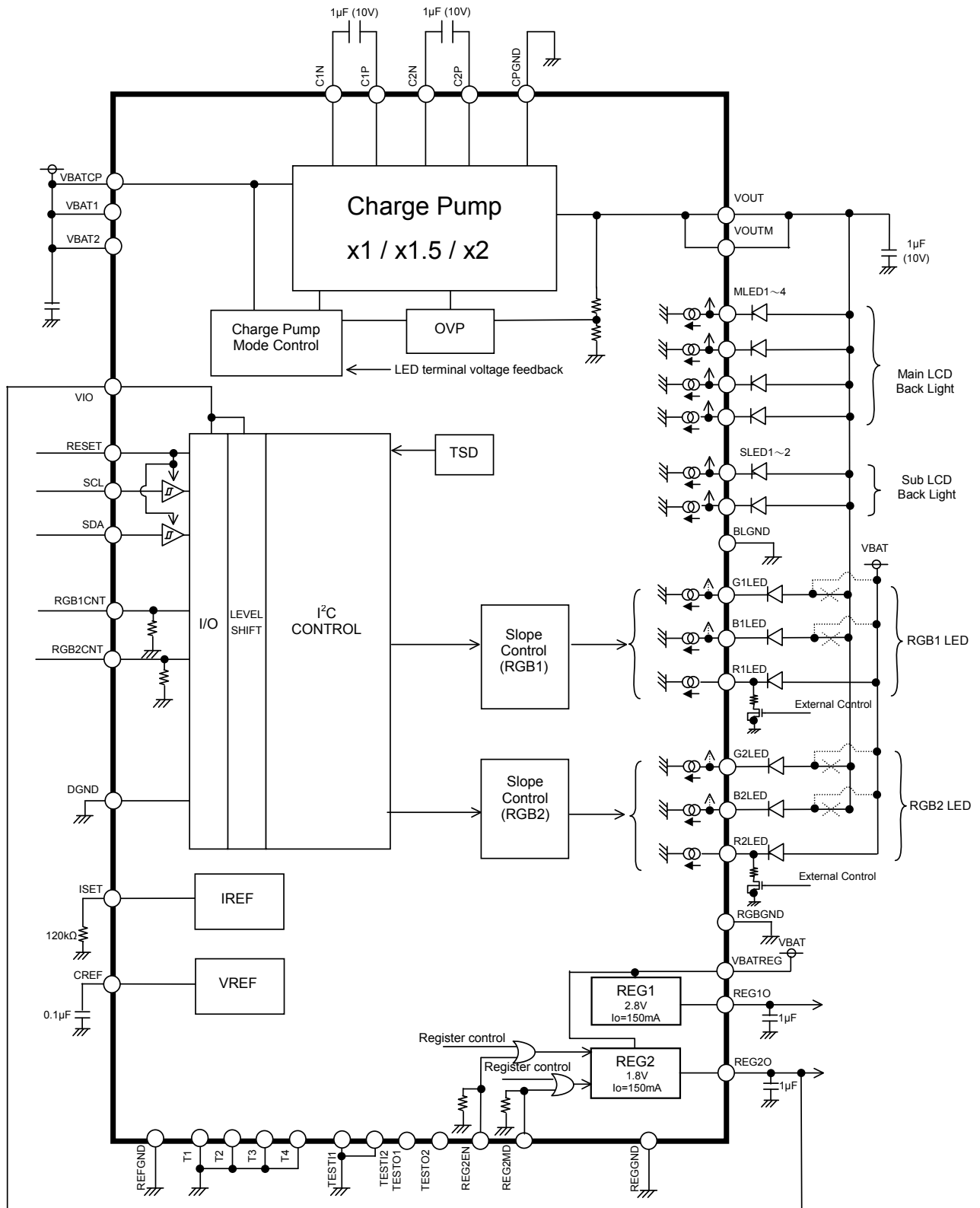



Fig.3 Block Diagram / Application Circuit example

● Pin Arrangement [Bottom View]


BD6081GU

| | | | | | | | |
|---|--------|-------|--|---------|---------|---------|--------|
| G | T4 | VBAT1 | REG2O | VBATREG | REGGND | VIO | T3 |
| F | REFGND | R1LED | CREF | REG1O | REG2MD | RGB1CNT | RESET |
| E | G1LED | B1LED | ISET | REG2EN | RGB2CNT | SDA | DGND |
| D | RGBGND | R2LED | TEST1 | TEST2 | SCL | VOUTM | VOUT |
| C | G2LED | B2LED |  index | TESTO2 | TESTO1 | C1P | C2P |
| B | SLED1 | BLGND | MLED2 | MLED4 | CPGND | C1N | VBATCP |
| A | T1 | SLED2 | MLED1 | MLED3 | VBAT2 | C2N | T2 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Total: 48ball

There is no Ball only in C3 for index.

BD6081GVW

| | | | | | | | | |
|---|--|-------|--------|--------|--------|---------|---------|--------|
| H | T2 | C1P | C2P | - | - | SDA | RESET | T3 |
| G | C1N | - | - | VOUTM | TESTO1 | SCL | RGB2CNT | VIO |
| F | CPGND | C2N | TEST1 | VOUT | DGND | RGB1CNT | TESTO2 | REG2MD |
| E | MLED3 | MLED4 | VBAT2 | VBATCP | - | REG2EN | REGGND | - |
| D | MLED2 | - | MLED1 | - | - | REG1O | VBATREG | - |
| C |  (index) | BLGND | B2LED | - | - | TEST2 | CREF | REG2O |
| B | SLED2 | SLED1 | R2LED | - | - | REFGND | - | VBAT1 |
| A | T1 | G2LED | RGBGND | B1LED | G1LED | R1LED | ISET | T4 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

Total: 63ball

There is no Ball only in C1 for index.

“-“ means NC pin (Non connect to internal circuit)

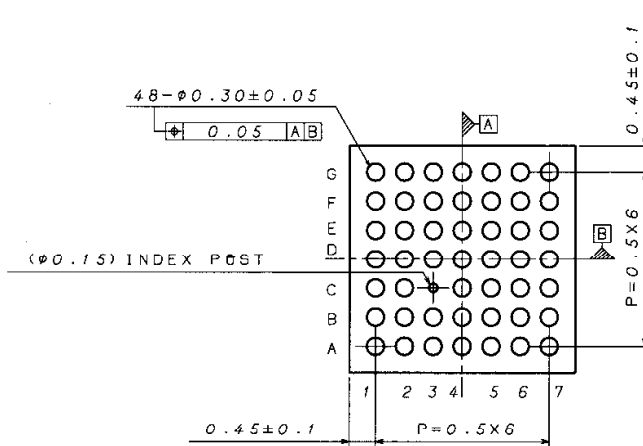
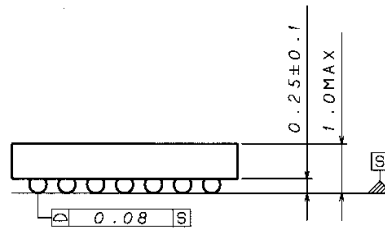
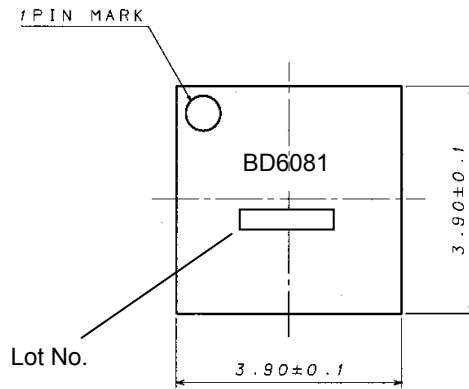
● Package

BD6081GU

VCSP85H3 CSP small Package

SIZE : 3.90mm×3.90mm (A difference in public: X and Y, together, ± 0.1mm) height 1.0mm max

A ball pitch : 0.5mm



(UNIT : mm)

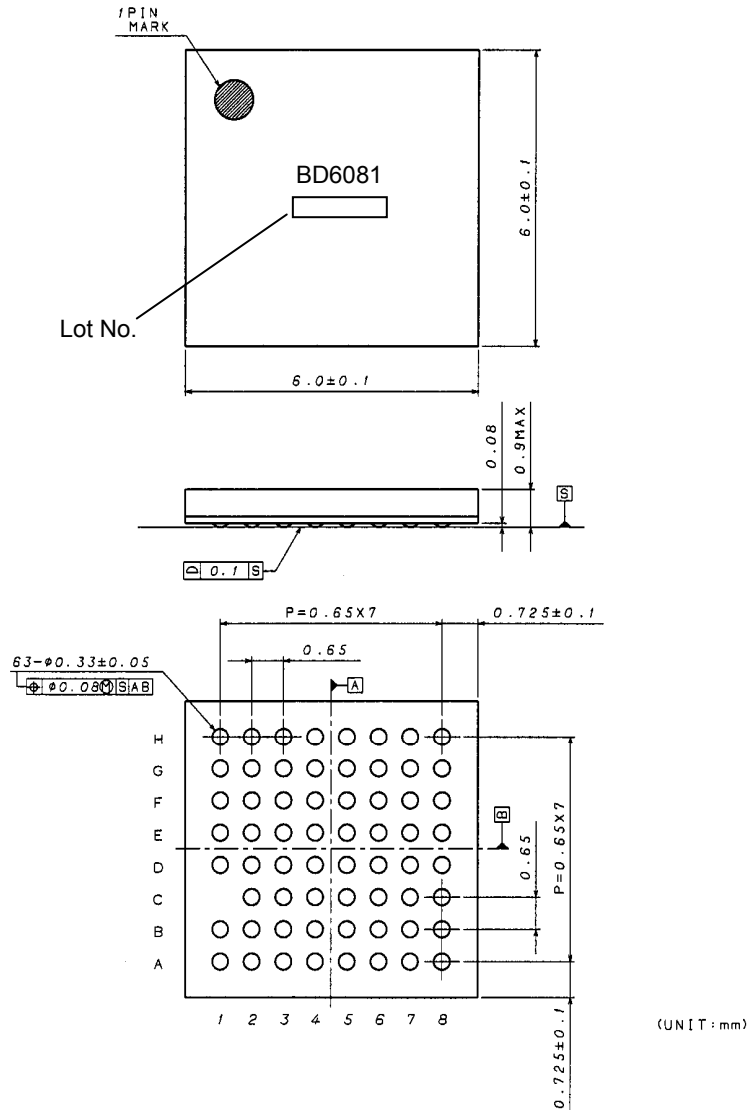
● Package

BD6081GVW

SBGA063W060

SIZE : 6.0mm×6.0mm(A difference in public: X and Y, together, ± 0.1mm) height 0.9mm max

A ball pitch : 0.65mm



● Pin Functions

| No | Pin No. | | Pin Name | I/O | Input Level | ESD Diode | | Functions | Equivalent circuit diagram |
|---------------|----------|-----------|----------|-----|-------------|-----------|------------|---|----------------------------|
| | BD6081GU | BD6081GVW | | | | For Power | For Ground | | |
| 1 | B7 | E4 | VBATCP | - | - | - | GND | Battery is connected | A |
| 2 | G2 | B8 | VBAT1 | - | - | - | GND | Battery is connected | A |
| 3 | A5 | E3 | VBAT2 | - | - | - | GND | Battery is connected | A |
| 4 | G4 | D7 | VBATREG | - | - | - | GND | Battery is connected | A |
| 5 | A1 | A1 | T1 | - | - | - | GND | Test Pin (short to GND) | A |
| 6 | A7 | H1 | T2 | - | - | - | GND | Test Pin (short to GND) | A |
| 7 | G7 | H8 | T3 | - | - | VBAT | GND | Test Pin (short to GND) | J |
| 8 | G1 | A8 | T4 | - | - | VBAT | GND | Test Pin (short to GND) | J |
| 9 | F3 | C7 | CREF | O | - | VBAT | GND | Reference voltage output | P |
| 10 | G6 | G8 | VIO | - | - | VBAT | GND | I/O voltage source is connected | C |
| 11 | F7 | H7 | RESET | I | VIO | VBAT | GND | Reset input (L: RESET, H: RESET cancel) | H |
| 12 | E6 | H6 | SDA | I | VIO | VBAT | GND | I ² C data input | I |
| 13 | D5 | G6 | SCL | I | VIO | VBAT | GND | I ² C clock input | H |
| 14 | B5 | F1 | CPGND | - | - | VBAT | - | Ground | B |
| 15 | F1 | B6 | REFGND | - | - | VBAT | - | Ground | B |
| 16 | G5 | E7 | REGGND | - | - | VBAT | - | Ground | B |
| 17 | B2 | C2 | BLGND | - | - | VBAT | - | Ground | B |
| 18 | D1 | A3 | RGBGND | - | - | VBAT | - | Ground | B |
| 19 | E7 | F5 | DGND | - | - | VBAT | - | Ground | B |
| 20 | B6 | G1 | C1N | I/O | - | VBAT | GND | Charge Pump capacitor is connected | F |
| 21 | C6 | H2 | C1P | I/O | - | - | GND | Charge Pump capacitor is connected | G |
| 22 | A6 | F2 | C2N | I/O | - | VBAT | GND | Charge Pump capacitor is connected | F |
| 23 | C7 | H3 | C2P | I/O | - | - | GND | Charge Pump capacitor is connected | G |
| 24 | D7 | F4 | VOUT | O | - | - | GND | Charge Pump output pin | A |
| 25 | D6 | G4 | VOUTM | O | - | - | GND | Charge Pump output pin output pin | A |
| 26 | E3 | A7 | ISET | I | - | VBAT | GND | LED standard current | O |
| 27 | F4 | D6 | REG1O | O | - | VBAT | GND | REG1 output pin | Q |
| 28 | G3 | C8 | REG2O | O | - | VBAT | GND | REG2 output pin | Q |
| 29 | A3 | D3 | MLED1 | I | - | VBAT | GND | Main LCD Back Light LED is connected 1 | D |
| 30 | B3 | D1 | MLED2 | I | - | VBAT | GND | Main LCD Back Light LED is connected 2 | D |
| 31 | A4 | E1 | MLED3 | I | - | VBAT | GND | Main LCD Back Light LED is connected 3 | D |
| 32 | B4 | E2 | MLED4 | I | - | VBAT | GND | Main LCD Back Light LED is connected 4 | D |
| 33 | B1 | B2 | SLED1 | I | - | VBAT | GND | Sub LCD Back Light LED is connected 1 | D |
| 34 | A2 | B1 | SLED2 | I | - | VBAT | GND | Sub LCD Back Light LED is connected 2 | D |
| 35 | F2 | A6 | R1LED | I | - | VBAT | GND | Red LED1 is connected | D |
| 36 | E1 | A5 | G1LED | I | - | VBAT | GND | Green LED1 is connected | D |
| 37 | E2 | A4 | B1LED | I | - | VBAT | GND | Blue LED1 is connected | D |
| 38 | D2 | B3 | R2LED | I | - | VBAT | GND | Red LED2 is connected | D |
| 39 | C1 | A2 | G2LED | I | - | VBAT | GND | Green LED2 is connected | D |
| 40 | C2 | C3 | B2LED | I | - | VBAT | GND | Blue LED2 is connected | D |
| 41 | F6 | F6 | RGB1CNT | I | VIO | VIO | GND | RGB1 LED external ON/OFF Synchronism Pin | K |
| 42 | E5 | G7 | RGB2CNT | I | VIO | VIO | GND | RGB2 LED external ON/OFF Synchronism Pin | K |
| 43 | E4 | E6 | REG2EN | I | (VBAT) | VBAT | GND | REG2 ON/OFF control Pin (L: OFF, H: ON) | L |
| 44 | F5 | F8 | REG2MD | I | (VBAT) | VBAT | GND | REG2 Mode control Pin (L: low current consumption, H: normal) | L |
| 45 | D3 | F3 | TESTI1 | I | - | VBAT | GND | Test input pin 1 (short to GND) | H |
| 46 | D4 | C6 | TESTI2 | I | - | VBAT | GND | Test input pin 2 (short to GND) | H |
| 47 | C5 | G5 | TESTO1 | O | - | VBAT | GND | Test output pin 1 (OPEN) | M |
| 48 | C4 | F7 | TESTO2 | O | - | VBAT | GND | Test output pin 2 (OPEN) | N |
| 49 - 63 | - | (Other) | NC | - | - | - | - | Non connect pin | - |

