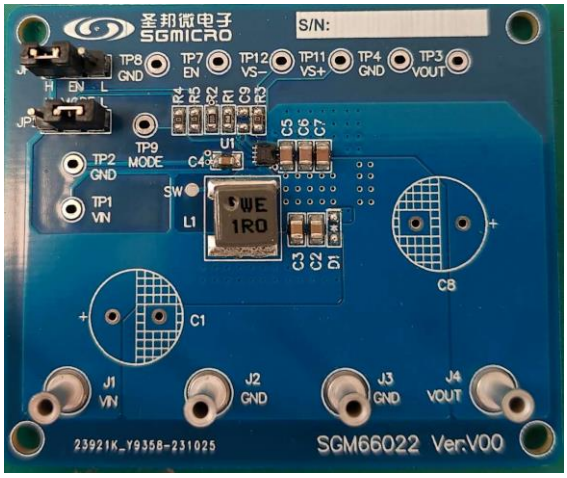
# SGM66022 Demo Board Test Report

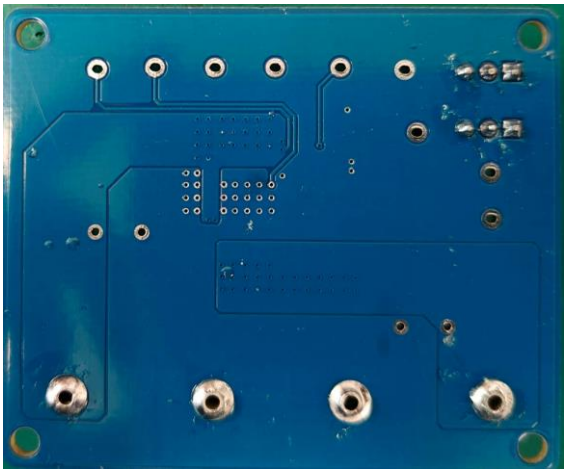
## 0.5V to 5.5V Input, 5V/3A Output

### Demo Board Picture:

Top




Bottom



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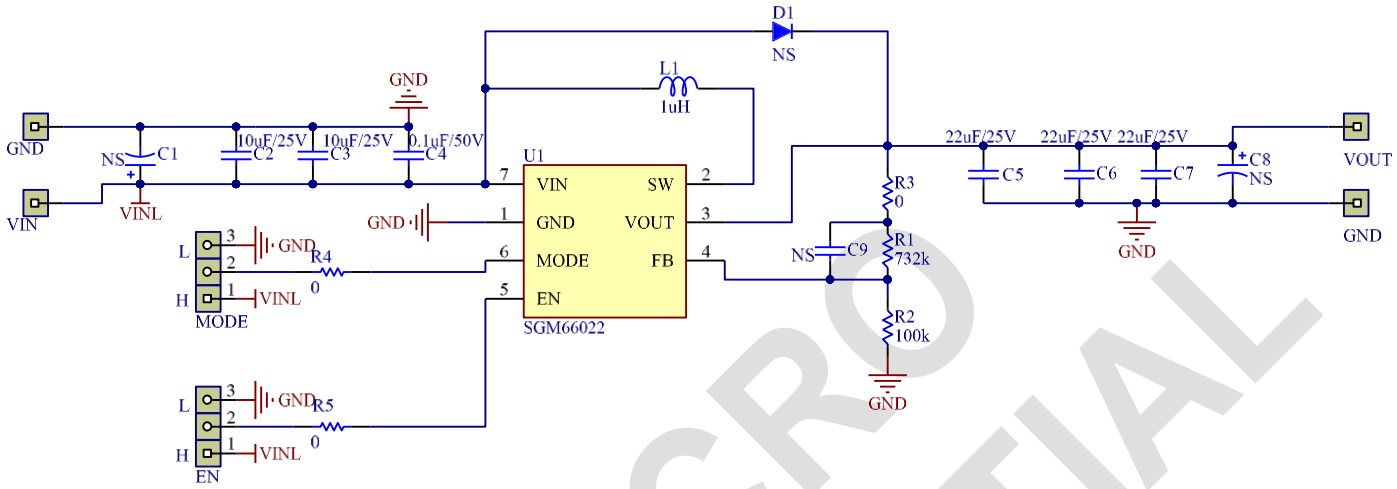
## 1. Schematic, BOM List and PCB layout

