D²PAK HV

DPAK HV

ST Bridge Rectifier

STBR series 1200 & 800 V automotive & industrial grade bridge diodes

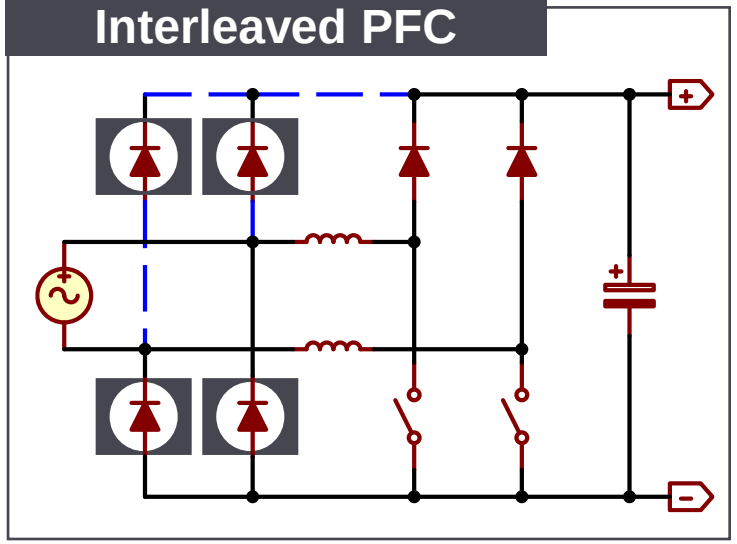
STBR 800 & 1200 V bridge rectifiers

For input bridge, bypass, reverse battery protection, O-ring, etc.

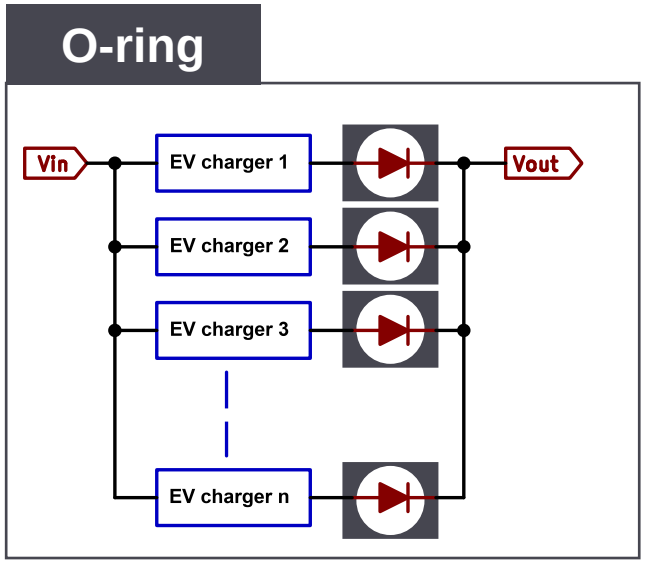
Markets	**Automotive**	**Industrial**
Applications	**OBC**	**EV chargers**