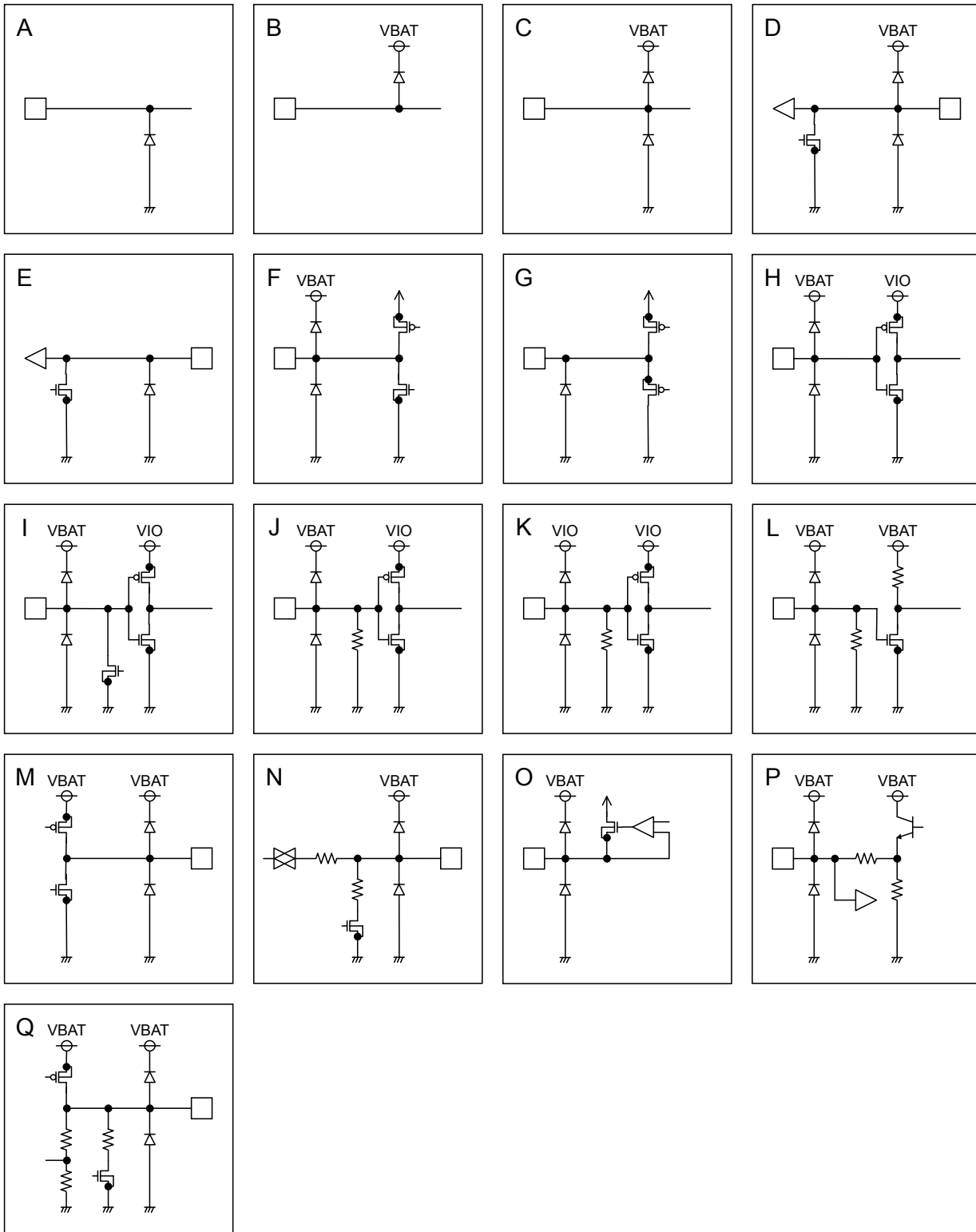
※ The LED pin which isn't used is to short-circuit to the ground. But, the setup of a register concerned with LED that isn't used is prohibited.

Total: Functional 48Pin

48 balls (BD6081GU)

63 balls (BD6081GVW)

●Equivalent circuit diagram



● I²C BUS format

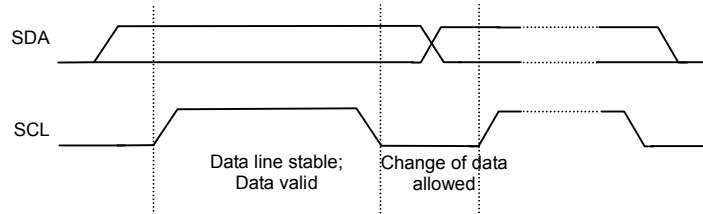
The writing/reading operation is based on the I²C slave standard.

- Slave address

| | | | | | | | |
|----|----|----|----|----|----|----|---|
| A7 | A6 | A5 | A4 | A3 | A2 | A1 | W |
| 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 |

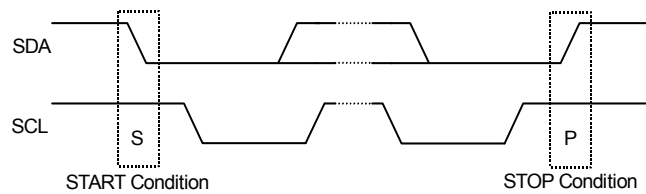
- Bit Transfer

SCL transfers 1-bit data during H. SCL cannot change signal of SDA during H at the time of bit transfer. If SDA changes while SCL is H, START conditions or STOP conditions will occur and it will be interpreted as a control signal.



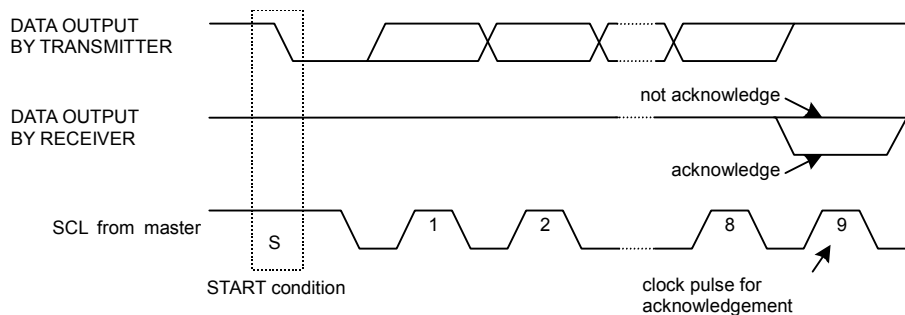
- START and STOP condition

When SDA and SCL are H, data is not transferred on the I²C- bus. This condition indicates, if SDA changes from H to L while SCL has been H, it will become START (S) conditions, and an access start, if SDA changes from L to H while SCL has been H, it will become STOP (P) conditions and an access end.



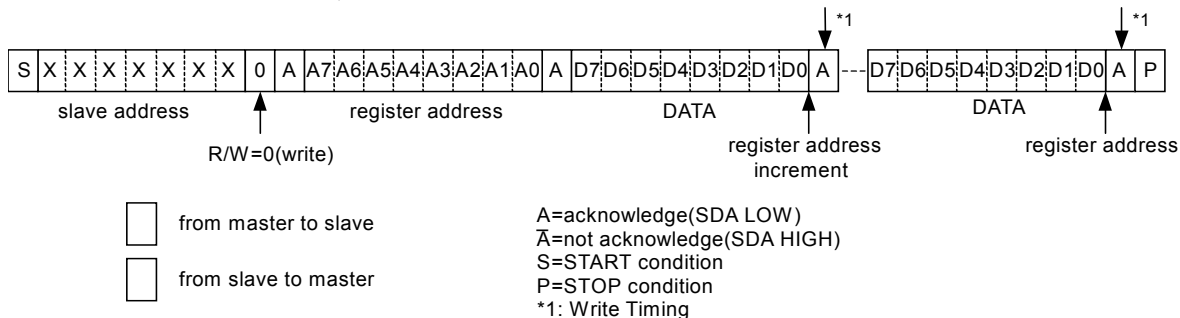
- Acknowledge

It transfers data 8 bits each after the occurrence of START condition. A transmitter opens SDA after transfer 8bits data, and a receiver returns the acknowledge signal by setting SDA to L.

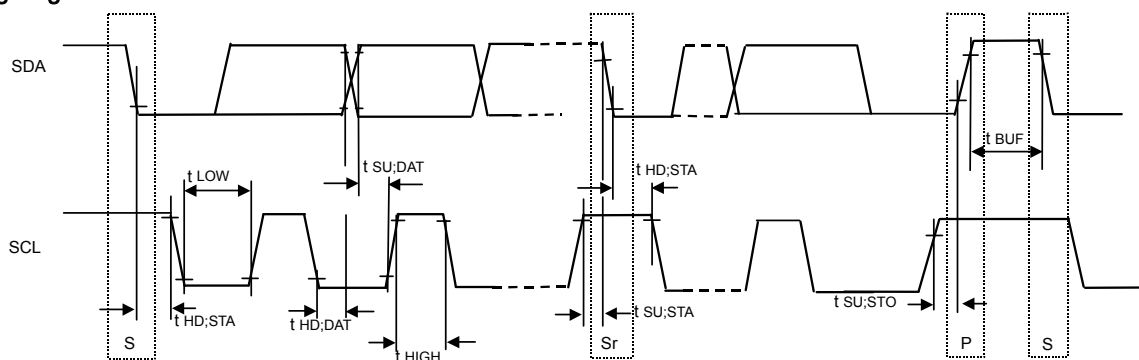


• Writing protocol

A register address is transferred by the next 1 byte that transferred the slave address and the write-in command. The 3rd byte writes data in the internal register written in by the 2nd byte, and after 4th byte or, the increment of register address is carried out automatically. However, when a register address turns into the last address (1Ah), it is set to 00h by the next transmission. After the transmission end, the increment of the address is carried out.



●Timing diagram



●Electrical Characteristics(Unless otherwise specified, Ta=25 °C, VBAT=3.6V, VIO=1.8V)

| Parameter | Symbol | Standard-mode | | | Fast-mode | | | Unit |
|---|---------|---------------|------|------|-----------|------|------|------|
| | | Min. | Typ. | Max. | Min. | Typ. | Max. | |
| [I²C BUS format] | | | | | | | | |
| SCL clock frequency | fSCL | 0 | - | 100 | 0 | - | 400 | kHz |
| LOW period of the SCL clock | tLOW | 4.7 | - | - | 1.3 | - | - | μs |
| HIGH period of the SCL clock | tHIGH | 4.0 | - | - | 0.6 | - | - | μs |
| Hold time (repeated) START condition After this period, the first clock is generated | tHD;STA | 4.0 | - | - | 0.6 | - | - | μs |
| Set-up time for a repeated START condition | tSU;STA | 4.7 | - | - | 0.6 | - | - | μs |
| Data hold time | tHD;DAT | 0 | - | 3.45 | 0 | - | 0.9 | μs |
| Data set-up time | tSU;DAT | 250 | - | - | 100 | - | - | ns |
| Set-up time for STOP condition | tSU;STO | 4.0 | - | - | 0.6 | - | - | μs |
| Bus free time between a STOP and START condition | tBUF | 4.7 | - | - | 1.3 | - | - | μs |

● Register List

| Address | Register data | | | | | | | | Function |
|---------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|---|
| | D7 | D6 | D5 | D4 | D3 | D2 | D1 | D0 | |
| 00h | - | - | - | - | - | - | - | SFTRST | Software reset |
| 01h | - | - | REG2NML | REG2PD | - | - | - | REG1PD | Control LDO |
| 02h | - | - | SLEDSSEL | SLEDEN | - | - | MLEDSEL | MLEDEN | Control Back Light |
| 03h | - | - | - | IMLED4 | IMLED3 | IMLED2 | IMLED1 | IMLED0 | Main Back Light current value |
| 04h | - | - | - | ISLED4 | ISLED3 | ISLED2 | ISLED1 | ISLED0 | Sub Back Light current value |
| 05h | - | B2LEDMD | G2LEDMD | RGB2STA | - | B1LEDMD | G1LEDMD | RGB1STA | Control RGB1, RGB2 LED Setting GB LED connection |
| 06h | RGB1MD1 | RGB1MD0 | B1LEDPL | G1LEDPL | R1LEDPL | B1LEDEN | G1LEDEN | R1LEDEN | Control RGB1 LED |
| 07h | RGB1WT1TM3 | RGB1WT1TM2 | RGB1WT1TM1 | RGB1WT1TM0 | RGB1WT2TM3 | RGB1WT2TM2 | RGB1WT2TM1 | RGB1WT2TM0 | RGB1 ON time setting |
| 08h | RGB1SL1 STEP3 | RGB1SL1 STEP2 | RGB1SL1 STEP1 | RGB1SL1 STEP0 | RGB1SL2 STEP3 | RGB1SL2 STEP2 | RGB1SL2 STEP1 | RGB1SL2 STEP0 | RGB1 slope 1step time setting |
| 09h | - | - | - | - | - | RGB1SLNUM2 | RGB1SLNUM1 | RGB1SLNUM0 | RGB1 slope step number setting |
| 0Ah | - | - | I1R1LED5 | I1R1LED4 | I1R1LED3 | I1R1LED2 | I1R1LED1 | I1R1LED0 | R1 LED current value1 |
| 0Bh | - | - | IDLTR1LED5 | IDLTR1LED4 | IDLTR1LED3 | IDLTR1LED2 | IDLTR1LED1 | IDLTR1LED0 | Δ current value for R1 LED current step |
| 0Ch | - | - | I1G1LED5 | I1G1LED4 | I1G1LED3 | I1G1LED2 | I1G1LED1 | I1G1LED0 | G1 LED current value1 |
| 0Dh | - | - | IDLTG1LED5 | IDLTG1LED4 | IDLTG1LED3 | IDLTG1LED2 | IDLTG1LED1 | IDLTG1LED0 | Δ current value for G1 LED current step |
| 0Eh | - | - | I1B1LED5 | I1B1LED4 | I1B1LED3 | I1B1LED2 | I1B1LED1 | I1B1LED0 | B1 LED current value1 |
| 0Fh | - | - | IDLTB1LED5 | IDLTB1LED4 | IDLTB1LED3 | IDLTB1LED2 | IDLTB1LED1 | IDLTB1LED0 | Δ current value for B1 LED current step |
| 10h | RGB2MD1 | RGB2MD0 | B2LEDPL | G2LEDPL | R2LEDPL | B2LEDEN | G2LEDEN | R2LEDEN | Control RGB2 LED |
| 11h | RGB2WT1TM3 | RGB2WT1TM2 | RGB2WT1TM1 | RGB2WT1TM0 | RGB2WT2TM3 | RGB2WT2TM2 | RGB2WT2TM1 | RGB2WT2TM0 | RGB2 ON time setting |
| 12h | RGB2SL1 STEP3 | RGB2SL1 STEP2 | RGB2SL1 STEP1 | RGB2SL1 STEP0 | RGB2SL2 STEP3 | RGB2SL2 STEP2 | RGB2SL2 STEP1 | RGB2SL2 STEP0 | RGB2 slope 1step time setting |
| 13h | - | - | - | - | - | RGB2SLNUM2 | RGB2SLNUM1 | RGB2SLNUM0 | RGB2 slope step number setting |
| 14h | - | - | I1R2LED5 | I1R2LED4 | I1R2LED3 | I1R2LED2 | I1R2LED1 | I1R2LED0 | R2 LED current value1 |
| 15h | - | - | IDLTR2LED5 | IDLTR2LED4 | IDLTR2LED3 | IDLTR2LED2 | IDLTR2LED1 | IDLTR2LED0 | Δ current value for R2 LED current step |
| 16h | - | - | I1G2LED5 | I1G2LED4 | I1G2LED3 | I1G2LED2 | I1G2LED1 | I1G2LED0 | G2 LED current value1 |
| 17h | - | - | IDLTG2LED5 | IDLTG2LED4 | IDLTG2LED3 | IDLTG2LED2 | IDLTG2LED1 | IDLTG2LED0 | Δ current value for G2 LED current step |
| 18h | - | - | I1B2LED5 | I1B2LED4 | I1B2LED3 | I1B2LED2 | I1B2LED1 | I1B2LED0 | B2 LED current value1 |
| 19h | - | - | IDLTB2LED5 | IDLTB2LED4 | IDLTB2LED3 | IDLTB2LED2 | IDLTB2LED1 | IDLTB2LED0 | Δ current value for B2 LED current step |
| 1Ah | - | - | - | - | - | - | RGB2MEL | RGB1MEL | RGB1, RGB2 LED external ON/OFF control |
| 1Dh | Reserved | | | | | | | | For test |
| 1Eh | Reserved | | | | | | | | For test |
| 1Fh | Reserved | | | | | | | | For test |

