Gen. 3 Automotive MOSFET

Excellent Figure-of-Merit & Dual-Side Cooling

PANJIT's third-generation Shielded-Gate Trench (SGT) MOSFETs are engineered for high-frequency DC/DC converters and automotive-grade reliability. Qualified to AEC-Q101 standards and rated for junction temperatures up to 175 °C, these devices are ideal for demanding applications such as electric power steering (EPS), onboard DC/DC converters, and other critical power control systems. Featuring an outstanding figure of merit ($R_{DS(on)} \times Q_g$), excellent avalanche capability, and superior switching performance, PANJIT's SGT MOSFETs support compact, efficient, and thermally robust designs across a variety of power topologies, including LLC, PSFB, synchronous buck, and boost converters. Offered in a broad range of package options, with highlighted solutions such as dual-side cooling packages for enhanced thermal performance and side wettable flank packages to support Automated Optical Inspection (AOI) and high-reliability automotive assembly, these MOSFETs enable flexible, robust, and manufacturable system designs.

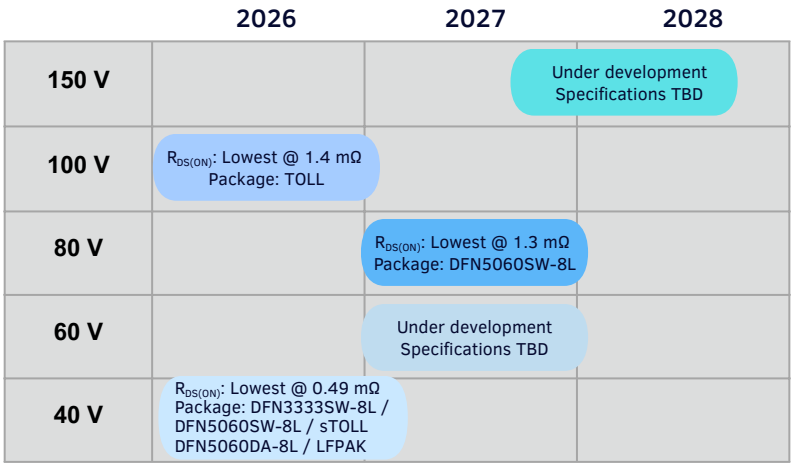
Key Features

- Third-generation shielded-gate trench technology
- Extremely low figure of merit (FOM=$R_{DS(on)} \times Q_g$)
- Optimized for fast switching and minimal voltage spiking
- AEC-Q101 qualified and PPAP-capable

