

TMI6240 Performance test report

Features:

- Typical 45mΩ RDS(ON) internal N-MOSFET
- Wide Input Operation Range:2.7V to 18V with input OVP function
- 19.1V OVP Protection
- Typical 45μA Quiescent Current
- Typical 4μA Shutdown Current
- External Programmable soft-start time by C_{ss} capacitor
- Output Auto Discharge
- Overcurrent protection
- Output Short Protection
- Thermal Shutdown Protection
- Available in SOT23-5 Package

Application:

- TV
- Digital Set Top Boxes
- Distributed Power Systems
- Digital Still and Video Cameras

Benefit:

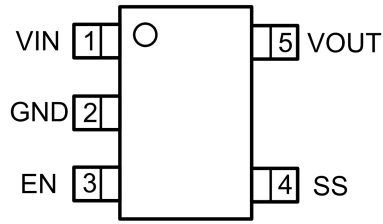
- High cost-efficient
- Less external components and small solution size
- Inrush current control by programmable soft-start time
- Full protection and high reliability

Catalog

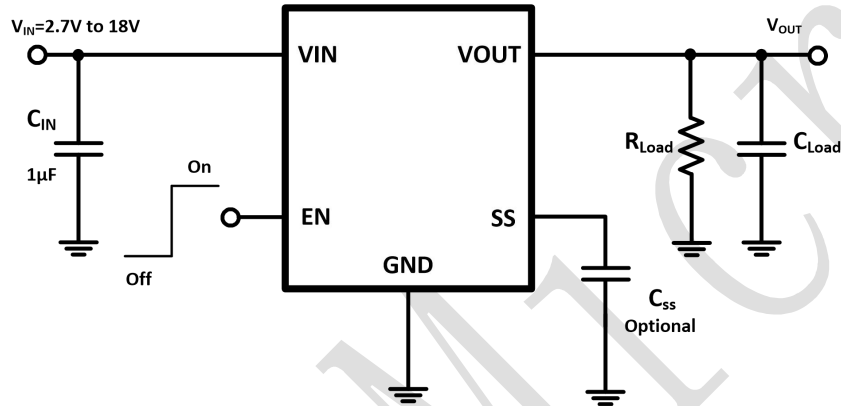
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TOLL Micro