Input "0" for "-".

Prohibit to accessing the address that isn't mentioned and the register for test.

●Register Map

Address 00h <Software reset>

| BIT | Name | Initial | Function | |
|-----|--------|---------|--------------|-------|
| | | | 0 | 1 |
| D7 | - | - | - | - |
| D6 | - | - | - | - |
| D5 | - | - | - | - |
| D4 | - | - | - | - |
| D3 | - | - | - | - |
| D2 | - | - | - | - |
| D1 | - | - | - | - |
| D0 | SFTRST | 0 | Reset cancel | Reset |

Address 01h <Control LDO>

| BIT | Name | Initial | Function | |
|-----|---------|---------|-----------------------------------|------------------|
| | | | 0 | 1 |
| D7 | - | - | - | - |
| D6 | - | - | - | - |
| D5 | REG2NML | 0 | REG2 low current consumption mode | REG2 normal mode |
| D4 | REG2PD | 0 | REG2 power OFF | REG2 power ON |
| D3 | - | - | - | - |
| D2 | - | - | - | - |
| D1 | - | - | - | - |
| D0 | REG1PD | 0 | REG1 power OFF | REG1 power ON |

Address 02h <Control Back Light>

| BIT | Name | Initial | Function | |
|-----|---------|---------|-----------------------|-----------------------|
| | | | 0 | 1 |
| D7 | - | - | - | - |
| D6 | - | - | - | - |
| D5 | SLEDSEL | 0 | 2 lights ON (SLED1~2) | 1 lights ON (SLED1) |
| D4 | SLEDEN | 0 | Sub Back Light OFF | Sub Back Light ON |
| D3 | - | - | - | - |
| D2 | - | - | - | - |
| D1 | MLEDSEL | 0 | 4 lights ON (MLED1~4) | 3 lights ON (MLED1~3) |
| D0 | MLEDEN | 0 | Main Back Light OFF | Main Back Light ON |

Address 03h <Main Back Light current value>

| BIT | Name | Initial | Function | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------|--------|---------|--|---|------|--------|--------|---------------|--------|--------|---------------|---|---|---|---|---|-----|---|---|---|---|---|-----|---|---|---|---|---|-----|---|---|---|---|---|----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|------|---|---|---|---|---|------|---|---|---|---|---|------|
| | | | 0 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D7 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D6 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D5 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D4 | IMLED4 | 0 | <table border="1"> <thead> <tr> <th>IMLED4</th> <th>IMLED3</th> <th>IMLED2</th> <th>IMLED1</th> <th>IMLED0</th> <th>Current value</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1mA</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>2mA</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>3mA</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td rowspan="3">1mA Step</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>1</td> <td>30mA</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>31mA</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>32mA</td> </tr> </tbody> </table> <p>When 120kΩ is connected to ISET pin.</p> | | | IMLED4 | IMLED3 | IMLED2 | IMLED1 | IMLED0 | Current value | 0 | 0 | 0 | 0 | 0 | 1mA | 0 | 0 | 0 | 0 | 1 | 2mA | 0 | 0 | 0 | 1 | 0 | 3mA | . | . | . | . | . | 1mA Step | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 0 | 1 | 30mA | 1 | 1 | 1 | 1 | 0 | 31mA | 1 | 1 | 1 | 1 | 1 | 32mA |
| IMLED4 | IMLED3 | IMLED2 | | | | IMLED1 | IMLED0 | Current value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | 0 | 0 | 1mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | 0 | 1 | 2mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | 1 | 0 | 3mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | | | . | . | 1mA Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | | | . | . | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | | | . | . | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | 0 | 1 | 30mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | 1 | 0 | 31mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | 1 | 1 | 32mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D3 | IMLED3 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D2 | IMLED2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D1 | IMLED1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D0 | IMLED0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Address 04h <Sub Back Light current value>

| BIT | Name | Initial | Function | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------|--------|---------|--|---|------|--------|--------|---------------|--------|--------|---------------|---|---|---|---|---|-----|---|---|---|---|---|-----|---|---|---|---|---|-----|---|---|---|---|---|----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|------|---|---|---|---|---|------|---|---|---|---|---|------|
| | | | 0 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D7 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D6 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D5 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D4 | ISLED4 | 0 | <table border="1"> <thead> <tr> <th>ISLED4</th> <th>ISLED3</th> <th>ISLED2</th> <th>ISLED1</th> <th>ISLED0</th> <th>Current value</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1mA</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>2mA</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>3mA</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td rowspan="3">1mA Step</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>1</td> <td>30mA</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>31mA</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>32mA</td> </tr> </tbody> </table> <p>When 120kΩ is connected to ISET pin.</p> | | | ISLED4 | ISLED3 | ISLED2 | ISLED1 | ISLED0 | Current value | 0 | 0 | 0 | 0 | 0 | 1mA | 0 | 0 | 0 | 0 | 1 | 2mA | 0 | 0 | 0 | 1 | 0 | 3mA | . | . | . | . | . | 1mA Step | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 0 | 1 | 30mA | 1 | 1 | 1 | 1 | 0 | 31mA | 1 | 1 | 1 | 1 | 1 | 32mA |
| ISLED4 | ISLED3 | ISLED2 | | | | ISLED1 | ISLED0 | Current value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | 0 | 0 | 1mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | 0 | 1 | 2mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | 1 | 0 | 3mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | | | . | . | 1mA Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | | | . | . | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | | | . | . | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | 0 | 1 | 30mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | 1 | 0 | 31mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | 1 | 1 | 32mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D3 | ISLED3 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D2 | ISLED2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D1 | ISLED1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D0 | ISLED0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Address 05h <Control RGB1, RGB2 LED, Setting GB LED connection>

| BIT | Name | Initial | Function | |
|-----|---------|---------|------------------------|-------------------------|
| | | | 0 | 1 |
| D7 | - | - | - | - |
| D6 | B2LEDMD | 0 | B2LED connection =VBAT | B2LED connection =VOUT |
| D5 | G2LEDMD | 0 | G2LED connection =VBAT | G2LED connection =VOUT |
| D4 | RGB2STA | 0 | RGB2 LED Lighting stop | RGB2 LED Lighting start |
| D3 | - | - | - | - |
| D2 | B1LEDMD | 0 | B1LED connection =VBAT | B1LED connection =VOUT |
| D1 | G1LEDMD | 0 | G1LED connection =VBAT | G1LED connection =VOUT |
| D0 | RGB1STA | 0 | RGB1 LED Lighting stop | RGB1 LED Lighting start |

Address 06h <Control RGB1 LED>

| BIT | Name | Initial | Function | |
|-----|---------|---------|------------------------|------------------------|
| | | | 0 | 1 |
| D7 | RGB1MD1 | 0 | Refer to the following | Refer to the following |
| D6 | RGB1MD0 | 0 | Refer to the following | Refer to the following |
| D5 | B1LEDPL | 0 | Refer to the following | Refer to the following |
| D4 | G1LEDPL | 0 | Refer to the following | Refer to the following |
| D3 | R1LEDPL | 0 | Refer to the following | Refer to the following |
| D2 | B1LEDEN | 0 | B1 LED OFF | B1 LED ON |
| D1 | G1LEDEN | 0 | G1 LED OFF | G1 LED ON |
| D0 | R1LEDEN | 0 | R1 LED OFF | R1 LED ON |

| RGB1MD1 | RGB1MD0 | *1LEDPL | Mode |
|---------|---------|---------|----------|
| 0 | 0 | 0 / 1 | Normal 1 |
| 0 | 1 | 0 / 1 | Normal 2 |
| 1 | 0 | 0 | Blink 1 |
| | | 1 | Blink 2 |
| 1 | 1 | 0 | Slope 1 |
| | | 1 | Slope 2 |

*1LEDPL : R1LEDPL, G1LEDPL, B1LEDPL is shown.

Address 07h <RGB1 ON time setting>

| BIT | Name | Initial | Function | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------|------------|------------|--|------------|--------------------|------------|------------|--------------------|---|---|---|---|--------|---|---|---|---|--------|---|---|---|---|--------|---|---|---|---|------|---|---|---|---|--------|---|---|---|---|-------|---|---|---|---|--------|
| D7 | RGB1WT1TM3 | 0 | <table border="1"> <thead> <tr> <th>RGB1WT1TM3</th> <th>RGB1WT1TM2</th> <th>RGB1WT1TM1</th> <th>RGB1WT1TM0</th> <th>Current light time</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0.256s</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0.512s</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>0.256s</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>Step</td> </tr> <tr> <td>1</td> <td>1</td> <td>0</td> <td>1</td> <td>3.584s</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>3.84s</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>4.096s</td> </tr> </tbody> </table> <p>Lighting time depends on internal OSC frequency.</p> | RGB1WT1TM3 | RGB1WT1TM2 | RGB1WT1TM1 | RGB1WT1TM0 | Current light time | 0 | 0 | 0 | 0 | 0.256s | 0 | 0 | 0 | 1 | 0.512s | . | . | . | . | 0.256s | . | . | . | . | Step | 1 | 1 | 0 | 1 | 3.584s | 1 | 1 | 1 | 0 | 3.84s | 1 | 1 | 1 | 1 | 4.096s |
| RGB1WT1TM3 | RGB1WT1TM2 | RGB1WT1TM1 | | RGB1WT1TM0 | Current light time | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | 0 | 0.256s | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | 1 | 0.512s | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | . | 0.256s | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | . | Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 0 | | 1 | 3.584s | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | | 0 | 3.84s | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | | 1 | 4.096s | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D6 | RGB1WT1TM2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D5 | RGB1WT1TM1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D4 | RGB1WT1TM0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D3 | RGB1WT2TM3 | 0 | <table border="1"> <thead> <tr> <th>RGB1WT2TM3</th> <th>RGB1WT2TM2</th> <th>RGB1WT2TM1</th> <th>RGB1WT2TM0</th> <th>Current light time</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0.256s</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0.512s</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>0.256s</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>Step</td> </tr> <tr> <td>1</td> <td>1</td> <td>0</td> <td>1</td> <td>3.584s</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>3.84s</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>4.096s</td> </tr> </tbody> </table> <p>Lighting time depends on internal OSC frequency.</p> | RGB1WT2TM3 | RGB1WT2TM2 | RGB1WT2TM1 | RGB1WT2TM0 | Current light time | 0 | 0 | 0 | 0 | 0.256s | 0 | 0 | 0 | 1 | 0.512s | . | . | . | . | 0.256s | . | . | . | . | Step | 1 | 1 | 0 | 1 | 3.584s | 1 | 1 | 1 | 0 | 3.84s | 1 | 1 | 1 | 1 | 4.096s |
| RGB1WT2TM3 | RGB1WT2TM2 | RGB1WT2TM1 | | RGB1WT2TM0 | Current light time | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | 0 | 0.256s | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | 1 | 0.512s | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | . | 0.256s | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | . | Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 0 | | 1 | 3.584s | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | | 0 | 3.84s | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | 1 | 4.096s | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D2 | RGB1WT2TM2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D1 | RGB1WT2TM1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D0 | RGB1WT2TM0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Address 08h <RGB1 slope 1step time setting>

| BIT | Name | Initial | Function | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|--------------|---------|--|---------------|---------------|---------------|--------------------|-----|---|---|---|---|-----|---|---|---|---|----------|---|---|---|---|--|---|---|---|---|------|---|---|---|---|------|---|---|---|---|------|
| | | | RGB1SL1 STEP3 | RGB1SL1 STEP2 | RGB1SL1 STEP1 | RGB1SL1 STEP0 | Current light time | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D7 | RGB1SL1STEP3 | 0 | <table border="1"> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>4ms</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>1</td><td>8ms</td></tr> <tr><td>.</td><td>.</td><td>.</td><td>.</td><td>4ms Step</td></tr> <tr><td>.</td><td>.</td><td>.</td><td>.</td><td></td></tr> <tr><td>1</td><td>1</td><td>0</td><td>1</td><td>56ms</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>0</td><td>60ms</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>1</td><td>64ms</td></tr> </table> <p>Lighting time depends on internal OSC frequency.</p> | 0 | 0 | 0 | 0 | 4ms | 0 | 0 | 0 | 1 | 8ms | . | . | . | . | 4ms Step | . | . | . | . | | 1 | 1 | 0 | 1 | 56ms | 1 | 1 | 1 | 0 | 60ms | 1 | 1 | 1 | 1 | 64ms |
| 0 | 0 | 0 | | 0 | 4ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | 1 | 8ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | . | 4ms Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | . | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 0 | | 1 | 56ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | | 0 | 60ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | | 1 | 64ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D6 | RGB1SL1STEP2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D5 | RGB1SL1STEP1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D4 | RGB1SL1STEP0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D3 | RGB1SL2STEP3 | 0 | <table border="1"> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>4ms</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>1</td><td>8ms</td></tr> <tr><td>.</td><td>.</td><td>.</td><td>.</td><td>4ms Step</td></tr> <tr><td>.</td><td>.</td><td>.</td><td>.</td><td></td></tr> <tr><td>1</td><td>1</td><td>0</td><td>1</td><td>56ms</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>0</td><td>60ms</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>1</td><td>64ms</td></tr> </table> <p>Lighting time depends on internal OSC frequency.</p> | 0 | 0 | 0 | 0 | 4ms | 0 | 0 | 0 | 1 | 8ms | . | . | . | . | 4ms Step | . | . | . | . | | 1 | 1 | 0 | 1 | 56ms | 1 | 1 | 1 | 0 | 60ms | 1 | 1 | 1 | 1 | 64ms |
| 0 | 0 | 0 | | 0 | 4ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | 1 | 8ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | . | 4ms Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | . | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 0 | | 1 | 56ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | | 0 | 60ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | | 1 | 64ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D2 | RGB1SL2STEP2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D1 | RGB1SL2STEP1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D0 | RGB1SL2STEP0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Address 09h <RGB1 slope step number setting>

