

# SINGLE-CHANNEL SiC MOSFET DRIVER CORE WITH ACTIVE MILLER CLAMP

APPLICATION FIELD:

PV INVERTER, E-VEHICLE, ENERGY STORAGE, MOTOR DRIVE,  
AND INDUCTION HEATING

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VERSION 1.0 03/2023

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## PRODUCT INTRODUCTION

This product is a compact, low-cost single-channel driver core designed by APL for the third generation SiC devices. The drive core includes isolated DC/DC power supply, and meets the requirements of reinforced insulation. It provides Active Miller clamp, UVLO, short-circuit protection, overtemperature protection. With the maximum current of 6A, it supports the driving power up to 1.5W with the negative voltage output, provides higher drive reliability for the 3rd generation SiC devices.

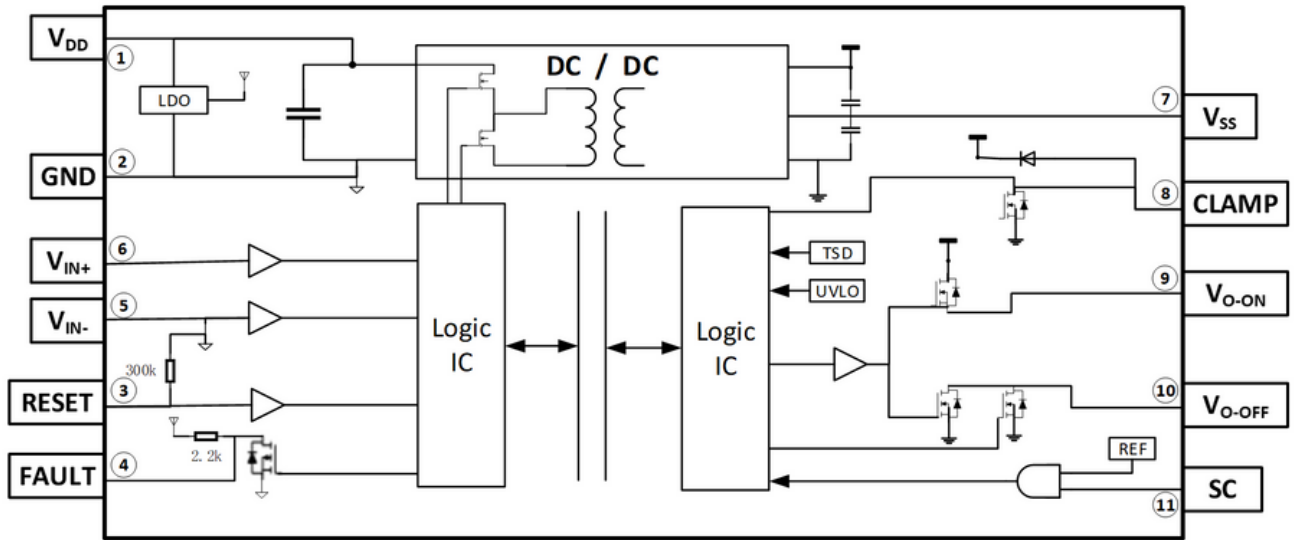
# PRODUCT FEATURES

- Maximum switch frequency up to 300KHz;
- Isolated DC/DC power supply inside. 3750Vrms isolation voltage meets reinforced insulation;
- Maximum +/-6A drive current;
- CMTI up to 100KV/uS;
- Active Miller clamp;
- UVLO, OTP, short-circuit protection with soft shutdown;