STBR series for low conduction power losses

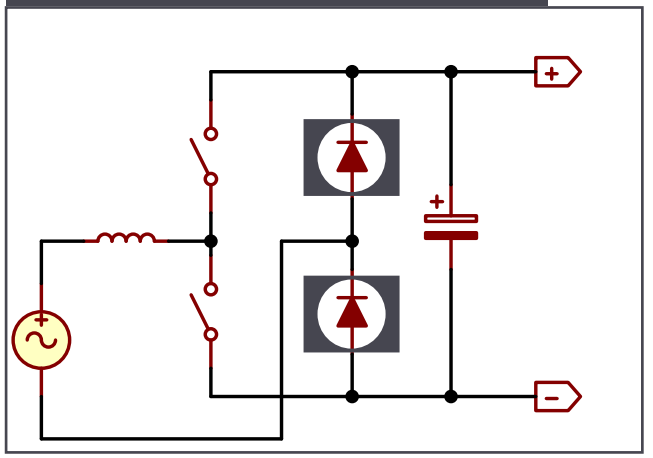
Semi-bridgeless & Interleaved PFC



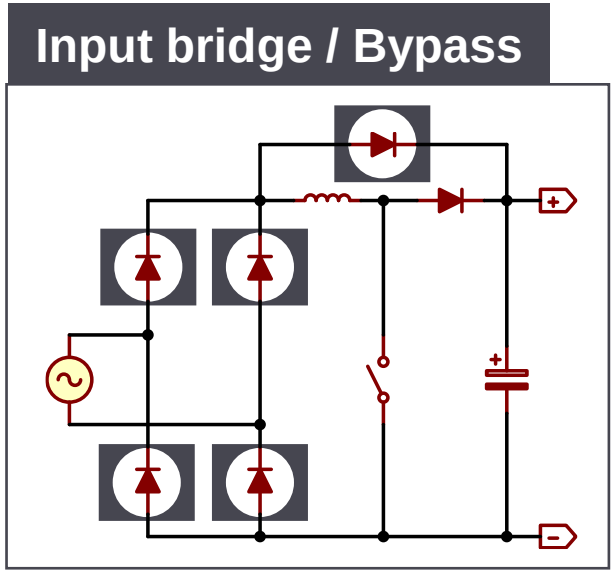
O-ring



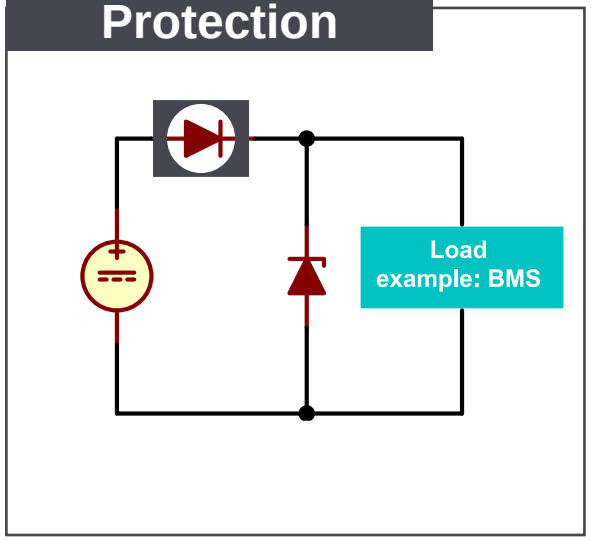
Totem pole



Input bridge / Bypass



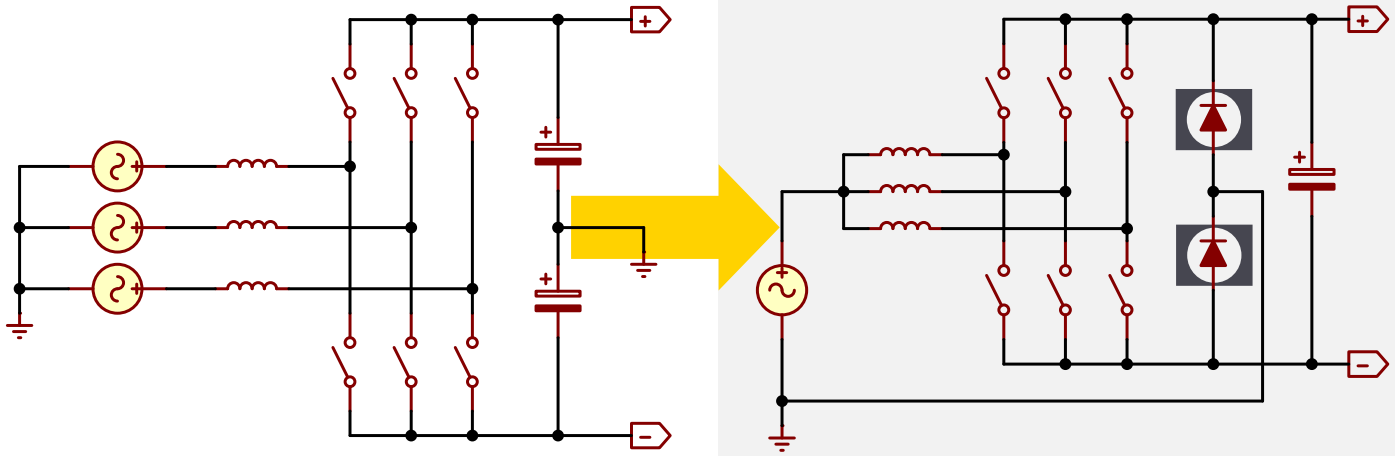
Reverse battery Protection



STBR diode

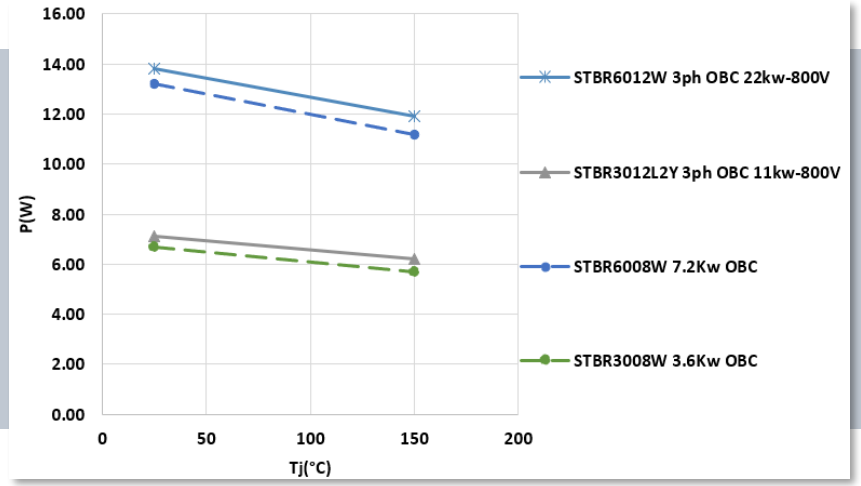
STBR series for low conduction power losses

4 legs allows same power from 3-phase to single-phase

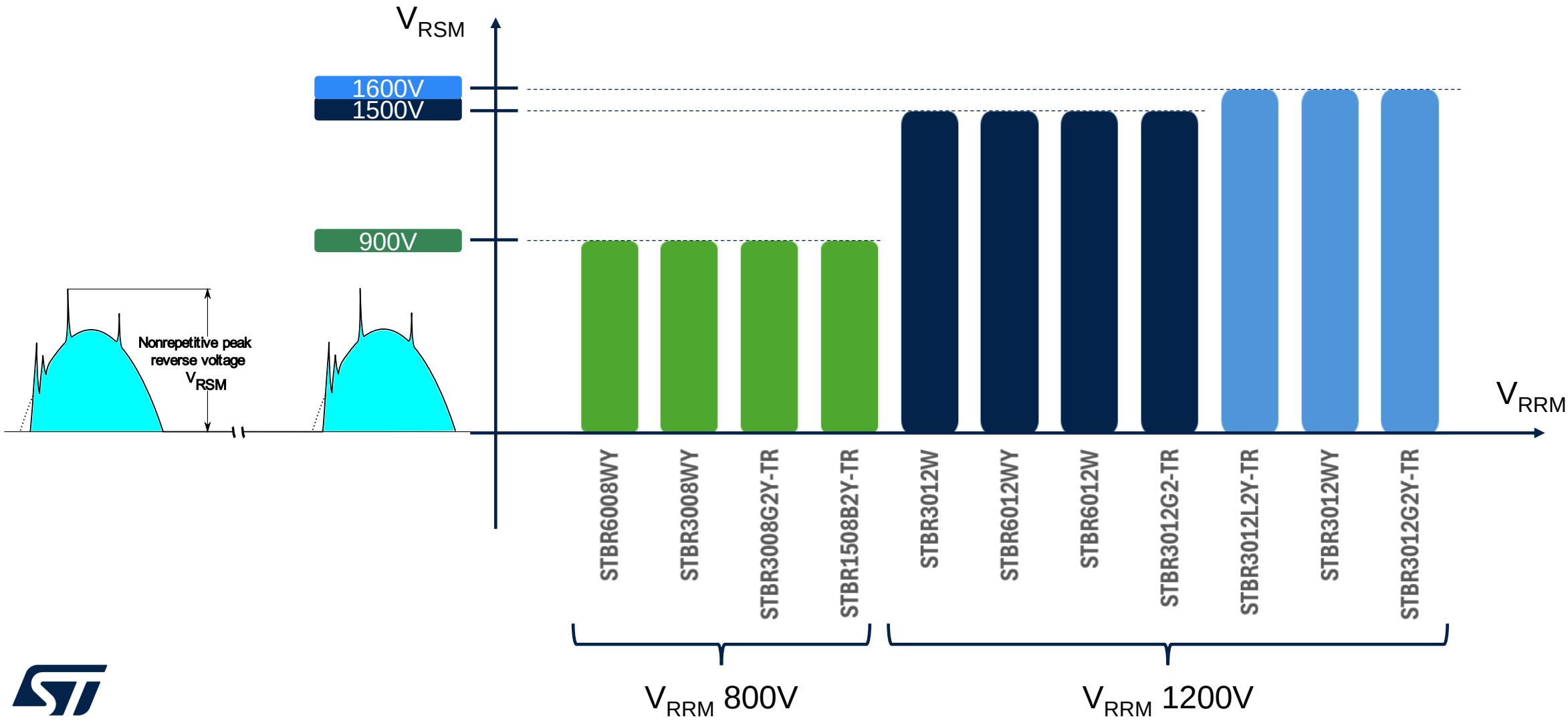


- Easy single phase with four-leg 3-phase PFC
- Less losses than controlled switches
- No gate drivers
- Does not require insulated/floating SMPS
- Save microcontroller ports
- 50 Hz conduction losses reduced
- State-of-the-art and reliable budget solution