| BIT | Name | Initial | Function | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|------------|---------|--|--------------|---|---|--------|---|---|---|--------|---|---|---|--------|---|---|---|--------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|--------------|
| | | | 0 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D7 | - | - | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D6 | - | - | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D5 | - | - | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D4 | - | - | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D3 | - | - | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D2 | RGB1SLNUM2 | 0 | <table border="1"> <tr><td>0</td><td>0</td><td>0</td><td>1 Step</td></tr> <tr><td>0</td><td>0</td><td>1</td><td>2 Step</td></tr> <tr><td>0</td><td>1</td><td>0</td><td>4 Step</td></tr> <tr><td>0</td><td>1</td><td>1</td><td>8 Step</td></tr> <tr><td>1</td><td>0</td><td>0</td><td>16 Step</td></tr> <tr><td>1</td><td>0</td><td>1</td><td>32 Step</td></tr> <tr><td>1</td><td>1</td><td>0</td><td>64 Step</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>(Prohibited)</td></tr> </table> | 0 | 0 | 0 | 1 Step | 0 | 0 | 1 | 2 Step | 0 | 1 | 0 | 4 Step | 0 | 1 | 1 | 8 Step | 1 | 0 | 0 | 16 Step | 1 | 0 | 1 | 32 Step | 1 | 1 | 0 | 64 Step | 1 | 1 | 1 | (Prohibited) |
| 0 | 0 | 0 | | 1 Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 1 | | 2 Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 1 | 0 | | 4 Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 1 | 1 | | 8 Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 | 0 | | 16 Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 | 1 | | 32 Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 0 | | 64 Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | | (Prohibited) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D1 | RGB1SLNUM1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D0 | RGB1SLNUM0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Address 0Ah <R1 LED current value 1>

| BIT | Name | Initial | Function | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | 0 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D7 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D6 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D5 | I1R1LED5 | 0 | <table border="1"> <thead> <tr> <th>I1R1 LED5</th> <th>I1R1 LED4</th> <th>I1R1 LED3</th> <th>I1R1 LED2</th> <th>I1R1 LED1</th> <th>I1R1 LED0</th> <th>Current value</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0mA</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0.5mA</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>1mA</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td rowspan="3">0.5mA Step</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td rowspan="3">30.5mA</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>1</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>31mA</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>31.5mA</td> </tr> </tbody> </table> | | | | I1R1 LED5 | I1R1 LED4 | I1R1 LED3 | I1R1 LED2 | I1R1 LED1 | I1R1 LED0 | Current value | 0 | 0 | 0 | 0 | 0 | 0 | 0mA | 0 | 0 | 0 | 0 | 0 | 1 | 0.5mA | 0 | 0 | 0 | 0 | 1 | 0 | 1mA | . | . | . | . | . | . | 0.5mA Step | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 30.5mA | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 31mA | 1 | 1 | 1 | 1 | 1 | 1 | 31.5mA |
| I1R1 LED5 | I1R1 LED4 | I1R1 LED3 | | | | | I1R1 LED2 | I1R1 LED1 | I1R1 LED0 | Current value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 0 | 0 | 0mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 0 | 1 | 0.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 1 | 0 | 1mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | | | | . | . | . | 0.5mA Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| . | . | . | | | | | . | . | . | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | | | | . | . | . | 30.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | | | | | 1 | 0 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | 1 | 1 | 0 | 31mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | 1 | 1 | 1 | 31.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D4 | I1R1LED4 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D3 | I1R1LED3 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D2 | I1R1LED2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D1 | I1R1LED1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D0 | I1R1LED0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

When 120kΩ is connected to ISET pin.

Address 0Bh <Δ current value for R1 LED current step>

| BIT | Name | Initial | Function | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| D7 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D6 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D5 | IDLTR1LED5 | 0 | <table border="1"> <thead> <tr> <th>IDLTR1 LED5</th> <th>IDLTR1 LED4</th> <th>IDLTR1 LED3</th> <th>IDLTR1 LED2</th> <th>IDLTR1 LED1</th> <th>IDLTR1 LED0</th> <th>Current value</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0mA</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0.5mA</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>1mA</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td rowspan="3">0.5mA Step</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td rowspan="3">30.5mA</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>1</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>31mA</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>31.5mA</td> </tr> </tbody> </table> | | | | IDLTR1 LED5 | IDLTR1 LED4 | IDLTR1 LED3 | IDLTR1 LED2 | IDLTR1 LED1 | IDLTR1 LED0 | Current value | 0 | 0 | 0 | 0 | 0 | 0 | 0mA | 0 | 0 | 0 | 0 | 0 | 1 | 0.5mA | 0 | 0 | 0 | 0 | 1 | 0 | 1mA | . | . | . | . | . | . | 0.5mA Step | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 30.5mA | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 31mA | 1 | 1 | 1 | 1 | 1 | 1 | 31.5mA |
| IDLTR1 LED5 | IDLTR1 LED4 | IDLTR1 LED3 | | | | | IDLTR1 LED2 | IDLTR1 LED1 | IDLTR1 LED0 | Current value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 0 | 0 | 0mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 0 | 1 | 0.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 1 | 0 | 1mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | | | | . | . | . | 0.5mA Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 1 | 1 | 1 | | | | | 1 | 0 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | 1 | 1 | 0 | 31mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | 1 | 1 | 1 | 31.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D4 | IDLTR1LED4 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D3 | IDLTR1LED3 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D2 | IDLTR1LED2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D1 | IDLTR1LED1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D0 | IDLTR1LED0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

When 120kΩ is connected to ISET pin.

Address 0Ch <G1 LED current value1>

| BIT | Name | Initial | Function | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| D7 | - | - | - | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D6 | - | - | - | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D5 | I1G1LED5 | 0 | <table border="1"> <thead> <tr> <th>I1G1 LED5</th> <th>I1G1 LED4</th> <th>I1G1 LED3</th> <th>I1G1 LED2</th> <th>I1G1 LED1</th> <th>I1G1 LED0</th> <th>Current value</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0mA</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0.5mA</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>1mA</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td rowspan="3">0.5mA Step</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>1</td> <td>30.5mA</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>31mA</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>31.5mA</td> </tr> </tbody> </table> | | | | I1G1 LED5 | I1G1 LED4 | I1G1 LED3 | I1G1 LED2 | I1G1 LED1 | I1G1 LED0 | Current value | 0 | 0 | 0 | 0 | 0 | 0 | 0mA | 0 | 0 | 0 | 0 | 0 | 1 | 0.5mA | 0 | 0 | 0 | 0 | 1 | 0 | 1mA | . | . | . | . | . | . | 0.5mA Step | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 0 | 1 | 30.5mA | 1 | 1 | 1 | 1 | 1 | 0 | 31mA | 1 | 1 | 1 | 1 | 1 | 1 | 31.5mA |
| I1G1 LED5 | I1G1 LED4 | I1G1 LED3 | | | | | I1G1 LED2 | I1G1 LED1 | I1G1 LED0 | Current value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 0 | 0 | 0mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 0 | 1 | 0.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| . | . | . | | | | | . | . | . | 0.5mA Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 1 | 1 | 1 | | | | | 1 | 0 | 1 | 30.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | | | | | 1 | 1 | 0 | 31mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | 1 | 1 | 1 | 31.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D4 | I1G1LED4 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D3 | I1G1LED3 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D2 | I1G1LED2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D1 | I1G1LED1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D0 | I1G1LED0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

When 120kΩ is connected to ISET pin.

Address 0Dh <Δ current value for G1 LED current step >

| BIT | Name | Initial | Function | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| D7 | - | - | - | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D6 | - | - | - | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D5 | IDLTG1LED5 | 0 | <table border="1"> <thead> <tr> <th>IDLTG1 LED5</th> <th>IDLTG1 LED4</th> <th>IDLTG1 LED3</th> <th>IDLTG1 LED2</th> <th>IDLTG1 LED1</th> <th>IDLTG1 LED0</th> <th>Current value</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0mA</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0.5mA</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>1mA</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td rowspan="3">0.5mA Step</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>1</td> <td>30.5mA</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>31mA</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>31.5mA</td> </tr> </tbody> </table> | | | | IDLTG1 LED5 | IDLTG1 LED4 | IDLTG1 LED3 | IDLTG1 LED2 | IDLTG1 LED1 | IDLTG1 LED0 | Current value | 0 | 0 | 0 | 0 | 0 | 0 | 0mA | 0 | 0 | 0 | 0 | 0 | 1 | 0.5mA | 0 | 0 | 0 | 0 | 1 | 0 | 1mA | . | . | . | . | . | . | 0.5mA Step | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 0 | 1 | 30.5mA | 1 | 1 | 1 | 1 | 1 | 0 | 31mA | 1 | 1 | 1 | 1 | 1 | 1 | 31.5mA |
| IDLTG1 LED5 | IDLTG1 LED4 | IDLTG1 LED3 | | | | | IDLTG1 LED2 | IDLTG1 LED1 | IDLTG1 LED0 | Current value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 0 | 0 | 0mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 0 | 1 | 0.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| . | . | . | | | | | . | . | . | 0.5mA Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 1 | 1 | 1 | | | | | 1 | 0 | 1 | 30.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | | | | | 1 | 1 | 0 | 31mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | 1 | 1 | 1 | 31.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D4 | IDLTG1LED4 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D3 | IDLTG1LED3 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D2 | IDLTG1LED2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D1 | IDLTG1LED1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D0 | IDLTG1LED0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

When 120kΩ is connected to ISET pin.

Address 0Eh <B1 LED Current value1>

| BIT | Name | Initial | Function | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| D7 | - | - | - | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D6 | - | - | - | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D5 | I1B1LED5 | 0 | <table border="1"> <thead> <tr> <th>I1B1 LED5</th> <th>I1B1 LED4</th> <th>I1B1 LED3</th> <th>I1B1 LED2</th> <th>I1B1 LED1</th> <th>I1B1 LED0</th> <th>Current value</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0mA</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0.5mA</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>1mA</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td rowspan="4">0.5mA Step</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td></td> <td></td> <td></td> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>1</td> <td>30.5mA</td> </tr> <tr> <td></td> <td></td> <td></td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>31mA</td> </tr> <tr> <td></td> <td></td> <td></td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>31.5mA</td> </tr> </tbody> </table> | | | | I1B1 LED5 | I1B1 LED4 | I1B1 LED3 | I1B1 LED2 | I1B1 LED1 | I1B1 LED0 | Current value | 0 | 0 | 0 | 0 | 0 | 0 | 0mA | 0 | 0 | 0 | 0 | 0 | 1 | 0.5mA | 0 | 0 | 0 | 0 | 1 | 0 | 1mA | . | . | . | . | . | . | 0.5mA Step | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | | | | 1 | 1 | 1 | 0 | 1 | 30.5mA | | | | 1 | 1 | 1 | 1 | 0 | 31mA | | | | 1 | 1 | 1 | 1 | 1 | 31.5mA |
| I1B1 LED5 | I1B1 LED4 | I1B1 LED3 | | | | | I1B1 LED2 | I1B1 LED1 | I1B1 LED0 | Current value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 0 | 0 | 0mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 0 | 1 | 0.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 1 | 0 | 1mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | | | | . | . | . | 0.5mA Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | 1 | 1 | 1 | 0 | 1 | 30.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1 | 1 | 1 | 1 | 0 | 31mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1 | 1 | 1 | 1 | 1 | 31.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D4 | I1B1LED4 | 0 | <p>When 120kΩ is connected to ISET pin.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D3 | I1B1LED3 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D2 | I1B1LED2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D1 | I1B1LED1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D0 | I1B1LED0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Address 0Fh <Δ current value for B1 LED current step >

| BIT | Name | Initial | Function | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | 0 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D7 | - | - | - | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D6 | - | - | - | | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D5 | IDLTB1LED5 | 0 | <table border="1"> <thead> <tr> <th>IDLTB1 LED5</th> <th>IDLTB1 LED4</th> <th>IDLTB1 LED3</th> <th>IDLTB1 LED2</th> <th>IDLTB1 LED1</th> <th>IDLTB1 LED0</th> <th>Current value</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0mA</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0.5mA</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>1mA</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td rowspan="4">0.5mA Step</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td></td> <td></td> <td></td> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>1</td> <td>30.5mA</td> </tr> <tr> <td></td> <td></td> <td></td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>31mA</td> </tr> <tr> <td></td> <td></td> <td></td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>31.5mA</td> </tr> </tbody> </table> | | | | IDLTB1 LED5 | IDLTB1 LED4 | IDLTB1 LED3 | IDLTB1 LED2 | IDLTB1 LED1 | IDLTB1 LED0 | Current value | 0 | 0 | 0 | 0 | 0 | 0 | 0mA | 0 | 0 | 0 | 0 | 0 | 1 | 0.5mA | 0 | 0 | 0 | 0 | 1 | 0 | 1mA | . | . | . | . | . | . | 0.5mA Step | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | | | | 1 | 1 | 1 | 0 | 1 | 30.5mA | | | | 1 | 1 | 1 | 1 | 0 | 31mA | | | | 1 | 1 | 1 | 1 | 1 | 31.5mA |
| IDLTB1 LED5 | IDLTB1 LED4 | IDLTB1 LED3 | | | | | IDLTB1 LED2 | IDLTB1 LED1 | IDLTB1 LED0 | Current value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 0 | 0 | 0mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 0 | 1 | 0.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 1 | 0 | 1mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | | | | . | . | . | 0.5mA Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | 1 | 1 | 1 | 0 | 1 | 30.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1 | 1 | 1 | 1 | 0 | 31mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1 | 1 | 1 | 1 | 1 | 31.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D4 | IDLTB1LED4 | 0 | <p>When 120kΩ is connected to ISET pin.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D3 | IDLTB1LED3 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D2 | IDLTB1LED2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D1 | IDLTB1LED1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D0 | IDLTB1LED0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Address 10h <Control RGB2 LED>

| BIT | Name | Initial | Function | |
|-----|---------|---------|--------------------|--------------------|
| | | | 0 | 1 |
| D7 | RGB2MD1 | 0 | Refer to following | Refer to following |
| D6 | RGB2MD0 | 0 | Refer to following | Refer to following |
| D5 | B2LEDPL | 0 | Refer to following | Refer to following |
| D4 | G2LEDPL | 0 | Refer to following | Refer to following |
| D3 | R2LEDPL | 0 | Refer to following | Refer to following |
| D2 | B2LEDEN | 0 | B2 LED OFF | B2 LED ON |
| D1 | G2LEDEN | 0 | G2 LED OFF | G2 LED ON |
| D0 | R2LEDEN | 0 | R2 LED OFF | R2 LED ON |

| RGB2MD1 | RGB2MD0 | *2LEDPL | Mode |
|---------|---------|---------|----------|
| 0 | 0 | 0 / 1 | Normal 1 |
| 0 | 1 | 0 / 1 | Normal 2 |
| 1 | 0 | 0 | Blink 1 |
| | | 1 | Blink 2 |
| 1 | 1 | 0 | Slope 1 |
| | | 1 | Slope 2 |

*2LEDPL : R2LEDPL, G2LEDPL, B2LEDPL is shown.