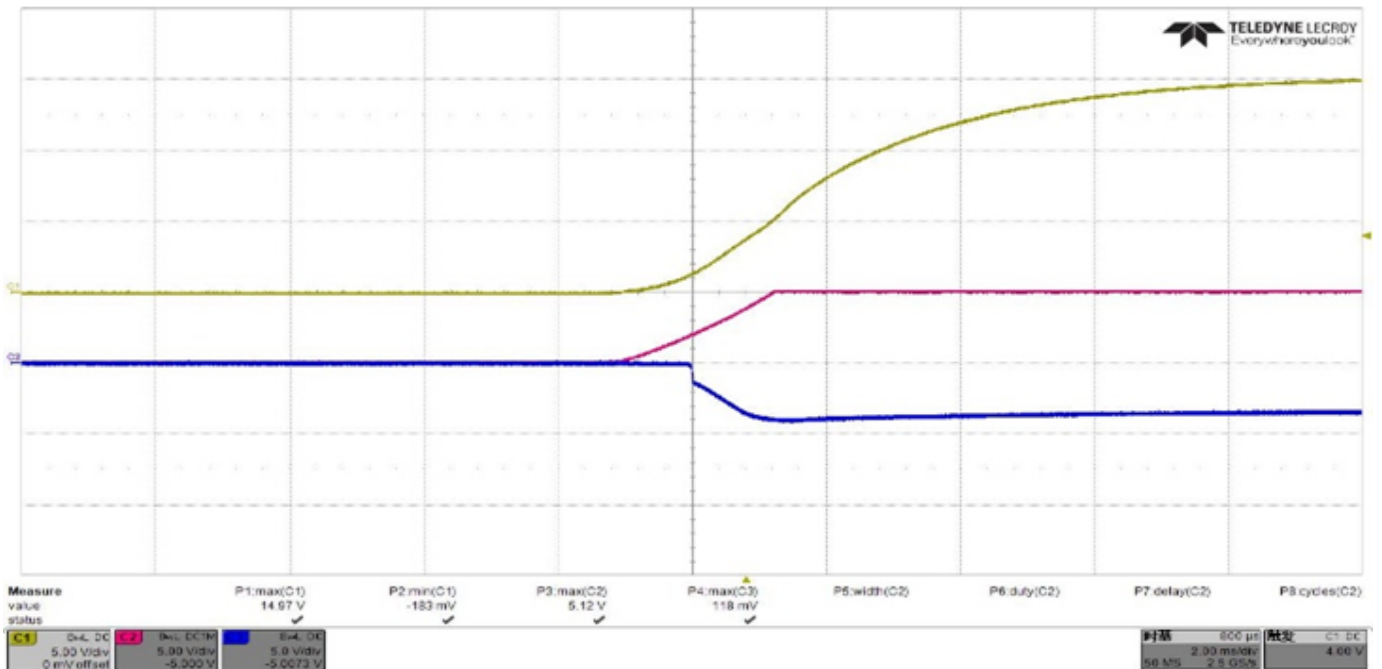
## DESIGN SPECIFICATION

| Symbol          | Parameter                      | Min. | Typ. | Max. | Unit |
|-----------------|--------------------------------|------|------|------|------|
| VDD             | Input power supply voltage     | 0    |      | 13.5 | V    |
| VIN+/VIN-       | Logic signal input voltage     | 0    |      | 6.5  | V    |
| RESET           | RESET signal                   | 0    |      | 6.5  | V    |
| IO              | Gate output peak current       | -6   |      | 6    | A    |
| I <sub>FO</sub> | FAULT input current            |      |      | 1    | mA   |
| I <sub>DC</sub> | Average input PS current       |      |      | 185  | mA   |
| f(MAX)          | Max switching frequency        |      |      | 300  | kHz  |
| CMTI            | Common-Mode Transient Immunity |      |      | 100  | V/ns |
| CIO             | Coupling capacitance           |      | 5.5  |      | pF   |
| CI              | Input Capacitance              |      | 500  |      | pF   |
| VISO            | Insulation voltage             |      |      | 3750 | Vrms |
| TOPR            | Operating temperature          | -40  |      | 85   |      |

