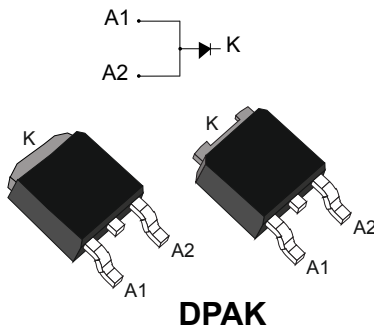


## 2 x 7.5 A - 45 V low drop power Schottky rectifier



### Features

- Very small conduction losses
- Negligible switching losses
- Extremely fast switching
- Low forward voltage drop
- Low capacitance
- Avalanche capability specified
- **ECOPACK2** compliant component

### Applications

- SMPS
- Freewheeling diodes
- Switching diodes

### Description

Dual center tab Schottky rectifier suited for SMPS and high frequency DC to DC converters.

Packaged in DPAK, the **STPS15L45C** is intended for use in low voltage, high frequency inverters, freewheeling and polarity protection applications.

#### Product status link

[STPS15L45C](#)

#### Product summary

Symbol	Value
$I_{F(AV)}$	2 x 7.5 A
$V_{RRM}$	45 V
$T_{j(max.)}$	150 °C
$V_{F(typ.)}$	0.40 V

# 1 Characteristics

**Table 1. Absolute ratings (limiting values, per diode, at 25 °C unless otherwise specified)**

Symbol	Parameter		Value	Unit	
V <sub>RRM</sub>	Repetitive peak reverse voltage		45	V	
I <sub>F(RMS)</sub>	Forward rms current		10	A	
I <sub>F(AV)</sub>	Average forward current	T <sub>c</sub> = 140 °C, δ = 0.5 square wave	Per diode	7.5	A
			Per device	15	
I <sub>FSM</sub>	Surge non repetitive forward current		t <sub>p</sub> = 10 ms sinusoidal	75	A
P <sub>ARM</sub>	Repetitive peak avalanche power		t <sub>p</sub> = 10 μs, T <sub>j</sub> = 125 °C	265	W
T <sub>stg</sub>	Storage temperature range		-65 to +175	°C	
T <sub>j</sub>	Maximum operating junction temperature <sup>(1)</sup>		150	°C	

1.  $(dP_{tot}/dT_j) < (1/R_{th(j-a)})$  condition to avoid thermal runaway for a diode on its own heatsink.

**Table 2. Thermal resistance parameters**

Symbol	Parameter		Max. value	Unit
R <sub>th(j-c)</sub>	Junction to case	Per diode	4	°C/W
		Total	2.4	
R <sub>th(c)</sub>	Coupling		0.7	

When the diodes 1 and 2 are used simultaneously :

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

For more information, please refer to the following application note :

- AN5088 : Rectifiers thermal management, handling and mounting recommendations

**Table 3. Static electrical characteristics (per diode)**

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
I <sub>R</sub> <sup>(1)</sup>	Reverse leakage current	T <sub>j</sub> = 25 °C	V <sub>R</sub> = V <sub>RRM</sub>	-		500	μA
		T <sub>j</sub> = 125 °C		-	60	120	mA
V <sub>F</sub> <sup>(2)</sup>	Forward voltage drop	T <sub>j</sub> = 25 °C	I <sub>F</sub> = 7.5 A	-		0.52	V
		T <sub>j</sub> = 125 °C		-	0.40	0.46	
		T <sub>j</sub> = 25 °C	I <sub>F</sub> = 12 A	-		0.60	
		T <sub>j</sub> = 125 °C		-	0.49	0.57	
		T <sub>j</sub> = 25 °C	I <sub>F</sub> = 15 A	-		0.64	
		T <sub>j</sub> = 125 °C		-	0.53	0.63	

1. Pulse test: t<sub>p</sub> = 5 ms, δ < 2%

2. Pulse test: t<sub>p</sub> = 380 μs, δ < 2%

To evaluate the conduction losses, use the following equation:

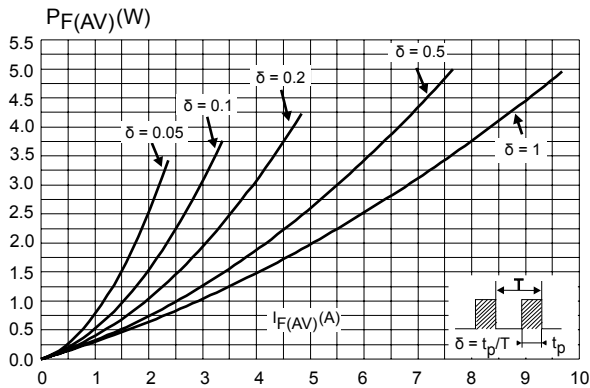
$$P = 0.29 \times I_{F(AV)} + 0.023 \times I_{F(RMS)}^2$$