Address 11h <RGB2 ON time setting>

| BIT | Name | Initial | Function | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------|-------------|-------------|--|--|--|--|--|-------------|-------------------------|-------------|-------------|-------------------------|---|---|---|---|--------|---|---|---|---|--------|---|---|---|---|-------------|---|---|---|---|--------|---|---|---|---|--------|---|---|---|---|--------|
| D7 | RGB2WT1TM3 | 0 | <table border="1"> <thead> <tr> <th>RGB2WT1 TM3</th> <th>RGB2WT1 TM2</th> <th>RGB2WT1 TM1</th> <th>RGB2WT1 TM0</th> <th>Current ON time setting</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0.256s</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0.512s</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>0.256s Step</td> </tr> <tr> <td>1</td> <td>1</td> <td>0</td> <td>1</td> <td>3.584s</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>3.845s</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>4.096s</td> </tr> </tbody> </table> <p>Lighting time depends on internal OSC frequency.</p> | | | | | RGB2WT1 TM3 | RGB2WT1 TM2 | RGB2WT1 TM1 | RGB2WT1 TM0 | Current ON time setting | 0 | 0 | 0 | 0 | 0.256s | 0 | 0 | 0 | 1 | 0.512s | . | . | . | . | 0.256s Step | 1 | 1 | 0 | 1 | 3.584s | 1 | 1 | 1 | 0 | 3.845s | 1 | 1 | 1 | 1 | 4.096s |
| RGB2WT1 TM3 | RGB2WT1 TM2 | RGB2WT1 TM1 | | | | | | RGB2WT1 TM0 | Current ON time setting | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | | 0 | 0.256s | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | | 1 | 0.512s | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | | | | | . | 0.256s Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 0 | | | | | | 1 | 3.584s | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | | | | | | 0 | 3.845s | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | | | | | | 1 | 4.096s | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D6 | RGB2WT1TM2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D5 | RGB2WT1TM1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D4 | RGB2WT1TM0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D3 | RGB2WT2TM3 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D2 | RGB2WT2TM2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D1 | RGB2WT2TM1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D0 | RGB2WT2TM0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| RGB2WT2 TM3 | RGB2WT2 TM2 | RGB2WT2 TM1 | RGB2WT2 TM0 | Current ON time setting |
|-------------|-------------|-------------|-------------|-------------------------|
| 0 | 0 | 0 | 0 | 0.256s |
| 0 | 0 | 0 | 1 | 0.512s |
| . | . | . | . | 0.256s Step |
| 1 | 1 | 0 | 1 | 3.584s |
| 1 | 1 | 1 | 0 | 3.845s |
| 1 | 1 | 1 | 1 | 4.096s |

Lighting time depends on internal OSC frequency.

Address 12h <RGB2 slope 1step time setting>

| BIT | Name | Initial | Function | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------|--------------|--------------|--|--------------|-------------------------|--------------|-------------------------|-------------------------|---|---|---|---|-----|---|---|---|---|-----|---|---|---|---|-----|---|---|---|---|------|---|---|---|---|--|---|---|---|---|------|---|---|---|---|------|---|---|---|---|------|
| | | | RGB2SL1STEP3 | RGB2SL1STEP2 | RGB2SL1STEP1 | RGB2SL1STEP0 | Current ON time setting | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D7 | RGB2SL1STEP3 | 0 | <table border="1"> <thead> <tr> <th>RGB2SL1STEP3</th> <th>RGB2SL1STEP2</th> <th>RGB2SL1STEP1</th> <th>RGB2SL1STEP0</th> <th>Current ON time setting</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>4ms</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>1</td><td>8ms</td></tr> <tr><td>.</td><td>.</td><td>.</td><td>.</td><td>4ms</td></tr> <tr><td>.</td><td>.</td><td>.</td><td>.</td><td>Step</td></tr> <tr><td>.</td><td>.</td><td>.</td><td>.</td><td></td></tr> <tr><td>1</td><td>1</td><td>0</td><td>1</td><td>56ms</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>0</td><td>60ms</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>1</td><td>64ms</td></tr> </tbody> </table> <p>Lighting time depends on internal OSC frequency.</p> | RGB2SL1STEP3 | RGB2SL1STEP2 | RGB2SL1STEP1 | RGB2SL1STEP0 | Current ON time setting | 0 | 0 | 0 | 0 | 4ms | 0 | 0 | 0 | 1 | 8ms | . | . | . | . | 4ms | . | . | . | . | Step | . | . | . | . | | 1 | 1 | 0 | 1 | 56ms | 1 | 1 | 1 | 0 | 60ms | 1 | 1 | 1 | 1 | 64ms |
| RGB2SL1STEP3 | RGB2SL1STEP2 | RGB2SL1STEP1 | | RGB2SL1STEP0 | Current ON time setting | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | 0 | 4ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | 1 | 8ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | . | 4ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | . | Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | . | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 0 | | 1 | 56ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | | 0 | 60ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | | 1 | 64ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D6 | RGB2SL1STEP2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D5 | RGB2SL1STEP1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D4 | RGB2SL1STEP0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D3 | RGB2SL2STEP3 | 0 | <table border="1"> <thead> <tr> <th>RGB2SL2STEP3</th> <th>RGB2SL2STEP2</th> <th>RGB2SL2STEP1</th> <th>RGB2SL2STEP0</th> <th>Current ON time setting</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>4ms</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>1</td><td>8ms</td></tr> <tr><td>.</td><td>.</td><td>.</td><td>.</td><td>4ms</td></tr> <tr><td>.</td><td>.</td><td>.</td><td>.</td><td>Step</td></tr> <tr><td>.</td><td>.</td><td>.</td><td>.</td><td></td></tr> <tr><td>1</td><td>1</td><td>0</td><td>1</td><td>56ms</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>0</td><td>60ms</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>1</td><td>64ms</td></tr> </tbody> </table> <p>Lighting time depends on internal OSC frequency.</p> | RGB2SL2STEP3 | RGB2SL2STEP2 | RGB2SL2STEP1 | RGB2SL2STEP0 | Current ON time setting | 0 | 0 | 0 | 0 | 4ms | 0 | 0 | 0 | 1 | 8ms | . | . | . | . | 4ms | . | . | . | . | Step | . | . | . | . | | 1 | 1 | 0 | 1 | 56ms | 1 | 1 | 1 | 0 | 60ms | 1 | 1 | 1 | 1 | 64ms |
| RGB2SL2STEP3 | RGB2SL2STEP2 | RGB2SL2STEP1 | | RGB2SL2STEP0 | Current ON time setting | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | 0 | 4ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | 1 | 8ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | . | 4ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | . | Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | . | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 0 | | 1 | 56ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | | 0 | 60ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | | 1 | 64ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D2 | RGB2SL2STEP2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D1 | RGB2SL2STEP1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D0 | RGB2SL2STEP0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Address 13h <RGB2 slope step number setting>

| BIT | Name | Initial | Function | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------|------------|------------|---|--------------|------------|------------|------|---|---|---|--------|---|---|---|--------|---|---|---|--------|---|---|---|--------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|--------------|
| | | | 0 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D7 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D6 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D5 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D4 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D3 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D2 | RGB2SLNUM2 | 0 | <table border="1"> <thead> <tr> <th>RGB2SLNUM2</th> <th>RGB2SLNUM1</th> <th>RGB2SLNUM0</th> <th>Step</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>0</td><td>1 Step</td></tr> <tr><td>0</td><td>0</td><td>1</td><td>2 Step</td></tr> <tr><td>0</td><td>1</td><td>0</td><td>4 Step</td></tr> <tr><td>0</td><td>1</td><td>1</td><td>8 Step</td></tr> <tr><td>1</td><td>0</td><td>0</td><td>16 Step</td></tr> <tr><td>1</td><td>0</td><td>1</td><td>32 Step</td></tr> <tr><td>1</td><td>1</td><td>0</td><td>64 Step</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>(Prohibited)</td></tr> </tbody> </table> | RGB2SLNUM2 | RGB2SLNUM1 | RGB2SLNUM0 | Step | 0 | 0 | 0 | 1 Step | 0 | 0 | 1 | 2 Step | 0 | 1 | 0 | 4 Step | 0 | 1 | 1 | 8 Step | 1 | 0 | 0 | 16 Step | 1 | 0 | 1 | 32 Step | 1 | 1 | 0 | 64 Step | 1 | 1 | 1 | (Prohibited) |
| RGB2SLNUM2 | RGB2SLNUM1 | RGB2SLNUM0 | | Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | 1 Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 1 | | 2 Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 1 | 0 | | 4 Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 1 | 1 | | 8 Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 | 0 | | 16 Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 | 1 | | 32 Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 0 | | 64 Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | | (Prohibited) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D1 | RGB2SLNUM1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D0 | RGB2SLNUM0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Address 14h <R2 LED current value1>

| BIT | Name | Initial | Function | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | 0 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D7 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D6 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D5 | I1R2LED5 | 0 | <table border="1"> <thead> <tr> <th>I1R2LED5</th> <th>I1R2LED4</th> <th>I1R2LED3</th> <th>I1R2LED2</th> <th>I1R2LED1</th> <th>I1R2LED0</th> <th>Current value</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0mA</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0.5mA</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>1mA</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td rowspan="4">0.5mA Step</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td></td> <td></td> <td></td> <td>1</td> <td>1</td> <td>0</td> <td>30.5mA</td> </tr> <tr> <td></td> <td></td> <td></td> <td>1</td> <td>1</td> <td>1</td> <td>31mA</td> </tr> <tr> <td></td> <td></td> <td></td> <td>1</td> <td>1</td> <td>1</td> <td>31.5mA</td> </tr> </tbody> </table> <p>When 120kΩ is connected to ISET pin.</p> | | | | I1R2LED5 | I1R2LED4 | I1R2LED3 | I1R2LED2 | I1R2LED1 | I1R2LED0 | Current value | 0 | 0 | 0 | 0 | 0 | 0 | 0mA | 0 | 0 | 0 | 0 | 0 | 1 | 0.5mA | 0 | 0 | 0 | 0 | 1 | 0 | 1mA | . | . | . | . | . | . | 0.5mA Step | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | | | | 1 | 1 | 0 | 30.5mA | | | | 1 | 1 | 1 | 31mA | | | | 1 | 1 | 1 | 31.5mA |
| I1R2LED5 | I1R2LED4 | I1R2LED3 | | | | | I1R2LED2 | I1R2LED1 | I1R2LED0 | Current value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 0 | 0 | 0mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 0 | 1 | 0.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 1 | 0 | 1mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | | | | . | . | . | 0.5mA Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | 1 | 1 | 0 | 30.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1 | 1 | 1 | 31mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1 | 1 | 1 | 31.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D4 | I1R2LED4 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D3 | I1R2LED3 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D2 | I1R2LED2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D1 | I1R2LED1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D0 | I1R2LED0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Address 15h <Δ current value for R2 LED current step >

| BIT | Name | Initial | Function | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | 0 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D7 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D6 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D5 | IDLTR2LED5 | 0 | <table border="1"> <thead> <tr> <th>IDLTR2 LED5</th> <th>IDLTR2 LED4</th> <th>IDLTR2 LED3</th> <th>IDLTR2 LED2</th> <th>IDLTR2 LED1</th> <th>IDLTR2 LED0</th> <th>Current value</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0mA</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0.5mA</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>1mA</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td rowspan="4">0.5mA Step</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td></td> <td></td> <td></td> <td>1</td> <td>1</td> <td>0</td> <td>30.5mA</td> </tr> <tr> <td></td> <td></td> <td></td> <td>1</td> <td>1</td> <td>1</td> <td>31mA</td> </tr> <tr> <td></td> <td></td> <td></td> <td>1</td> <td>1</td> <td>1</td> <td>31.5mA</td> </tr> </tbody> </table> <p>When 120kΩ is connected to ISET pin.</p> | | | | IDLTR2 LED5 | IDLTR2 LED4 | IDLTR2 LED3 | IDLTR2 LED2 | IDLTR2 LED1 | IDLTR2 LED0 | Current value | 0 | 0 | 0 | 0 | 0 | 0 | 0mA | 0 | 0 | 0 | 0 | 0 | 1 | 0.5mA | 0 | 0 | 0 | 0 | 1 | 0 | 1mA | . | . | . | . | . | . | 0.5mA Step | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | | | | 1 | 1 | 0 | 30.5mA | | | | 1 | 1 | 1 | 31mA | | | | 1 | 1 | 1 | 31.5mA |
| IDLTR2 LED5 | IDLTR2 LED4 | IDLTR2 LED3 | | | | | IDLTR2 LED2 | IDLTR2 LED1 | IDLTR2 LED0 | Current value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 0 | 0 | 0mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 0 | 1 | 0.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 1 | 0 | 1mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | | | | . | . | . | 0.5mA Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | 1 | 1 | 0 | 30.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1 | 1 | 1 | 31mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1 | 1 | 1 | 31.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D4 | IDLTR2LED4 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D3 | IDLTR2LED3 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D2 | IDLTR2LED2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D1 | IDLTR2LED1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D0 | IDLTR2LED0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Address 16h <G2 LED current value1>

| BIT | Name | Initial | Function | | | | | | |
|-----|----------|---------|----------|----------|----------|----------|----------|----------|---------------|
| | | | 0 | 1 | | | | | |
| D7 | - | - | - | - | | | | | |
| D6 | - | - | - | - | | | | | |
| D5 | I1G2LED5 | 0 | | | | | | | |
| D4 | I1G2LED4 | 0 | I1G2LED5 | I1G2LED4 | I1G2LED3 | I1G2LED2 | I1G2LED1 | I1G2LED0 | Current value |
| D3 | I1G2LED3 | 0 | 5 | 4 | 3 | 2 | 1 | 0 | 0mA |
| D2 | I1G2LED2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.5mA |
| D1 | I1G2LED1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1mA |
| D0 | I1G2LED0 | 0 | . | . | . | . | . | . | 0.5mA Step |
| | | | . | . | . | . | . | . | |
| | | | . | . | . | . | . | . | |
| | | | . | . | . | . | . | . | |
| | | | 1 | 1 | 1 | 1 | 0 | 1 | 30.5mA |
| | | | 1 | 1 | 1 | 1 | 1 | 0 | 31mA |
| | | | 1 | 1 | 1 | 1 | 1 | 1 | 31.5mA |

When 120kΩ is connected to ISET pin.