**Schematic:**



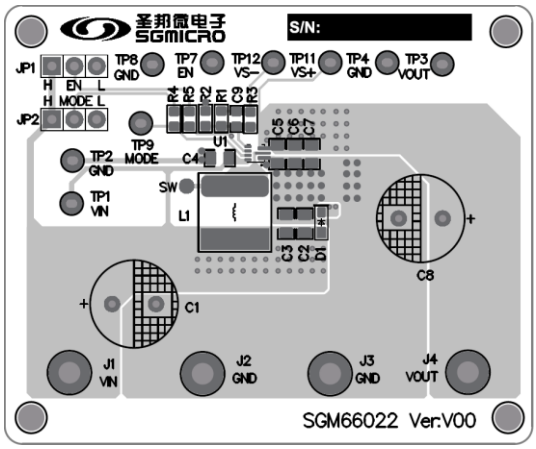

**BOM List:**

| Item | Quantity | Designator | Description | Manufacturer |
|---|---|---|---|---|
| 1 | 0 | C1, C8, C9 | NS | |
| 2 | 2 | C2, C3 | Cap., Ceramic, 10μF 25V, ±10%, X6S,0805 | Murata |
| 3 | 1 | C4 | Cap., Ceramic, 0.1μF 50V, ±10%, X7R,0805 | TDK |
| 4 | 3 | C5, C6, C7 | Cap., Ceramic, 22μF 25V, ±20%, X5R,0805 | Murata |
| 5 | 1 | D1 | NS | |
| 6 | 1 | L1 | Ind., SMD 1 uH 12 A±20%,74439344010<br>$R_{DC}$=5.5mohm,6.65mm×6.45mm | Würth Elektronik |
| 7 | 1 | R1 | Res., 732kΩ, ±1%, 0.1W,0805 | UNI-Royal |
| 8 | 1 | R2 | Res., 100kΩ, ±1%, 0.1W,0805 | UNI-Royal |
| 9 | 3 | R3,R4,R5 | Res., 0Ω, ±5%, 0.1W,0603 | UNI-Royal |
| 10 | 1 | U1 | SGM66022 8A Valley Current, 0.5V Ultra-Low Input, Synchronous Boost Converter,TDFN-2×2-7AL | SG-Micro |
| Conclusion: Total 14 components | | | | |

