

LOW DROP OR-ing POWER SCHOTTKY DIODE

MAJOR PRODUCT CHARACTERISTICS

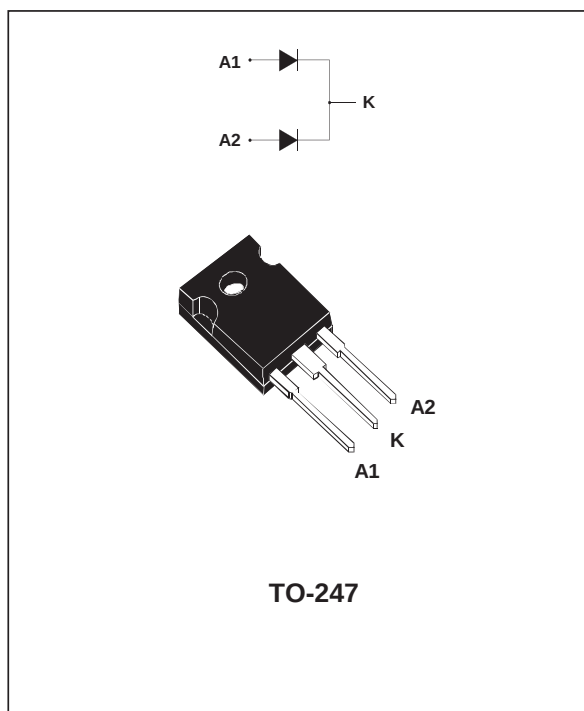
$I_{F(AV)}$	2 x 30 A
V_{RRM}	15 V
$T_j (max)$	125°C
$V_F (max)$	0.33 V

FEATURES AND BENEFITS

- VERY LOW FORWARD VOLTAGE DROP FOR LESS POWER DISSIPATION AND REDUCED HEATSINK SIZE
- OPERATION JUNCTION TEMPERATURE: 125°C
- REVERSE VOLTAGE SUITED TO OR-ing OF 3V, 5V and 12V RAILS
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

Dual center tap schottky rectifier packaged in TO-247 and suited for N+1 redundancy operations, this device has an optimized forward voltage drop to reduce the power losses in the application.



TO-247

ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter			Value	Unit
V _{RRM}	Repetitive peak reverse voltage			15	V
I _{F(RMS)}	RMS forward current			40	A
I _{F(AV)}	Average forward current	Tcase = 115°C δ = 0.5	Per diode	30	A
			Per device	60	
I _{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal		400	A
I _{RRM}	Peak repetitive reverse current	tp = 2μs F = 1kHz		2	A
I _{RSM}	Non repetitive peak reverse current	tp = 100μs		3	A
P _{ARM}	Repetitive peak avalanche power	tp = 1μs Tj = 25°C		24000	W
T _{stg}	Storage temperature range			- 65 to + 150	°C
T _j	Maximum operating junction temperature *			125	°C
dV/dt	Critical rate of rise of reverse voltage			10000	V/μs

* : $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th(j-a)}}$ thermal runaway condition for a diode on its own heatsink

STPS60L15CW

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	0.8	$^{\circ}\text{C/W}$
		Total	0.55	
$R_{th(c)}$	Coupling		0.3	$^{\circ}\text{C/W}$

When the diodes 1 and 2 are used simultaneously:

$$T_j (\text{diode 1}) = P (\text{diode 1}) \times R_{th(j-c)} (\text{per diode}) + P (\text{diode 2}) \times R_{th(c)}$$

STATIC ELECTRICAL CHARACTERISTICS (Per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$T_j = 25^{\circ}\text{C}$	$V_R = V_{RRM}$			16	mA
		$T_j = 100^{\circ}\text{C}$			0.35	0.85	A
V_F^*	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 30\text{ A}$			0.41	V
		$T_j = 25^{\circ}\text{C}$	$I_F = 60\text{ A}$			0.49	
		$T_j = 125^{\circ}\text{C}$	$I_F = 30\text{ A}$		0.27	0.33	
		$T_j = 125^{\circ}\text{C}$	$I_F = 60\text{ A}$		0.39	0.44	

Pulse test : * $t_p = 380\text{ }\mu\text{s}$, $\delta < 2\%$

To evaluate the conduction losses use the following equation:

$$P = 0.22 \times I_{F(AV)} + 0.0036 I_{F(RMS)}^2$$

Fig. 1: Conduction losses versus average current).