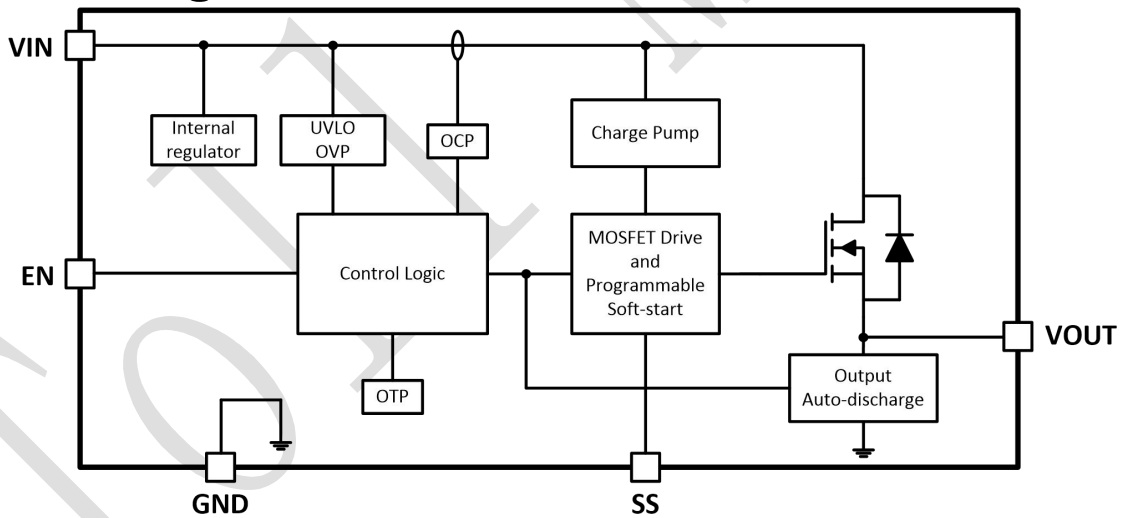
1. Pin Configuration



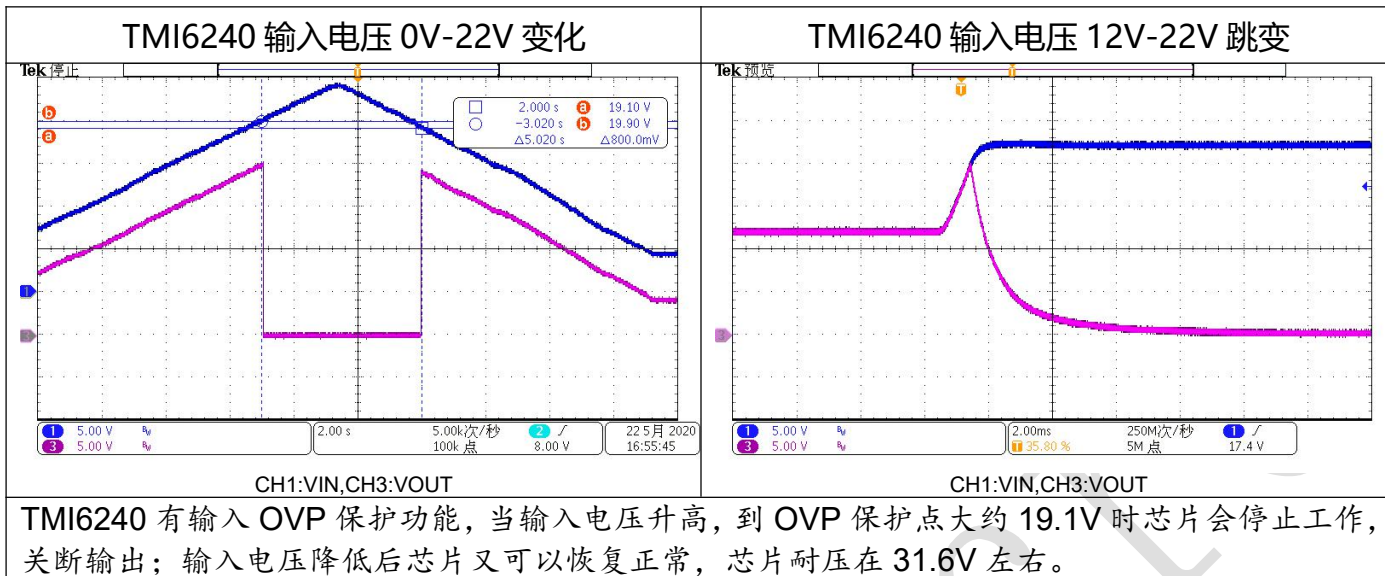
2. Application Circuit



