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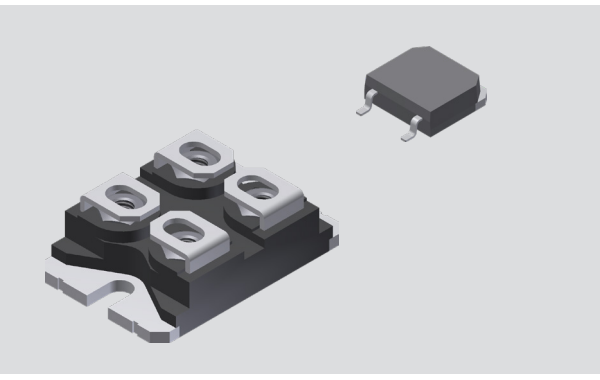
Expertise Applied | Answers Delivered



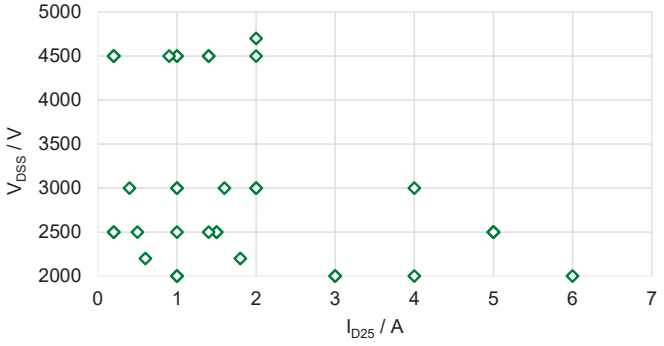
Very High-Voltage MOSFETs

Littelfuse offers an extensive portfolio of discrete Very High-Voltage (VHV) MOSFETs featuring improved overall device performance, reduced losses, increased avalanche robustness, and reliable operation.

Littelfuse VHV MOSFETs ranging from 2000 V to 4700 V, with nominal current ratings from 200 mA to 6 A and power dissipation capability from 78 W to 960 W, are available in both standard and unique packaging options.

VHV MOSFETs are capable of withstanding high avalanche energies and are specifically designed to address demanding, fast-switching power conversion applications requiring very high blocking voltages.

Breakdown Voltage V_{DSS} vs. Drain Current I_D

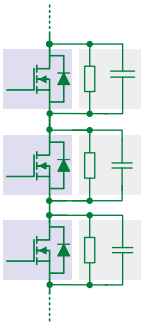


V_{DSS} / kV	I_{D25} / A	$R_{DS(ON)}$ / Ω	P_D / W
2, 2.2, 2.5, 3, 4.5, 4.7	0.2 - 6	4 - 625	78 - 960

Comparison - HV design with Littelfuse VHV MOSFETs vs. series-connected LV MOSFETs

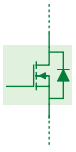
Solution A: Using LV MOSFETs

- Requires several MOSFETs in series
- Higher component count - decreases system reliability - requires sufficient overdesign for acceptable reliability
- Additional RC components are required for uniform voltage sharing
- Complicates gate drive & system design
- Requires additional PCB area
- Cost-inefficient - Not a recommended design



LV MOSFET
+
RC Element

OR



VHV MOSFET

Solution B: Using VHV MOSFET

- A Single MOSFET is sufficient
- Lower component count - improves system reliability
- Isolated packages simplify design and mounting effort
- Simplifies gate driving and design effort
- Saves PCB area - Increases power density
- Cost-efficient design - Recommended design

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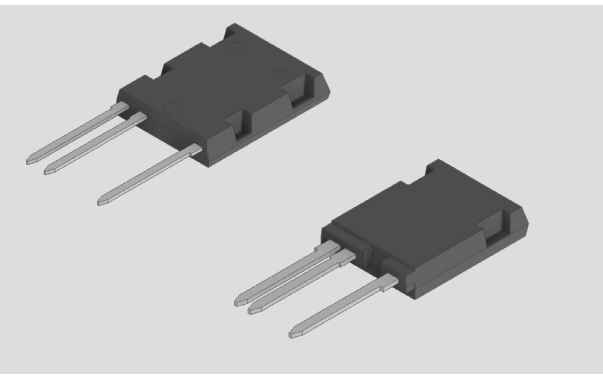


Very High-Voltage MOSFETs

Features

- Very high blocking voltage
- Unique high-voltage packages
- Proprietary isolated packages
- High avalanche energy rating
- High power dissipation capability

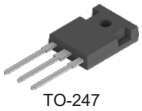
Benefits

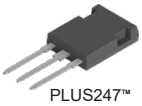
- High power density
- Cost-efficient solution
- Improved reliability
- Easy mounting, PCB space saving

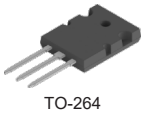
Applications

- Auxiliary power supplies in industrial motor drives, photovoltaic inverters, HVDC grid systems, uninterruptable power supplies, traction drives, and electric vehicles
- Laser and X-ray generation systems
- High-voltage power supplies
- Pulsed power applications

Standard & Plus Packages


TO-247


PLUS247™


TO-264

High Voltage Packages

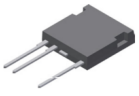

TO-247HV


TO-263HV

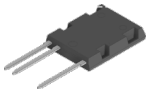

PLUS247HV


TO-268HV

Isolated Packages


ISOPLUS i4-PAC™


SOT227B (miniBLOC)


ISOPLUS i5-PAC™

Unique and Proprietary Packages from Littelfuse

Scan this QR code to access the webpage on Very High Voltage MOSFETs at littefuse.com

Scan this QR code to access the article on Littelfuse High-Voltage Discrete Silicon MOSFETs and their Applications

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