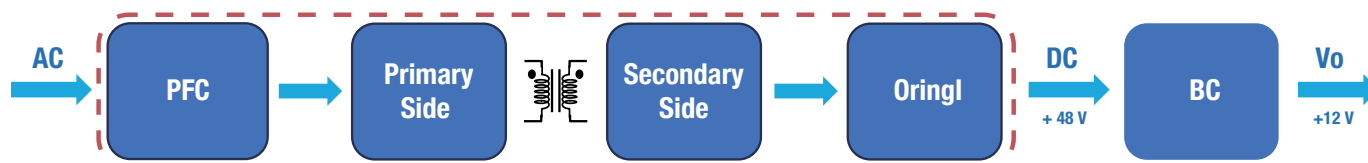


# Power MOSFETs Selector Guide for AI Applications

## INTRODUCTION

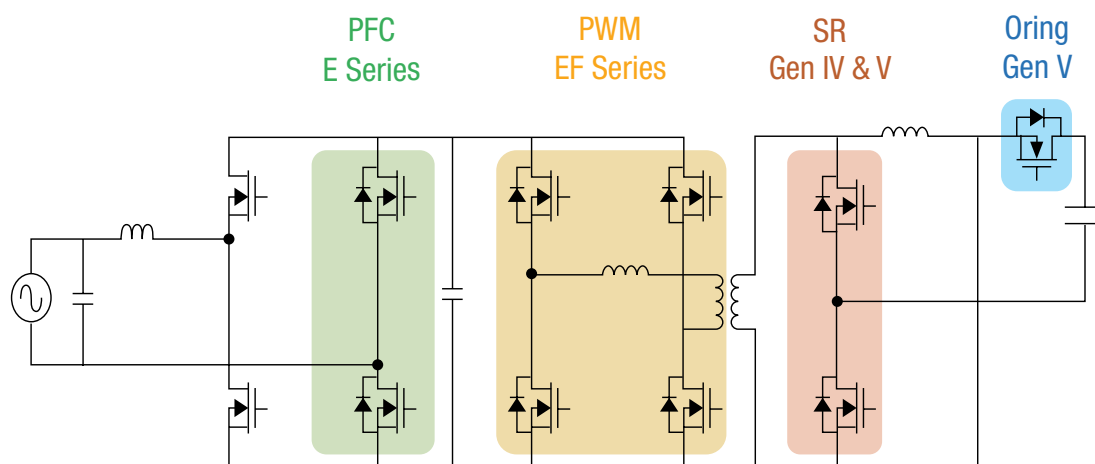
AI server power systems demand high efficiency, high power density, and effective thermal management throughout the power conversion chain. This selector guide highlights Vishay power MOSFET solutions for high performance AC/DC power supplies and Intermediate Bus Converters (IBCs), with devices optimized for PFC, PWM, synchronous rectification, OR-ing, and DC/DC conversion applications.

## HIGH PERFORMANCE AC/DC POWER SUPPLIES



AC/DC power supply units (PSU) serve critical hubs connecting the upstream power supply system to downstream server racks. PSU power has increased from 5.5 kW to 18.6 kW. As the power density of AI server racks continues to surge, PSUs are required to support higher current in smaller form factors, while reducing distribution losses.

We enable AC/DC PSU designs with Gen 5 E / EF series MOSFETs for PFC and LLC stages, and TrenchFET® Gen V power MOSFETs for synchronous rectification and OR ing applications — delivering higher efficiency, improved thermal performance, and compact footprints for AI server power supplies.



### High Performance Solutions for all Sockets

#### Notes:

<sup>(1)</sup> Greater Dimensions Available

Vishay maintains an ISO9001 Certified Quality Management System.

#### SELECTOR GUIDE

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## E SERIES FOR PFC AND EF SERIES FOR PWM

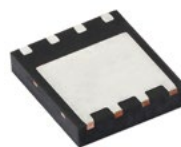
- MOSFET solutions for PFC and PWM
- SJ5 E + PowerPAK® 10 x 12
- SJ5 EF + PowerPAK® 10 x 12
- FOM
  - [SiHK031N60AE](#)
  - [SiHK039N60AEF](#)
  - [SiHK075N60AEF](#)



| Part number                   | Package           | $V_{DS}$ (V) | $R_{DS(on)}$ typ. (mΩ) | $Q_g$ (nC) | $Q_{gd}$ (nC) |
|-------------------------------|-------------------|--------------|------------------------|------------|---------------|
| <a href="#">SiHK031N60AE</a>  | PowerPAK® 10 x 12 | 600          | 36.8                   | 97         | 32            |
| <a href="#">SiHK039N60AEF</a> | PowerPAK® 10 x 12 | 600          | 39                     | 102        | 35            |
| <a href="#">SiHK075N60AEF</a> | PowerPAK® 10 x 12 | 600          | 65                     | 62         | 21            |