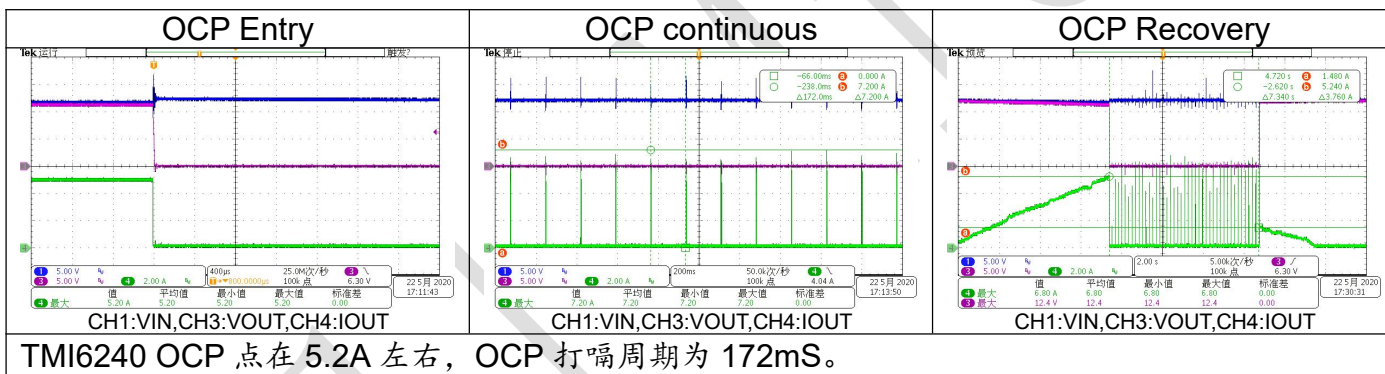
3. Block Diagram



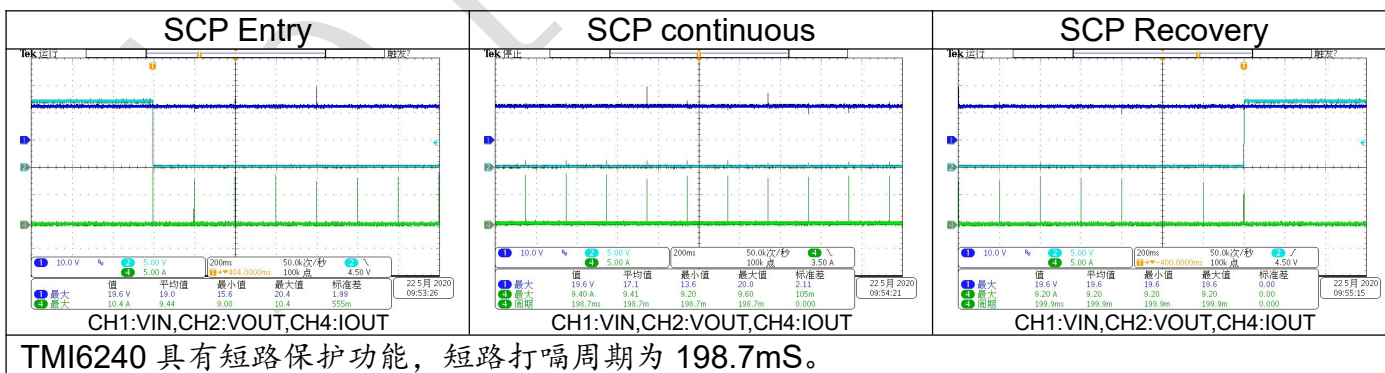
4. OVP



5. OCP

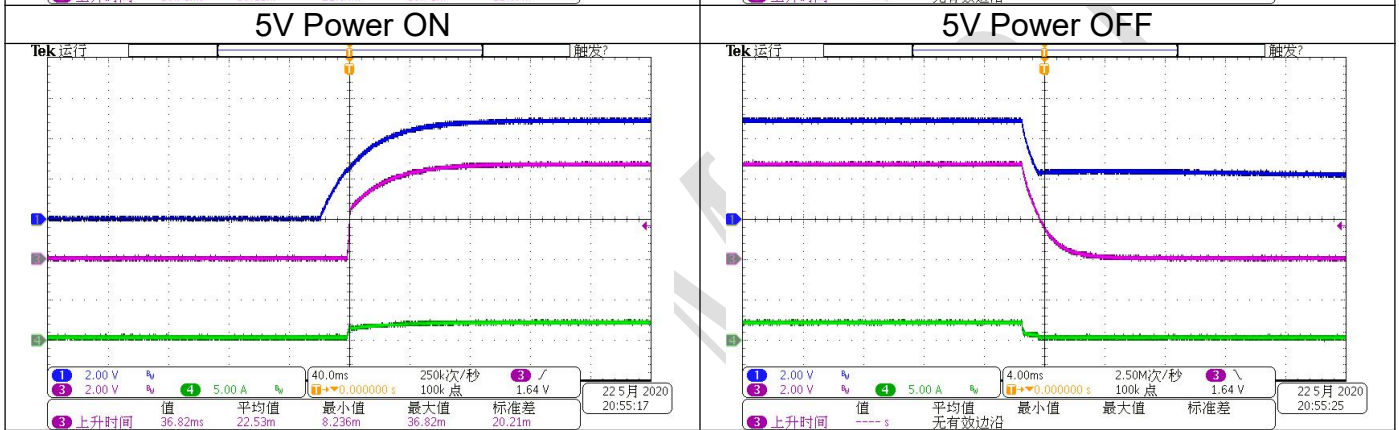
