DID YOU KNOW?

A BRIEF INTRODUCTION TO FRED Pt® IN eSMP® SERIES PACKAGES

Vishay has introduced eSMP® (enhanced surface-mount power) series packages for high reliability automotive and industrial applications. The series consists of flat-type and low profile surface-mount packages with an enlarged cathode pad dimension design, enabling maximized power ratings for downsizing and space-saving designs.

By expanding its FRED Pt® ultrafast diode platform with devices in the eSMP® series packages, Vishay now offers a complete portfolio of ultrafast diodes with low V_F (for reduced conduction losses) and soft recovery features for a wide range of applications. This has been made possible thanks to Vishay's know-how in managing the devices' platinum doping technology. Multiple FRED Pt® diode series have been developed to offer different V_F / Q_{rr} ratios to meet the efficiency requirements of specific applications.

FRED Pt® Ultrafast Diodes - Main Features

Compared to conventional ultrafast diode technology, Vishay's FRED Pt® chip design delivers the highest system efficiency by offering:

- Very low forward voltage drop
- Soft recovery behavior at any temperature
- Voltages from 100 V to 600 V
- Current from 1 A to 30 A
- Multiple V_F / Q_{rr} trade-offs available for the 600 V series:
  - o L series for extremely low V_F (< 1 V at rated current)
  - o U series for low V_F for DCM PFC
  - o H series balancing V_F and Q_{rr} aspects for CRM PFC
  - o X series for extremely low Q_{rr} for CCM PFC
- Photo polyamide passivation for the highest AEC-Q101 reliability requirements
- T_J max = 175 °C

The table below outlines Vishay's FRED Pt® diodes available in eSMP® series packages:

eSMP® Package	$I_{F(AV)}$	Reverse Voltage	T_J Max.	AEC-Q101 Qualified	FRED Pt® in eSMP® Products Series
SMF (DO-219AB)	1 A to 2 A	100 V to 200 V	175 °C	Yes	VS-1EFHxx, VS-2EFHxx
	1 A to 2 A	600 V	175 °C	Yes	VS-1EFUxx, VS-2EFUxx
SlimSMA (DO-221AC)	2 A to 3 A	100 V to 200 V	175 °C	Yes	VS-2EJHxx, VS-3EJHxx
	3 A	600 V	175 °C	Yes	VS-3EJHxx
SMPC (TO-277A)	4 A to 10 A	100 V to 200 V	175 °C	Yes	VS-4ESHxx, VS-4CSHxx, VS-6ESHxx, VS-6CSHxx, VS-8CSHxx, VS-10CSHxx
	6 A	600 V	175 °C	Yes	VS-6ESHxx, VS-6ESUxx
SlimDPAK (TO-252AE)	4 A to 10 A	100 V to 200 V	175 °C	Yes	VS-4EVHxx, VS-6EVHxx, VS-6CVHxx, VS-8CVHxx, VS-10CVHxx
	6 A to 15 A	600 V	175 °C	Yes	VS-6EVHxx, VS-6EVLxx, VS-6EVXxx, VS-8EVHxx, VS-8EVLxx, VS-8EVXxx, VS-15EVHxx, VS-8EVLxx, VS-8EVUxx
SMPD (TO-263AC)	16 A to 20 A	200 V	175 °C	Yes	VS-16EDHxx, VS-16CDHxx, VS-20CDHxx
	10 A to 30 A	600 V	175 °C	Yes	VS-10CDUxx, VS-12CDUxx, VS-16CDUxx, VS-30CDUxx