## MID VOLTAGE GEN IV AND V MOSFETS FOR SYNCHRONOUS RECTIFICATION

- Low combination of  $R_{DS(on)}$ ,  $Q_g$ , and  $C_{oss}$ 
  - [SiRS5800DP](#)
  - [SiRS5100DP](#)
  - [SiRS5700DP](#)
  - [SiRS4400DP](#)

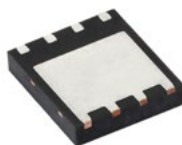


| Part number                | Package         | $V_{DS}$ (V) | $R_{DS(on)}$ max. at 10 V (mΩ) | $R_{DS(on)}$ max. at 7.5 V (mΩ) | $Q_g$ (nC) | $I_D$ (A) |
|----------------------------|-----------------|--------------|--------------------------------|---------------------------------|------------|-----------|
| <a href="#">SiRS5800DP</a> | PowerPAK® SO-8S | 80           | 1.8                            | 2.3                             | 61         | 265       |
| <a href="#">SiRS5100DP</a> | PowerPAK® SO-8S | 100          | 2.5                            | 2.9                             | 51         | 241       |
| <a href="#">SiRS5700DP</a> | PowerPAK® SO-8S | 150          | 5.6                            | 6.2                             | 55         | 144       |
| <a href="#">SiRS4400DP</a> | PowerPAK® SO-8S | 40           | 0.69                           | 0.96                            | 90         | 473       |

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## LOW VOLTAGE GEN IV AND V MOSFETS FOR OR-ING

- $R_{DS(on)}$  down to 0.47 mΩ
  - [SiRS5800DP](#)
  - [SiR500DP](#)
  - [SiRA20DDP](#)



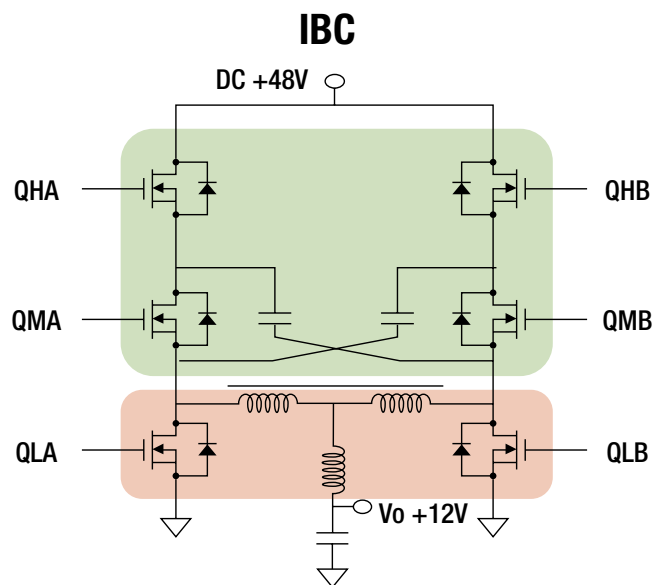
| Part number                | Package         | $V_{DS}$ (V) | $R_{DS(on)}$ max. at 10 V (mΩ) | $R_{DS(on)}$ max. at 7.5 V (mΩ) | $Q_g$ (nC) | $I_D$ (A) |
|----------------------------|-----------------|--------------|--------------------------------|---------------------------------|------------|-----------|
| <a href="#">SiRS5800DP</a> | PowerPAK® SO-8S | 80           | 1.8                            | 2.3                             | 61         | 265       |
| <a href="#">SiR500DP</a>   | PowerPAK® SO-8  | 30           | 0.47                           | 0.68                            | 54.3       | 350.8     |
| <a href="#">SiRA20DDP</a>  | PowerPAK® SO-8  | 25           | 0.61                           | 0.82                            | 54         | 337       |

## IBC (DC/DC CONVERTER)



As power requirements increase and power density climbs, thermal management becomes a primary design constraint. IBC DC/DC converter designs are therefore moving to MOSFETs with double-sided cooling (top and bottom).

Vishay low profile PowerPAK® SO-8DC MOSFETs feature an enlarged top-side cooling area for improved thermal performance. The products deliver high temperature operation up to +175 °C and combine low on-resistance with low gate and output charge for efficient switching. Key series for IBC DC/DC converter designs include QHA / QHB / QMA / QMB (80 V) and QLA / QLB (60 V), offering optimized solutions for high density, high efficiency power conversion.