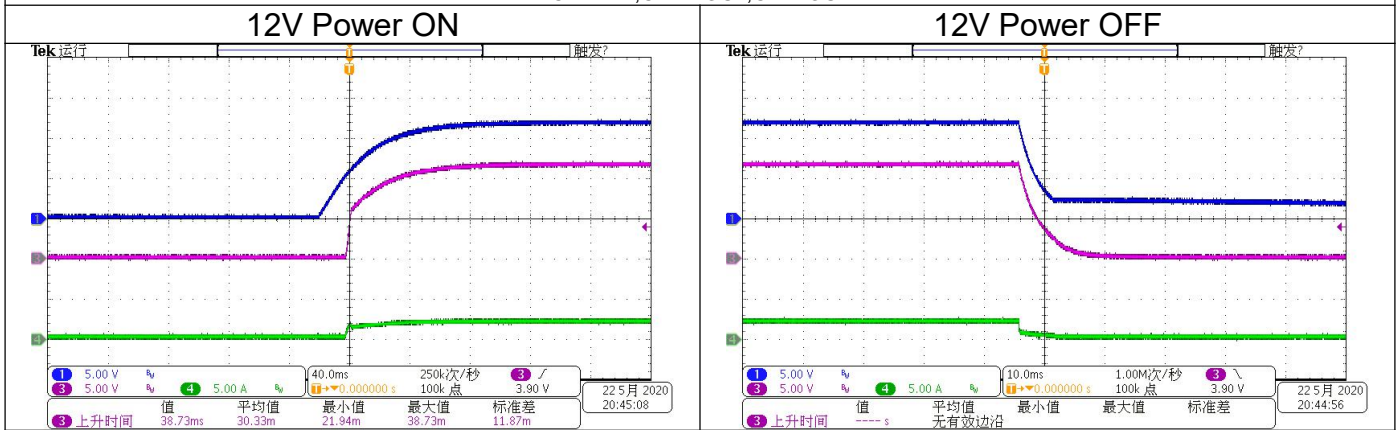


6. SCP

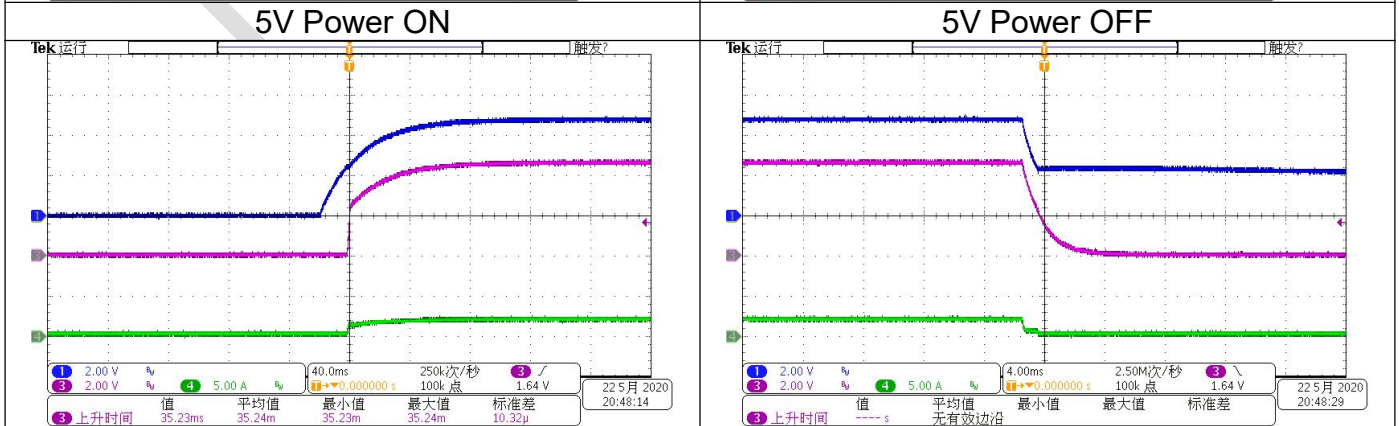
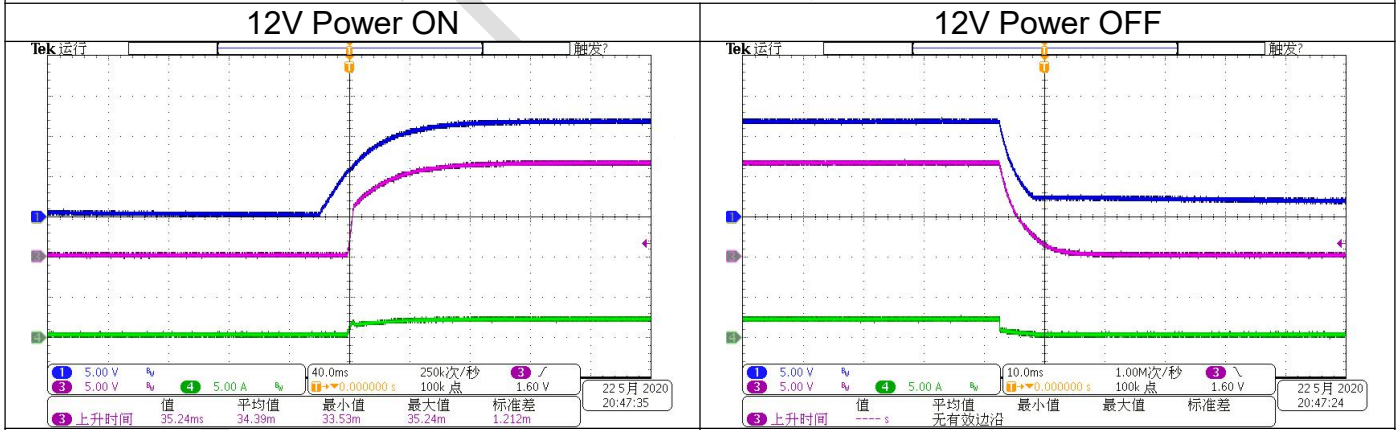


