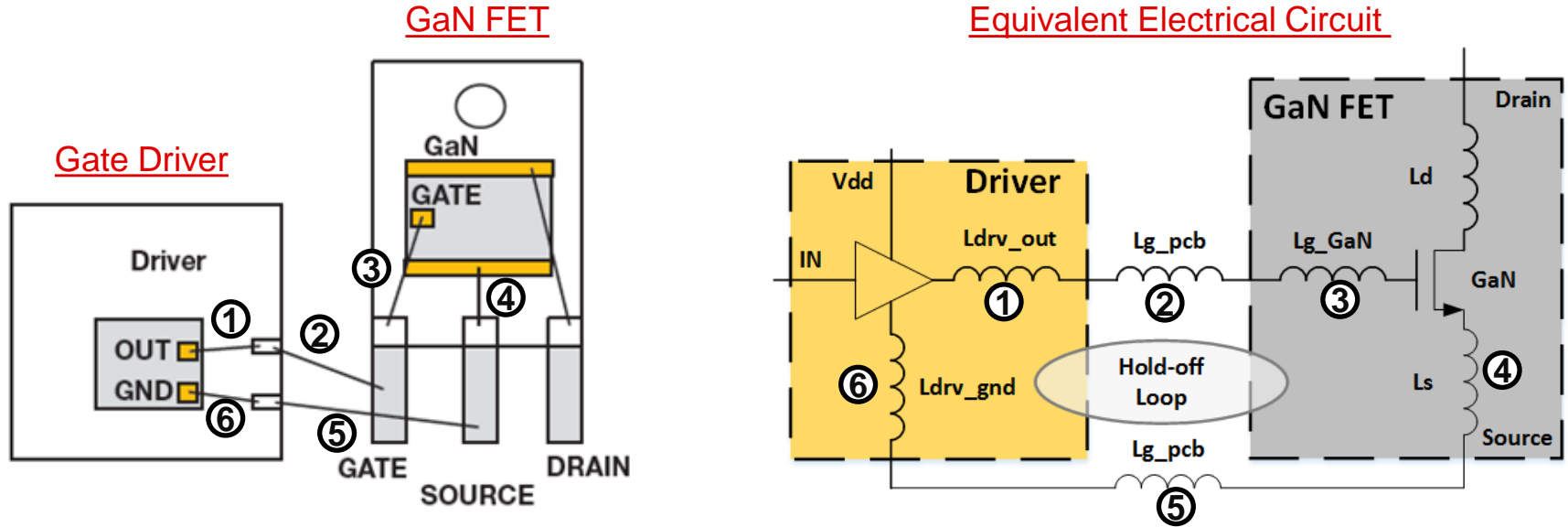


Driving GaN

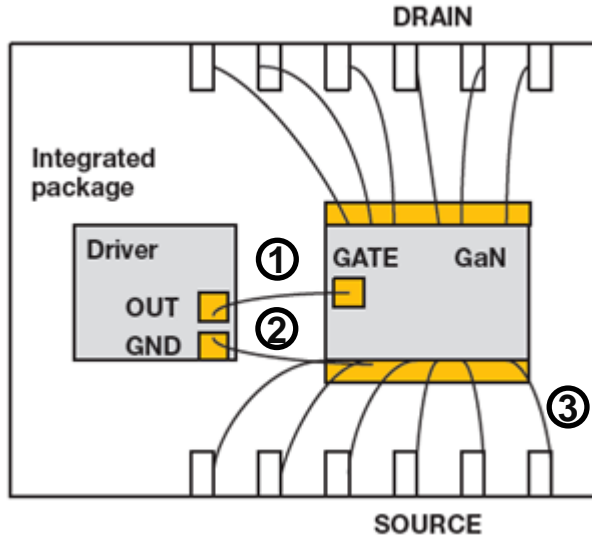
Parasitics: limits system performance



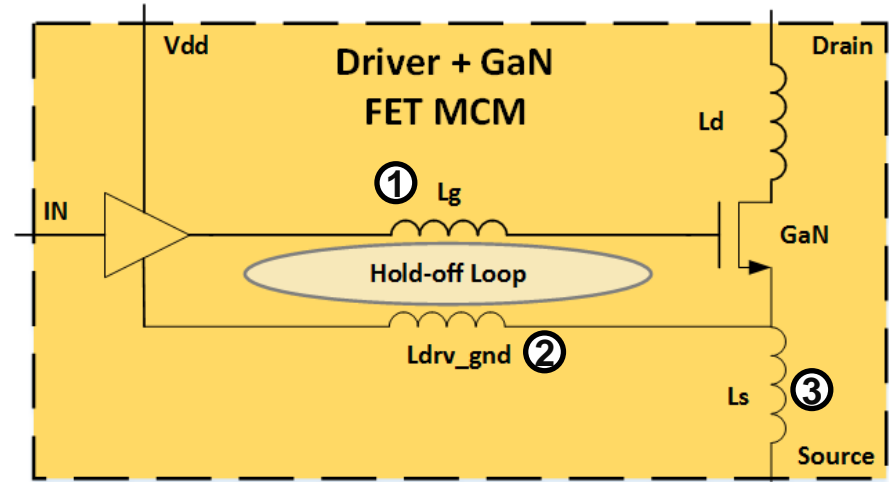
- Parasitic inductances cause switching loss, ringing and reliability issues, especially at higher frequencies
- **Why pay for GaN if you cannot get best system performance?**

