# FRED Pt® Hyperfast and Ultrafast Recovery Rectifiers Reduce Switching Losses for Consumer Products and Electronic Ballast Lighting


## KEY BENEFITS

- Forward currents up to 3 A in the SMA package, 4 A in the SMB package, and 5 A in the SMC package
  - Increase power density to facilitate lower system costs
- Fast recovery times down to 30 ns
- Reduced reverse recovery charge
- Low forward voltage drop down to 0.99 V
- Low leakage current
- High operating junction temperature to +175 °C

## APPLICATIONS

- Power factor correction (PFC) diodes, boost diodes for DCM and CRM, and freewheeling diodes in power switching applications for consumer products, LCD TVs, power supplies, and electronic ballast lighting

## RESOURCES

- Datasheets: see next page for featured products
- For technical questions contact: DiodesAmerica@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

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# DIODES

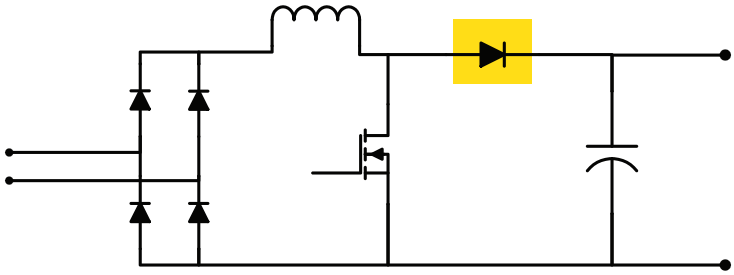
## FRED Pt® Hyperfast and Ultrafast Recovery Rectifiers

Combining extremely fast and soft recovery characteristics with low forward voltage drop and low leakage current, Vishay's FRED Pt® hyperfast and ultrafast recovery rectifiers reduce switching losses in consumer products, LCD TVs, power supplies, and electronic ballast lighting. The devices offer designers a choice of current ratings, packages, and speeds to optimize efficiency in these applications. With forward currents up to 3 A in the SMA package, 4 A in the SMB package, and 5 A in the SMC package, the devices increase power density to facilitate lower system costs. "U speed" ultrafast rectifiers offer the advantage of lower forward voltage, while "H speed" hyperfast devices provide lower reverse recovery charge. The rectifiers feature a planar structure and platinum doped lifetime control to guarantee high overall performance, ruggedness, and reliability characteristics. For a more robust design, the components offer an operating junction temperature to +175 °C.

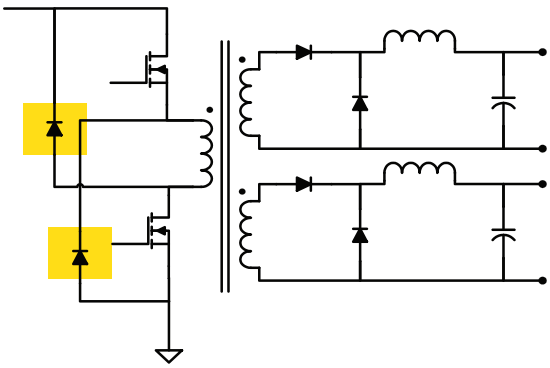
### The Key Specifications

| PART NUMBER | PACKAGE | $I_{FAV}$ (A) | $V_R$ (V) | $V_F$ at $I_F$ (V) | TYP. $t_{rr}$ AT RATED $I_F$ (ns) | SPEED |
|---|---|---|---|---|---|---|
| VS-3EMH06-M3 | SMA (DO-214AC) | 3 | 600 | 1.7 | 35 | Hyperfast - Low $Q_{rr}$ |
| VS-3EMU06-M3 | | 3 | 600 | 1.35 | 41 | Ultrafast - Low $V_F$ |
| VS-3EGH06-M3 | SMB (DO-214AA) | 3 | 600 | 1.7 | 35 | Hyperfast - Low $Q_{rr}$ |
| VS-3EGU06-M3 | | 3 | 600 | 1.35 | 41 | Ultrafast - Low $V_F$ |
| VS-3EGU06WHM3 | | 3 | 600 | 0.99 | 41 | Ultrafast - Low $V_F$ |
| VS-4EGH06-M3 | | 4 | 600 | 1.95 | 30 | Hyperfast - Low $Q_{rr}$ |
| VS-4EGU06-M3 | | 4 | 600 | 1.3 | 45 | Ultrafast - Low $V_F$ |
| VS-4ECH06-M3 | SMC (DO-214AB) | 4 | 600 | 1.85 | 30 | Hyperfast - Low $Q_{rr}$ |
| VS-4ECU06-M3 | | 4 | 600 | 1.3 | 45 | Ultrafast - Low $V_F$ |
| VS-5ECH06-M3 | | 5 | 600 | 1.95 | 30 | Hyperfast - Low $Q_{rr}$ |
| VS-5ECU06-M3 | | 5 | 600 | 1.35 | 45 | Ultrafast - Low $V_F$ |

### PFC Diode



### Dual Forward Clamp Diode



### Flyback Clamp Diode