

TVS Flat for automotive: ISO 7637/10605 rated and 175 °C capability



AEC-Q101 qualified, ST's TVS Flat series ensures improved robustness and reliability in harsh environments

ST's transient voltage suppressors (TVS) are made to resist the stress levels specified in standards such as ISO 10605 and ISO 7637 to meet all automotive requirements. Able to withstand 10/1000 μ s transient voltage surges and with power capability at 175 °C, they fit tough environments thanks to low power derating at high temperature. Manufactured on ST's upgraded production lines using robust and well known die products leads to improved reliability for your applications.

KEY FEATURES

- AEC-Q101 qualified
- Increased power density
- Lower cost per watt ratio
- Footprint compatible with SMA, SMB series
- T_j (max.) = 175 °C
- 1 mm thickness

KEY BENEFITS

- Thinner applications
- No PCB redesign thanks to backward footprint compatibility
- Provides space saving and more power in similar packages
- Automatic visual inspection compatible

KEY APPLICATIONS

- Electronic boards for e-bikes, cars and trucks:
 - Power rail
 - MOS gate
 - Battery management system
 - Electronic control units



DIFFERENTIATION AND IMPROVEMENTS

Made for slim applications

SMA Flat package is rated 1 mm thick while SMA is about 2.3 mm.

High temperature capability

With a maximum T_j rating of 175 °C, both series are built to comply with harsh environments.

Low power derating at high temperature

- SMA4FY: up to 200 W at 175°C
- SMA6FY: up to 400 W at 175°C

Increased power/size ratio

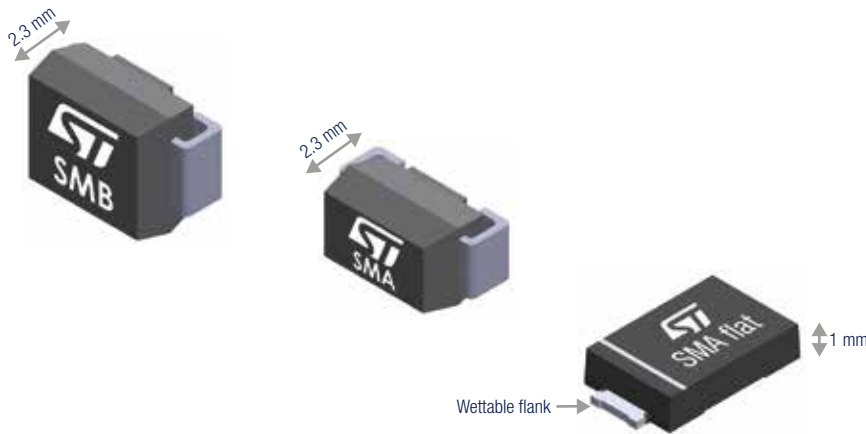
- By increasing power capability with SMA6FY series: 600 W in SMA Flat instead of SMB

Low leakage

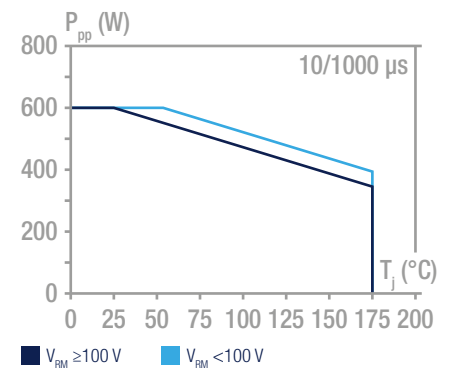
- Leakage current rated 5 times lower than most of our competitors
- IR specified at 85 °C

Rated according to automotive standards

- ISO 10605 (C = 150 pF, R = 330 Ω)
- ISO 10605 (C = 330 pF, R = 330 Ω)
- ISO 7637-2 (Pulse 1, 2a, 3a, and 3b)



Maximum peak pulse power dissipation versus initial junction temperature



TVS FLAT RANGE

| Automotive grade TVS | Stand-off voltage range (V_{RM}) | Breakdown voltage range (V_{BR}) | 10/1000 μ s surge capability (P_{pp}) | 8/20 μ s surge capability (P_{pp}) | Directionality | Package |
|----------------------|--------------------------------------|--------------------------------------|---|--|----------------|----------|
| SMA4FxxAY | 5 to 33 V | 6.8 to 39 V | 400 W | 2.5 kW | Unidirectional | SMA Flat |
| SMA6FxxAY | 5 to 33 V | 6.8 to 39 V | 600 W | 4 kW | Unidirectional | SMA Flat |

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