Typical conduction losses per diode



Nonrepetitive reverse voltage guaranteed in datasheet

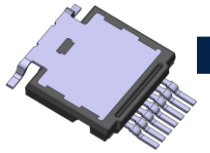


STBR portfolio in mass production

I_{FAV}

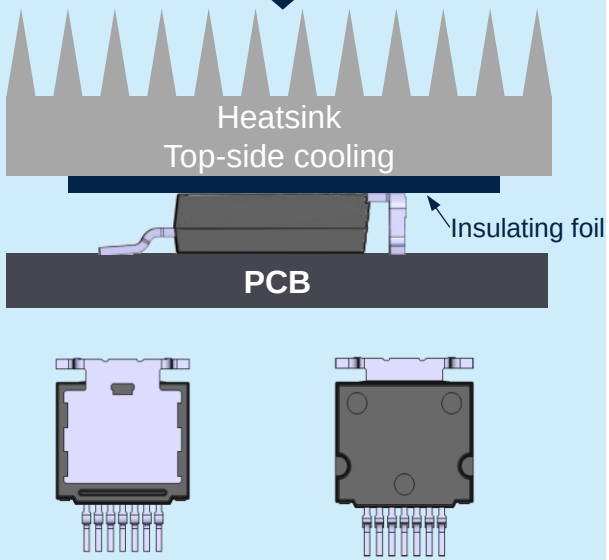
60A

15A

Commercial Product (CP)	$I_{F(AVG)}$ (A)	V_{RRM} (V)	cp_base quantity	cp_bulk quantity	Package name	Package picture
STBR3012L2Y-TR NEW	30	1200	600	600	HU3PAK T.S.C.	
STBR6008WY	60	800	30	600	DO-247	
STBR3008WY	30	800	30	600		
STBR3012WY	30	1200	30	600		
STBR3012W	30	1200	30	600		
STBR6012WY	60	1200	30	600		
STBR6012W	60	1200	30	600		
STBR3008G2Y-TR	30	800	1000	1000	D^2PAK HV	
STBR3012G2Y-TR	30	1200	1000	1000		
STBR3012G2-TR	30	1200	1000	1000		
STBR1508B2Y-TR	15	800	2500	2500	DPAK HV	

