

Automotive power Schottky rectifier

Features

- Very small conduction losses
- Negligible switching losses
- Extremely fast switching
- AEC-Q101 qualified

Description

30 A dual center tab Schottky rectifier suitable for automotive applications.

Package in PowerSO-20 (slug up), this device is especially intended for use in a low voltage applications.

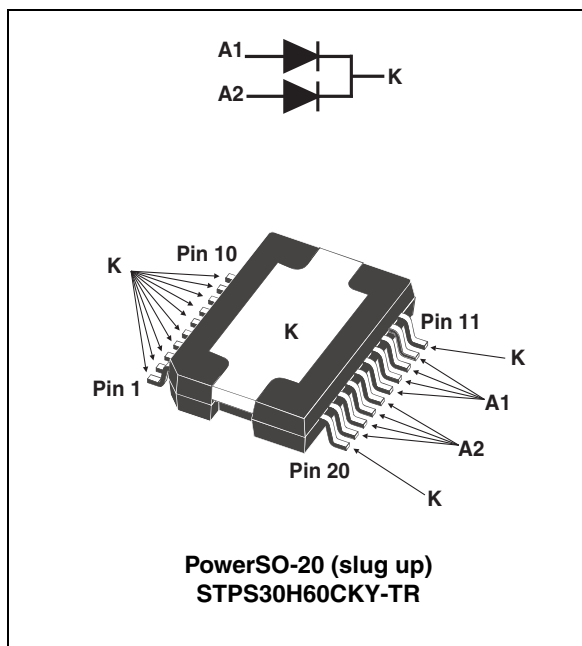


Table 1. Device summary

Symbol	Value
$I_{F(AV)}$	2 x 15 A
V_{RRM}	60 V
$T_{J(max)}$	150 °C
$V_{F(max)}$	0.645 V

1 Characteristics

Table 2. Absolute rating (limiting value, per diode)

Symbol	Parameter			Value	Unit
V _{RRM}	Repetitive peak reverse voltage			60	V
I _{F(RMS)} ⁽¹⁾	Forward rms current			45	A
I _{F(AV)} ⁽¹⁾	Average forward current	T _C = 140 °C, δ = 0.5 square pulse	Per diode	15	A
		T _C = 135 °C, δ = 0.5 square pulse	Per device	30	
I _{FSM} ⁽¹⁾	Surge non repetitive forward current		t _p = 10 ms Sinusoidal	250	A
T _{stg}	Storage temperature range			-65 to +175	°C
T _j	Operating junction temperature range			-40 to +150	°C
T _R	Recommended reflow soldering temperature range			245 +0/-5	°C

1. All anode pins (A1, A2) must be connected

Table 3. Thermal parameters

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode Per device	0.95 0.61	$^{\circ}\text{C/W}$
$R_{th(c)}$	Coupling		0.27	$^{\circ}\text{C/W}$

When diodes 1 and 2 are used simultaneously:

$$\Delta T_{j(\text{diode } 1)} = P_{(\text{diode } 1)} \times R_{th(j-c)}(\text{Per diode}) + P_{(\text{diode } 2)} \times R_{th(c)}$$

Table 4. Static electrical characteristics (per diode)

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
$I_R^{(1)}$	Reverse leakage current	$T_j = 25\text{ }^{\circ}\text{C}$	$V_R = V_{RRM}$			150	μA
		$T_j = 125\text{ }^{\circ}\text{C}$				45	mA
$V_F^{(1) (2)}$	Forward voltage drop	$T_j = 25\text{ }^{\circ}\text{C}$	$I_F = 15\text{ A}$			0.580	V
		$T_j = 125\text{ }^{\circ}\text{C}$	$I_F = 15\text{ A}$			0.515	
		$T_j = 25\text{ }^{\circ}\text{C}$	$I_F = 30\text{ A}$			0.700	
		$T_j = 125\text{ }^{\circ}\text{C}$	$I_F = 30\text{ A}$			0.645	

1. Pulse test : $t_p = 380\text{ }\mu\text{s}$, $d < 2\%$

2. All anode pins (A1, A2) must be connected

To evaluate the maximum conduction losses use the following equation:

$$P = 0.385 \times I_{F(AV)} + 0.00867 \times I_F^2(\text{RMS})$$

Figure 1. Average forward power dissipation versus average forward current (per diode, all anode pins connected)