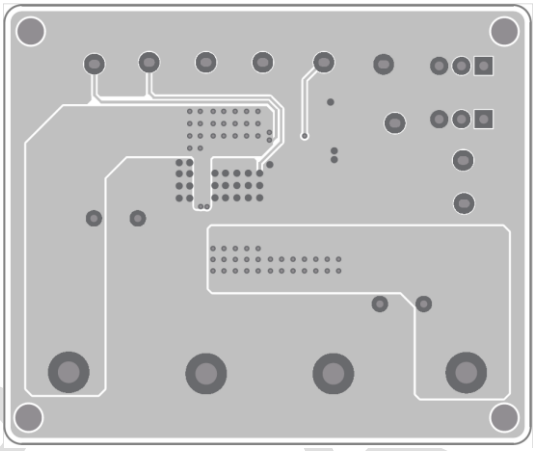
注：如无特殊说明，测试对象为 SGM66022XTHD7G/TR 。

**PCB Layout:**

Top Layer

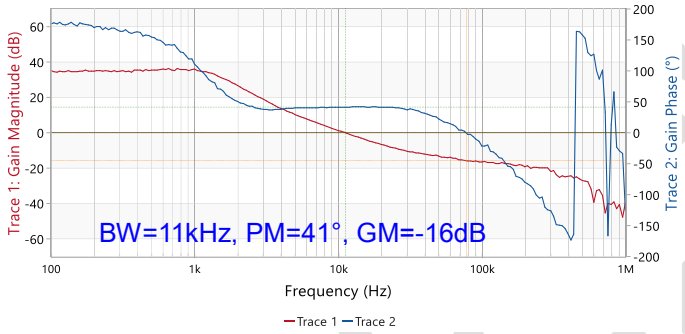



Bottom Layer

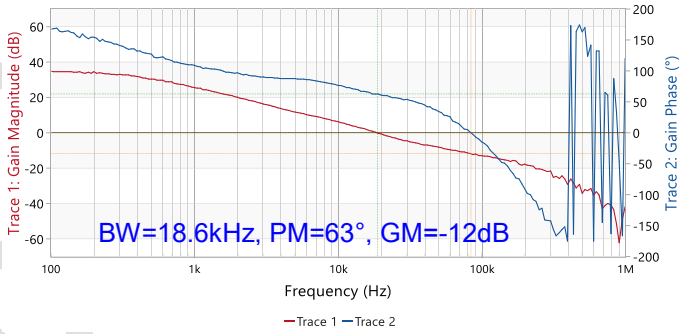


## 2. Bode Plot

$V_{IN}$=1.8V, $V_{OUT}$=5.5V/1A



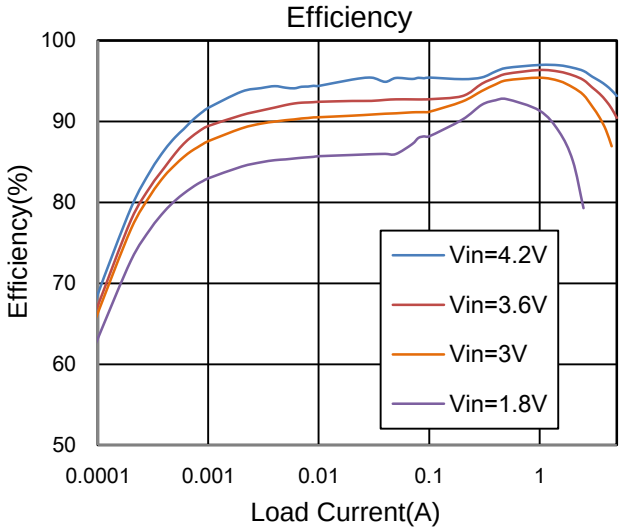

$V_{IN}$=3.6V, $V_{OUT}$=5.5V/3A



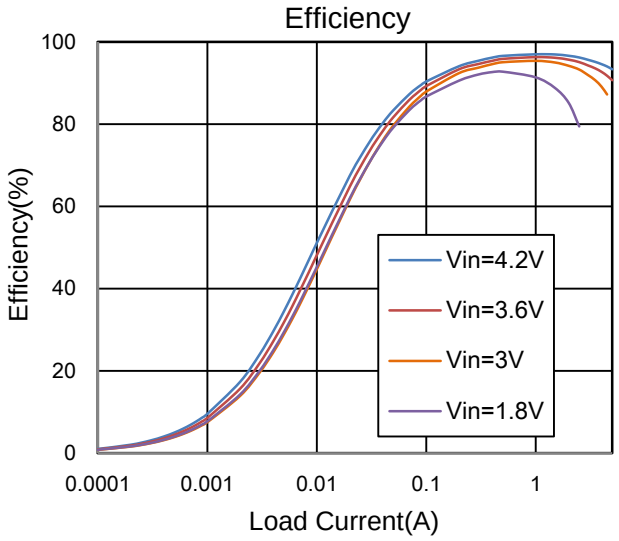

## 3. Efficiency

Test condition:

(a)Auto PFM mode,SGM66022 $V_{OUT}$=5V Efficiency at 25°C ambient temperature,$V_{IN}$=1.8V/3V/3.6V/4.2V