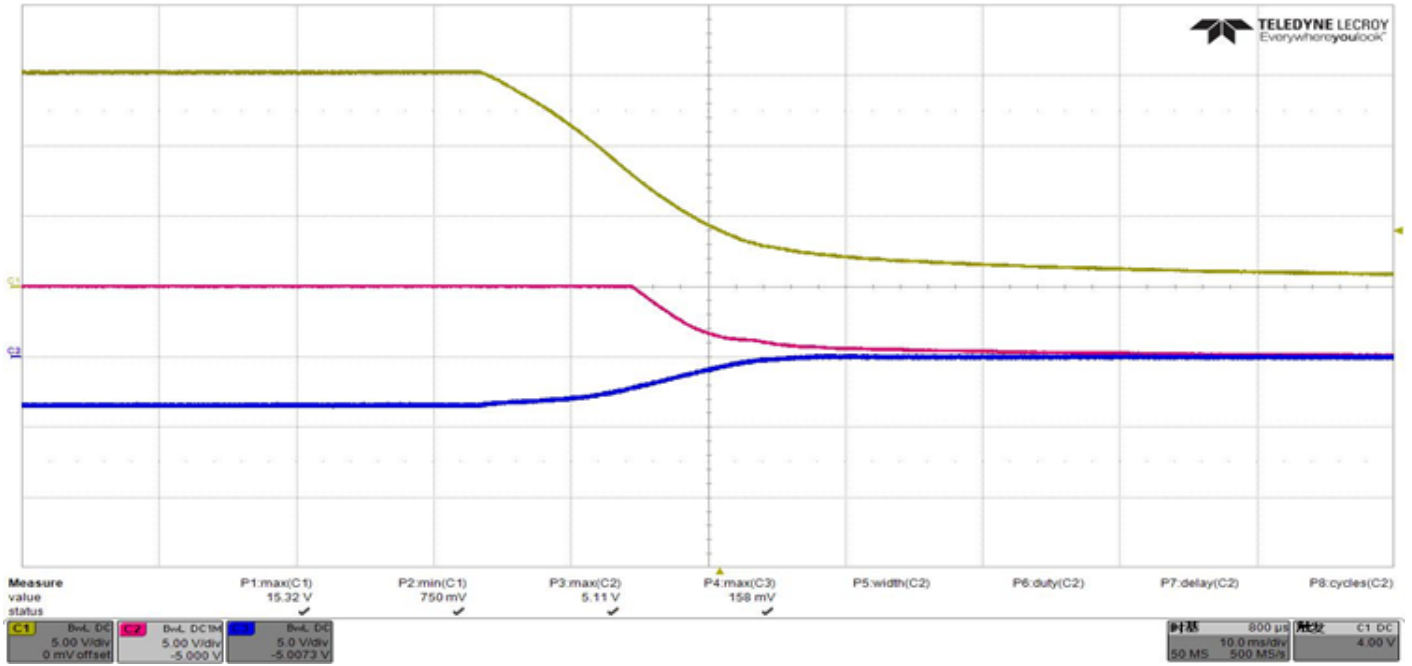
# CIRCUIT BLOCK DIAGRAM



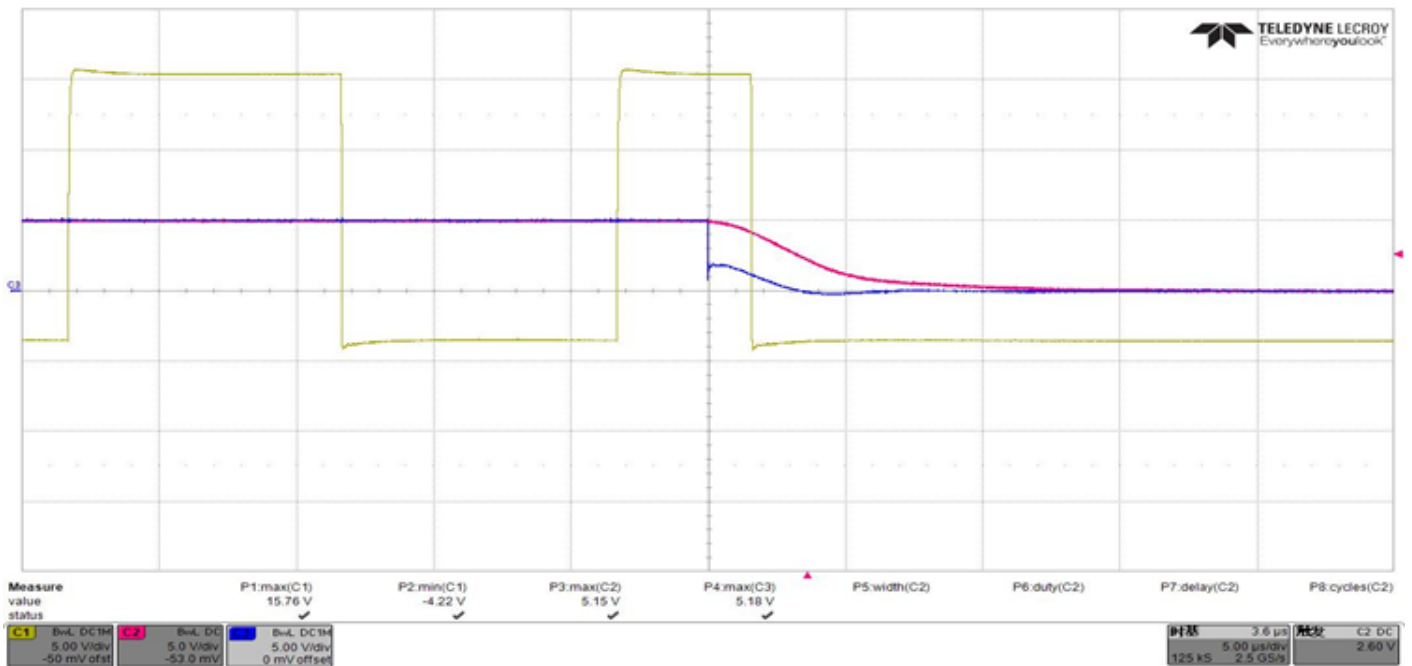
# MEASUREMENT RESULTS AND WAVEFORMS



Power On: Vcc&negative output &5V LDO output



Power Off:Vcc&negative output &5V LDO output



UVLO

FOR MORE DETAILS, PLEASE CONTACT LOCAL SALES, OR SALES@SZAPL.COM/4008-860-626.