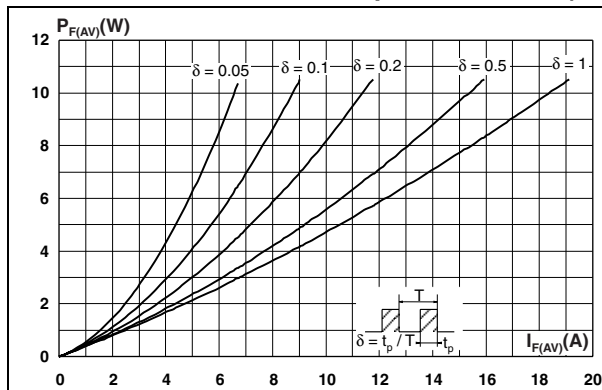


Figure 2. Average forward current versus ambient temperature (per diode, all anode pins connected) ($\delta = 0.5$)

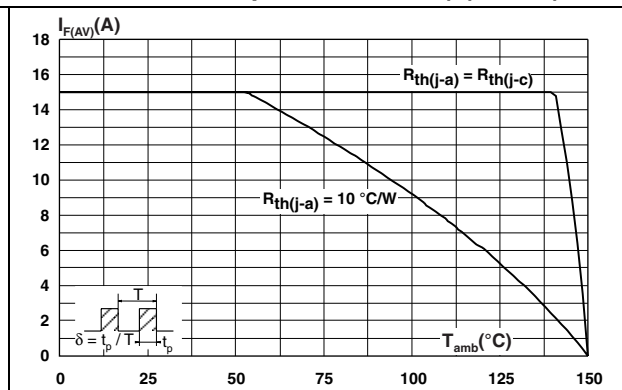


Figure 3. Non repetitive surge peak forward current versus overload duration (maximum values)

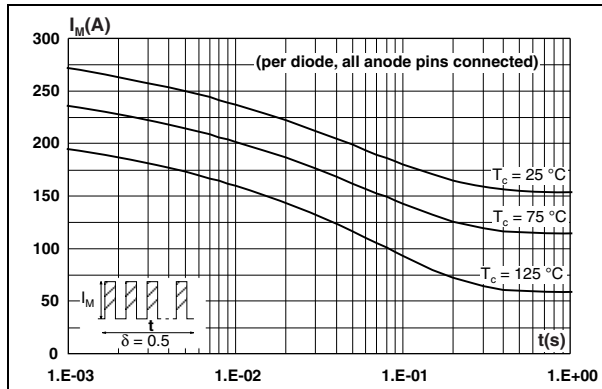


Figure 4. Relative variation of thermal impedance junction to case versus pulse duration

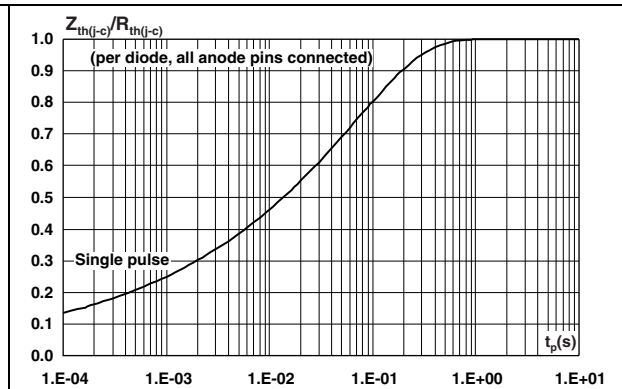


Figure 5. Reverse leakage current versus reverse voltage applied (per diode) (typical values)

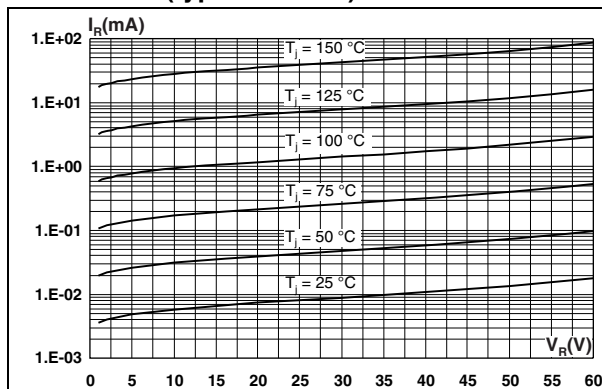


Figure 6. Junction capacitance versus reverse voltage applied (per diode) (typical values)