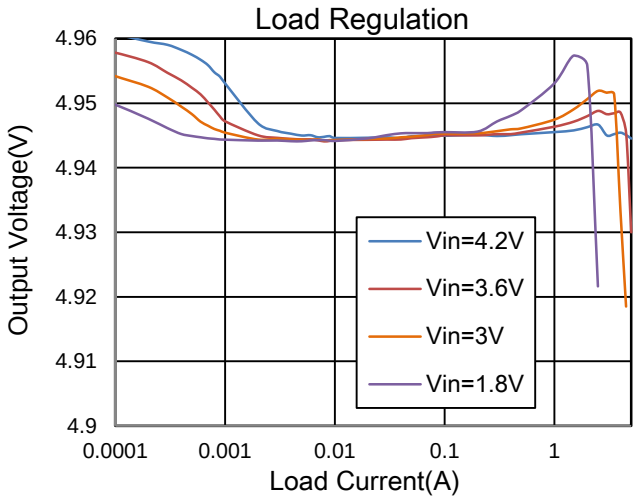

(b)Force PWM mode,SGM66022 $V_{OUT}$=5V,Efficiency at 25°C ambient temperature,$V_{IN}$=1.8V/3V/3.6V/4.2V



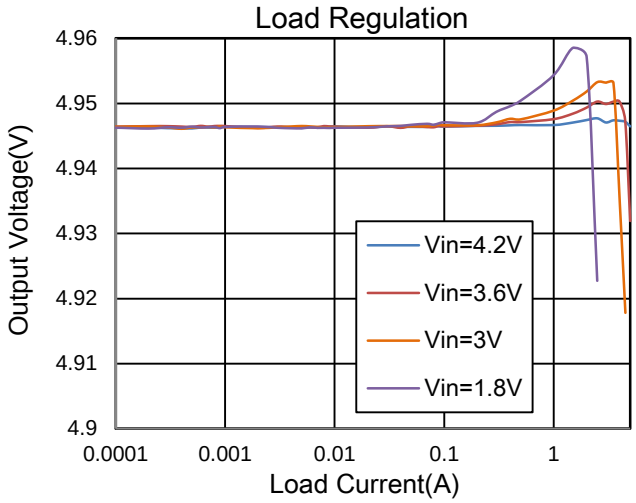

## 4. Load Regulation

Test condition:

(a)Auto PFM mode,SGM66022 $V_{OUT}$=5V Load Regulation at 25°C ambient temperature,$V_{IN}$=1.8V/3V/3.6V/4.2V



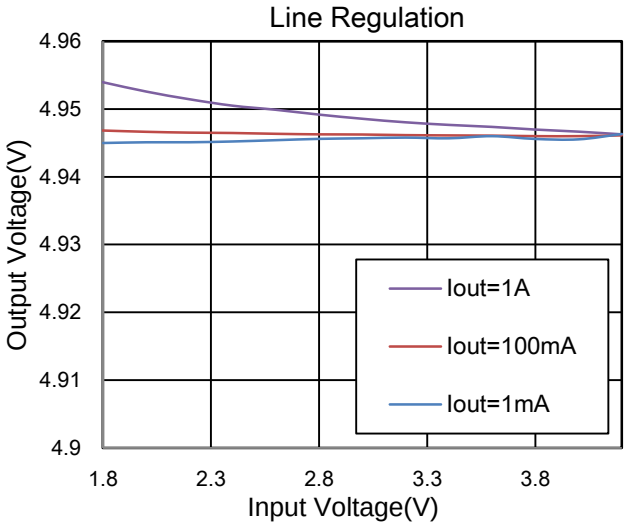

(b)Force PWM mode,SGM66022 $V_{OUT}$=5V,Load Regulation at 25°C ambient temperature, $V_{IN}$=1.8V/3V/3.6V/4.2V



