MPQ1922-AEC1/MP1922

100V, 3A, Half-Bridge Pre-Driver, AEC-Q100 Qualified

Q4 2021

mps

MPQ1922-AEC1/MP1922 – Target Applications

- **Automotive Pumps and Fans**
- **Automotive Superchargers and Actuators**
- **Battery-Powered Tools**
- **E-Bikes**

Automotive Fans

Automotive Superchargers

Power Tools
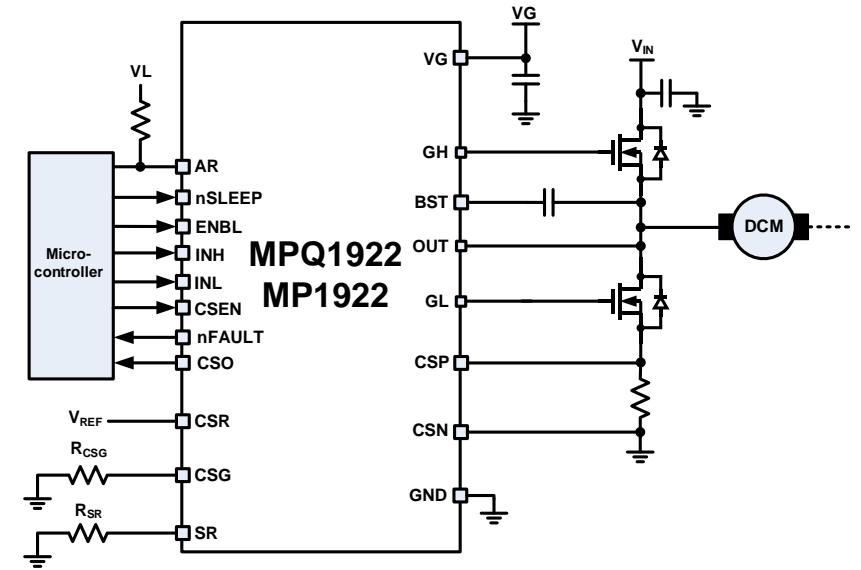

E-Bikes

Why Use This Part?

It's Simple and Easy!

- Supports 100V Operation Voltage with 3A Source, 4A Sink Gate Driver Current

- Integrated Current-Sense Amplifier

- Internal Charge Pump and Auto-Bootstrap (Auto-BST) Refresh

- External MOSFETs Provide Desaturation Protection and Shoot-Through Protection

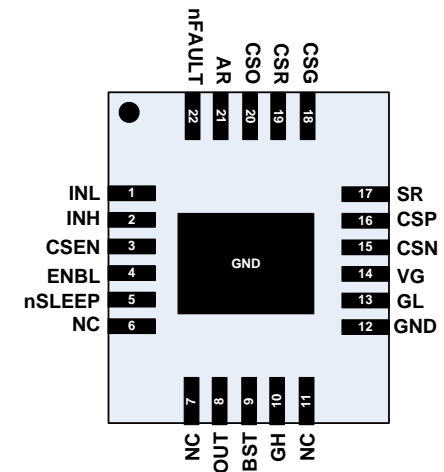- Configurable Slew Rate

- Available in AEC-Q100 Grade 1

MPQ1922-AEC1/MP1922 – 100V, 3A, Half-Bridge Pre-Driver

- Supports 100V Supply

- 3A Source, 4A Sink Gate Driver Current

- Internal Charge Pump and Auto-Refresh for High-Side MOSFET (HS-FET) Gate Driver