7. Power ON/OFF

C_{ss}=20nF, C_{Load}=470μF, C_{in}=4.7μF, I_o=2A
CH1:VIN,CH2:VOUT,CH4:IOUT



C_{ss}=47nF, C_{Load}=470μF, C_{in}=4.7μF, I_o=2A

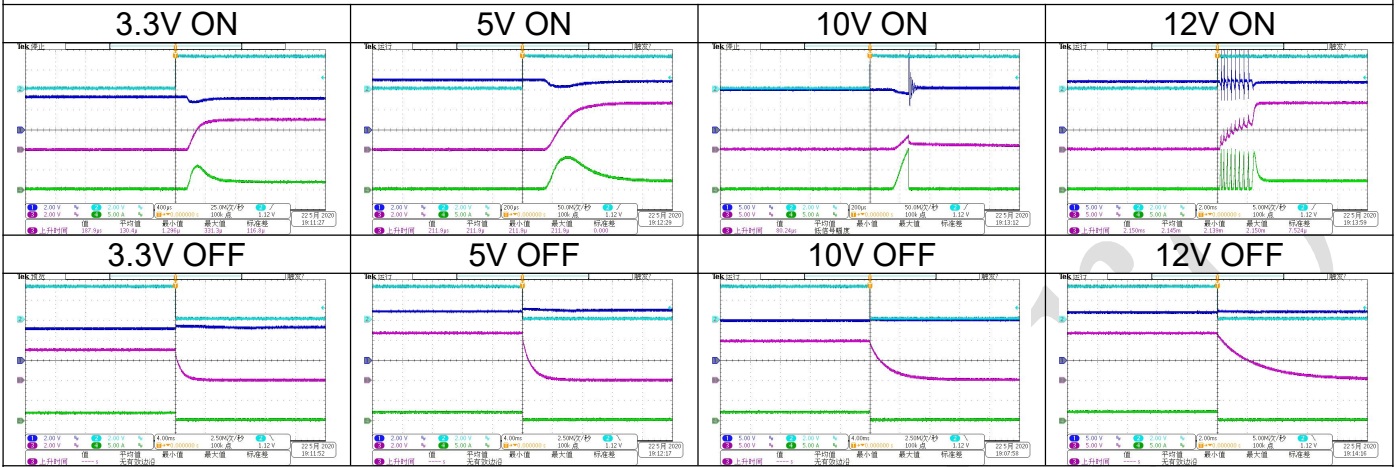


TMI6240 电源上下电平稳，无过冲，无回沟。

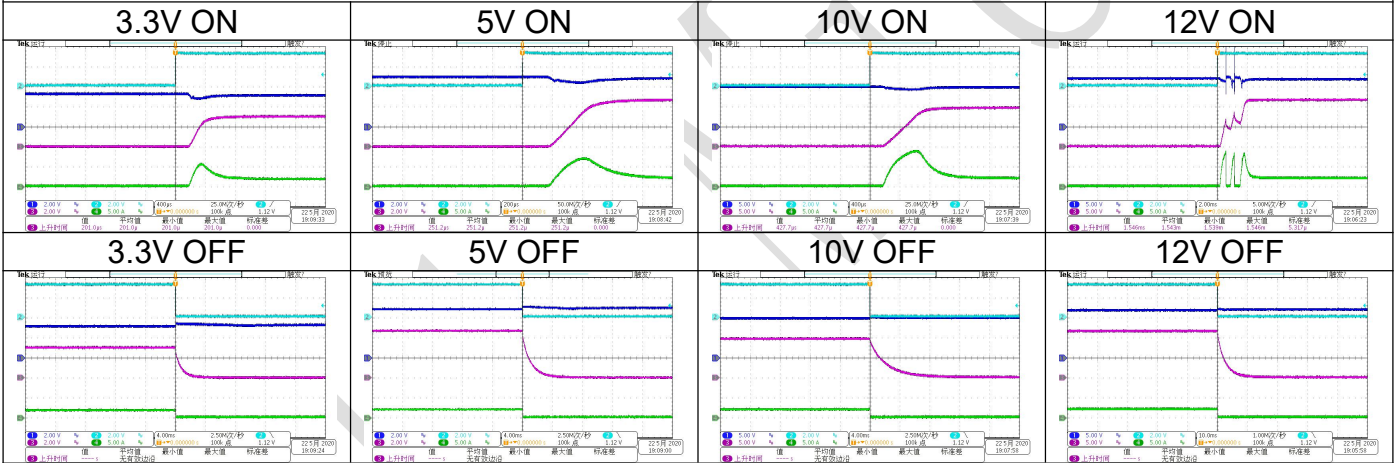
8. EN ON/OFF

EN=3.3V/100Hz, C_{Load}=470μF, C_{IN}=4.7μF, I_o=2A
CH1:VIN,CH2:EN,CH3:VOUT,CH4:IOOUT

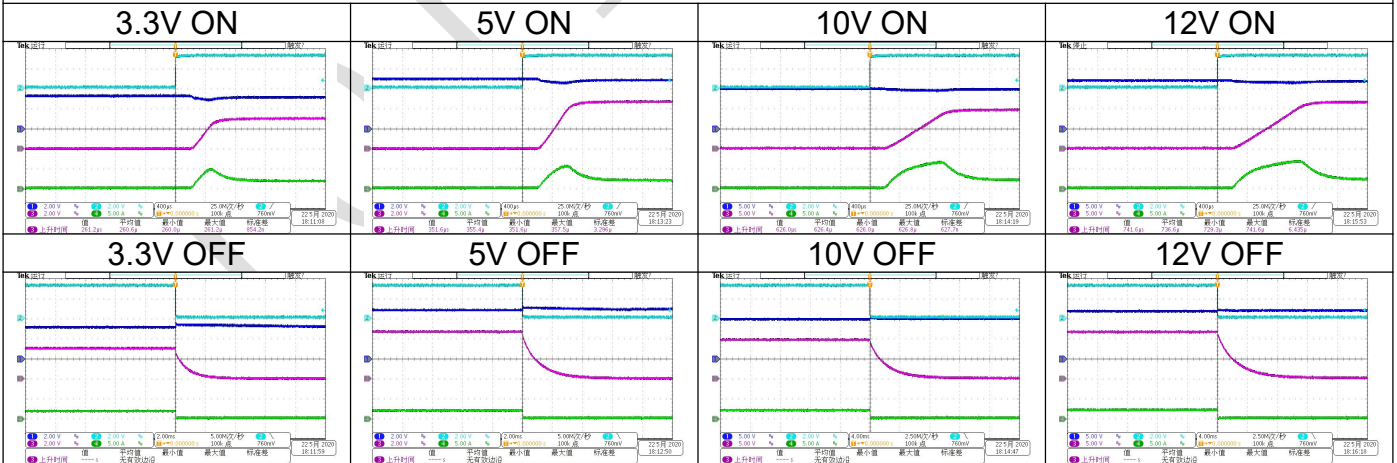
C_{ss}=1nF



C_{ss}=2.2nF

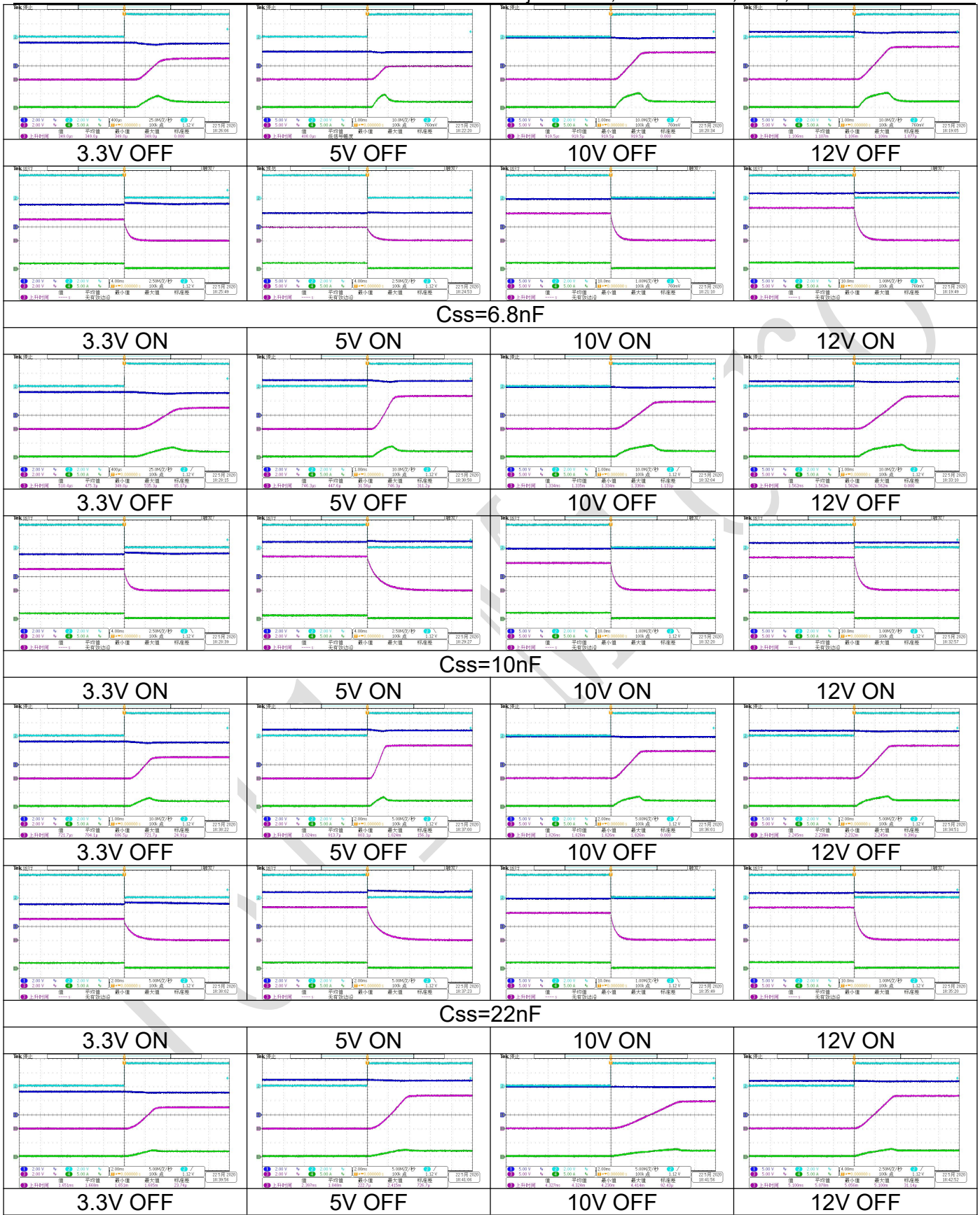