Integrated driver: for best total solution

GaN FET/Driver integrated package

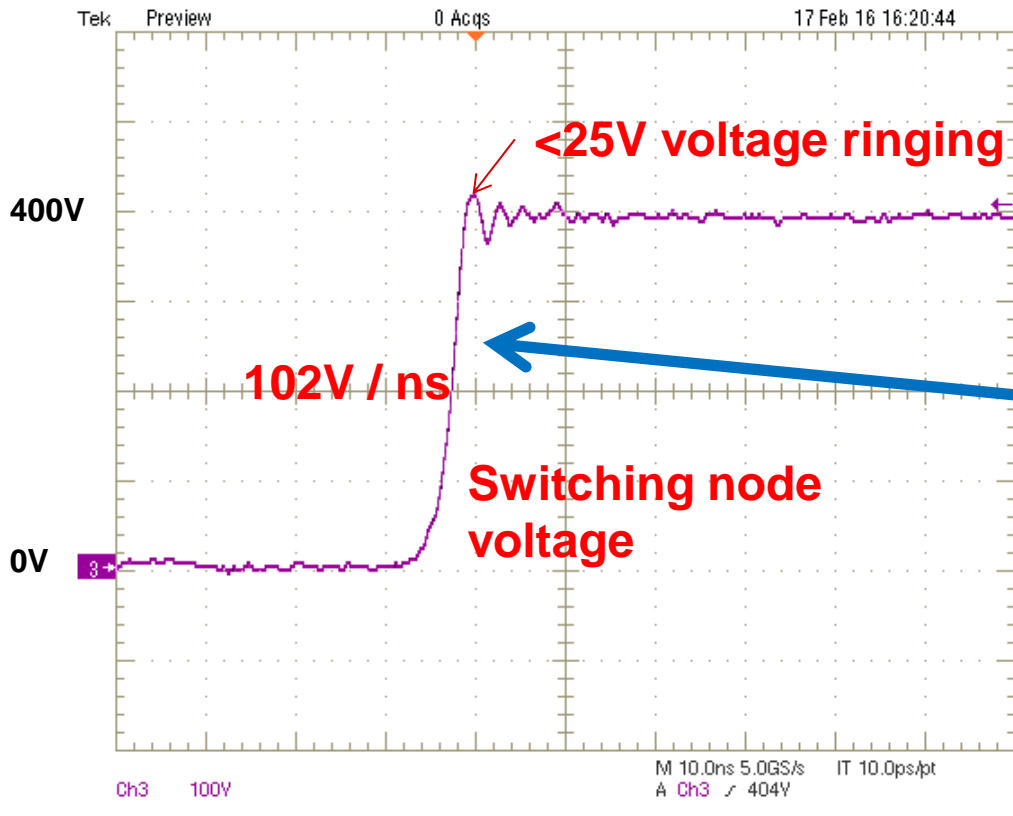


Equivalent electrical circuit



- Integrating the driver eliminates common-source inductance and significantly reduces the inductance between the driver output and GaN gate, as well as the inductance in driver grounding.

