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DID YOU KNOW?

THE STATE OF THE ART ULTRAFAST DIODE FOR RESONANT TOPOLOGIES

What are the key features of 600 V FRED Pt® Gen 5?

- Ultrafast diode with optimized E_{REC} and I_{RRM}
- 600 V breakdown voltage
- Best in class among Si UF diodes in terms of E_{REC}
- Optimized for high speed resonant SMPS operation (LLC)
- AEC-Q101 extended up to 2000 h

What are the key benefits of 600 V FRED Pt® Gen 5?

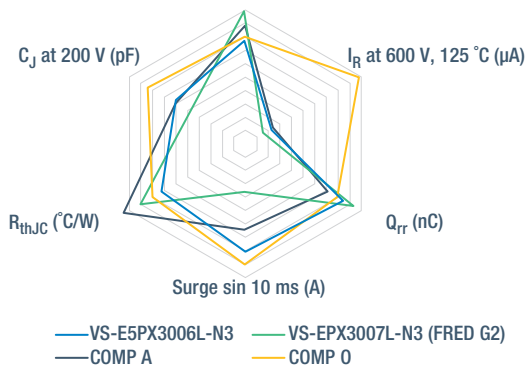
- Limit current stress on switch
- Improved light- and full-load efficiency in automotive and industrial resonant SMPS
- Improved system reliability
- Price competitiveness compared to alternative offering in the market



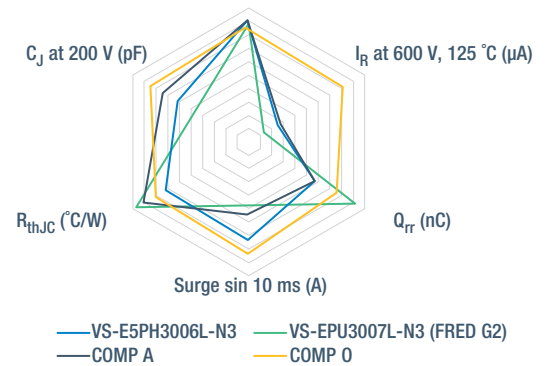
**Gen5
UltraFast**

Comparing FRED Pt® Gen 5 with previous FRED generations and the competition

Radar plot of performance for
FRED G5 "X" series VS-E5PX3006L-N3
 V_F at 30 A, 125 °C (V)

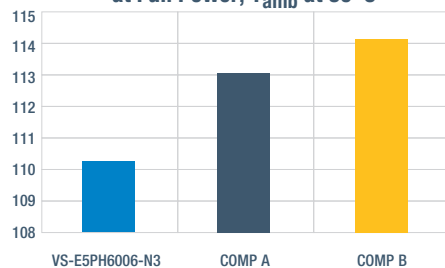


Radar plot of performance for
FRED G5 "H" series VS-E5PH3006L-N3
 V_F at 30 A, 125 °C (V)

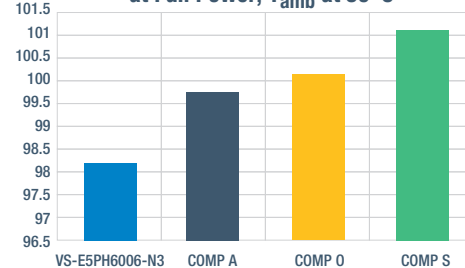


Thermal comparison in EV fast charging stations

Diode Heatsink Temperature of 30 kW EV Charger
at Full Power, T_{amb} at 50 °C



Diode Heatsink Temperature of 15 kW EV Charger
at Full Power, T_{amb} at 50 °C





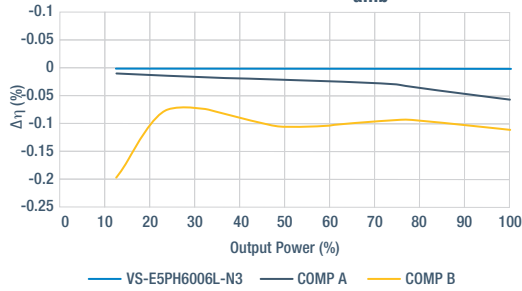
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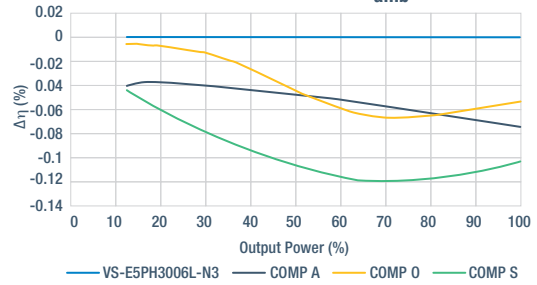
THE STATE OF THE ART ULTRAFAST DIODE FOR RESONANT TOPOLOGIES

Efficiency comparison in resonant SMPS applications

Efficiency Comparison in 30 kW LLC
DC/DC Resonant Converter, T_{amb} at 50 °C



Efficiency Comparison in 15 kW LLC
DC/DC Resonant Converter, T_{amb} at 50 °C



Part Number	V_R (V)	Speed class	$I_{F(AV)}$ (A)	V_F typ. (V) ¹	Q_{rr} typ. (nC) ²	t_{rr} typ. (ns) ³	Package	AEC-Q101 Qualified
VS-E5TH1506-M3	600	H	15	1.15	782	22	TO-220AC 2L	No
VS-E5TX1506-M3	600	X	15	1.3	578	19	TO-220AC 2L	No
VS-E5TH3006-M3	600	H	30	1.15	1560	25	TO-220AC 2L	No
VS-E5TX3006-M3	600	X	30	1.3	952	22	TO-220AC 2L	No
VS-E5PH3006L-N3	600	H	30	1.15	1560	25	TO-247AD 2L	No
VS-E5PX3006L-N3	600	X	30	1.3	952	22	TO-247AD 2L	No
VS-E5PH6006L-N3	600	H	60	1.2	2385	29	TO-247AD 2L	No
VS-E5PX6006L-N3	600	X	60	1.4	1568	26	TO-247AD 2L	No
VS-E5PH7506L-N3	600	H	75	1.2	2515	32	TO-247AD 2L	No
VS-E5PX7506L-N3	600	X	75	1.4	1731	29	TO-247AD 2L	No
VS-E5TH1506THN3	600	H	15	1.15	782	22	TO-220AC 2L	Yes
VS-E5TX1506THN3	600	X	15	1.3	578	19	TO-220AC 2L	Yes
VS-E5TH3006THN3	600	H	30	1.15	1560	25	TO-220AC 2L	Yes
VS-E5TX3006THN3	600	X	30	1.3	952	22	TO-220AC 2L	Yes
VS-E5PH3006LHN3	600	H	30	1.15	1560	25	TO-247AD 2L	Yes
VS-E5PX3006LHN3	600	X	30	1.3	952	22	TO-247AD 2L	Yes
VS-E5PH6006LHN3	600	H	60	1.2	2385	29	TO-247AD 2L	Yes
VS-E5PX6006LHN3	600	X	60	1.4	1568	26	TO-247AD 2L	Yes
VS-E5PH7506LHN3	600	H	75	1.2	3090	32	TO-247AD 2L	Yes
VS-E5PX7506LHN3	600	X	75	1.4	2048	29	TO-247AD 2L	Yes

Notes:

¹ I_F = rated current, $T_J = 125$ °C

² $T_J = 125$ °C, I_F = rated current A, $V_R = 400$ V, $dI_F/dt = 1000$ A/μs

³ $T_J = 25$ °C $I_F = 1$ A $dI_F/dt = 100$ A/μs, $V_R = 30$ V