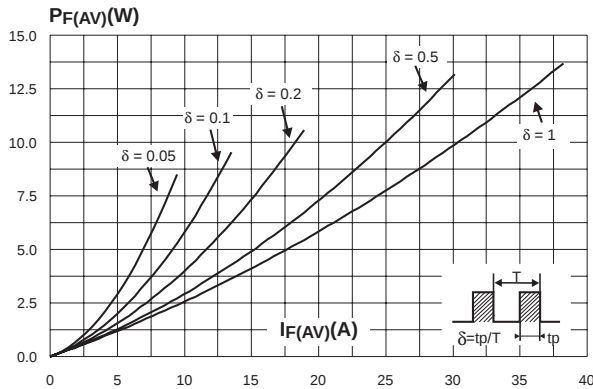


Fig. 3: Normalized avalanche power derating versus pulse duration.

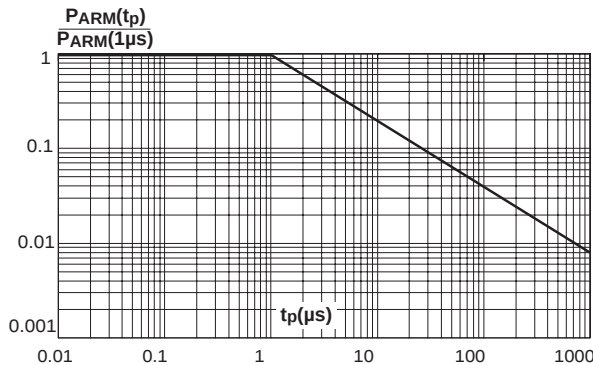


Fig. 2: Average forward current versus ambient temperature ($\delta=0.5$).

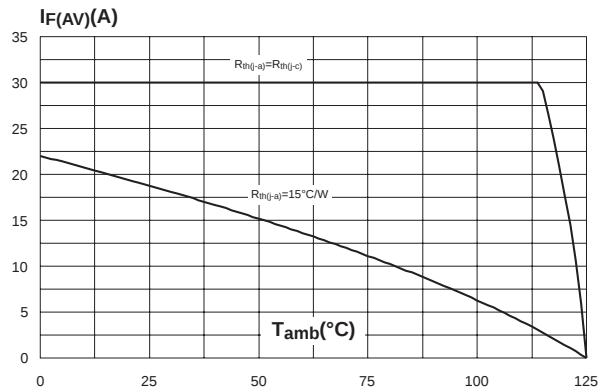


Fig. 4: Normalized avalanche power derating versus junction temperature.

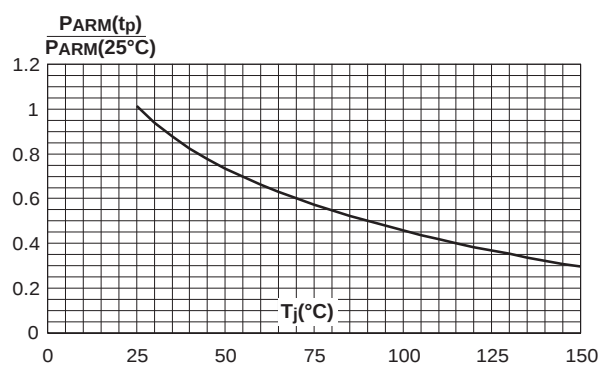


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values).