Address 17h <Δ current value for G2 LED current step >

| BIT | Name | Initial | Function | | | | | | |
|-----|------------|---------|-------------|-------------|-------------|-------------|-------------|-------------|---------------|
| | | | 0 | 1 | | | | | |
| D7 | - | - | - | - | | | | | |
| D6 | - | - | - | - | | | | | |
| D5 | IDLTG2LED5 | 0 | | | | | | | |
| D4 | IDLTG2LED4 | 0 | IDLTG2 LED5 | IDLTG2 LED4 | IDLTG2 LED3 | IDLTG2 LED2 | IDLTG2 LED1 | IDLTG2 LED0 | Current value |
| D3 | IDLTG2LED3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0mA |
| D2 | IDLTG2LED2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.5mA |
| D1 | IDLTG2LED1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1mA |
| D0 | IDLTG2LED0 | 0 | . | . | . | . | . | . | 0.5mA Step |
| | | | . | . | . | . | . | . | |
| | | | . | . | . | . | . | . | |
| | | | . | . | . | . | . | . | |
| | | | 1 | 1 | 1 | 1 | 0 | 1 | 30.5mA |
| | | | 1 | 1 | 1 | 1 | 1 | 0 | 31mA |
| | | | 1 | 1 | 1 | 1 | 1 | 1 | 31.5mA |

When 120kΩ is connected to ISET pin.

Address 18h <B2 LED current value1>

| BIT | Name | Initial | Function | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | 0 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D7 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D6 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D5 | I1B2LED5 | 0 | <table border="1"> <thead> <tr> <th>I1B2LED5</th> <th>I1B2LED4</th> <th>I1B2LED3</th> <th>I1B2LED2</th> <th>I1B2LED1</th> <th>I1B2LED0</th> <th>Current value</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0mA</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0.5mA</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>1mA</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td rowspan="3">0.5mA Step</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>1</td> <td>30.5mA</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>31mA</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>31.5mA</td> </tr> </tbody> </table> <p>When 120kΩ is connected to ISET pin.</p> | | | | I1B2LED5 | I1B2LED4 | I1B2LED3 | I1B2LED2 | I1B2LED1 | I1B2LED0 | Current value | 0 | 0 | 0 | 0 | 0 | 0 | 0mA | 0 | 0 | 0 | 0 | 0 | 1 | 0.5mA | 0 | 0 | 0 | 0 | 1 | 0 | 1mA | . | . | . | . | . | . | 0.5mA Step | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 0 | 1 | 30.5mA | 1 | 1 | 1 | 1 | 1 | 0 | 31mA | 1 | 1 | 1 | 1 | 1 | 1 | 31.5mA |
| I1B2LED5 | I1B2LED4 | I1B2LED3 | | | | | I1B2LED2 | I1B2LED1 | I1B2LED0 | Current value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 0 | 0 | 0mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 0 | 1 | 0.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 1 | 0 | 1mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | | | | . | . | . | 0.5mA Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 1 | 1 | 1 | | | | | 1 | 0 | 1 | 30.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | | | | | 1 | 1 | 0 | 31mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | 1 | 1 | 1 | 31.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D4 | I1B2LED4 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D3 | I1B2LED3 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D2 | I1B2LED2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D1 | I1B2LED1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D0 | I1B2LED0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Address 19h <Δ current value for B2 LED current step >

| BIT | Name | Initial | Function | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | 0 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D7 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D6 | - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D5 | IDLTB2LED5 | 0 | <table border="1"> <thead> <tr> <th>IDLTB2 LED5</th> <th>IDLTB2 LED4</th> <th>IDLTB2 LED3</th> <th>IDLTB2 LED2</th> <th>IDLTB2 LED1</th> <th>IDLTB2 LED0</th> <th>Current value</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0mA</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0.5mA</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>1mA</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td rowspan="3">0.5mA Step</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>1</td> <td>30.5mA</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>31mA</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>31.5mA</td> </tr> </tbody> </table> <p>When 120kΩ is connected to ISET pin.</p> | | | | IDLTB2 LED5 | IDLTB2 LED4 | IDLTB2 LED3 | IDLTB2 LED2 | IDLTB2 LED1 | IDLTB2 LED0 | Current value | 0 | 0 | 0 | 0 | 0 | 0 | 0mA | 0 | 0 | 0 | 0 | 0 | 1 | 0.5mA | 0 | 0 | 0 | 0 | 1 | 0 | 1mA | . | . | . | . | . | . | 0.5mA Step | . | . | . | . | . | . | . | . | . | . | . | . | 1 | 1 | 1 | 1 | 0 | 1 | 30.5mA | 1 | 1 | 1 | 1 | 1 | 0 | 31mA | 1 | 1 | 1 | 1 | 1 | 1 | 31.5mA |
| IDLTB2 LED5 | IDLTB2 LED4 | IDLTB2 LED3 | | | | | IDLTB2 LED2 | IDLTB2 LED1 | IDLTB2 LED0 | Current value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 0 | 0 | 0mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 0 | 1 | 0.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | | | | | 0 | 1 | 0 | 1mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| . | . | . | | | | | . | . | . | 0.5mA Step | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 1 | 1 | 1 | | | | | 1 | 0 | 1 | 30.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | | | | | 1 | 1 | 0 | 31mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | 1 | 1 | 1 | 31.5mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D4 | IDLTB2LED4 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D3 | IDLTB2LED3 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D2 | IDLTB2LED2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D1 | IDLTB2LED1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D0 | IDLTB2LED0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Address 1Ah <RGB1, RGB2 LED external ON/OFF control>

| BIT | Name | Initial | Function | | | | | | | | | | | | | | | | |
|---------|------------------------|-------------------|--|---|---------|------------------------|-------------------|---|---|----|---|---|----|---|---|-----|---|---|----|
| | | | 0 | 1 | | | | | | | | | | | | | | | |
| D7 | - | - | - | - | | | | | | | | | | | | | | | |
| D6 | - | - | - | - | | | | | | | | | | | | | | | |
| D5 | - | - | - | - | | | | | | | | | | | | | | | |
| D4 | - | - | - | - | | | | | | | | | | | | | | | |
| D3 | - | - | - | - | | | | | | | | | | | | | | | |
| D2 | - | - | - | - | | | | | | | | | | | | | | | |
| D1 | RGB2MEL | 0 | <table border="1"> <thead> <tr> <th>RGB*MEL</th> <th>RGB*CNT (external pin)</th> <th>RGB* LED Lighting</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>L</td> <td>ON</td> </tr> <tr> <td>0</td> <td>H</td> <td>ON</td> </tr> <tr> <td>1</td> <td>L</td> <td>OFF</td> </tr> <tr> <td>1</td> <td>H</td> <td>ON</td> </tr> </tbody> </table> <p>But, a state of lighting depends on the setup of other registers.</p> | | RGB*MEL | RGB*CNT (external pin) | RGB* LED Lighting | 0 | L | ON | 0 | H | ON | 1 | L | OFF | 1 | H | ON |
| RGB*MEL | RGB*CNT (external pin) | RGB* LED Lighting | | | | | | | | | | | | | | | | | |
| 0 | L | ON | | | | | | | | | | | | | | | | | |
| 0 | H | ON | | | | | | | | | | | | | | | | | |
| 1 | L | OFF | | | | | | | | | | | | | | | | | |
| 1 | H | ON | | | | | | | | | | | | | | | | | |
| D0 | RGB1MEL | 0 | | | | | | | | | | | | | | | | | |

●RGB LED operating

1. Operating mode

RGB LED can set up the following operating mode by the setup of the register.

<Setup register>

I1**LED : (register) Initial electric current value [mA]

IDLT**LED : (register) The electric current Δ value of around 1Step [mA]

RGB*SLNUM : (register) slope step number (1,2,4,8,16,32,64 Step)

RGB*SL1STEP : (register) The first half slope 1Step time [ms]

RGB*SL2STEP : (register) The latter half slope 1Step time [ms]

RGB*WT1TM : (register) The first half lighting time [ms]

RGB*WT2TM : (register) The latter half lighting time [ms]

As for the following setup, calculate it from the above setup.

$I2^{**}LED$: At the time of middle lighting current value [mA] = $I1^{**}LED + IDLT^{**}LED \times RGB*SLNUM$

(In case of the value that a calculation exceeds maximum value, the current value is at the limit with maximum.)

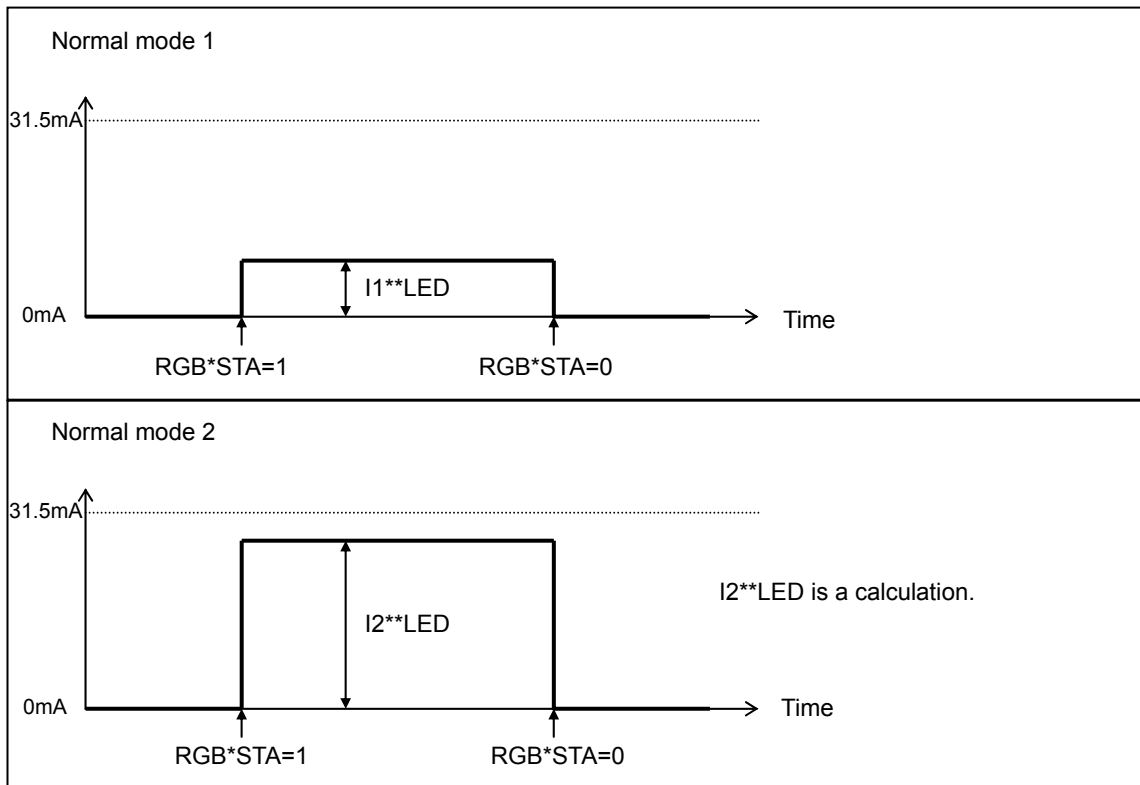
RGB*SL1TM : The first half slope time [ms] = $RGB*SL1STEP \times RGB*SLNUM$

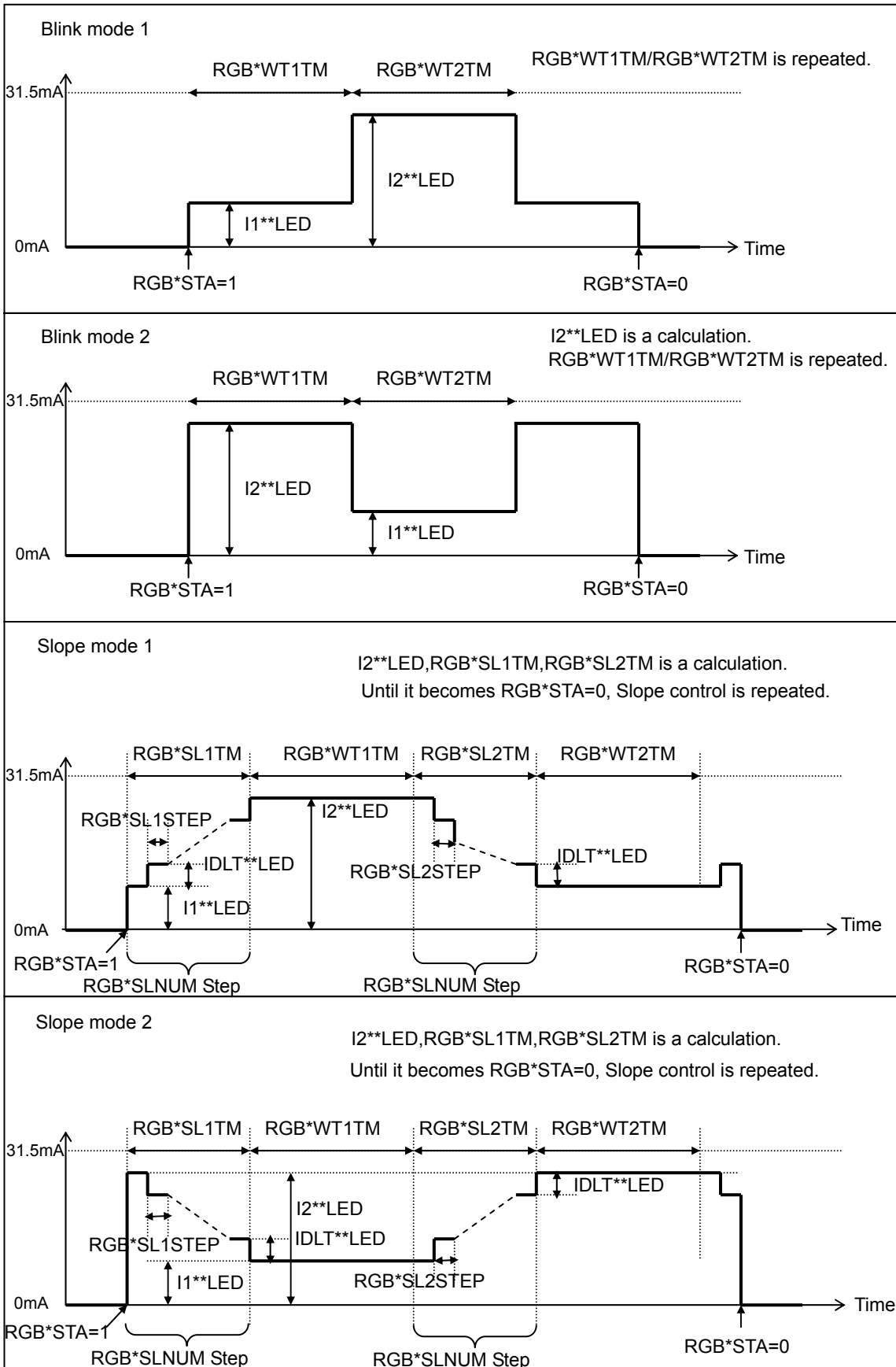
RGB*SL2TM : The latter half slope time [ms] = $RGB*SL2STEP \times RGB*SLNUM$

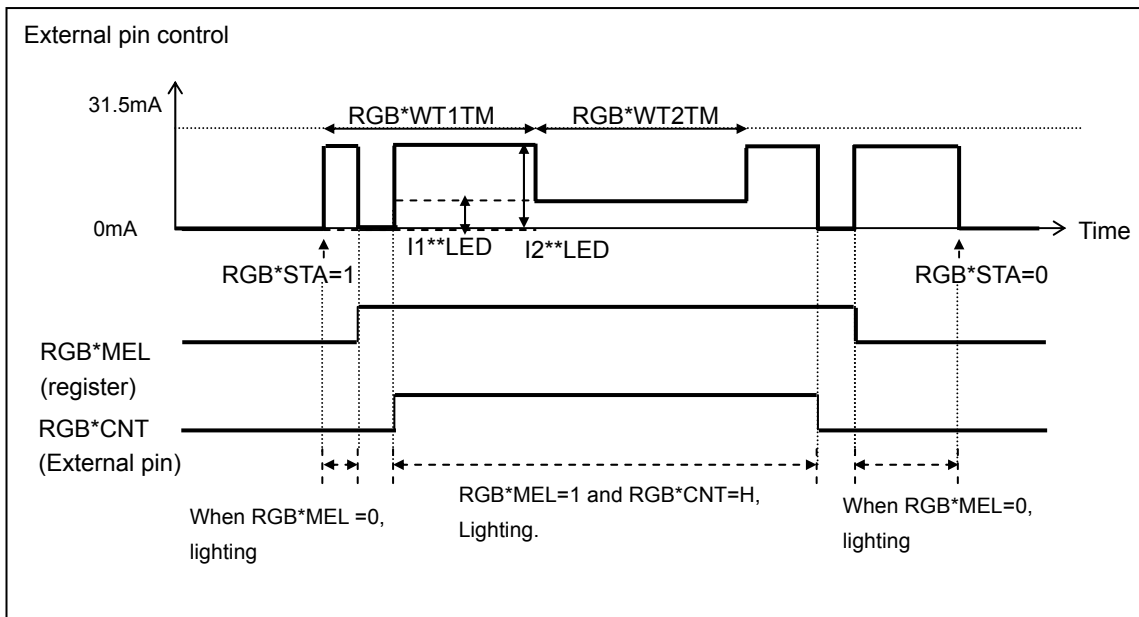
Each setup is necessary for DC current (at Normal mode or Blink mode).