Y = Automotive grade

Top-side cooling allows standard PCBs instead insulated metal substrates

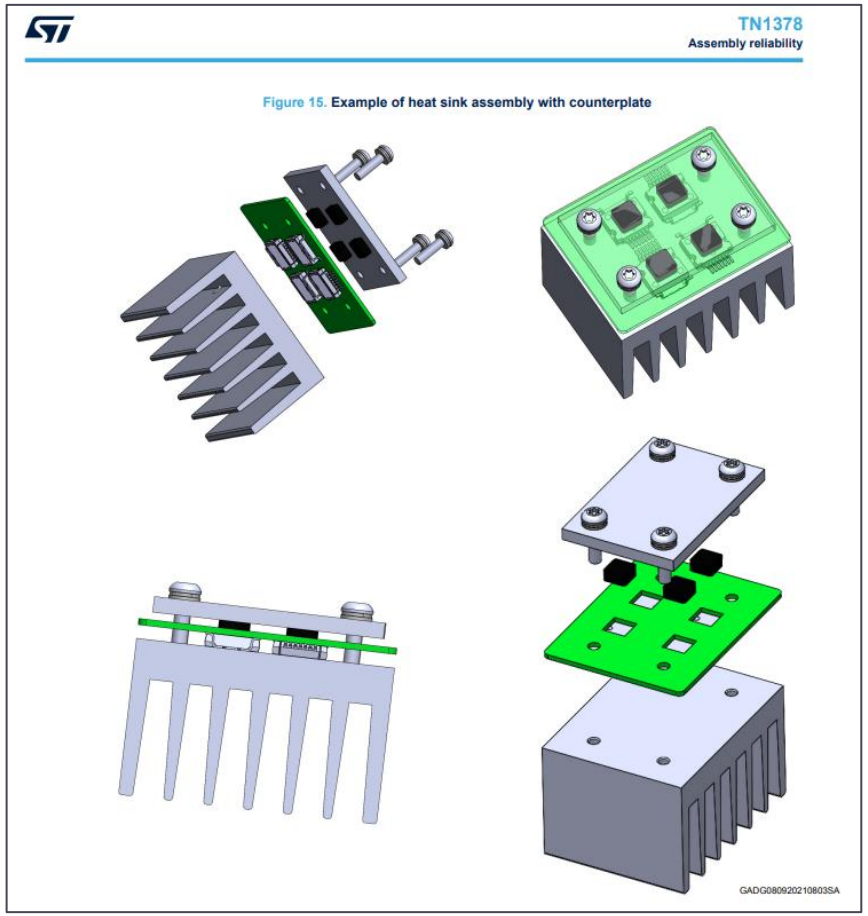


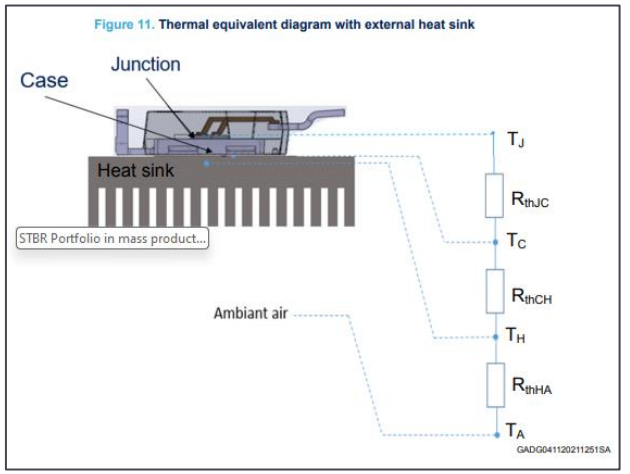
V_{RRM}

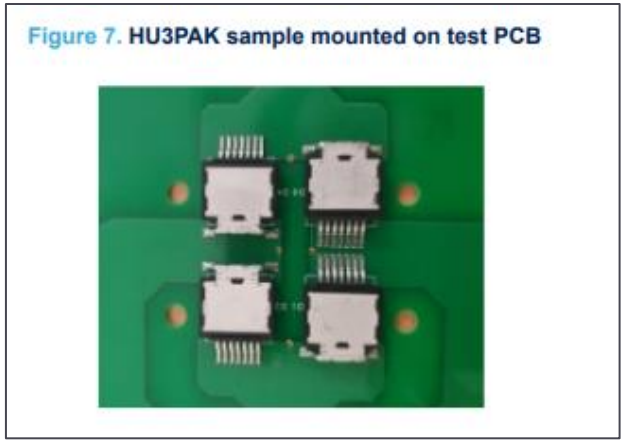
800V ⟷ 1200V

HU3PAK assembly guidelines

Technical note TN1378 provides package mounting and thermal behavior for HU3PAK

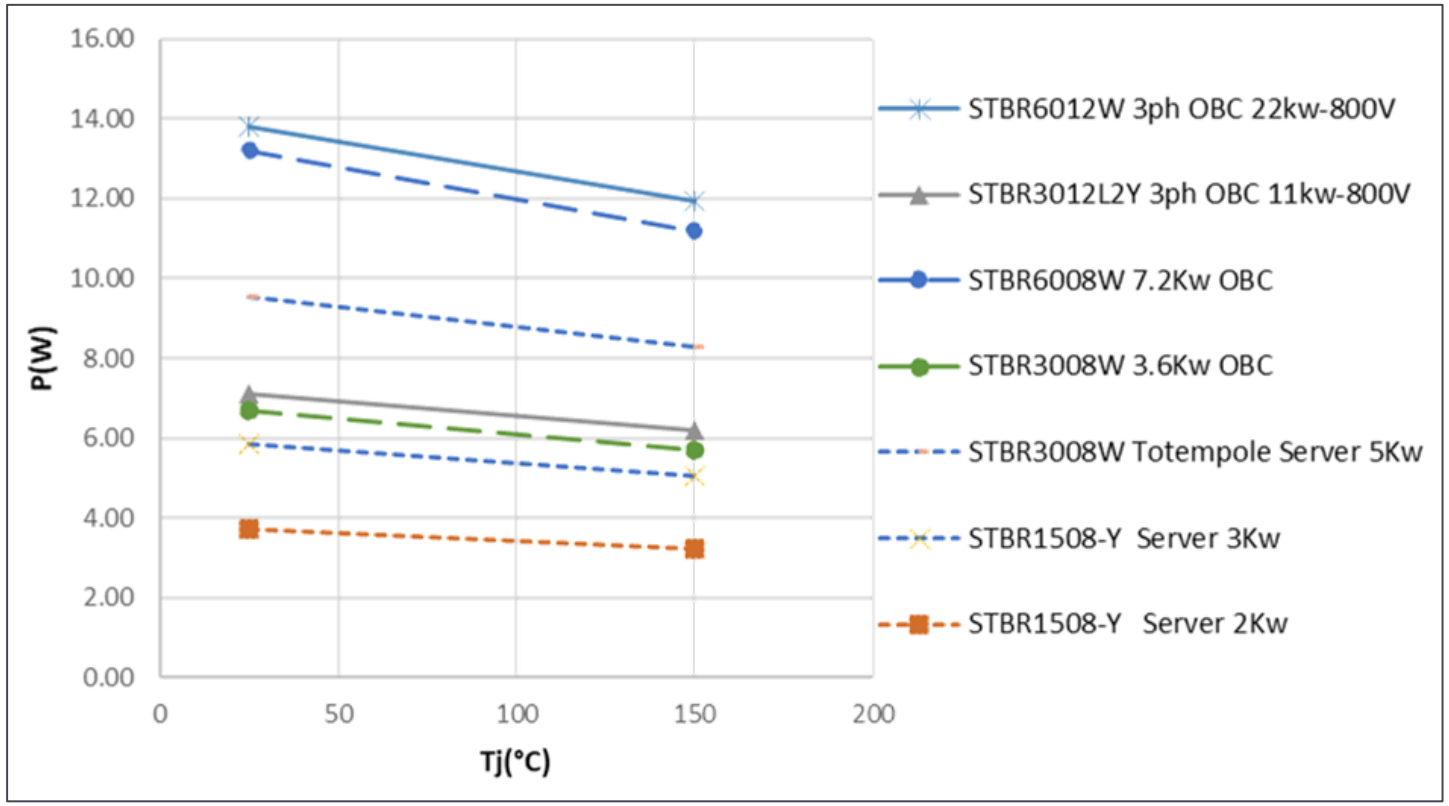






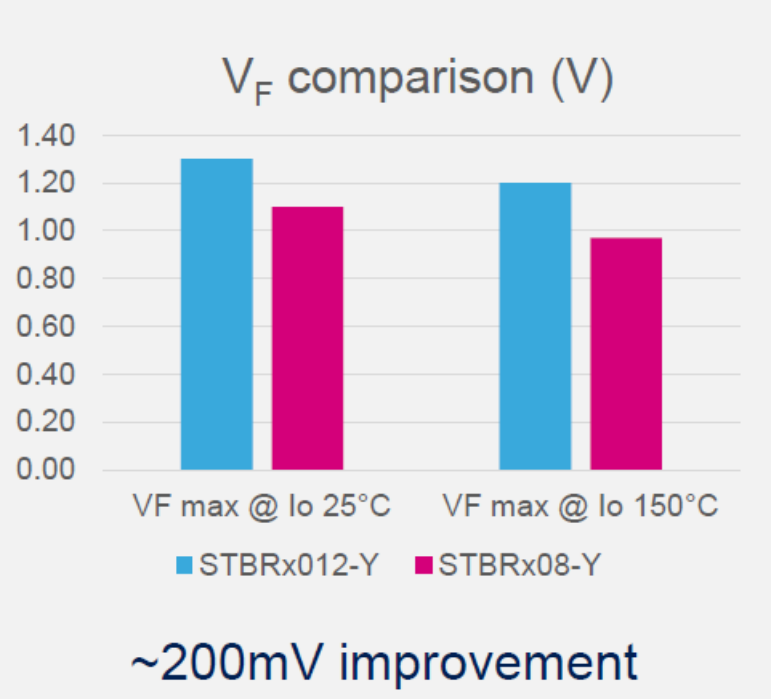
Lower V_F helps reduce conduction losses in low frequency rectification

