

LDMOS 30V Half-Bridge Power Block in a 10mm² Footprint

The DMN3012LEG is the first in a new generation of discrete MOSFETs, offering industry leading efficiency in a package measuring just 3.3mm x 3.3mm, providing significant cost, power and space savings in a range of power conversion and control applications.

Integrating dual MOSFETs in a single package reduces the board space, typically requiring two separate devices, by up to 50% and when used in DC/DC synchronous buck converters and half-bridge power topologies, reduces the size of many power converter solutions.

Industry lowest power losses are realized through the Lateral Diffused MOS (LDMOS) design optimizing high power density, high efficiency and high frequency capability along with ultra-low internal inductance, low on-resistance and low capacitance.

The low profile package (1.2mm typ.) meets all designs in computing / tablet PC products.



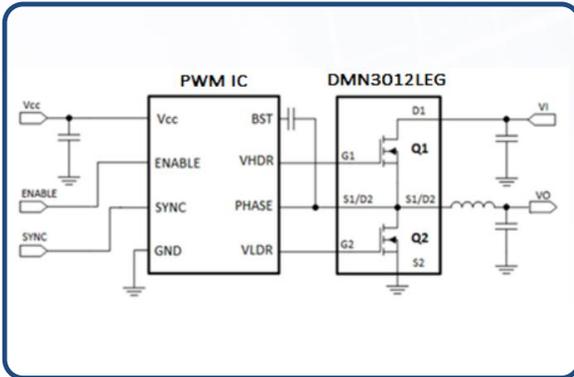
The DIODES Advantage

- **Improves System Efficiency**
 - Superior peak power efficiency of 95%
 - Low input capacitances provide fast switching speed
 - Improved performance at light load
 - Optimized for 5V gate drive applications
- **Reduced System Temperature**
 - Low on-resistance provides low conduction loss
 - Ultra low package inductance reduces switching loss
 - Underside pad improves thermal resistance and power handling
- **Improved Reliability**
 - Unclamped inductive switch (UIS) ruggedness tested at production

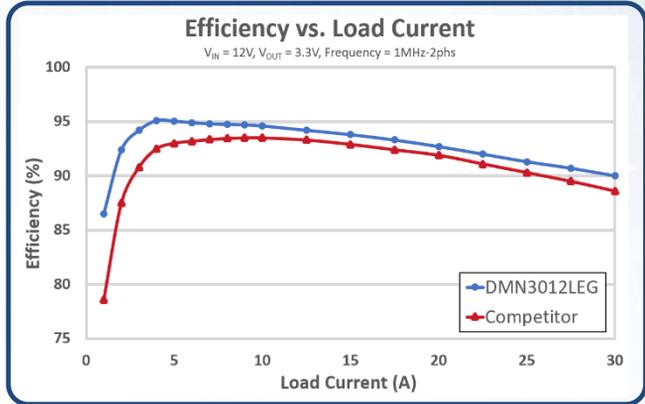
Circuit functions:

- **Single-phase and multiphase point-of-load (POL), voltage regulator module (VRM), IMVP**
- **Synchronous DC/DC buck converter applications**
- **High power, high switch frequency applications**
- **Multiphase synchronous buck converter applications**
- **Power management functions**

Typical Schematic



Performance Benchmark



Product Portfolio

Three family devices provide different duty cycle operations to gain best performance in efficiency.

Part Number	Package	Position	BV _{DSS} (V)	V _{GS} (V)	R _{DS(on)} typ. (@V _{GS} /I _D) (mΩ)	Q _g 4.5V typ. (nC)
DMN3012LEG	PowerDI3333	HS	30	10	10.5 @5V/15A	4.7
		LS	30	10	5.2 @5V/15A	9.7
DMN3013LDG	PowerDI3333	HS	30	10	13.3 @4.5V/4A	3.3
		LS	30	10	12.7 @4.5V/4A	3.4
DMN3022LDG	PowerDI3333	HS	30	10	16 @5V/10A	2.8
		LS	30	10	6.4 @5V/10A	6.1

Ordering Information

Part Number	Case	Reel Size (inches)	Quantity
DMN3012LEG-7	PowerDI3333-8 (Type D)	7	1000
DMN3012LEG-13	PowerDI3333-8 (Type D)	13	3000
DMN3013LDG-7	PowerDI3333-8 (Type D)	7	1000
DMN3013LDG-13	PowerDI3333-8 (Type D)	13	3000
DMN3022LDG-7	PowerDI3333-8 (Type D)	7	1000
DMN3022LDG-13	PowerDI3333-8 (Type D)	13	3000

Above supplied MSL Level 1, Tape & Reel, 12mm width

Cross Reference

Part	Diodes Inc. Orderable (OPN)	Texas Instruments Orderable (OPN)
DMN3012LEG	DMN3012LEG-7 (-13)	CSD87330Q3D
DMN3013LDG	DMN3013LDG-7 (-13)	CSD87333Q3D
DMN3022LDG	DMN3022LDG-7 (-13)	CSD87331Q3D