- Integrated Current-Sense Amplifier

- Low-Power Sleep Mode

- Configurable Controlled Slew Rate

- External MOSFET Desaturation Protection

- Thermal Shutdown

- Under-Voltage Lockout (UVLO) Protection

- Fault Indication Output

- Thermally Enhanced Surface-Mount Package
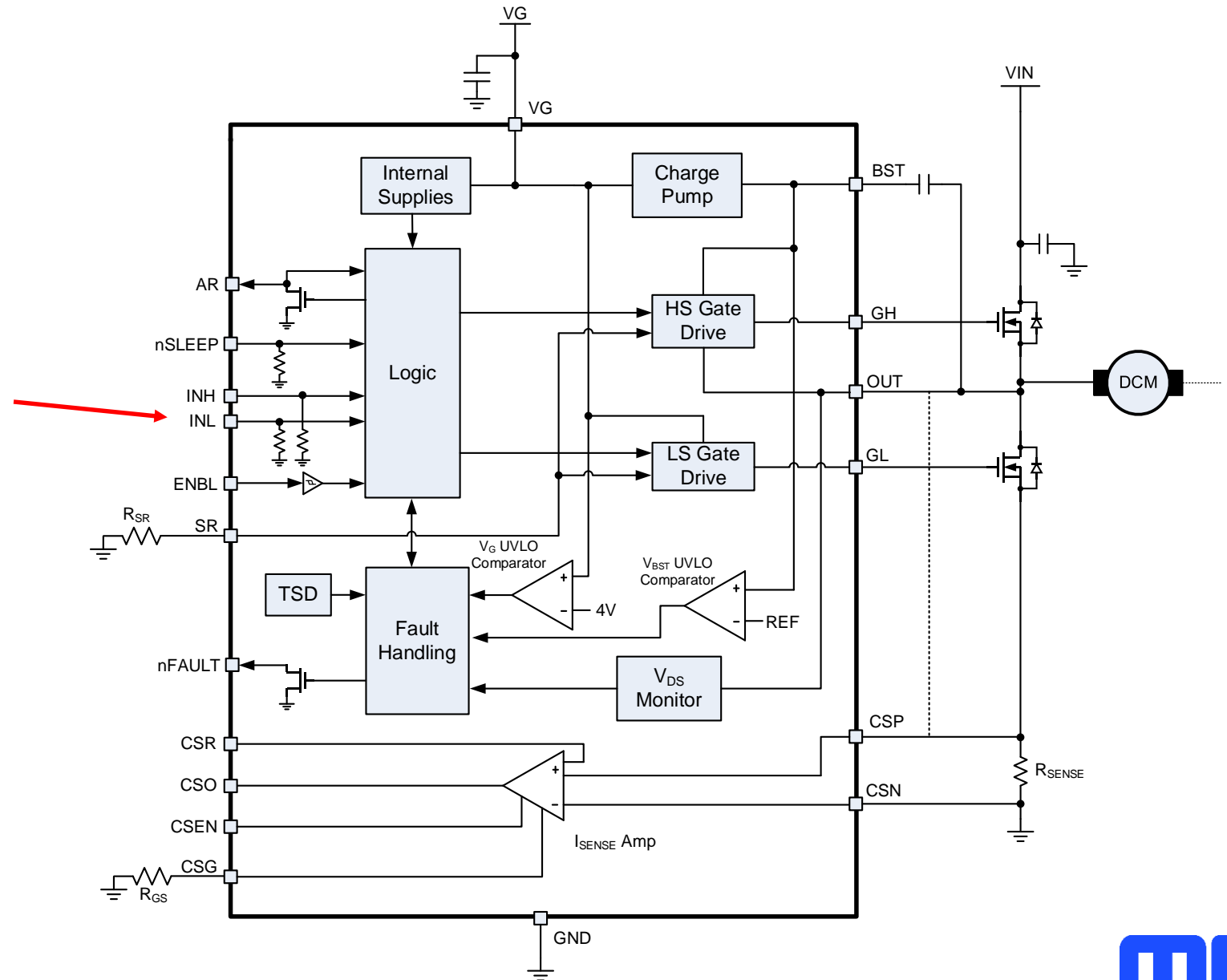
- Available in a QFN-22 (4mmx5mm) Package