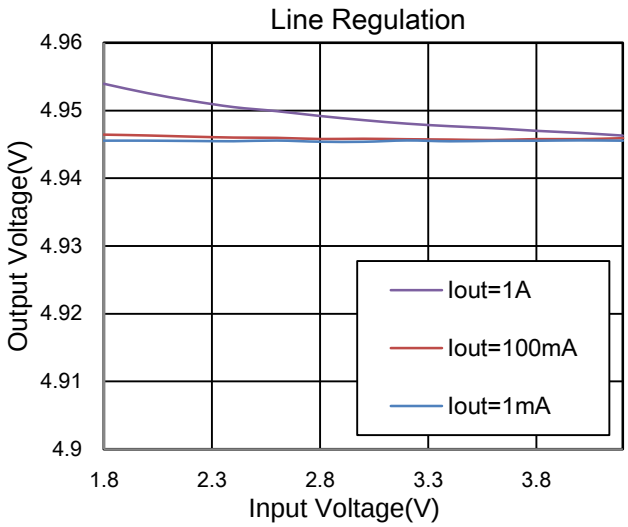

## 5. Line Regulation

Test condition:

(a)Auto PFM mode,SGM66022 $V_{OUT}$=5V,Line Regulation at 25°C ambient temperature,$I_{OUT}$=1A/100mA/1mA



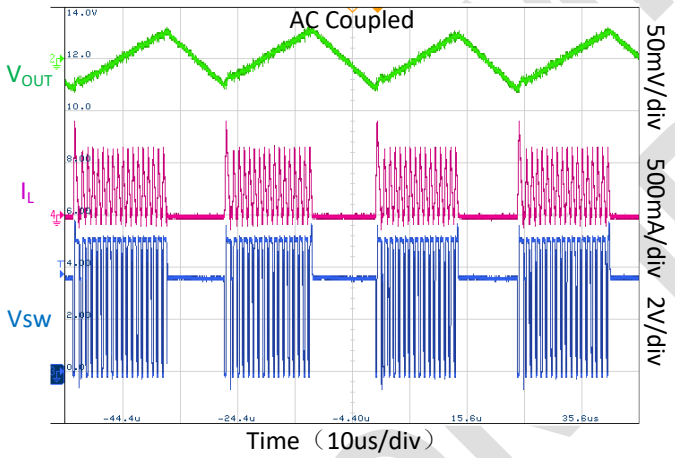

(b)Force PWM mode,SGM66022 $V_{OUT}$=5V,Line Regulation at 25°C ambient temperature,$I_{OUT}$=1A/100mA/1mA