For more information, please refer to the following application notes related to the power losses :

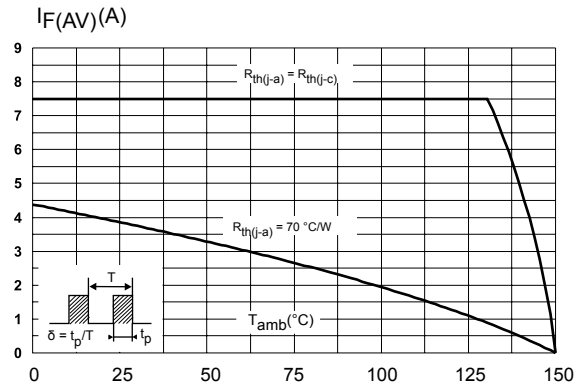
- AN604: Calculation of conduction losses in a power rectifier
- AN4021: Calculation of reverse losses on a power diode

## 1.1 Characteristics (curves)

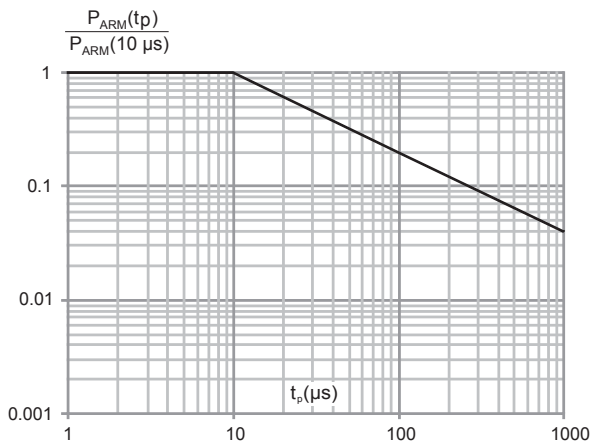
**Figure 1. Average forward power dissipation versus average forward current (per diode)**



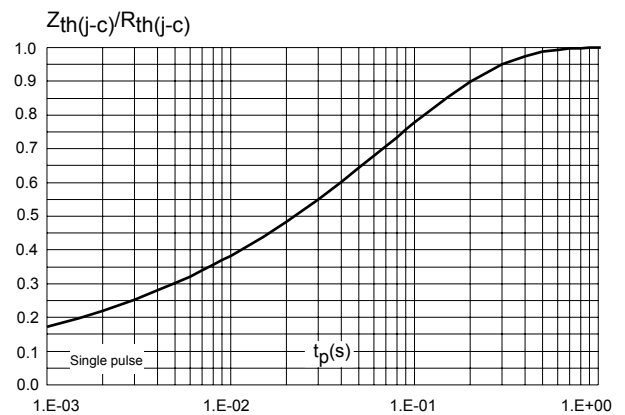
**Figure 2. Average forward current versus ambient temperature ( $\delta = 0.5$ , per diode)**



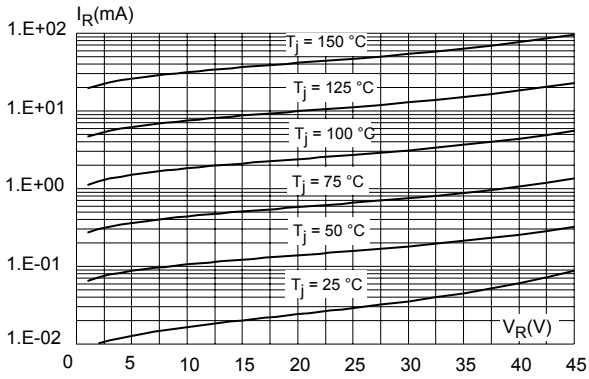
**Figure 3. Normalized avalanche power derating versus pulse duration ( $T_j = 125\text{ }^\circ\text{C}$ )**



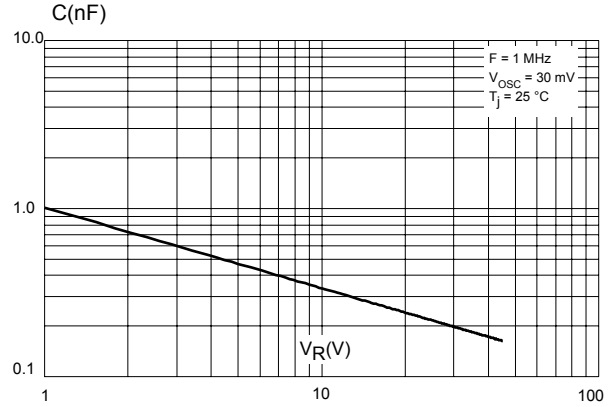
**Figure 4. Relative variation of thermal impedance junction to case versus pulse duration**



