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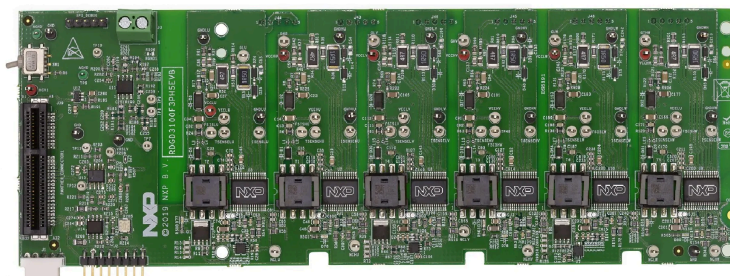Home (/) / Design Center (/design/design-center:DESIGN) / Development Boards and Designs (/design/design-center/development-boards-and-designs:EVDEBRDSSYS) / 3-Phase Reference Design for Fuji M653 IGBTs

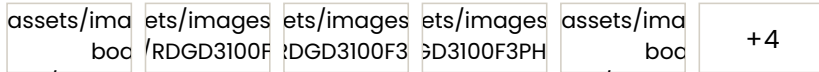# 3-Phase Reference Design for Fuji M653 IGBTs Featuring GD3100

RDGD3100F3PH5EVB   Receive alerts ⓘ

Overview | Product Details | Documentation | Design Resources ⓘ | Training | Support | BUY OPTIONS | GET STARTED (/DOCUM

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The RDGD3100F3PH5EVB is a fully functional three-phase power gate drive reference design populated with six GD3100 gate drivers (/products/power-management/motor-and-solenoid-drivers/powertrain-and-engine-control/advanced-high-voltage-isolated-gate-driver-for-igbt-and-sic-mosfets:GD3100) with fault management and supporting control circuitry.

This board supports SPI daisy chain for programming and communication with three high-side gate drivers and three low-side gate drivers independently. Included is S32SDEV-CON18 PCIe cable for connecting to MCU controller board MPC5777C-DEVB (/products/no-longer-manufactured/mpc5777c-bms-and-engine-control-development-board:MPC5777C-DEVB) (not included). This board is designed to be connected to a Fuji Electric M653 Series IGBT module footprint (not included).
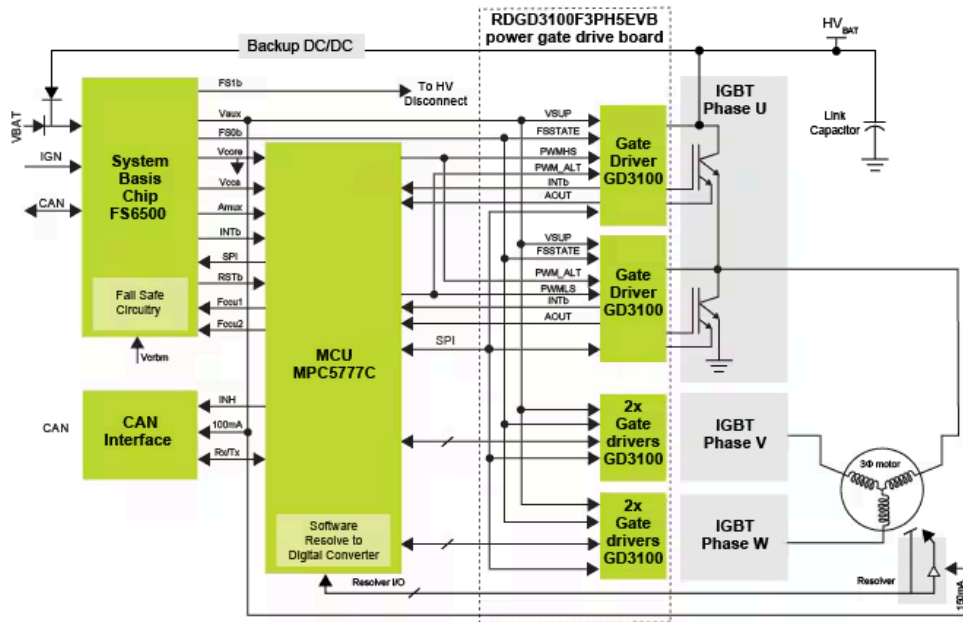
DESIGN FILES   SOFTWARE

Product Details

Block Diagram │ Supported Devices │ Features

Block Diagram

RDGD3100F3PH5EVB

Supported Devices

Processors and Microcontrollers

Ultra-Reliable MPC57xx MCUs

- **MPC5777C** (/products/processors-and-microcontrollers/power-architecture/mpc5xxx-microcontrollers/ultra-reliable-mpc57xx-mcus/ultra-reliable-mpc5777c-mcu-for-automotive-and-industrial-engine-management:MPC5777C): Ultra-Reliable MPC5777C MCU for Automotive and Industrial Engine Management

- **MPC5775B-E** (/products/processors-and-microcontrollers/power-architecture/mpc5xxx-microcontrollers/ultra-reliable-mpc57xx-mcus/mpc5775b-and-mpc5775e-microcontrollers-for-battery-management-systems-bms-and-inverter-applications:MPC5775B-E): MPC5775B and MPC5775E Microcontrollers for Battery Management Systems (BMS) and Inverter Applications

Power Management

System Basis Chips

- **FS6500** (/products/power-management/pmics-and-sbcs/system-basis-chips/grade-1-and-grade-0-safety-power-system-basis-chip-with-can-flexible-data-transceiver:FS6500): Grade 1 and Grade 0 Safety Power System Basis Chip with CAN Flexible Data Transceiver

Powertrain and Engine Control

- **GD3100** (/products/power-management/motor-and-solenoid-drivers/powertrain-and-engine-control/advanced-high-voltage-isolated-gate-driver-for-igbt-and-sic-mosfets:GD3100): Advanced High Voltage Isolated Gate Driver for IGBT and SiC MOSFETs

Interfaces

3.3 V / 5 V IO CAN Transceivers

- **TJA1042** (/products/interfaces/can-transceivers/can-with-flexible-data-rate/high-speed-can-transceiver-with-standby-mode:TJA1042)**:** High-Speed CAN Transceiver with Standby Mode

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Features

Key Features

- SPI interface for safety monitoring, programmability and flexibility
- Low propagation delay and minimal PWM distortion
- Integrated galvanic signal isolation (up to 8 kV)
- Integrated gate drive power stage capable of 15 A peak source and sink
- Fully programmable active Miller clamp
- Compatible with negative gate supply
- Compatible with current sense and temperature sense IGBTs
- Integrated soft shutdown, two-level turn-off, active clamp and segmented drive for wave shaping
- CMTI > 100 V/ns
- Compatible with 200 V to 1700 V IGBT/SiC, power range > 125 kW
- Operating temperature range -40 °C to 125 °C
- External creepage distance (CPG): > 7.8 mm
- Operating frequency > 40 kHz
- 5.0 V and 3.3 V tolerant MCU interface available

SPI Interface

- Safety monitoring and programming control features
- PCIe connector providing external I/O connections (including GDIC control and SPI, motor current and application feedback, and power supply control). PCIe cable harness included
- Additional SPI test port for GDIC debug
- Connector for resolver/motor position sense
- Connector for motor phase current sense

MC33GD3100

- Advanced single channel gate driver for IGBT and SiC MOSFETs. Integrated galvanic isolation and low on-resistance drive transistors provide high charging and discharging current, low dynamic saturation voltage and rail-to-rail gate voltage control

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ASIL D ISO 26262

- GD3100 is compliant with ISO 26262 ASIL C/D functional safety requirements

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