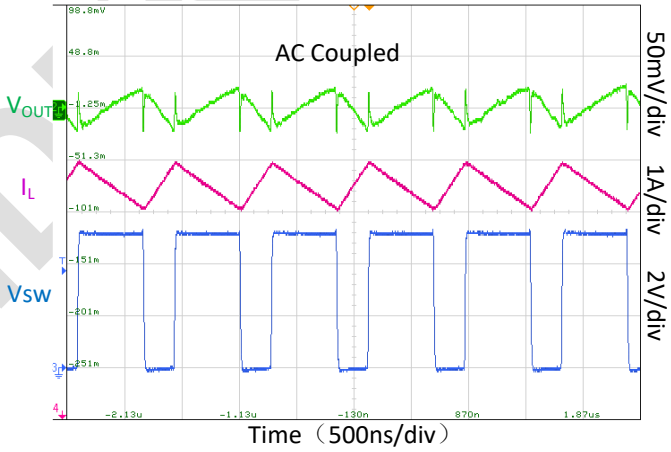

## 6. Output Voltage Ripple

Test condition: SGM66022 $V_{IN}$=3.6V,$V_{OUT}$=5V Output Ripple,

IOUT=100mA




IOUT =3A

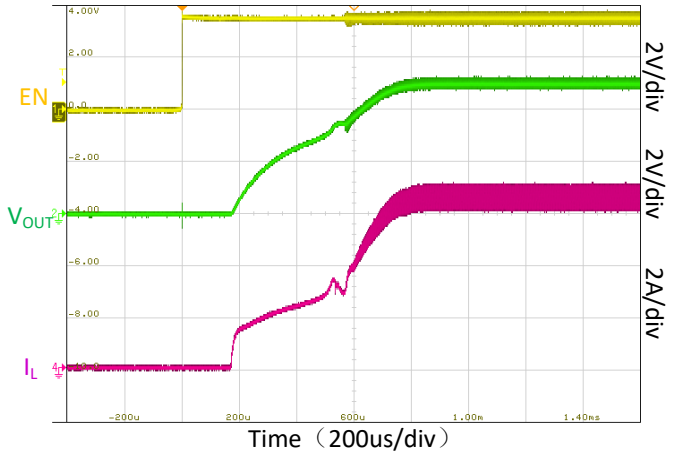


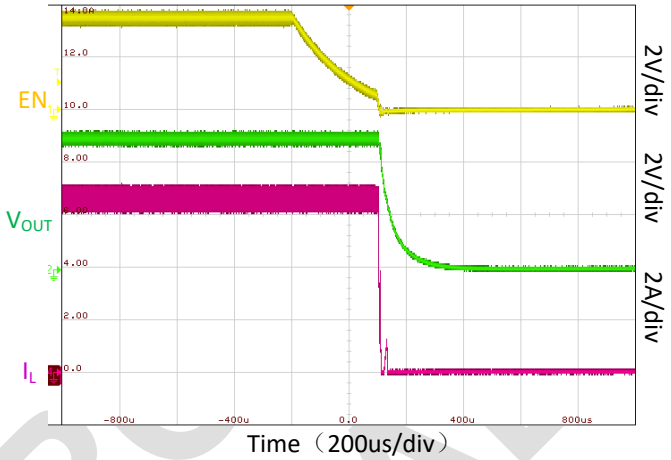

## 7. EN On/Off

Test condition: SGM66022 $V_{IN}$=3.6V,$V_{OUT}$=5V, 1.15-Ω resistance load,

Start-up by EN

Shut-down by EN

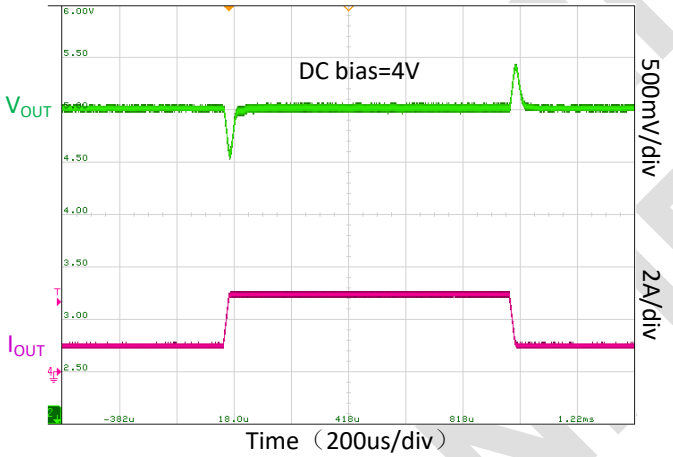


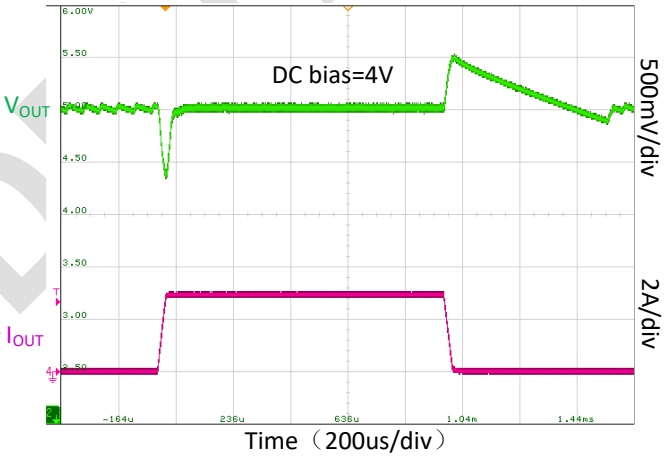

## 8. Load Transient

Test condition: SGM66022 $V_{IN}$=3.6V, $V_{OUT}$=5V, $I_{OUT}$=1A to3A, Slew rate=0.1A/us Load Transient Response