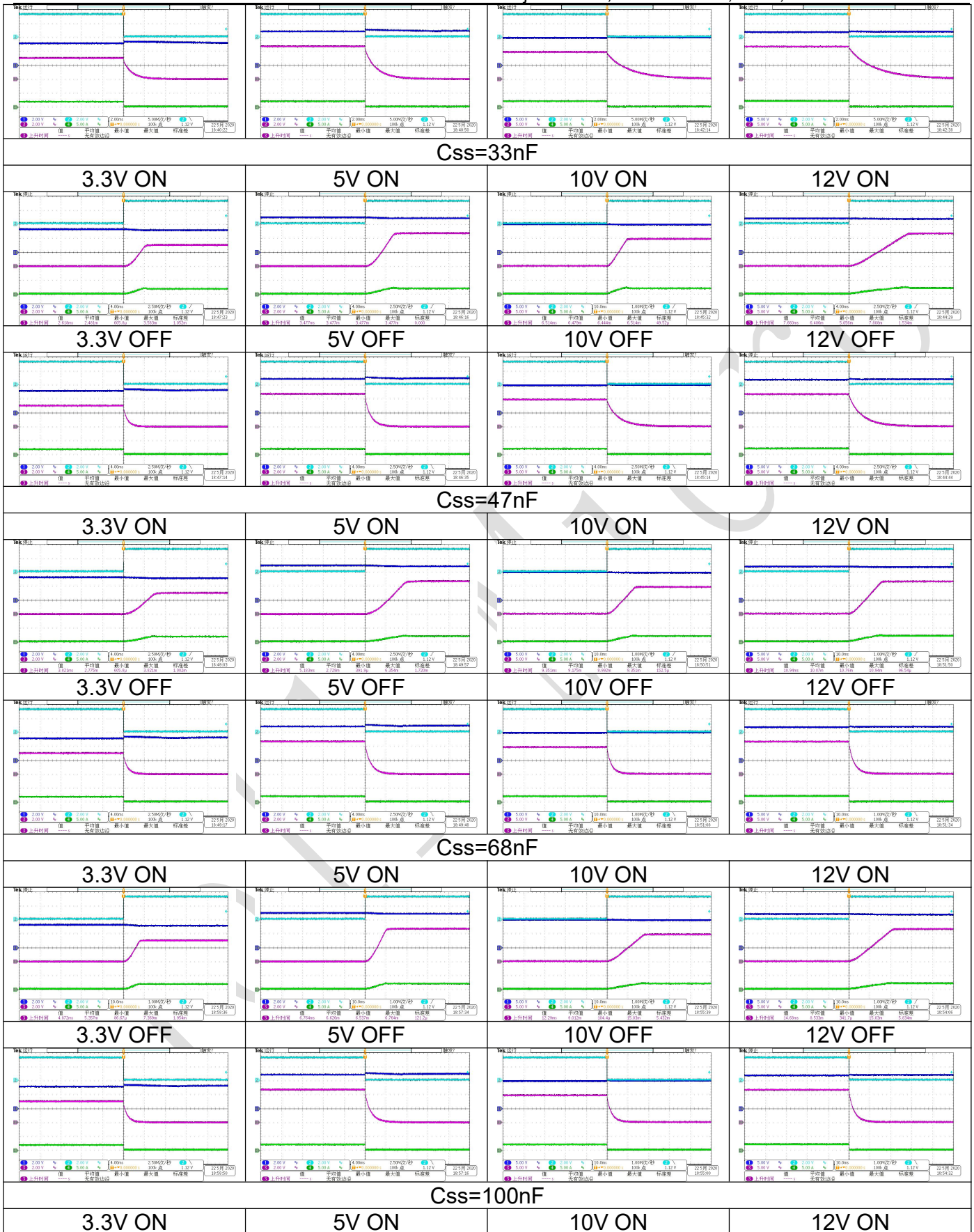
C_{ss}=3.3nF

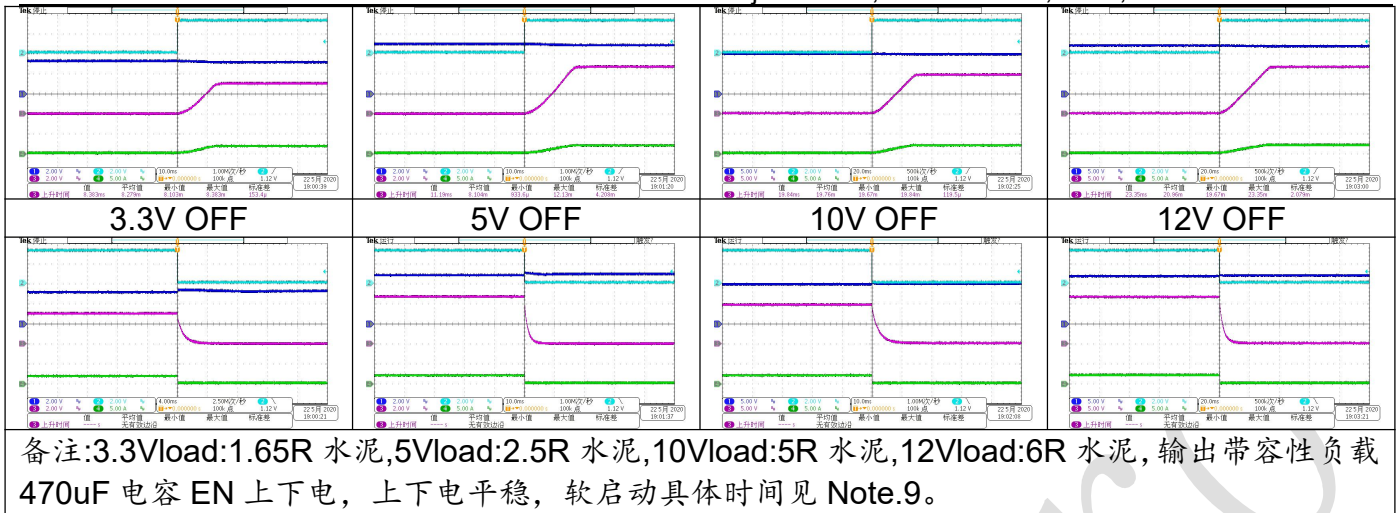


C_{ss}=4.7nF









9. Soft-Start

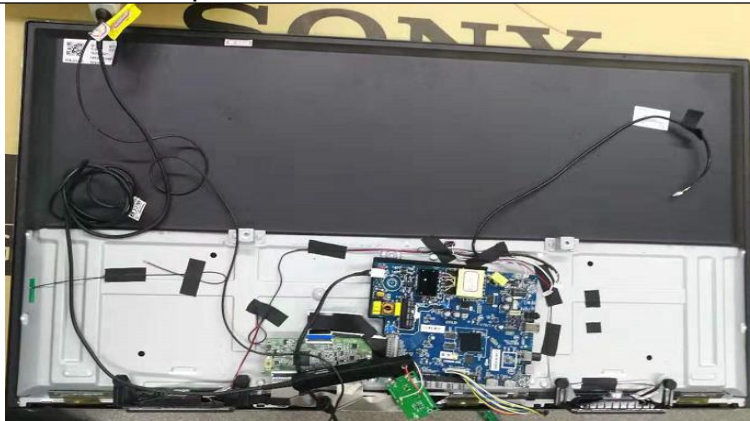
| Css | TMI6240 Soft-start time 10% to 90%, CLoad=470μF, Cin=4.7μF, Io=2A | | | |
|-------|---|---------|---------|---------|
| | 3.3V | 5V | 10V | 12V |
| 1nF | 187.9uS | 211.9uS | / | / |
| 2.2nF | 201.0uS | 251.2uS | 427.7uS | / |
| 3.3nF | 261.2uS | 351.6uS | 626.0uS | 741.6uS |
| 4.7nF | 349.0uS | 408.0uS | 919.5uS | 1.106mS |
| 6.8nF | 510.4uS | 746.3uS | 1.334mS | 1.562mS |
| 10nF | 721.7uS | 1.024mS | 1.826mS | 2.245mS |
| 22nF | 1.651mS | 2.397mS | 4.327mS | 5.100mS |
| 33nF | 2.618mS | 3.477mS | 6.514mS | 7.660uS |
| 47nF | 3.821mS | 5.183mS | 9.351mS | 10.94mS |
| 68nF | 4.872mS | 6.764mS | 12.29mS | 14.88mS |
| 100nF | 8.383mS | 11.19mS | 19.84mS | 23.35mS |

备注:3.3Vload:1.65R 水泥,5Vload:2.5R 水泥,10Vload:5R 水泥,12Vload:6R 水泥

总结: 输出带容性负载 470uF 时, 不建议软启动时间低于 0.5mS.