Available in a QFN-22 (4mmx5mm) Package

MPQ1922-AEC1/MP1922 – Functional Block Diagram

Input Logic

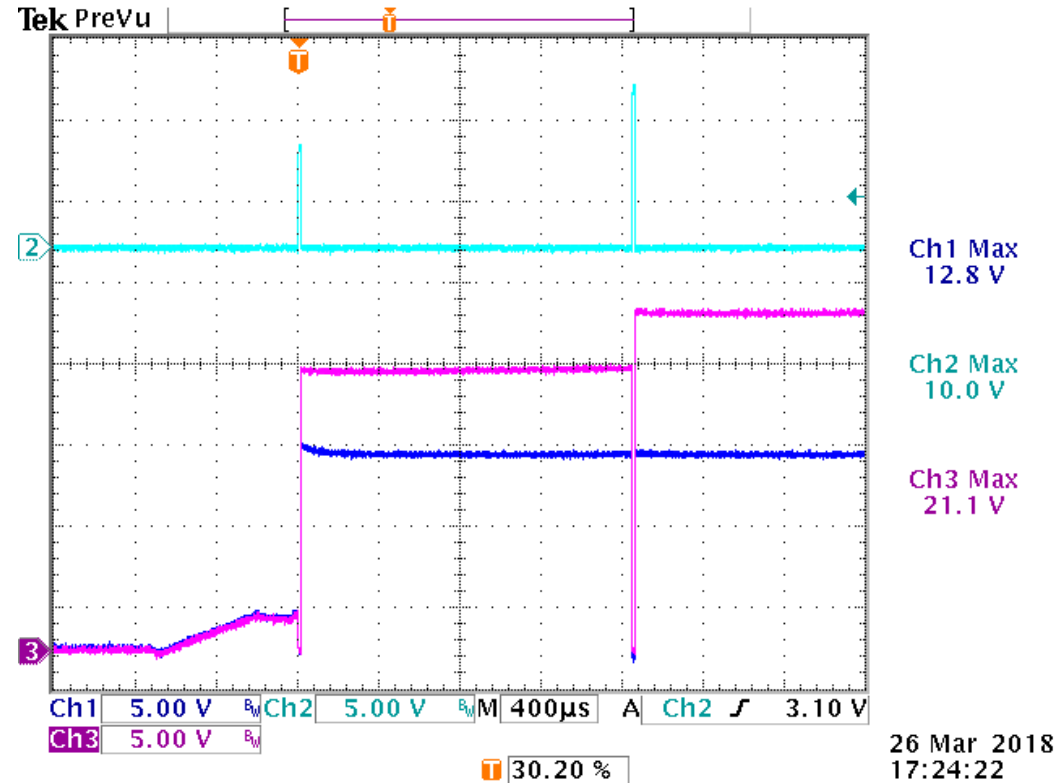| INL	INH	OUT
High	High	Hi-Z
High	Low	GND
Low	High	VIN
Low	Low	Hi-Z

MPQ1922-AEC1/MP1922 – Slew Rate Control

- The MPQ1922-AEC1 and MP1922 employ configurable slew rate control to reduce electromagnetic interference (EMI) that is generated when the output switches quickly.

- The slew rate is controlled by changing the pull-up and pull-down resistance of the MOSFET gates, which can be set by the resistance between the SR pin and ground.

R_{SR}	Pull-Up Resistance	Pull-Down Resistance	Adaptative Dead Time
0Ω	1.8Ω	1.4Ω	No
10kΩ	8Ω	3.7Ω	Yes
30kΩ	25Ω	14Ω	Yes
100kΩ	100Ω	42Ω	Yes

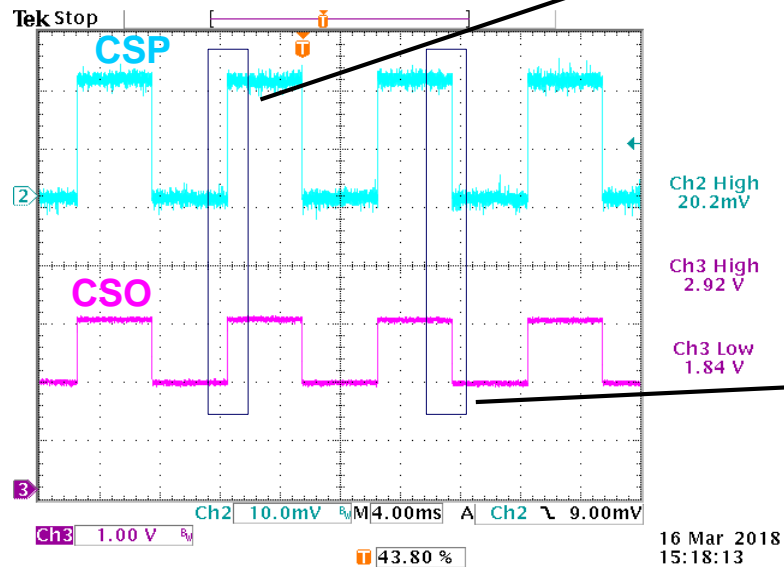If the BST voltage (V_{BST}) is insufficient, the low-side MOSFET (LS-FET) turns on.

