Field-Effect Rectifier Diodes
Advantageously replace Schottky

These new 60V & 100V structured field-effect rectifier diodes enhance application performance and compactness

ST's new series of 60 and 100 V field-effect rectifier diodes (FERD) range from 20 to 40 A with 6 package options. Based on a proprietary process, these diodes achieve the best-in-class $V_F/I_R$ trade-off for a given chip surface. These diodes exhibit much better intrinsic performance than traditional Schottky-structured diodes of equivalent voltage and current ratings. The combination of a lower $V_F$ diode, with better control of leakage current, integrated into a smaller die enable designers to use smaller packages, resulting in a higher application compactness, with potential cost benefits.

**KEY FEATURES**
- Lower $V_F \times I_R$ than corresponding Schottky diode
- Smaller chip than Schottky for the same current rating
- Lower thermal coefficient
- Unique 30A device in DPAK
- ECOPACK2 components

**KEY BENEFITS**
- Improves application efficiency and thermal performance
- Wide selection of 26 devices
- Easier compact design at competitive prices
- Best performance reproducibility thanks to low $V_F/I_R$ variations over current, voltage, and temperature ranges
- Higher reliability thanks to a lower leakage current

**KEY APPLICATIONS**
- Industrial power
- Factory automation
- Tooling chargers
- Auxiliary power
- Server & telecom power
- Air-conditioning
- Home appliances
- UPS
- DC/DC converters
- SMPS
- USB chargers

www.st.com/ferd
DESIGN SAFE, COMPACT, AND AFFORDABLE POWER SUPPLIES

ST’s new 60V and 100V field-effect rectifier diodes (FERD) help power converter designers reach higher efficiency and increased density at levels that were not achievable using traditional Schottky solutions. In regards to power density, our new FERD dice are much smaller than Schottky ones and can be easily integrated into smaller packages. For example, a 20A or higher FERD diode housed in a DPAK package reduces by a factor of 3 the PCB surface occupied by a Schottky diode of the same current rating housed in a D²PAK package. Of course, the application’s overall electrical performance is maintained and often improved using FERD diodes. In addition to the power integration benefits, the potential positive economic impact of using a less expensive package solution must be taken into account. Moreover, ST’s patented FERD technology exhibits a much better controlled leakage current, with a lower thermal coefficient than standard Schottky diodes. Therefore, developers will appreciate an easier thermal design, with reduced thermal runaway risks, and the associated improved reliability.

FERD TECHNOLOGY ADVANTAGE OVER SCHOTTKY - EXAMPLE OF 60V DIODES

FERD DIODE SELECTION GUIDE

<table>
<thead>
<tr>
<th>Part Number</th>
<th>I_{fwd} (A)</th>
<th>V_{fwd} (V)</th>
<th>V_{f}, 125°C typ. / max. (V)</th>
<th>I_{f} at V_{fmax}, 125°C max. (mA)</th>
<th>Packages</th>
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</thead>
<tbody>
<tr>
<td>FERD20H60C</td>
<td>2 x 10</td>
<td>60</td>
<td>0.525 / 0.585</td>
<td>20</td>
<td>TO-220AB, D²PAK</td>
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<tr>
<td>FERD20L60C</td>
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<td>60</td>
<td>0.510 / 0.575</td>
<td>60</td>
<td>TO-220AB, D²PAK</td>
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<tr>
<td>FERD20M60</td>
<td>20</td>
<td>60</td>
<td>0.510 / 0.560</td>
<td>20</td>
<td>TO-220AB, D²PAK</td>
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<tr>
<td>FERD20U60DJFD</td>
<td>20</td>
<td>60</td>
<td>0.465 / 0.505</td>
<td>70</td>
<td>PowerFLAT™ (6 x 5 mm)</td>
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<tr>
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<td>60</td>
<td>0.540 / 0.600</td>
<td>20</td>
<td>TO-220AB, D²PAK</td>
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<tr>
<td>FERD30L60C</td>
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<td>0.510 / 0.570</td>
<td>60</td>
<td>TO-220AB, D²PAK</td>
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<tr>
<td>FERD40L60C</td>
<td>2 x 20</td>
<td>60</td>
<td>0.515 / 0.580</td>
<td>80</td>
<td>TO-220AB, D²PAK</td>
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<tr>
<td>FERD20S100S</td>
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<td>100</td>
<td>0.690 / 0.760</td>
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<td>DPAK, IPAK, TO-220AB</td>
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<tr>
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<td>100</td>
<td>0.640 / 0.705</td>
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<td>DPAK, IPAK, TO-220AB, TO-220FPAB</td>
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<tr>
<td>FERD30H100S</td>
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<td>100</td>
<td>0.680 / 0.745</td>
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<td>DPAK, IPAK, TO-220AB</td>
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<tr>
<td>FERD30SM100DJF</td>
<td>30</td>
<td>100</td>
<td>0.665 / 0.735</td>
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<td>PowerFLAT™ (6 x 5 mm)</td>
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<tr>
<td>FERD40H100S</td>
<td>40</td>
<td>100</td>
<td>0.645 / 0.705</td>
<td>24</td>
<td>D²PAK, TO-220AB</td>
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</tbody>
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