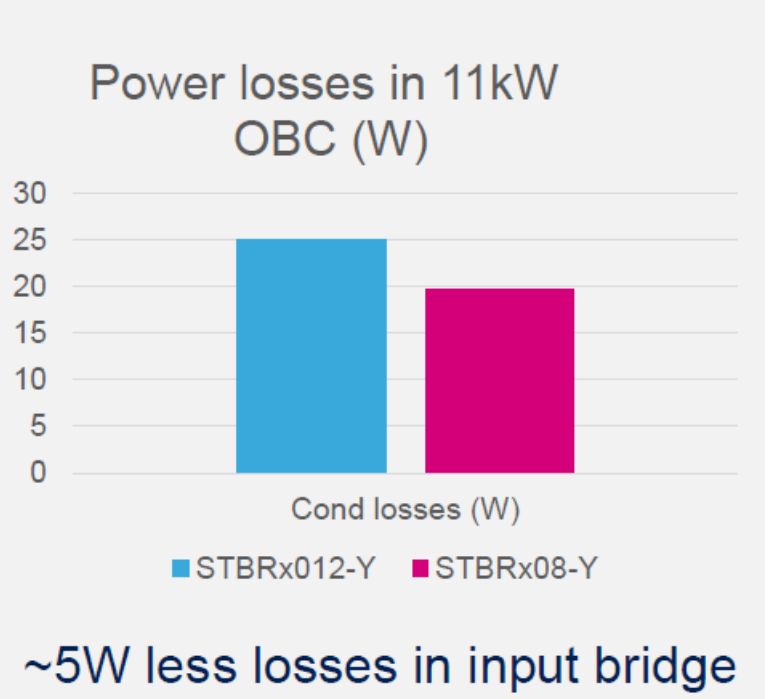
Typical conduction losses per diode

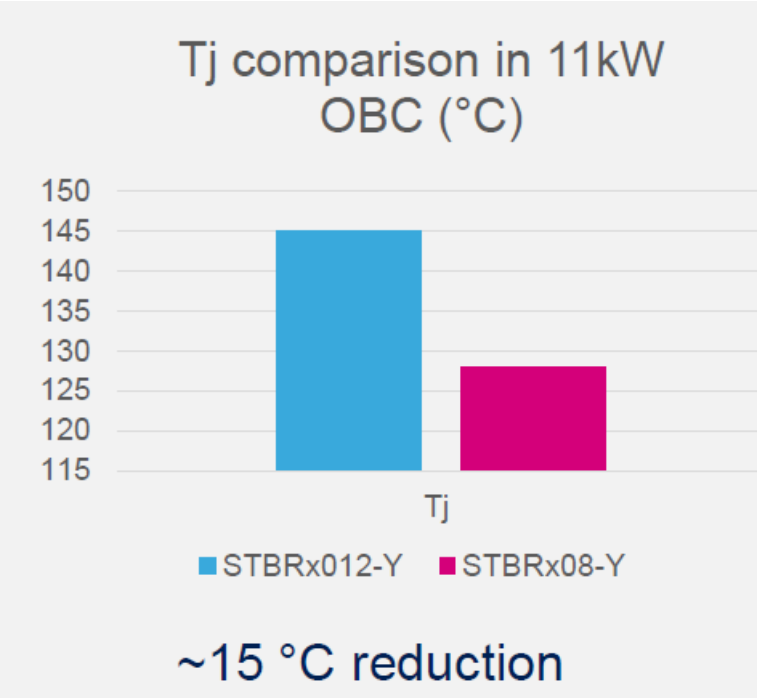


800 V STBR V_F performance

Lower VF reduces diode losses and lowers Tj by 15°C in 11 kW OBCs for improved reliability and flexibility in more compact designs



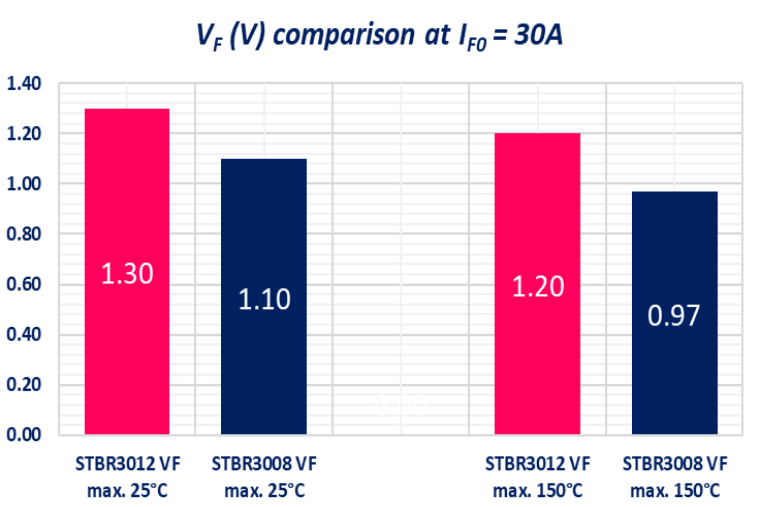




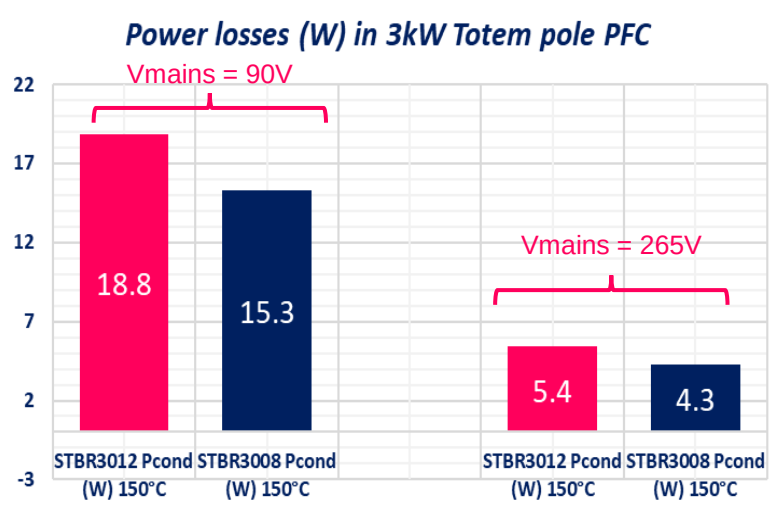
Bridge STBR series V_F performance

Lower VF reduces diode losses and lowers Tj in 3 kW OBCs for improved reliability and flexibility in more compact designs

