1 A, 2 A, and 3 A Gen 7 1200 V FRED Pt® Hyperfast Rectifiers in SMPC HV Package Reduce Switching Losses and Increase Efficiency; Devices Combine Low Q_{rr} Down to 105 nC and V_F Down to 1.45 V With Low Junction Capacitance and Large Creepage Distance

Product Benefits:

- Forward current of 1 A, 2 A, and 3 A
- 1200 V repetitive reverse voltage
- Compact SMPC HV package measures 4.3 mm x 6.5 mm with a low 1.1 mm profile
  - Footprint-compatible with the TO-277A
- Minimum 5.4 mm creepage distance
- Comparative tracking index (CTI) ≥ 600 (Material Group I)
- Recovery time (t_{rr}) down of 50 ns
- Reverse recovery charge (Q_{rr}) down to 105 nC typical
- Forward voltage drop down to 1.45 V
- Exceptionally low junction capacitance down to 7.25 pF (4 V, 1 MHz)
- AEC-Q101 qualified versions available (VS-E7SX0112HM3V, VS-E7SX0212HM3V, and VS-E7SX0312HM3V)
- Non-repetitive peak surge current up to 70 A
- Moisture Sensitivity Level of 1 in accordance with J-STD-020
- High temperature operation to +175 °C
- RoHS-compliant and halogen-free

Market Applications:

- Clamp, snubber, and freewheeling diodes in flyback auxiliary power supplies and high frequency rectifiers for bootstrap driver functionality
- Desaturation protection for the latest fast switching IGBTs and high voltage Si / SiC MOSFETs
- Industrial drives and tools, on-board chargers and motors for electric vehicles (EV), energy generation and storage systems, and Ćuk converters and industrial LED SEPIC circuitry

The News:

Vishay Intertechnology expands its Gen 7 platform of 1200 V FRED Pt® Hyperfast rectifiers with six new devices in the eSMP® series SMPC HV package. Optimized for industrial, automotive, and energy applications, the 1 A, 2 A, and 3 A rectifiers not only offer the best trade-off between reverse recovery charge (Q_{rr}) and forward voltage drop for devices in their class, but also provide the lowest junction capacitance and recovery time.

- The devices' combination of fast recovery time, low Q_{rr}, low forward voltage drop, and low junction capacitance reduces switching losses and increases efficiency

- With their compact package — combined with a large creepage distance and molding compound with a comparative tracking index (CTI) ≥ 600 (Material Group I) — the rectifiers reduce component counts and lower BOM costs based on IEC 60664-1 requirements for high voltage applications
- The rectifiers feature a planar structure and platinum doped lifetime control that guarantee system reliability and robustness without compromising on performance
- The devices' optimized stored charge and low recovery current minimize switching losses and reduce power dissipation

The Key Specifications:

Part #	$I_{F(AV)}$ (A)	V_R (V)	V_F at I_F (V)	t_{rr} (ns)	Q_{rr} (nC)	C_T (pF)	I_{FSM} (A)	Package	AEC-Q101
VS-E7SX0112-M3V	1	1200	1.45	50	105	7.25	19	SMPC HV	No
VS-E7SX0112HM3V	1		1.45		105	7.25	19		Yes
VS-E7SX0212-M3V	2		1.6		165	9.0	21		No
VS-E7SX0212HM3V	2		1.6		165	9.0	21		Yes
VS-E7SX0312-M3V	3		1.45		240	20	70		No
VS-E7SX0312HM3V	3		1.45		240	20	70		Yes

Availability:
Samples and production quantities of the new Gen 7 rectifiers are available now, with a lead time of eight weeks.

To access the product datasheets on the Vishay Website, go to
http://www.vishay.com/ppg?97470 (VS-E7SX0112-M3V)
http://www.vishay.com/ppg?97387 (VS-E7SX0112HM3V)
http://www.vishay.com/ppg?97471 (VS-E7SX0212-M3V)
http://www.vishay.com/ppg?97389 (VS-E7SX0212HM3V)
http://www.vishay.com/ppg?97472 (VS-E7SX0312-M3V)
http://www.vishay.com/ppg?97390 (VS-E7SX0312HM3V)

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