(* : 1/2 channels is shown. ** : R1/G1/B1/R2 /G2/B2 is shown.)

Note) The current value in the table, it is value when 120k Ω is connected to ISET pin.

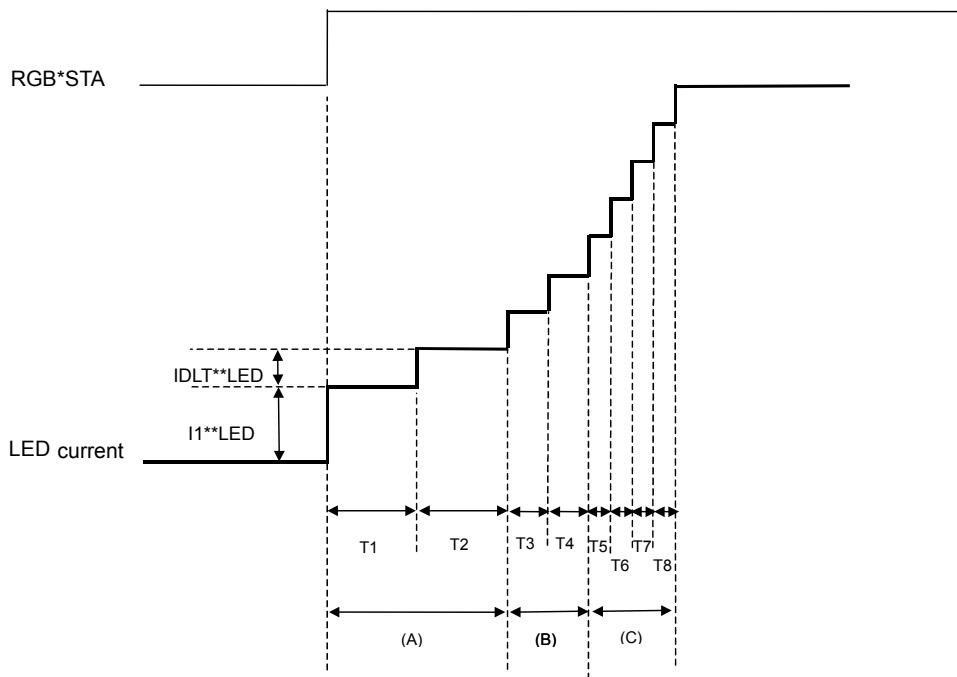






2. Slope control

The slope control that this LSI is equipped processes step time inside as follows. It is made to have electric current by the log curve that is a simple target as to the slope.



- (A)Section : It transits at the step time of two times when it was set up with $RGB*SL1STEP$
- (B)Section : It transits at the step time when it was set up with $RGB*SL1STEP$.
- (C)Section : It transits at the step time of a half times when it was set up with $RGB*SL1STEP$.

The time of the total ($RGB*SL1TM$) is calculated with $RGB*SL1STEP \times RGB*SLNUM$.

A similar movement is done on the descent ($RGB*SL2TM$) side as well.

The acceptance of the setup of a register concerned with LED working during the slope movement stops.

But, a $RGB*STA$ signal interrupts even during the slope movement, and it is possible that LED is turned off.

●Explanation for operate

1. Reset

There are two kinds of reset, software reset and hardware reset.

(1) Software reset

- All the registers are initialized more than making a register (SFTRST) setup "1".
- The register of software resetting is an automatic return (Auto Return 0).

(2) Hardware reset

- It shifts to hardware reset by changing RESET pin "H" → "L".
- The condition of all the registers under hardware reset pin is returned to the initial value, and it stops accepting all address.
- It's possible to release from a state of hardware reset by setting register "L" → "H".
- RESET pin has delay circuit. It doesn't recognize as hardware reset in "L" period under 5μs.

(3) Reset Sequence

- When hardware reset was done during software reset, software reset is canceled when hardware reset is canceled. (Because the initial value of software reset is "0")

2. Thermal shutdown

The blocks which thermal shutdown function is effective in the following.

Charge pump

LED Driver

REG1

REG2 is not shut down by thermal shutdown function, because REG2 can be used for I/O voltage.

A thermal shutdown function works in about 195 °C.

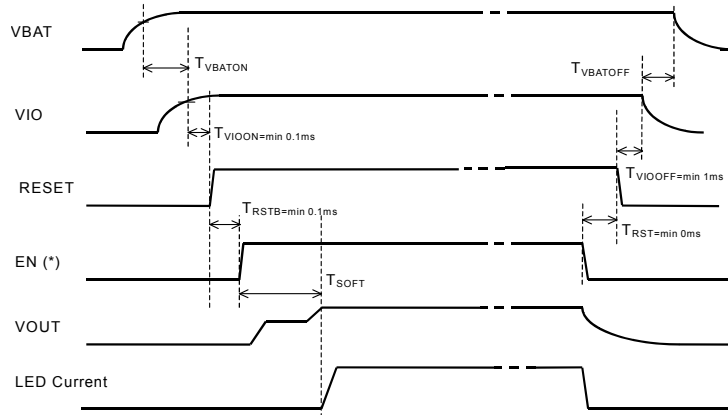
Detection temperature has a hysteresis, and detection release temperature is about 175 °C.

(Design reference value)

3. DC/DC

Start up

DC/DC circuit operates when either LED turns ON.
 (But, when LED connection is set to DC/DC output (VOUT) only.)
 DC/DC circuit has soft start function to prevent a rush current.
 VBAT and VIO sequence is as follow.



(*) An EN signal means the following in the upper figure.

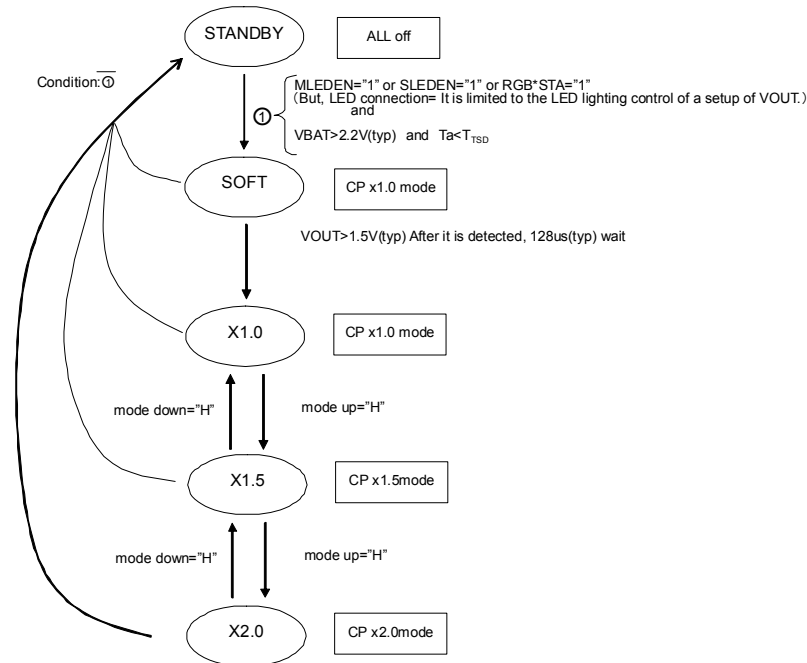
EN = "MLEDEN" or "SLEDEN" or "RGB1STA" or "RGB2STA"

(= LED The LED lighting control of a setup of connection VOUT)

But, as for VBAT < 2.2V (typ) or Ta > T_{TSD} (typ : 195° C), a protection function functions, and an EN signal doesn't become effective.

Mode transition

The transition of boosts multiple transits automatically by the VBAT voltage and the voltage of the LED electric current inflow pin.



Over voltage protection / Over current protection

DC/DC circuit output (VOUT) is equipped with the over-voltage protection and the over current protection function.
 A VOUT over-voltage detection voltage is about 6.0V.(VOUT at the time of rise in a voltage)
 A detection voltage has a hysteresis, and a detection release voltage is about 5.75V. (Design reference value)
 And, when VOUT output short-circuits in GND, drain electric current is controlled by an over current protection function.

4. LED Driver

LED current value setting

LED maximum current value (White LED driver and RGB LED Driver common) can be established in the resistance value R_{ISET} that it is connected to the ISET Pin.

A setting is shown in the following.

$$I_{LEDmax} = 6.4 \times 0.6 [V] / R_{ISET} [k\Omega] [A] \text{ (Typ)} \quad \text{MLED1to4, SLED1to2}$$

$$I_{LEDmax} = 6.3 \times 0.6 [V] / R_{ISET} [k\Omega] [A] \text{ (Typ)} \quad \text{All RGB LED}$$

The maximum setting of LED current is 32mA (MLED and SLED), 31.5mA (RGB) on the D range of the internal circuit.

LED current overload protection

ISET Pin is mount with the GND short detection function. LED current value prevents excessive LED current from flowing when ISET Pin becomes low impedance because it is shown with a formula of the former extension.

White LED Driver

The number of lighting of white LED can be set up by the register MLEDSEL and SLEDSEL (address02h).

The settlement of the number of lighting can be setup with follow.

Main LCD Back light · · · 3 Light (MLED1 ~ 3) or 4 Light (MLED1 ~ 4)

Sub LCD Back light · · · 1 Light (SLED1) or 2 Light (SLED1 ~ 2)

Connect the LED pin that isn't used to the ground.

RGB LED Driver

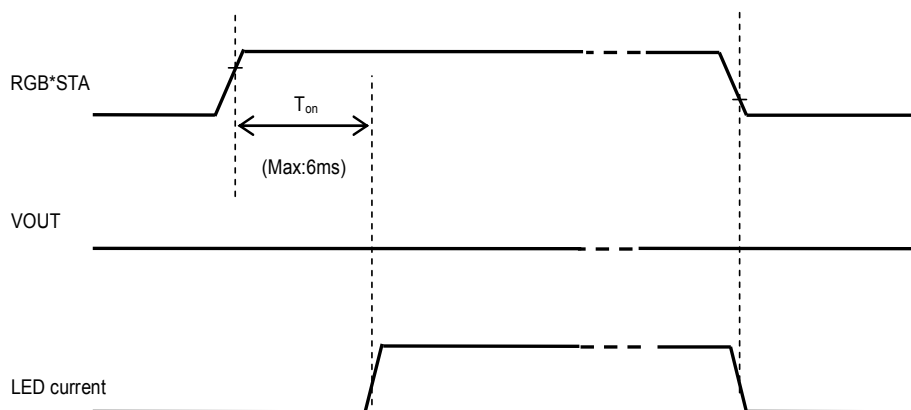
By register B*LEDMD and G*LEDMD (address05h), a place of connection of Green LED and Blue LED It can be set up in VBAT or VOUT. When V_f is low, it is connected to VBAT, and it is possible that efficiency is raised.

When a VBAT connection is chosen, a feedback route to the DC/DC circuit is interrupted, and it works as a simple constant current driver.

A write protect is given in the following address when "1" is written in the RGB*STA register.

| Register | A protected address |
|----------|---------------------|
| RGB1STA | 06h ~ 0Fh |
| RGB2STA | 10h ~ 19h |

VBAT connection a start in the setup Sequence



When the connection of LED is VBAT, only a LED driver turns it on, and a DC/DC circuit is turned off.

The LED pin which isn't used is to short to the ground.

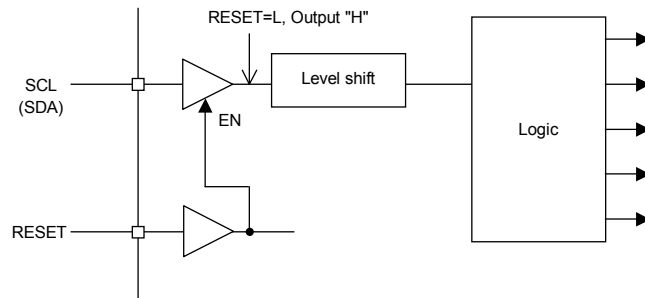
But, the setup of a register concerned with LED that isn't used is prohibited.

5. I/O

CPU interface control input is possible low voltage interface. Interface peripheral block diagram is as follows.

VIO voltage or interface voltage is possible the setting range of 1.65~3.3V. (But, VBAT voltage \geq VIO voltage)

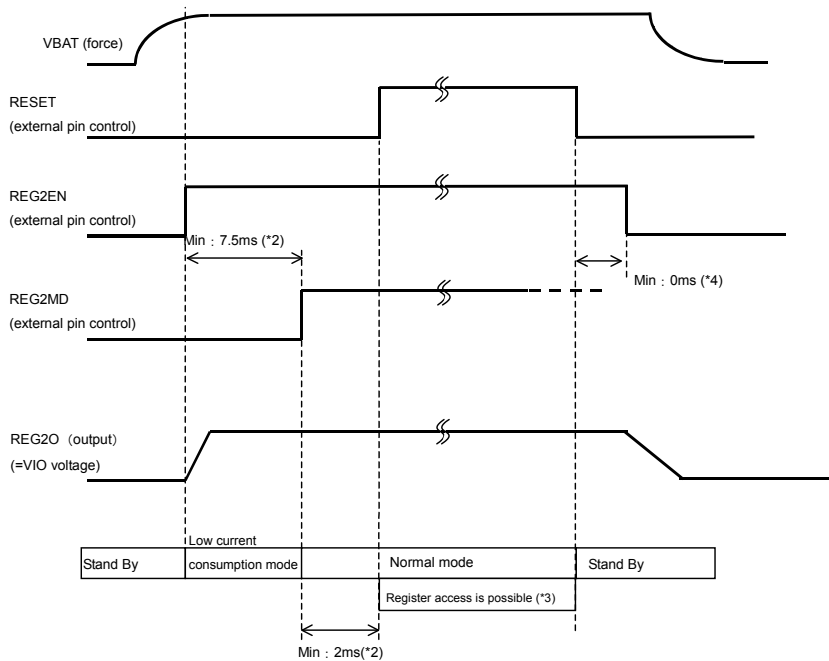
Also, I/O of with enable is being used for SCL, SDA input as a prevention of clock propagation to the inside when other LSI shared the SCL, SDA line.