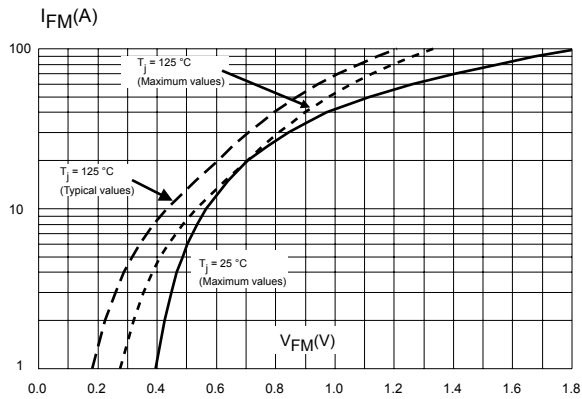
**Figure 5. Reverse leakage current versus reverse voltage applied (typical values, per diode)**



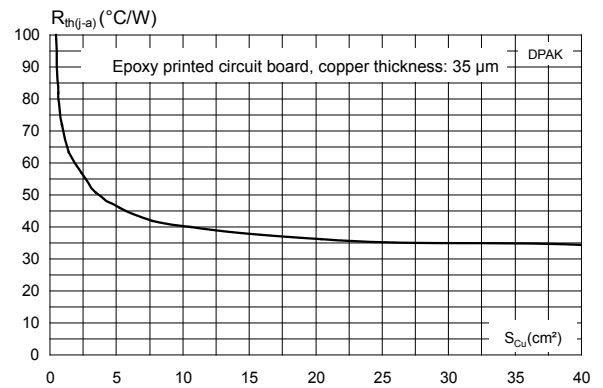
**Figure 6. Junction capacitance versus reverse voltage applied (typical values, per diode)**