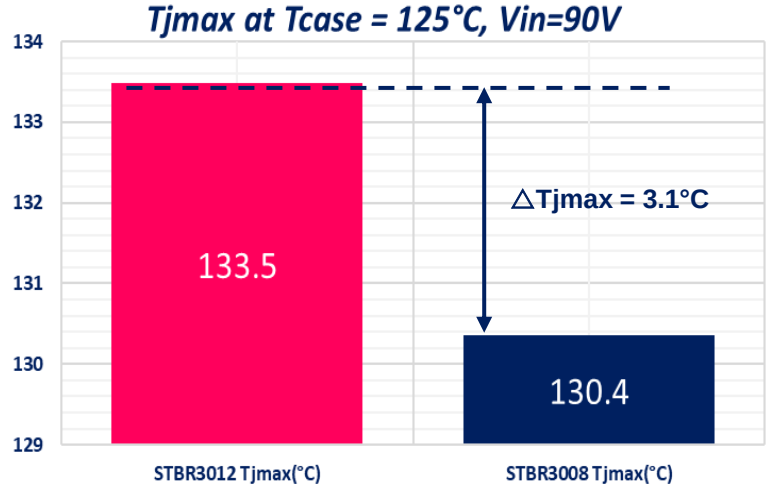
~200mV improvement



Losses are reduced



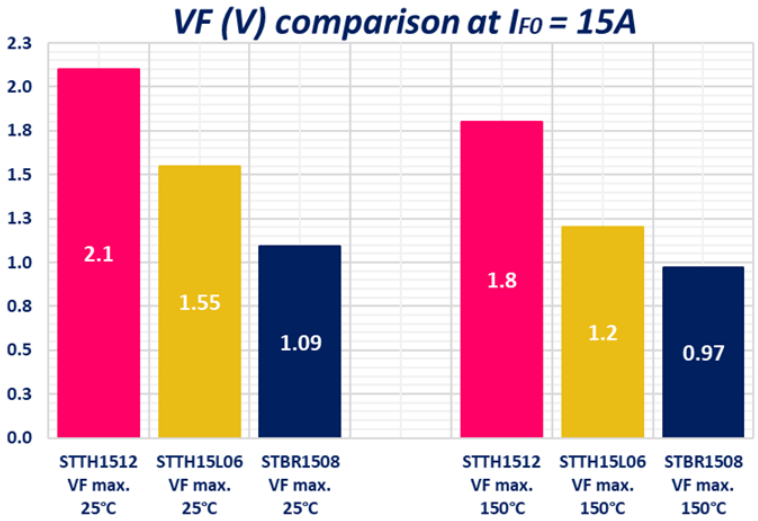
Temperature reduction



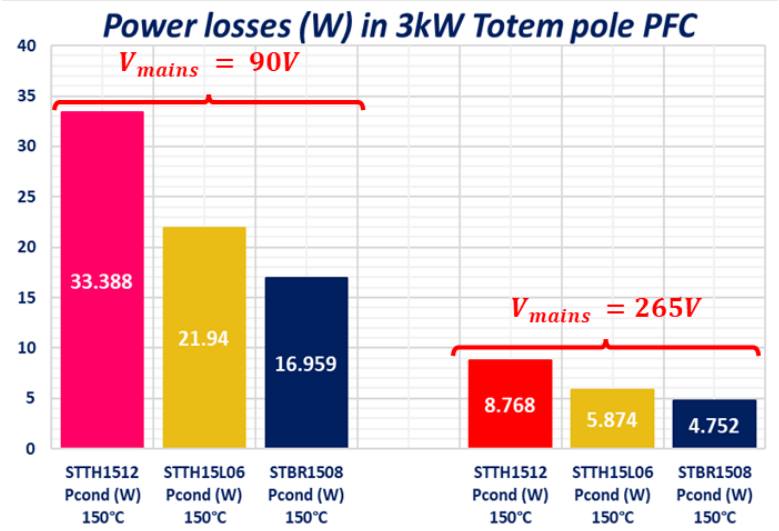
Bridge STBR versus Ultrafast V_F performance

The better VF of STBR1508 reduces diode losses and lowers ~36°C lower Tj than STTH1512D/G and ~29°C than STTH15L06D/G

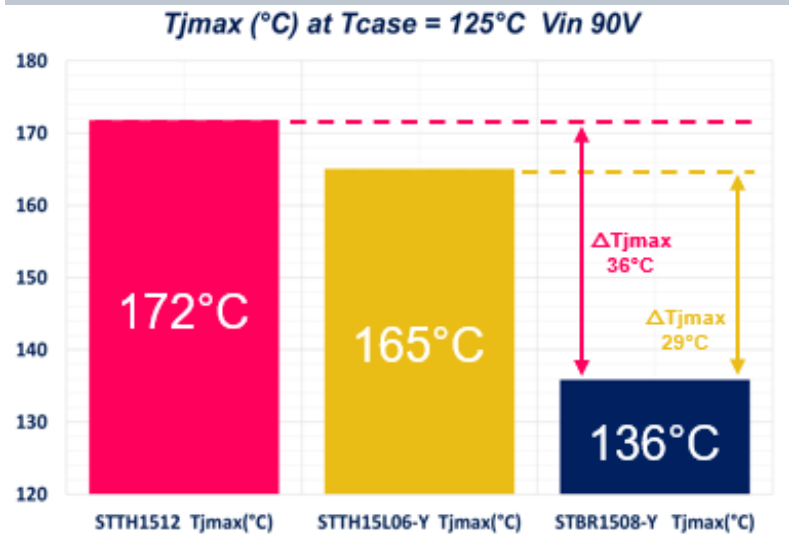
Vf improvement within STBR



Reduced losses in input bridge

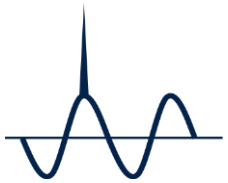


Temp. reduction up to 36°C

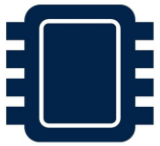


Allows use of DPAK instead of D²PAK/TO-220 (surface saving)

Robust and safe automotive-grade STBR



I_{FSM} rated lightning surge capability (IEC61000-4-5)

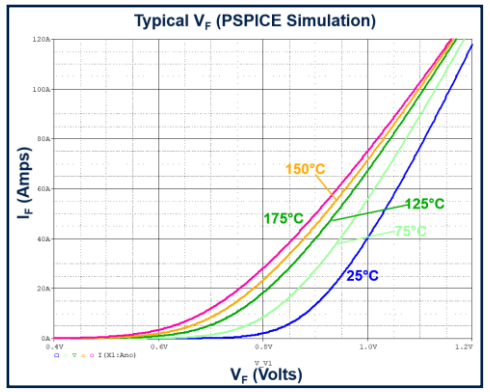


HV D²PAK, HV DPAK, DO-247, and HU3PAK packages

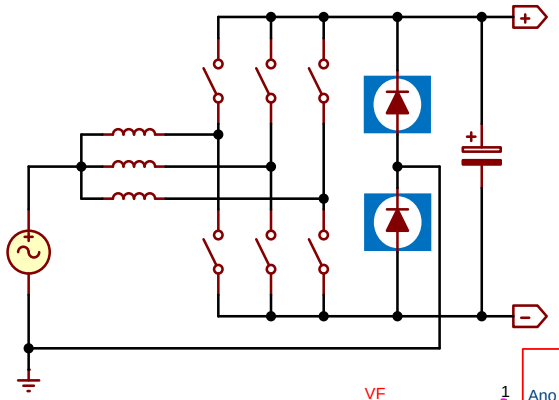
Full V_{RRM} guaranteed (-40 to 175°C) in datasheet