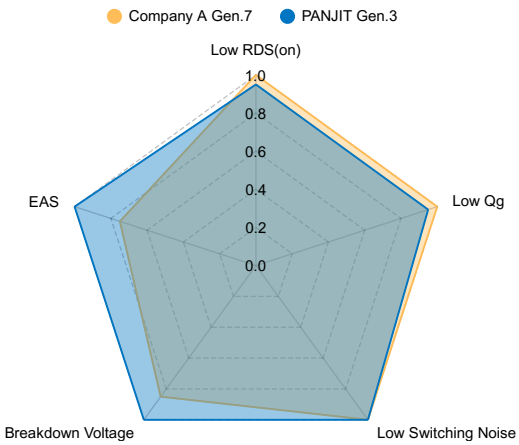
Target Applications

- Motor drivers
- DC/DC converters
- Synchronous rectification

Automotive-Grade MOSFET Roadmap



Performance Comparison



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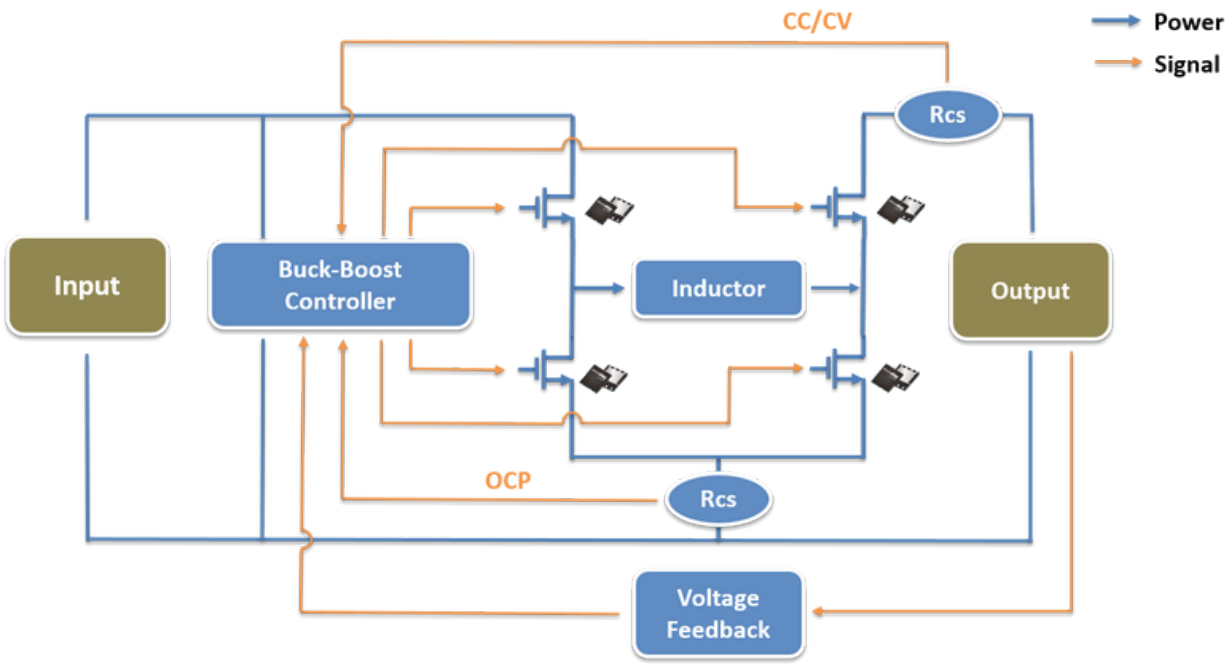
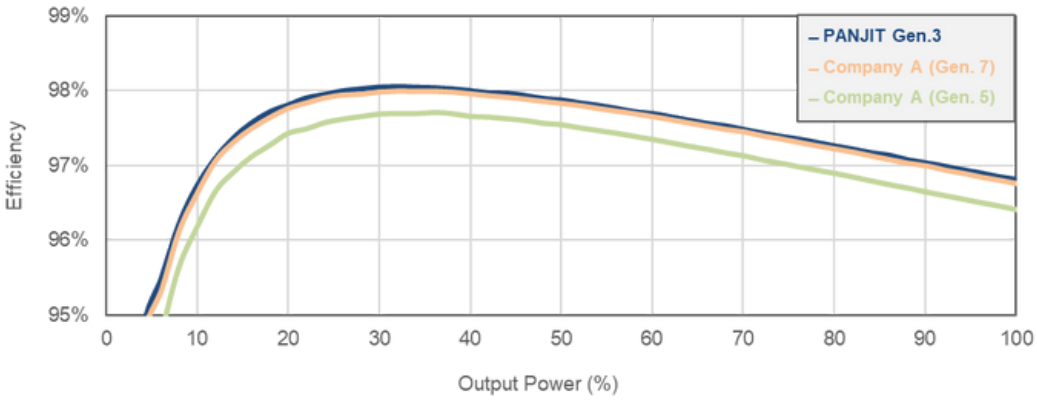
Block Diagram of the Buck-Boost Converter



Output Power vs. Efficiency Performance Comparison

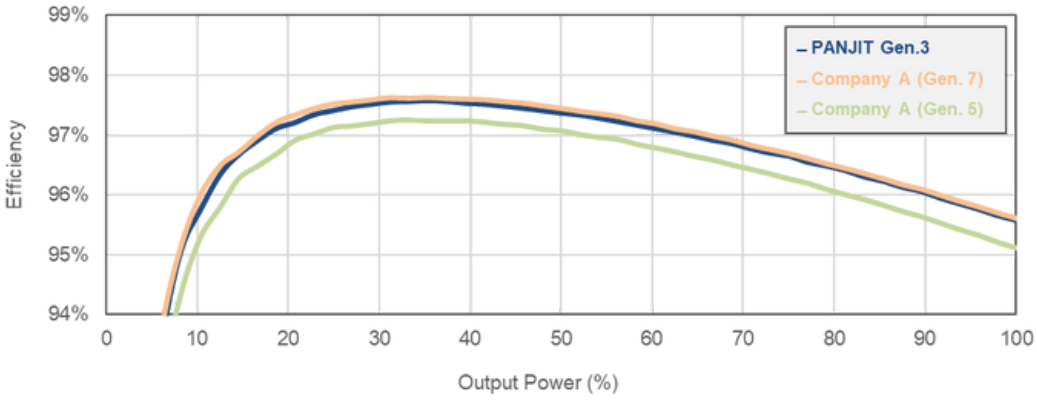
300 W Buck (24 V to 12 V/25 A)

400 KHz operating frequency



288 W Boost (12 V to 24 V/12 A)

400 KHz operating frequency



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