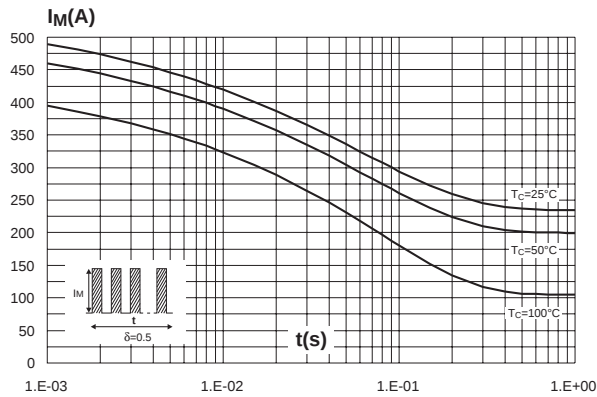


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

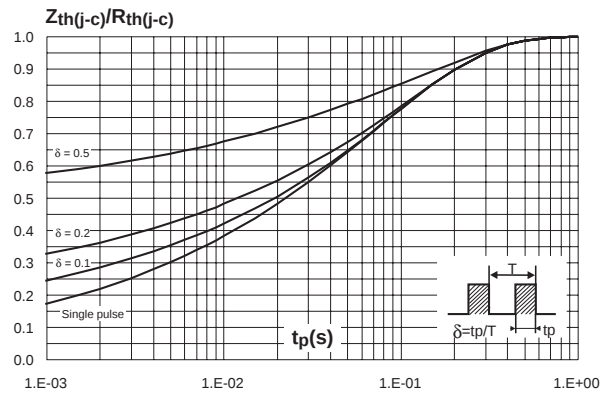


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

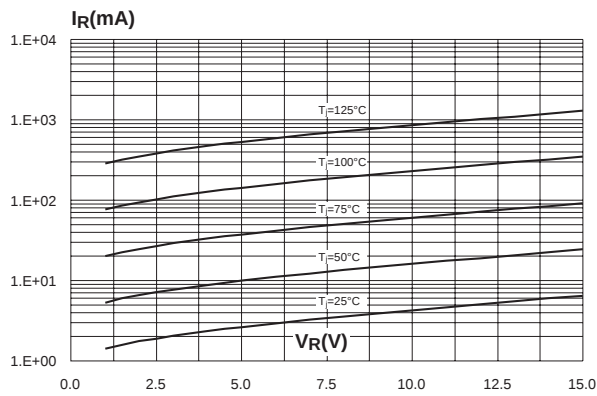


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

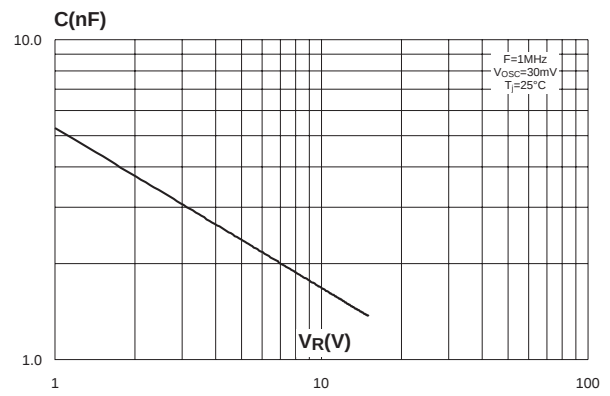
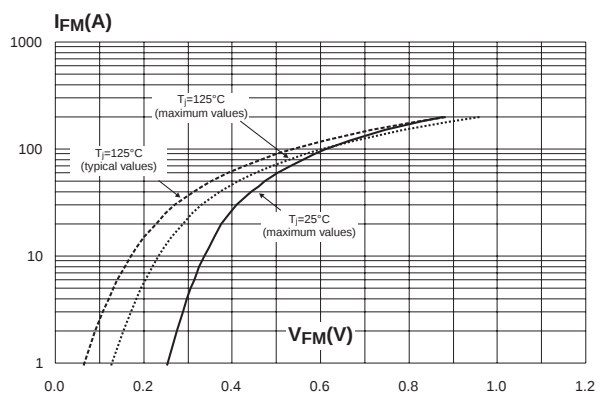
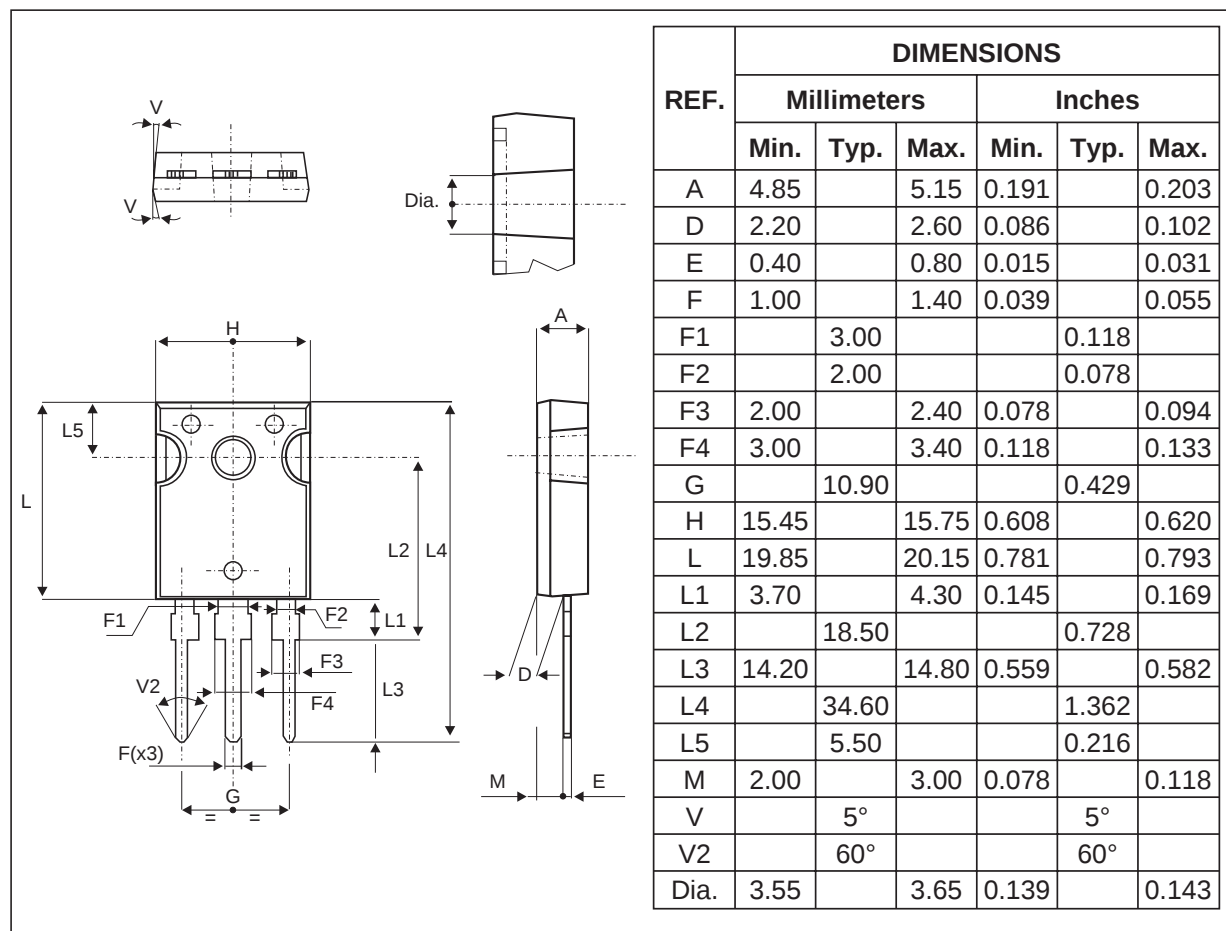


Fig. 9: Forward voltage drop versus forward current.



PACKAGE MECHANICAL DATA
 TO-247


- Cooling method: C
- Recommended torque value: 0.8 m.N
- Maximum torque value: 1.0 m.N

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS60L15CW	STPS60L15CW	TO-247	4.4 g.	30	Tube

- Epoxy meets UL94,V0

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics

© 2003 STMicroelectronics - Printed in Italy - All rights reserved.

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - Finland - France - Germany
 Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore
 Spain - Sweden - Switzerland - United Kingdom - United States.

<http://www.st.com>