LMG3410 GaN: driver integration eliminates ringing

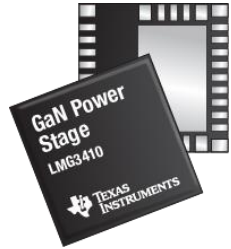
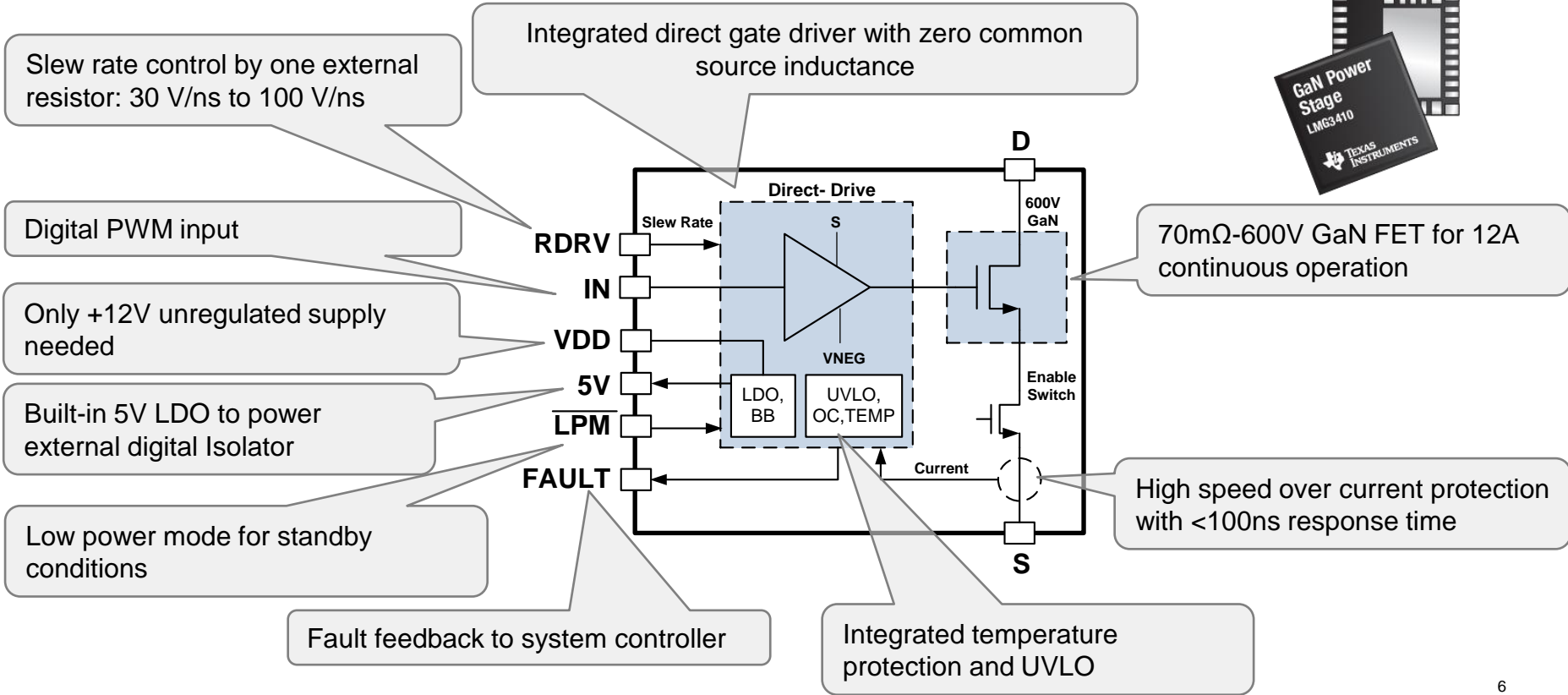


