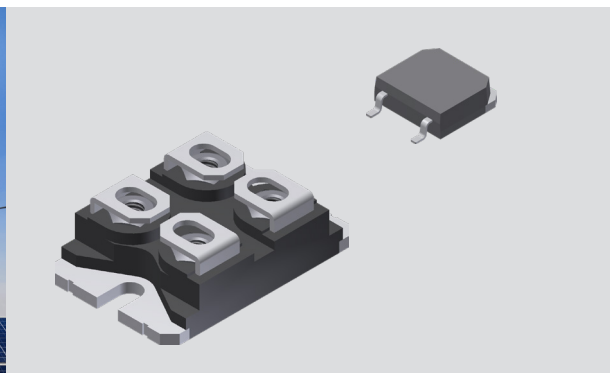




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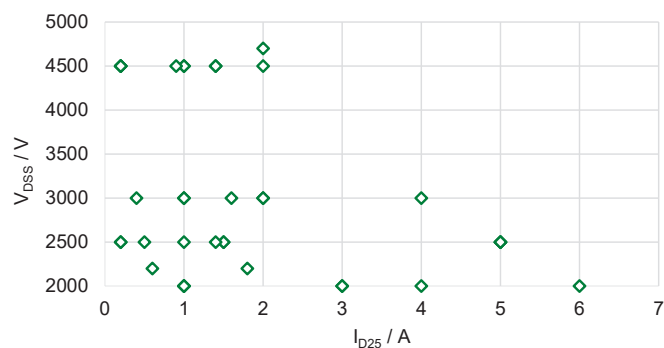
## Very High-Voltage MOSFETs

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  $I_D$

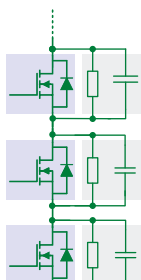


$V_{DSS} / kV$	$I_{D25} / A$	$R_{DS(ON)} / \Omega$	$P_D / W$
2, 2.2, 2.5, 3, 4.5, 4.7	0.2 - 6	4 - 625	78 - 960

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

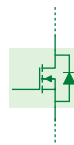
#### Solution A: Using LV MOSFETs

- 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



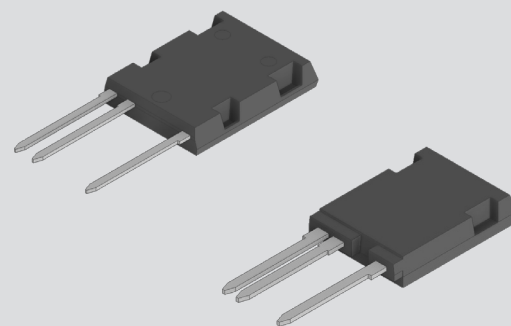
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## Very High-Voltage MOSFETs

### Features

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

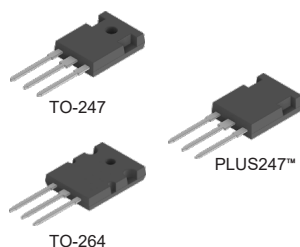
### Benefits

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

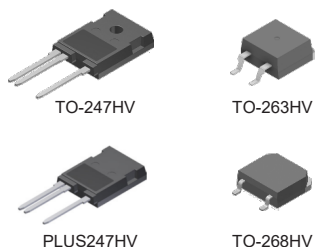
### Applications

- 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

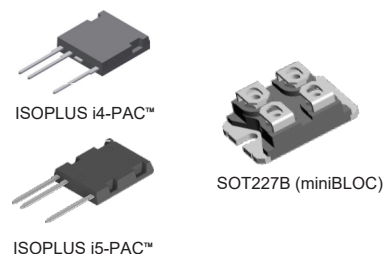
#### Standard & Plus Packages



#### High Voltage Packages



#### Isolated Packages



#### Unique and Proprietary Packages from Littelfuse



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



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