



# DID YOU KNOW?

## A BRIEF INTRODUCTION TO TRANSIENT VOLTAGE SUPPRESSOR (TVS) DIODES IN eSMP® SERIES PACKAGES

Vishay has introduced the eSMP® (enhanced Surface-Mount Power) series packages for high reliability automotive and industrial applications. The series consists of flat-type surface-mount packages with space-saving footprints that maintain the surge capabilities of traditional transient voltage suppressor (TVS) diode packages. Vishay provides 400 W SMF (DO-219AB), 400 W SMP (DO-220AA), 600 W SlimSMA (DO-221AC), and 1500 W SMPC (TO-277A) TVS for the same 10 / 1000  $\mu$ s surge conditions as the traditional 400 W SMA, 600 W SMB, and 1500 W SMC TVS packages.

### 400 W TVS in SMP and SMF Packages

The asymmetric SMP and symmetric SMF packages offer body volumes of 6.9 mm<sup>3</sup> and 4.94 mm<sup>3</sup>, respectively, which are only 28 % and 20 % of the SMA's. SMP and SMF devices can provide 400 W surge capability in the same 10 / 1000  $\mu$ s conditions as SMA TVS, while offering compact footprints optimized for space-limited applications.

### 600 W TVS in SlimSMA Package

The SlimSMA package features a body volume of 10.5 mm<sup>3</sup>, which is only 29 % of the traditional SMB's. The SlimSMA package is footprint-compatible with the SMA package and provides 600 W surge capability under the same 10 / 1000  $\mu$ s conditions. SlimSMA TVS diodes are suitable for space-limited applications, such as 2.5 inch hard disks.

### 1500 W TVS in SMPC Package

The body volume of the SMPC package is 28.85 mm<sup>3</sup>, which is only 30 % of the traditional SMC's. The asymmetric TVS can provide 1500 W surge capability under the same 10 / 1000  $\mu$ s conditions as the SMC, and is suitable for space-limited motor or DC power line surge protection.

The table below provides recommended eSMP® package replacements for traditional TVS products:

| Power Rating at 10 / 1000 $\mu$ s | Traditional Package | Traditional TVS Series | Recommended eSMP® Package | Recommend eSMP® Series           |
|-----------------------------------|---------------------|------------------------|---------------------------|----------------------------------|
| 400 W                             | SMA                 | SMAJxxA Series         | SMP                       | <a href="#">SMPxxA Series</a>    |
|                                   |                     |                        | SMF                       | <a href="#">VTVSxxSMF Series</a> |
|                                   |                     | TPSMAxxA Series        | SMP                       | <a href="#">TPSMPxxA Series</a>  |
| 600 W                             | SMB                 | SMBJxxA Series         | SlimSMA                   | <a href="#">SMA6FxxA Series</a>  |
|                                   |                     | TPSMBxxA Series        |                           | <a href="#">TA6FxxA Series</a>   |
| 1500 W                            | SMC                 | SMCJxxA Series         | SMPC                      | <a href="#">SMPCxxA Series</a>   |
|                                   |                     | SMCJxxA Series         |                           | <a href="#">SMPCxxAN Series</a>  |
|                                   |                     | TPSMCxxA Series        |                           | <a href="#">TPCxxA Series</a>    |
|                                   |                     | SMCJxxCA Series        |                           | <a href="#">TPCxxCA Series</a>   |