$I_O$=1A-3A-1A



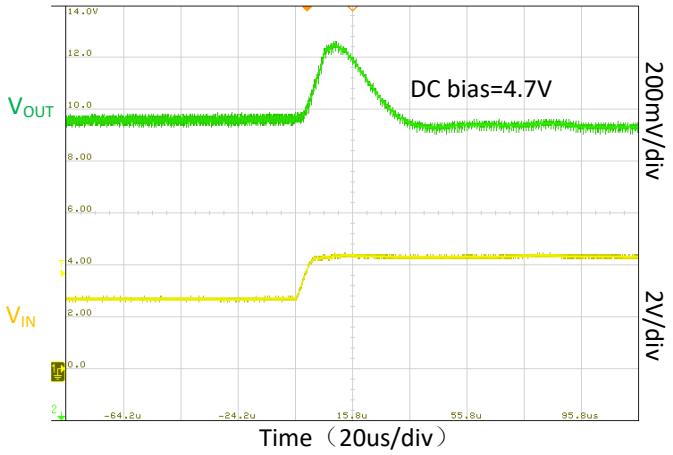

$I_O$=0A-3A-0A



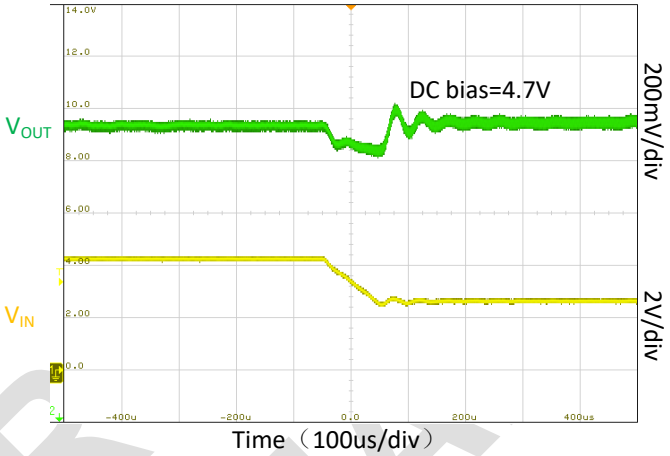

## 9. Line Transient

Test condition: SGM66022 $V_{IN}$=2.7-4.3V, $V_{OUT}$=5V, $I_{OUT}$=2A, Slew rate=0.3V/us Line Transient Response