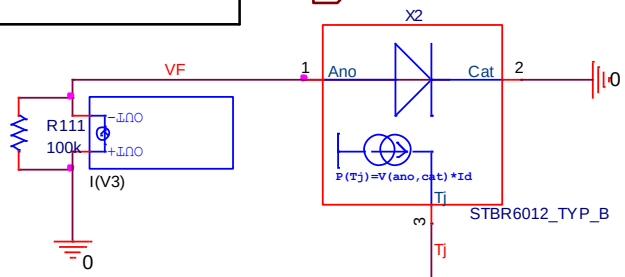
AEC-Q101 qualified – PPAP capable

Eletrothermal simulation

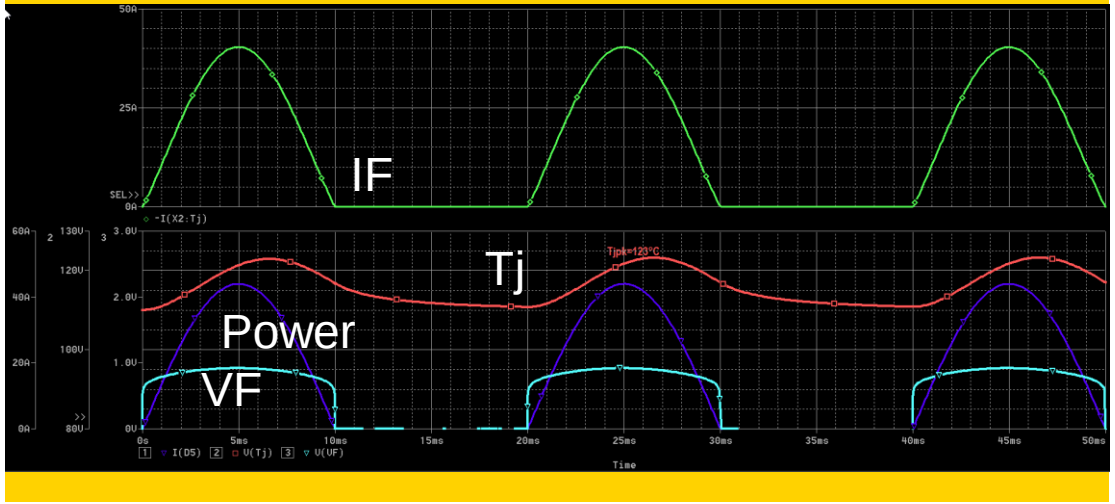


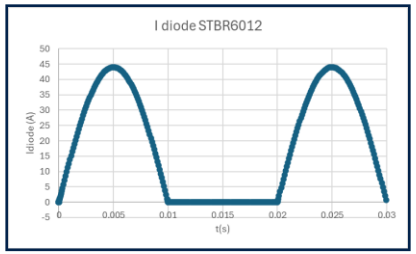
E.g. current waveforms in 22 kW totem pole low frequency leg