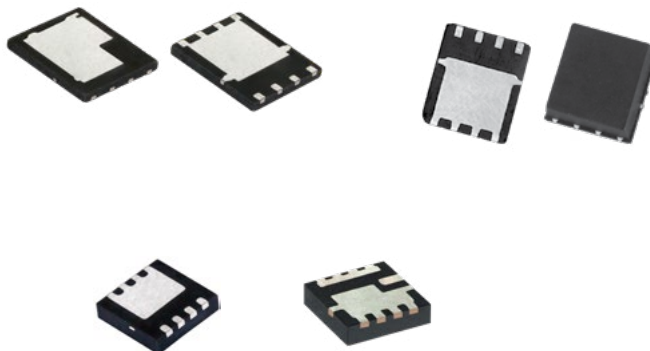




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## QHA / QHB / QMA / QMB – 80 V

- PowerPAK® SO-8DC / SO-8
  - [SiDR5802EP](#)
  - [SiDR680ADP](#)
  - [SiR5802DP](#)
  - [SiR680ADP](#)
- PowerPAK® 1212-8S / 1212-F
  - [SiSS588DN](#)
  - [SiSD5806DN](#)



| Part number                | Package           | $V_{DS}$ (V) | $R_{DS(on)}$ max.<br>at 10 V<br>(m $\Omega$ ) | $R_{DS(on)}$ max.<br>at 7.5 V<br>(m $\Omega$ ) | $Q_g$ (nC) | $I_D$ (A) |
|----------------------------|-------------------|--------------|-----------------------------------------------|------------------------------------------------|------------|-----------|
| <a href="#">SiDR5802EP</a> | PowerPAK® SO-8DC  | 80           | 2.9                                           | 4.5                                            | 28         | 153       |
| <a href="#">SiDR680ADP</a> | PowerPAK® SO-8DC  | 80           | 2.88                                          | 3.5                                            | 43         | 137       |
| <a href="#">SiR5802DP</a>  | PowerPAK® SO-8    | 80           | 2.9                                           | 4.0                                            | 28         | 137.5     |
| <a href="#">SiR680ADP</a>  | PowerPAK® SO-8    | 80           | 2.88                                          | 3.5                                            | 43         | 125       |
| <a href="#">SiSS588DN</a>  | PowerPAK® 1212-8S | 80           | 8                                             | 9.3                                            | 14.2       | 58.1      |
| <a href="#">SiSD5806DN</a> | PowerPAK® 1212-F  | 60           | 3.4                                           | 5.1                                            | 20         | 91        |

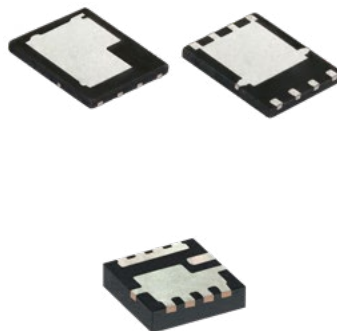
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## QLA / QLB – 60 V

- PowerPAK® SO-8DC / SO-8 / SO-8S
  - [SiDR626LDP](#)
  - [SiDR626EP](#)
  - [SiR626LDP](#)
  - [SiRS4600DP](#)
- PowerPAK® 1212-8S / 1212-F
  - [SiSS22LDN](#)
  - [SiSD4604LDN](#)



| Part number                 | Package           | $V_{DS}$ (V) | $R_{DS(on)}$ max. at 10 V (mΩ) | $R_{DS(on)}$ max. at 7.5 V (mΩ) | $R_{DS(on)}$ max. at 4.5 V (mΩ) | $Q_g$ (nC) | $I_D$ (A) |
|-----------------------------|-------------------|--------------|--------------------------------|---------------------------------|---------------------------------|------------|-----------|
| <a href="#">SiRS5800DP</a>  | PowerPAK® SO-8DC  | 60           | 1.5                            |                                 | 2.1                             | 41         | 204       |
| <a href="#">SiDR626EP</a>   | PowerPAK® SO-8DC  | 60           | 1.74                           | 2.1                             |                                 | 51         | 227       |
| <a href="#">SiR626LDP</a>   | PowerPAK® SO-8    | 60           | 1.5                            |                                 | 2.1                             | 41         | 186       |
| <a href="#">SiRS4600DP</a>  | PowerPAK® SO-8S   | 60           | 1.15                           | 1.3                             |                                 | 81         | 359       |
| <a href="#">SiSS22LDN</a>   | PowerPAK® 1212-8S | 60           | 3.65                           |                                 | 5.1                             | 17.4       | 92.5      |
| <a href="#">SiSD4604LDN</a> | PowerPAK® 1212-F  | 60           | 3.4                            |                                 | 5.1                             | 20         | 91        |

## RESOURCES

For technical support, contact [pmostechsupport@vishay.com](mailto:pmostechsupport@vishay.com)

For further information, visit [www.vishay.com/en/mosfets/](http://www.vishay.com/en/mosfets/)

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