An equivalent circuit around the part I/O becomes p.8. By rising turn of the I/O power supply and the input level be careful enough because an electric current route may occur through the protection Diode of the pin.

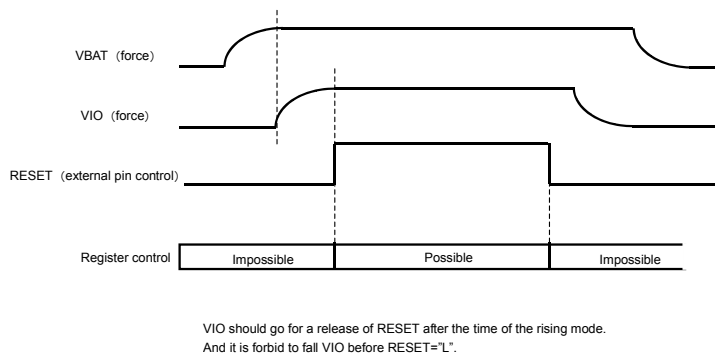
6. About the start of REG2 (the voltage for I/O)

It must start as follows when REG2 output is used as VIO voltage.



- (*1) This sequence is when REG2O is used as an I/O voltage.
Take the specifications of the outside power supply into consideration when the I/O voltage is applied from outside.
- (*2) When the low consumption mode is unnecessary, REG2EN=REG2MD (simultaneous control) is possible.
But, at that case as well, REG2 rising time in the normal mode Take a (Min : 2ms) into consideration.
- (*3) REG2 should go for a release of RESET at the time of the normal mode.
- (*4) REG2EN= Though "L" and RESET= "L" don't care even about the simultaneous timing,
It is prohibition to take REG2EN= "L" in front of RESET= "L".

It must start as follows when external power supply is used as VIO voltage.



7. About the pin management of the function that isn't used and test pins

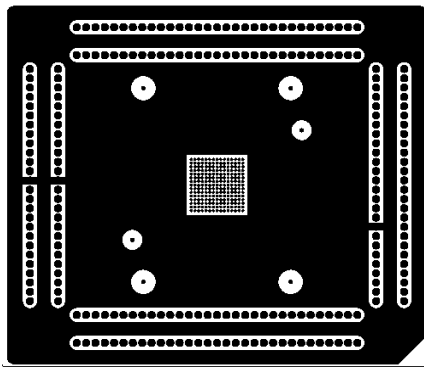
Please connect the pin that isn't used and test pin referred to equivalent circuit (P.8).

- TESTI1, TESTI2 Short to GND (Must) because input pin for test
- TESTO1, TESTO2 Be OPEN because output for test
- T1~T4 Short to GND (Must) because input pin for test
- Non-used LED Pin Short to GND

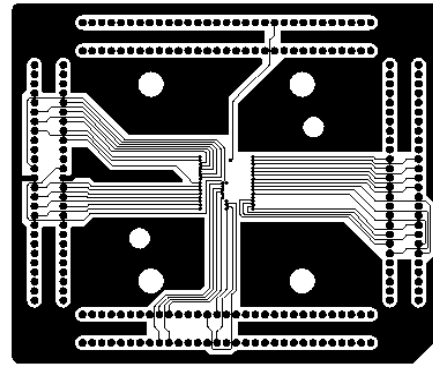
But, the setup of a register concerned with LED that isn't used is prohibited.

- REG2EN, REG2MD, RGB1CNT, RGB2CNT Pull-Down resistance is built in.
Short to GND

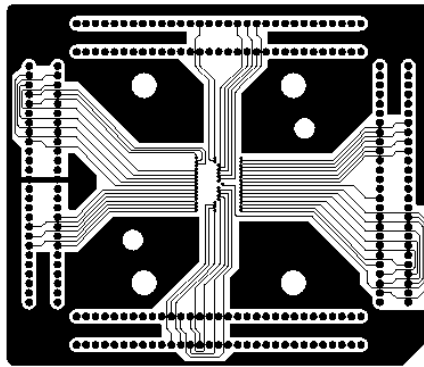
10. BD6081GU PCB pattern of the Power dissipation measuring board



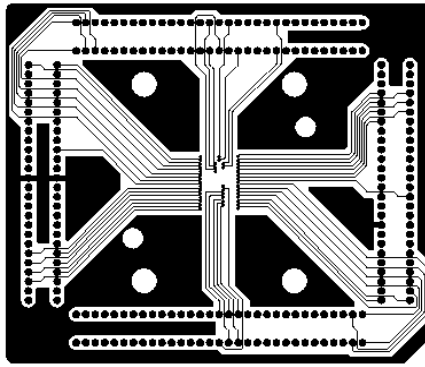
1st layer(component)



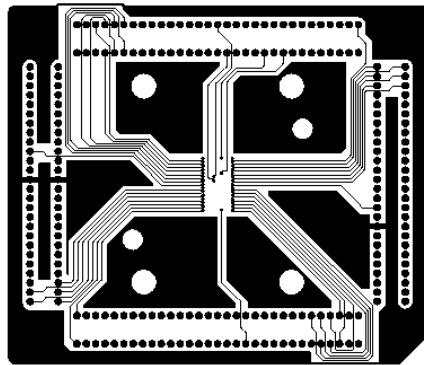
2nd layer



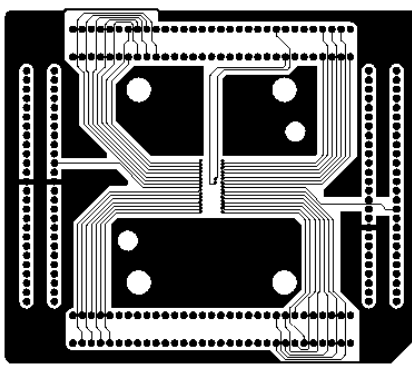
3rd layer



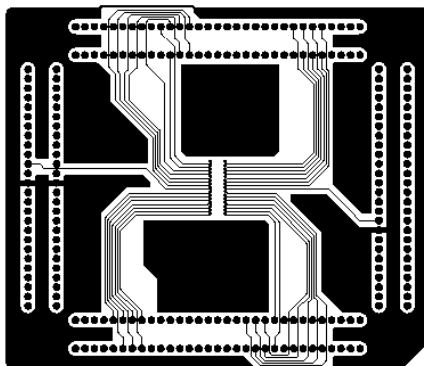
4th layer



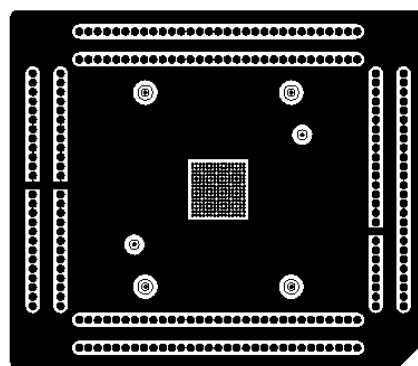
5th layer



6th layer



7th layer



8th layer(solder)

●Notes for use**(1) Absolute Maximum Ratings**

An excess in the absolute maximum ratings, such as supply voltage, temperature range of operating conditions, etc., can break down devices, thus making impossible to identify breaking mode such as a short circuit or an open circuit. If any special mode exceeding the absolute maximum ratings is assumed, consideration should be given to take physical safety measures including the use of fuses, etc.

(2) Power supply and ground line

Design PCB pattern to provide low impedance for the wiring between the power supply and the ground lines. Pay attention to the interference by common impedance of layout pattern when there are plural power supplies and ground lines. Especially, when there are ground pattern for small signal and ground pattern for large current included the external circuits, please separate each ground pattern. Furthermore, for all power supply pins to ICs, mount a capacitor between the power supply and the ground pin. At the same time, in order to use a capacitor, thoroughly check to be sure the characteristics of the capacitor to be used present no problem including the occurrence of capacity dropout at a low temperature, thus determining the constant.

(3) Ground voltage

Make setting of the potential of the ground pin so that it will be maintained at the minimum in any operating state. Furthermore, check to be sure no pins are at a potential lower than the ground voltage including an actual electric transient.

(4) Short circuit between pins and erroneous mounting

In order to mount ICs on a set PCB, pay thorough attention to the direction and offset of the ICs. Erroneous mounting can break down the ICs. Furthermore, if a short circuit occurs due to foreign matters entering between pins or between the pin and the power supply or the ground pin, the ICs can break down.

(5) Operation in strong electromagnetic field

Be noted that using ICs in the strong electromagnetic field can malfunction them.

(6) Input pins

In terms of the construction of IC, parasitic elements are inevitably formed in relation to potential. The operation of the parasitic element can cause interference with circuit operation, thus resulting in a malfunction and then breakdown of the input pin. Therefore, pay thorough attention not to handle the input pins, such as to apply to the input pins a voltage lower than the ground respectively, so that any parasitic element will operate. Furthermore, do not apply a voltage to the input pins when no power supply voltage is applied to the IC. In addition, even if the power supply voltage is applied, apply to the input pins a voltage lower than the power supply voltage or within the guaranteed value of electrical characteristics.

(7) External capacitor

In order to use a ceramic capacitor as the external capacitor, determine the constant with consideration given to a degradation in the nominal capacitance due to DC bias and changes in the capacitance due to temperature, etc.

(8) Thermal shutdown circuit (TSD)

This LSI builds in a thermal shutdown (TSD) circuit. When junction temperatures become detection temperature or higher, the thermal shutdown circuit operates and turns a switch OFF. The thermal shutdown circuit, which is aimed at isolating the LSI from thermal runaway as much as possible, is not aimed at the protection or guarantee of the LSI. Therefore, do not continuously use the LSI with this circuit operating or use the LSI assuming its operation.

(9) Thermal design

Perform thermal design in which there are adequate margins by taking into account the permissible dissipation (Pd) in actual states of use.

(10) LDO

Use each output of LDO by the independence. Don't use under the condition that each output is short-circuited because it has the possibility that an operation becomes unstable.

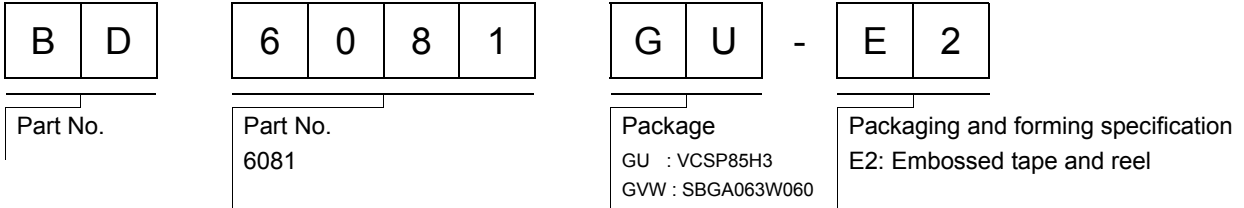
(11) About the pin for the test, the un-use pin

Prevent a problem from being in the pin for the test and the un-use pin under the state of actual use. Please refer to a function manual and an application notebook. And, as for the pin that doesn't specially have an explanation, ask our company person in charge.

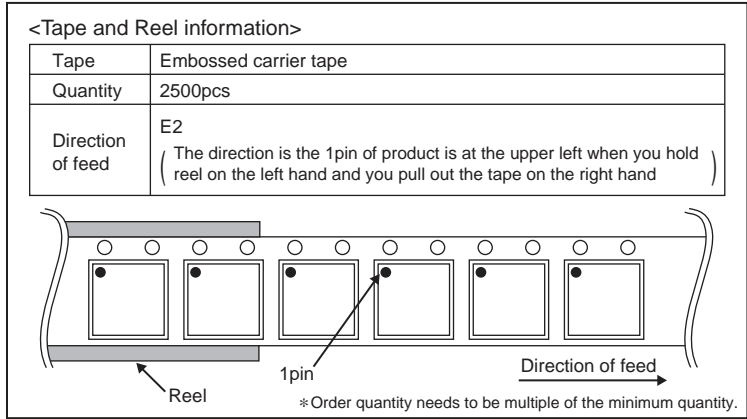
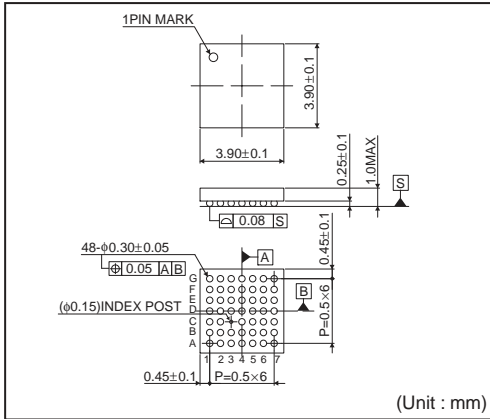
(12) About the function description or application note or more.

The function manual and the application notebook are the design materials to design a set. So, the contents of the materials aren't always guaranteed. Please design application by having fully examination and evaluation include the external elements.

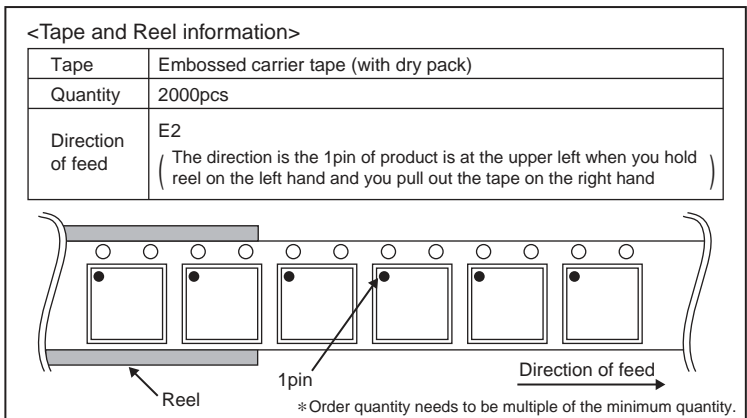
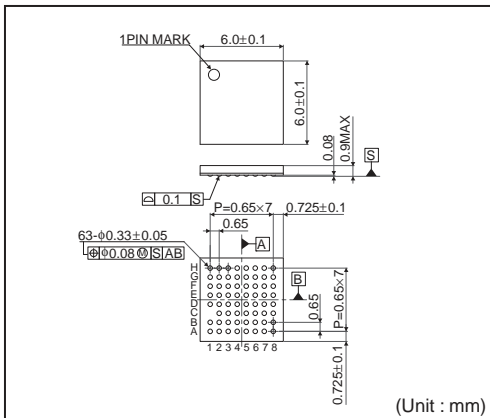
● Ordering part number



VCSP85H3 (BD6081GU)



SBGA063W060



Notes

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