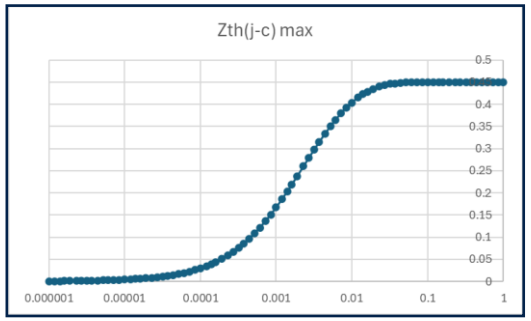


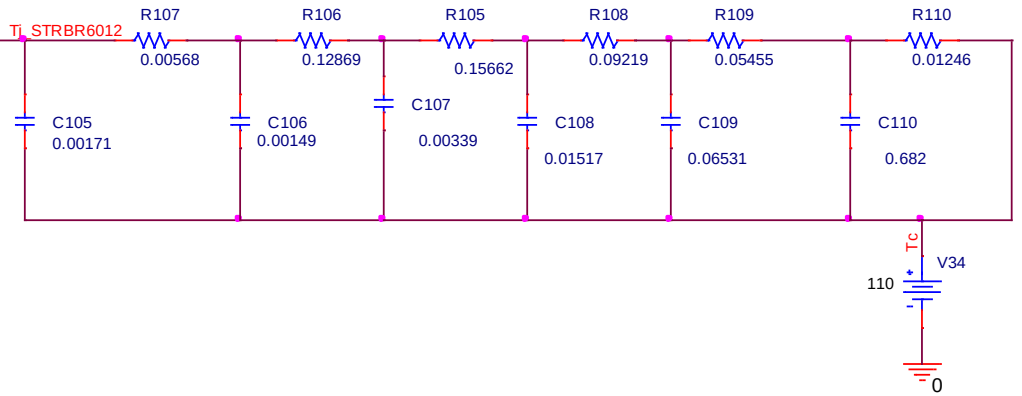


VF(IF,Tj) SPICE lib file & simulation support available on demand

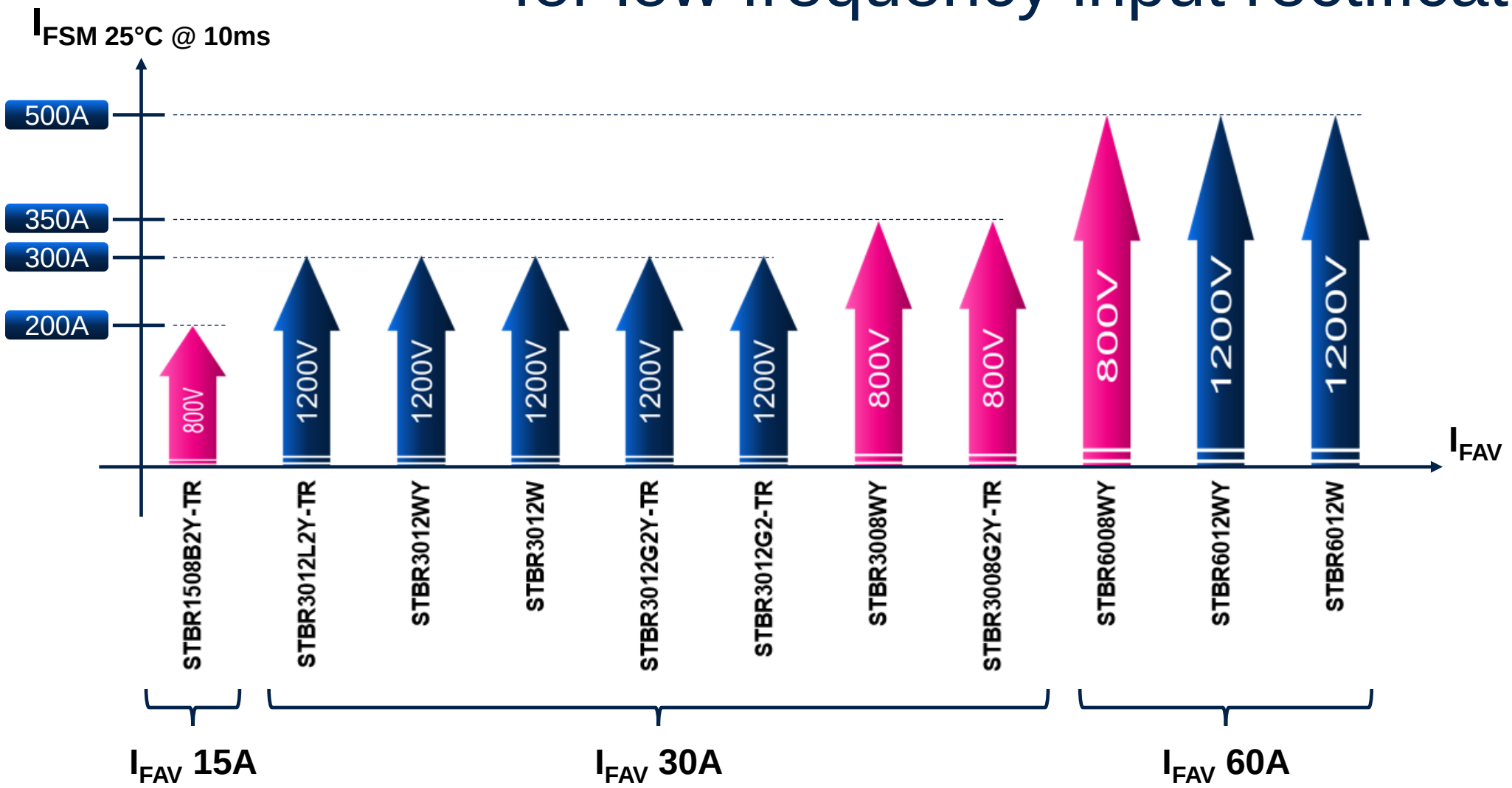




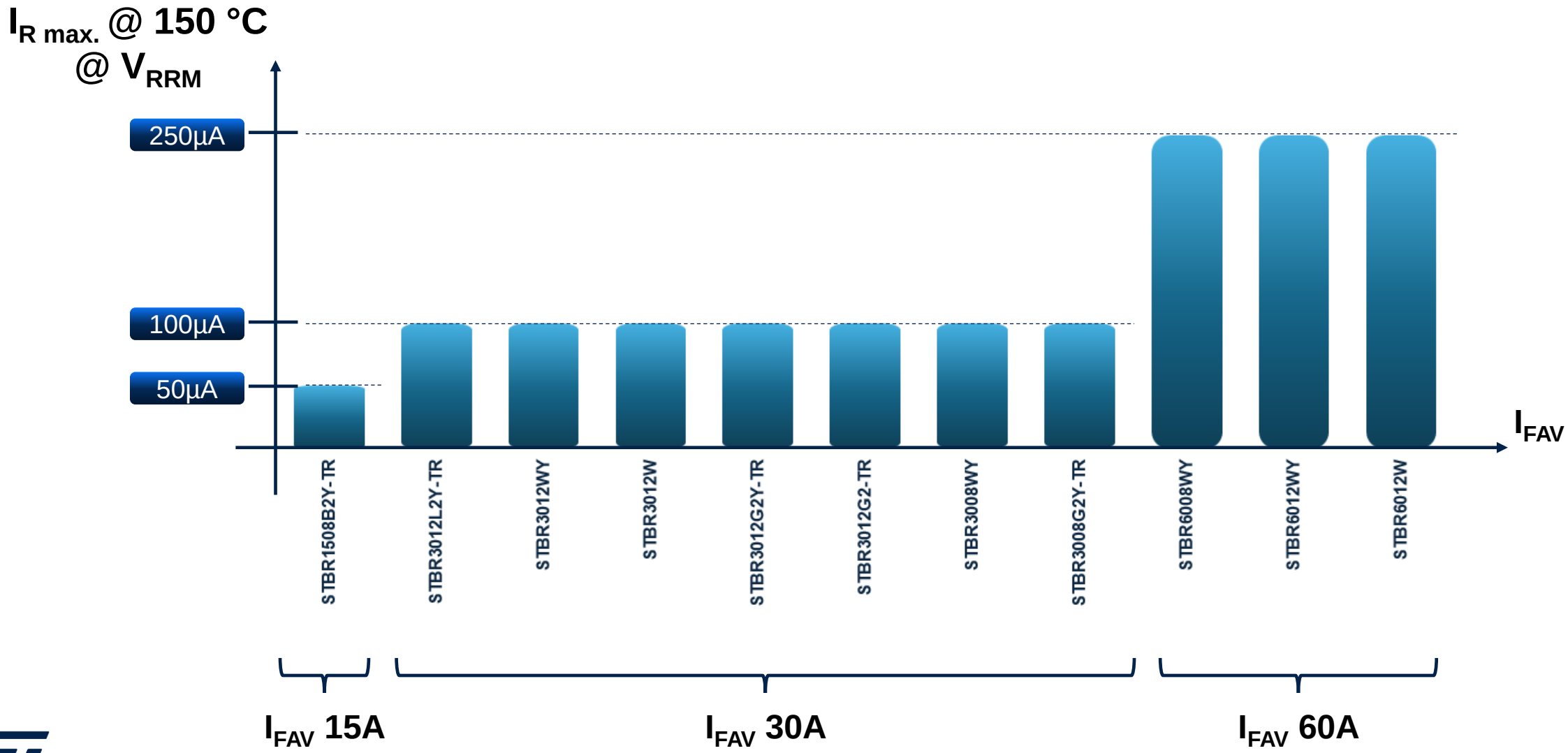




STBR allows high surge capability for low frequency input rectification



STBR has lower (I_R) leakage current versus Ultrafast



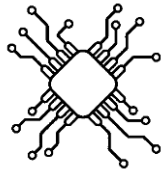
Summary of STBR features

Reduce thermal stress

Increase efficiency

Robust & safe

Design support available on request



Our technology starts with You