**Figure 7. Forward voltage drop versus forward current (per diode)**



**Figure 8. Thermal resistance junction to ambient versus copper surface under tab**



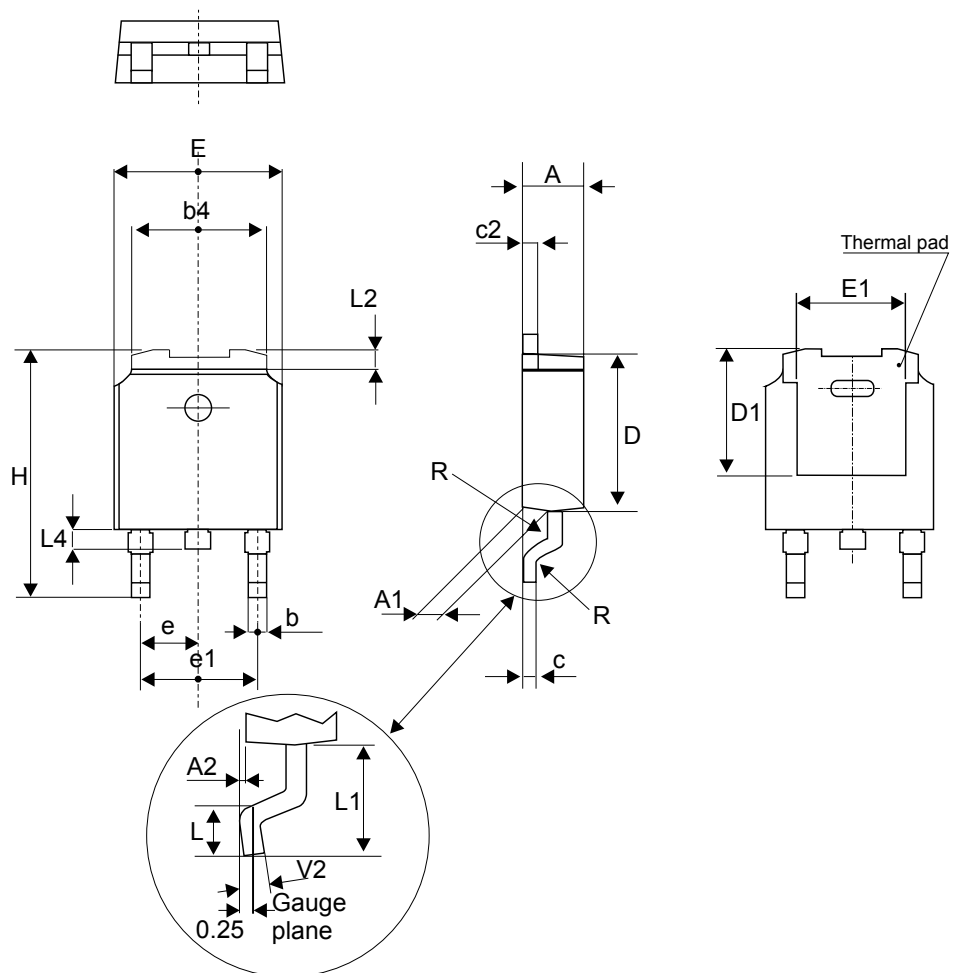
## 2 Package information

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](http://www.st.com). ECOPACK is an ST trademark.

### 2.1 DPAK package information

- Epoxy meets UL 94, V0
- Cooling method: by conduction (C)

**Figure 9. DPAK package outline**

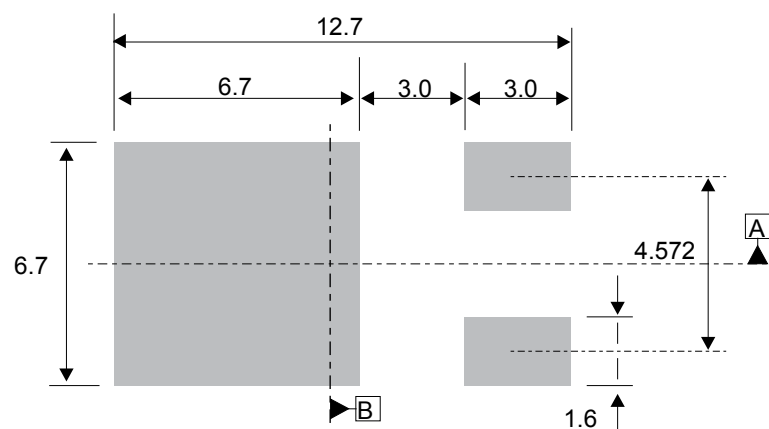


*Note:* This package drawing may slightly differ from the physical package. However, all the specified dimensions are guaranteed.

**Table 4. DPAK package mechanical data**

Ref.	Dimensions			
	Millimeters		Inches (for reference only)	
	Min.	Max.	Min.	Max.
A	2.18	2.40	0.085	0.094
A1	0.90	1.10	0.035	0.043
A2	0.03	0.23	0.001	0.009
b	0.64	0.90	0.025	0.035
b4	4.95	5.46	0.194	0.215
c	0.46	0.61	0.018	0.024
c2	0.46	0.60	0.018	0.023
D	5.97	6.22	0.235	0.244
D1	4.95	5.60	0.194	0.220
E	6.35	6.73	0.250	0.265
E1	4.32	5.50	0.170	0.216
e	2.286 typ.		0.090 typ.	
e1	4.40	4.70	0.173	0.185
H	9.35	10.40	0.368	0.409
L	1.0	1.78	0.039	0.070
L2		1.27		0.050
L4	0.60	1.02	0.023	0.040
V2	-8°	+8°	-8°	+8°

**Figure 10. DPAK recommended footprint (dimensions in mm)**



The device must be positioned within  $\oplus 0.05$  AB

### 3 Ordering Information

**Table 5. Ordering information**

Order code	Marking	Package	Weight	Base qty.	Delivery mode
STPS15L45CB	S15L45C	DPAK	0.35 g	75	Tube
STPS15L45CB-TR				2500	Tape and reel



## Revision history

**Table 6. Document revision history**

Date	Version	Changes
10-Mar-2011	2	Automatic revalidation date workflow started.
07-Jul-2015	3	Updated DPAK package information and reformatted to current standard. Removed IPAK.
29-Nov-2018	4	Updated DPAK package information and reformatted to current standard.
09-Aug-2019	5	Added <a href="#">Section Applications</a> . Updated <a href="#">Table 3</a> , <a href="#">Figure 4</a> and <a href="#">Table 5</a> .

**IMPORTANT NOTICE – PLEASE READ CAREFULLY**

STMicroelectronics NV and its subsidiaries (“ST”) reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST’s terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers’ products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. For additional information about ST trademarks, please refer to [www.st.com/trademarks](http://www.st.com/trademarks). All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2019 STMicroelectronics – All rights reserved

## Данный компонент на территории Российской Федерации

### Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9