VIN=2.7-4.3V

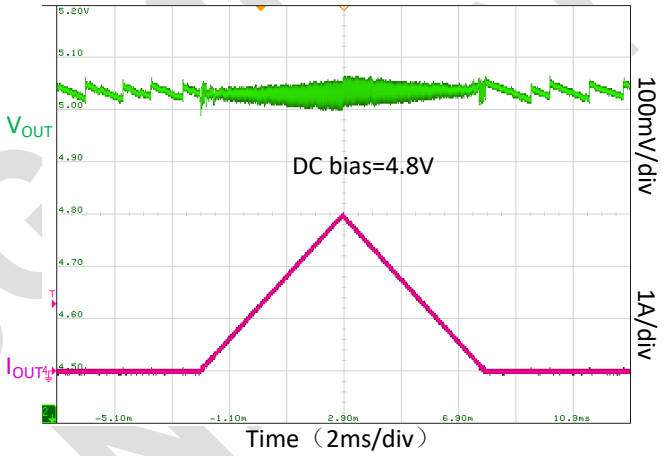



VIN=4.3-2.7V



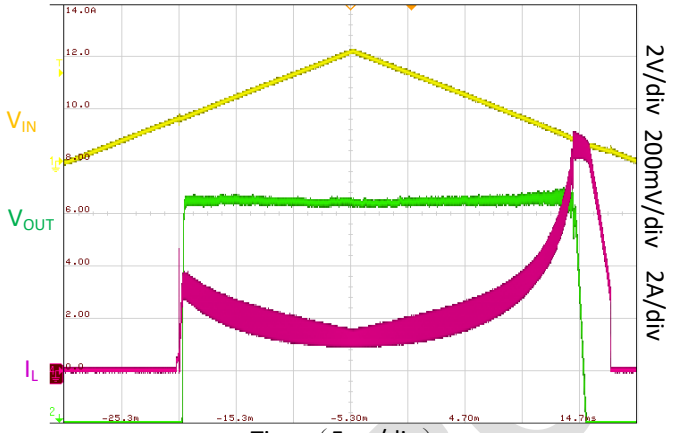

## 10. Load Sweep

Test condition：SGM66022 $V_{IN}$=3.6V, $V_{OUT}$=5V, load Sweep



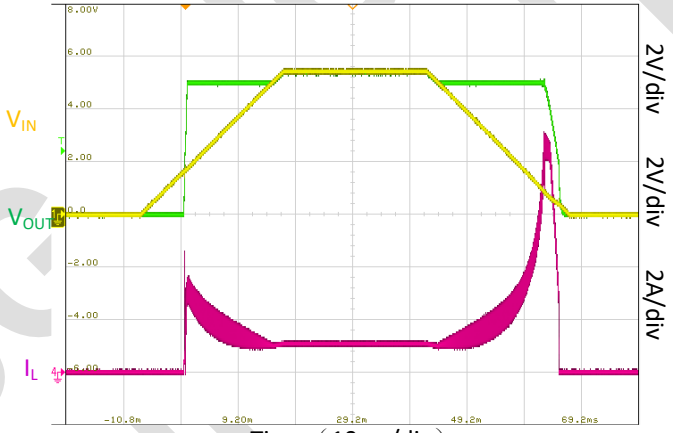

## 11. Line Sweep

Test condition：SGM66022 $V_{IN}$=0-4.3V, $V_{OUT}$=5V, 5-Ω resistance load, Line Sweep



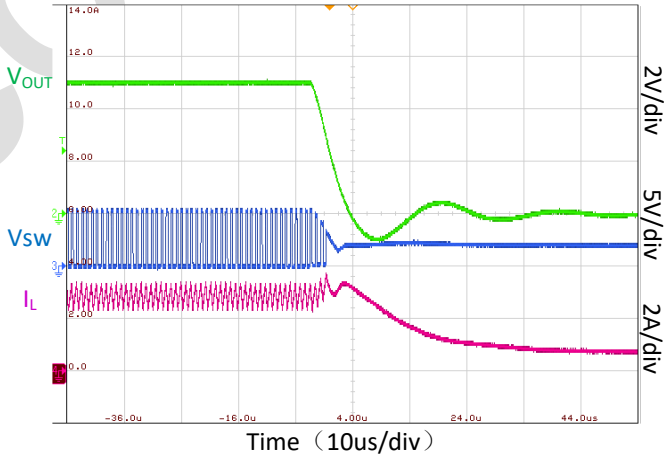

## 12. Pass Through

Test condition：SGM66022 $V_{IN}$=0-4.3V, $V_{OUT}$=5V, 5-Ω resistance load, Line Sweep




## 13. SCP

Test condition: SGM66022 $V_{IN}$=2V, $V_{OUT}$=5V, Output SCP



## 14. Thermal Test

Test condition: SGM66022 $V_{IN}$=3.6V,$V_{OUT}$=5V, $I_{OUT}$=3A, Temperature rise for 1 hour.