Zero to 400V in <4ns
With TI-GaN

Captured with 1GHz Passive Voltage
Probe – Tektronix TPP1000

Choosing a GaN

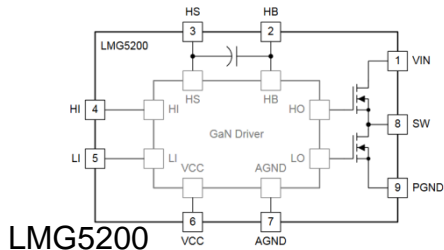
LMG3410: 600V/70mΩ 12A GaN power stage



TI-GaN: more than just high voltage

Easy and Compact

Fully integrated HB GaN



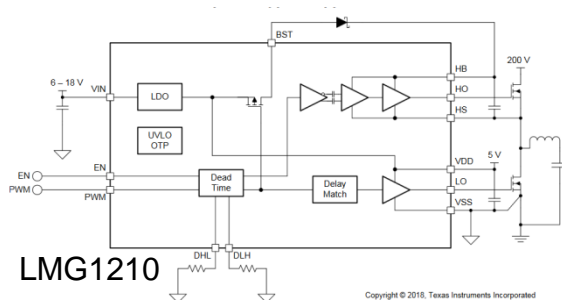
6x8mm QFN

80V Half Bridge GaN Power Stage

- Motor Drive
- Wide Vin DCDC
- Audio Amp

Fast and Robust

Up to 50MHz Operation



LMG1210

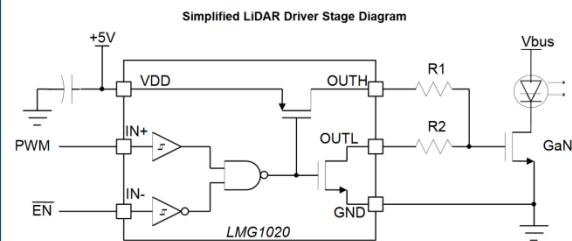
CMTI >300V/ns

50MHz 200V Half Bridge GaN Driver

- RF Envelope Tracking
- High Frequency DCDC
- High-Side driver

Small and Mighty

0.8 x 1.2 mm WCSP



LMG1020

1ns Pulse -500ps rise time

60MHz Low Side GaN Driver

- LiDAR
- Time of Flight Laser Driver
- Class E wireless charging

Tools

Sub 200V design tools

Solution	Devices	Type	Status
48V to POL DCDC Converter	LMG5200 TPS53632G	EVM	LMG5200POLEV-10
48V to POL DCDC Converter	LMG5200 UCD3138	TIDA	PMP4497
Triple Rail 48V DCDC Converter	LMG5200 UCD3138	TIDA	PMP4486
48V 3-Phase 10A Motor Drive	LMG5200 C2000	TIDA EVM	TIDA-00909 EVM
3-Phase 200V AC Servo Drive	LMG3410 C2000	TIDA	TIDA-00915
Nanosecond LiDAR Solution	LMG1020	TIDA EVM	TIDA-01573 EVM
Multi-MHz GaN Power Stage	LMG1210	TIDA	TIDA-01634

600V design tools

Solution	Devices	Type	Status
HV GaN Evaluation Platform	LMG3410	EVMs	LMG3410-HB-EVM LMG34XX-BB-EVM
500W LLC (400/12V)	LMG3410 UCD3138	TIDA	PMP20289
1KW CCM Totem Pole PFC	LMG3410 UCD3138	TIDA	PMP20873
1kW LLC (400/48V)	LMG3410 UCD3138	TIDA	PMP20637
1.6kW CRM Totem Pole PFC	LMG3410 C2000	TIDA	TIDA-00961
3KW Interleaved CCM Totem Pole PFC	LMG3410 C2000	TIDA	TIDM-1007

Summary

- GaN is enabling a new generation of power conversion designs not possible before.
- These designs allow systems to reach unprecedented levels of power density and efficiency
- Integration of driver and GaN in a low inductance package provides an optimal solution for fast and reliable switching
- GaN enables 1MHz isolated LLC designs with over 6x reduction in size and weight of the power transformer
- GaN enables the integrations of 100kHz drive and motor by reducing the solutions size and eliminating heatsink.
- Learn more at ti.com/gan



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