Test Conditions: V_{IN} = 12V, HS-FET is high, LS-FET is low,
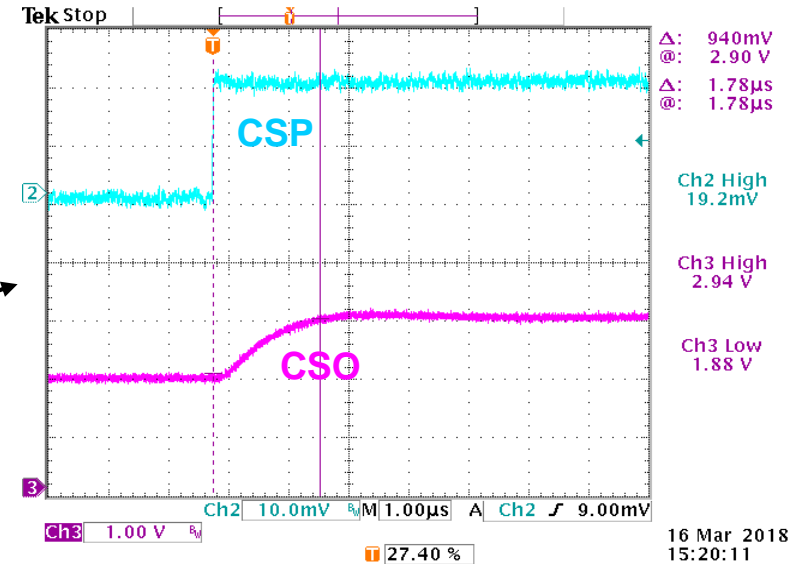no load, starts with V_{GATE} = 12V, AR is low

MPQ1922-AEC1/MP1922 – Current Sense
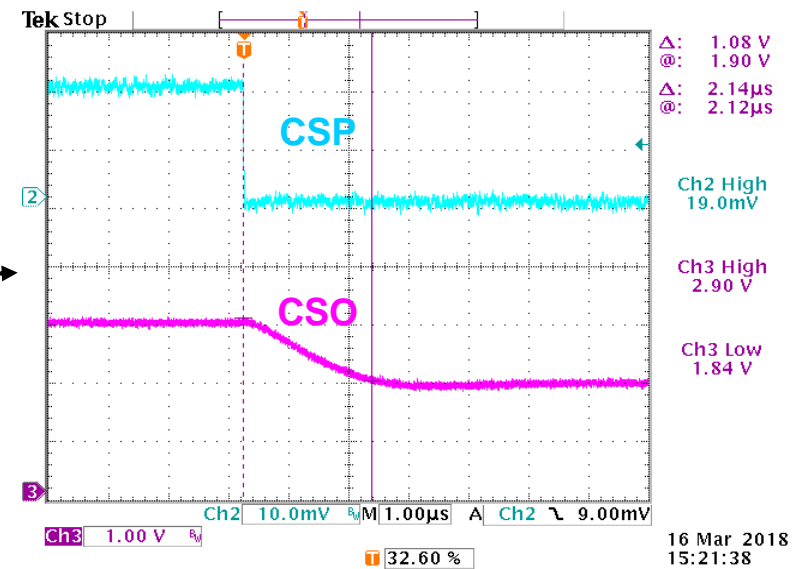
Current-Sense Gain

R$_{CSG}$	Gain
0Ω	210
10kΩ	105
30kΩ	52.5
100kΩ	21

Test Conditions: V$_{CSR}$ = 1.7V, R$_{CSG}$ = 30kΩ, Gain = 50V/V