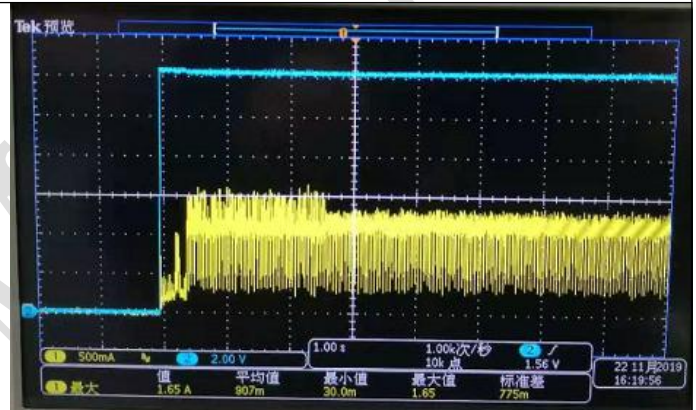
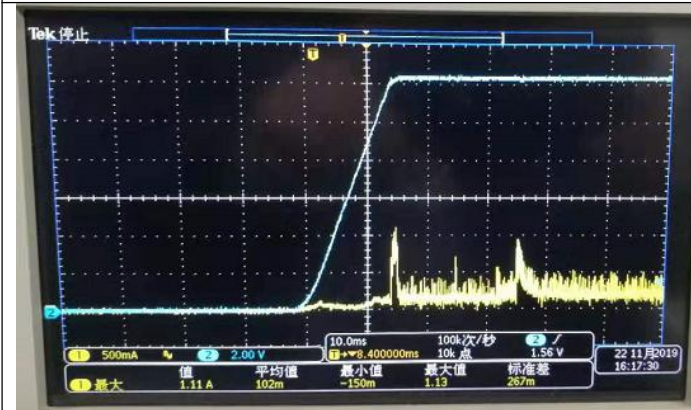
10. Actual test

Comparison of 42 inch 4K screen TV



分离器件上电

TMI6240 上电

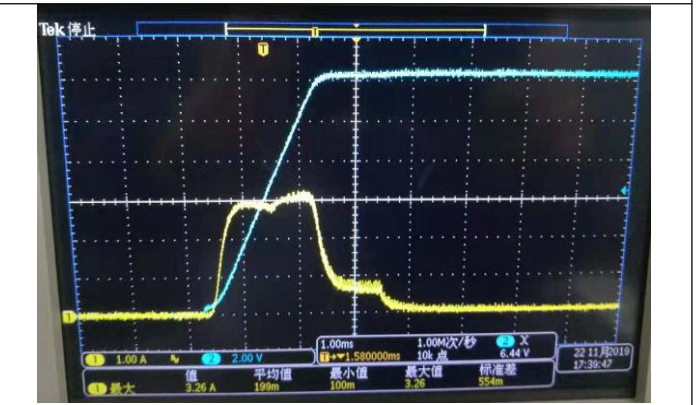
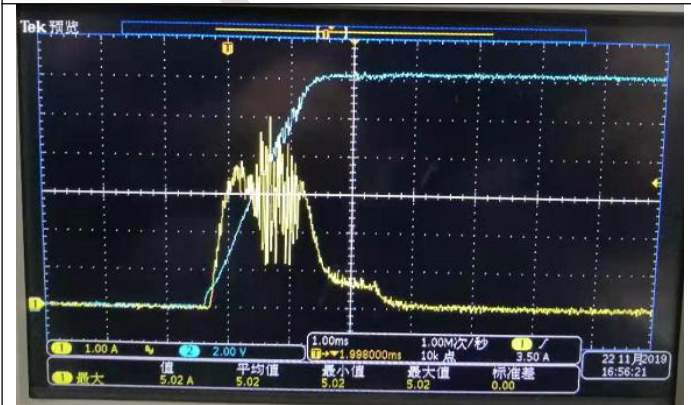


Comparison of 55 inch 4K screen TV



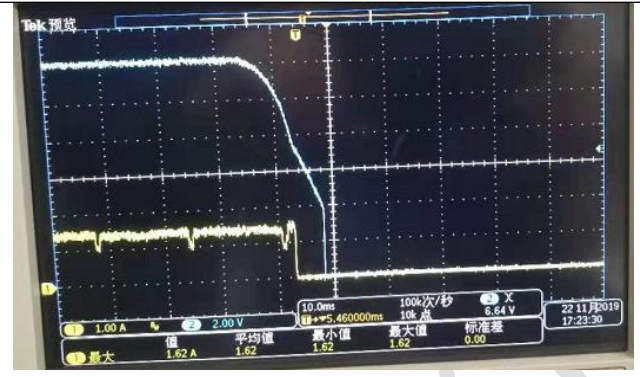
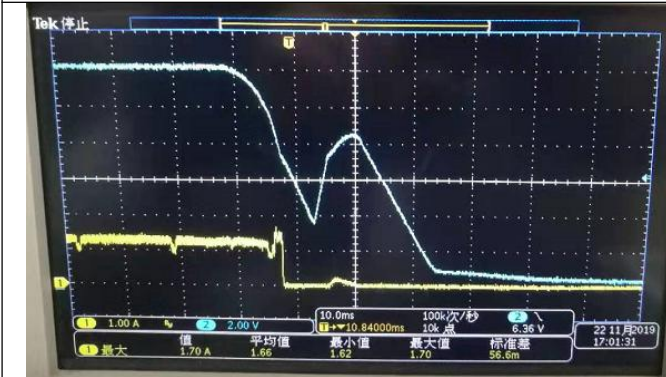
分离器件上电

TMI6240 上电



分离器件待机掉电

TMI6240 待机掉电波形



分离器件 12V 上电电流大并且启动电流不平稳,而 TMI6240 上电电流比分离器件要小且电流平稳;屏待机掉电有回勾,TMI6240 的屏待机掉电波形平滑,无回勾。