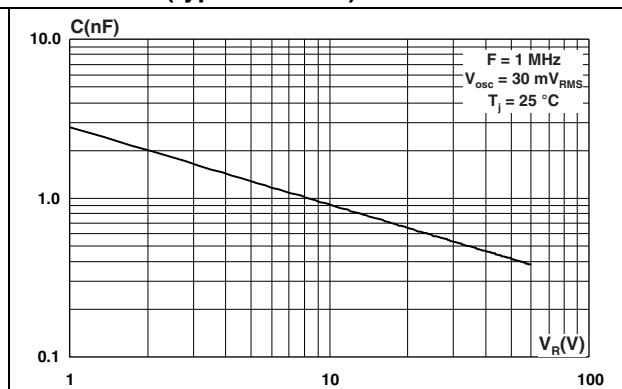


Figure 7. Forward voltage drop versus forward current (per diode, all anode pins connected, low level)

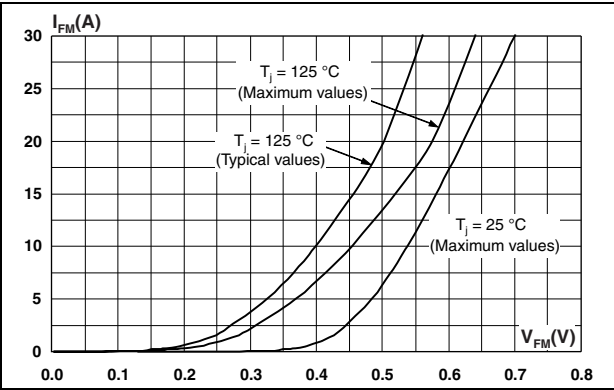
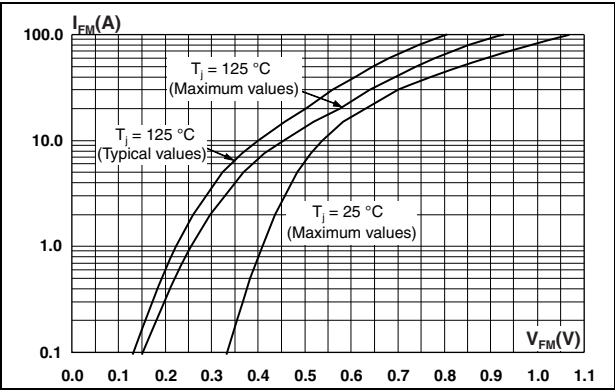


Figure 8. Forward voltage drop versus forward current (per diode, all anode pins connected, high level)



2 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: www.st.com. ECOPACK® is an ST trademark.

Table 5. PowerSO-20 (slug up) dimensions

Ref	Dimensions					
	Millimeter			Inch		
	Min	Typ	Max	Min	Typ	Max
A	3.25		3.5	0.128		0.138
A2	3	3.15	3.3	0.118	0.124	0.13
A4	0.8		1	0.031		0.039
A5	0.15	0.2	0.25	0.006	0.008	0.01
a1	0.03		-0.04	0.0012		-0.0016
b	0.4		0.53	0.016		0.021
c	0.23		0.32	0.009		0.012
D ⁽¹⁾	15.8		16	0.622		0.63
D1	9.4		9.8	0.37		0.385
D2		1			0.039	
E	13.9		14.5	0.547		0.57
E1 ⁽¹⁾	10.9		11.1	0.429		0.437
E2			2.9			0.114
E3	5.8		6.2	0.228		0.244
e	1.12	1.27	1.42	0.044	0.05	0.056
e3		11.43			0.45	
G	0		0.1	0		0.004
H	15.5		15.9	0.61		0.625
h			1.1			0.043
L	0.8		1.1	0.031		0.043
N			10°			10°
R		0.6			0.024	
S	0°		8°	0°		8°
V	5°		7°	5°		7°

1. These measurements do not include mold flash or protrusions.
Mold flash or protrusions shall not exceed 0.15 mm (0.006"). Critical dimensions: E, a1, e, and G.

3 Ordering information

Table 6. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
STPS30H60CKY-TR	PS30H60CY	PowerSO-20	1.93 g	600	Tape and reel

4 Revision history

Table 7. Document revision history

Date	Revision	Changes
02-Dic-2010	1	First issue.

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

UNLESS EXPRESSLY APPROVED IN WRITING BY AN AUTHORIZED ST REPRESENTATIVE, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2010 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Philippines - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[STMicroelectronics:](#)

[STPS30H60CKY-TR](#)