

# 800 V AND 1200 V

## Automotive-grade rectifiers for input bridge circuits



**With their low forward voltage drop, ST's automotive-grade rectifiers improve the efficiency of input bridges in compliance with the most stringent standards.**

Based on 1500 V technology, the 1200 V AEC-Q101-qualified rectifiers offer superior performance and ruggedness. By limiting the inrush current, they make AC/DC converters safer and are ideal for use in mixed-bridge configurations along with our high-temperature thyristors (SCRs).

Our latest 800 V bridge rectifiers offers an approximate 200 mV improvement in forward voltage leading to a thermal stress reduction of 15°C in an 11 kW on-board charger design.

### KEY FEATURES & BENEFITS

- Low forward voltage drop
- Ultra-low leakage current
- $V_{RRM}$  guaranteed from -40 to +175 °C
- $V_{RSM}$  guaranteed up to 1500 V
- AEC-Q101 qualified
- PPAP capable
- ECOPACK®2 component
  
- Reduces conduction losses
- Reduces reverse losses
- Provides high-quality performance
- Limits inrush current when associated with SCRs

### KEY APPLICATIONS

- Automotive input bridges
  - On-board battery chargers
  - Stationary battery chargers

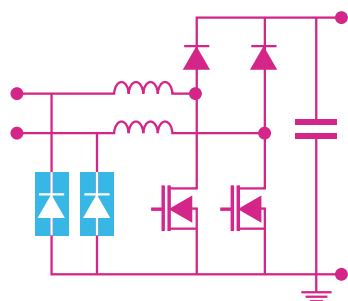
## STEVAL-ISF003V1 Evaluation board

Low standby loss front-end with inrush current limitation evaluation board. Standalone development tool for designing broad inrush-current reduction systems.

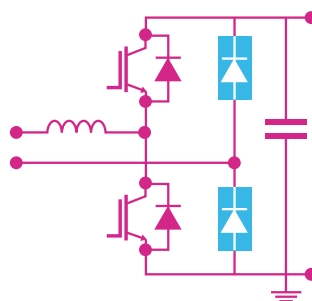
The STEVAL-ISF003V1 evaluation board limits the inrush current charging a DC bus capacitor to comply with IEC 61000-3-3 standards. This inrush current limitation is based on a soft-start procedure of the mixed bridge with STBR6012WY diodes and SCR rectifiers using progressive phase control at board start-up. This solution drastically reduces standby losses as the DC bus can be

totally disconnected from the AC mains when it does not have to operate. DC bus deactivation is simply achieved by turning off the SCRs, without requiring an additional relay to open the circuit in standby. The steady-state losses are also reduced, thanks to the removal of the NTC / PTC resistor traditionally used to limit the inrush current, which in turn removes the need for a relay to bypass it.

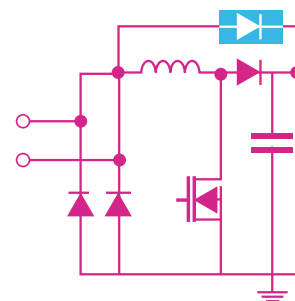
## STBR fits in below PFC, NPC, BY-PASS or for redundancy configurations



Semi-Bridgeless PFC



Totem-Pole PFC



Bypass

Note: For designs combined with a thyristor, Application Note AN4606 provides additional information about the inrush current limiter function on st.com

## Product portfolio offer

Part number	Current rating (A)	Voltage rating (V)	Packages	Associated SCR for mixed input bridge
STBR3012WY	30	1200	D0-247	TN3050H-12WY
STBR6012WY	60	1200	D0-247	TN5050H-12WY
STBR3008WY	30	800	D0-247	
STBR6008WY	60	800	D0-247	

