imall

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from, Europe, America and south Asia, supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts, Customers Priority, Honest Operation, and Considerate Service", our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip, ALPS, ROHM, Xilinx, Pulse, ON, Everlight and Freescale. Main products comprise IC, Modules, Potentiometer, IC Socket, Relay, Connector. Our parts cover such applications as commercial, industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832 Email & Skype: info@chipsmall.com Web: www.chipsmall.com Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

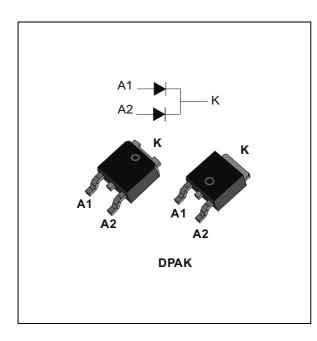


STPS640C

life.augmented

Power Schottky rectifier

Datasheet – production data



Description

This dual Schottky rectifier is designed for switch mode power supplies and other power converters.

This device is intended for use in low and medium voltage operation, and in particular high frequency circuits where low switching losses are required (free wheeling and polarity protection).

Symbol	Value		
I _{F(AV)}	2 x 3 A		
V _{RRM}	40 V		
T _j (max)	150 °C		
V _F (typ)	0.50 V		

Table 1. Device summary

Features

- Very small conduction losses
- Extremely fast switching
- Low thermal resistance
- Negligible switching losses
- Low forward voltage drop
- Low capacitance
- Avalanche specification
- ECOPACK[®]2 compliant component for DPAK on demand

This is information on a product in full production.

1 Characteristics

Table 2. Absolute ratings (limiting values, per diode, at 25 °C unless otherwise stated)

Symbol	Parameter	Value	Unit		
V _{RRM}	Repetitive peak reverse voltage	40	V		
I _{F(RMS)}	Forward rms current	Forward rms current			
I _{F(AV)}	Average forward current, square wave	3	Α		
I _{FSM}	Surge non repetitive forward current	Surge non repetitive forward current $t_p = 10 \text{ ms sinusoidal}$			
P _{ARM}	Repetitive peak avalanche power	90	W		
T _{stg}	Storage temperature range	-65 to + 150	°C		
Т _ј	Maximum operating junction temperature ⁽¹⁾	150	°C		
dPtot					

1. $\frac{dPtot}{dT_j} < \frac{1}{Rth(j-a)}$ condition to avoid thermal runaway for a diode on its own heatsink

Table 3. Thermal parameters

Symbol	Parameter	Value	Unit	
В	per dioc	le	5.5	
R _{th(j-c)}	Junction to case per dev	per device		°C/W
R _{th(c)}	coupling		0.5	

When the diodes 1 and 2 are used simultaneously: Δ Tj (diode 1) = P (diode1) x R_{th(j-c)} (Per diode) + P (diode 2) x R_{th(c)}

Table 4. Static electrical characteristics (per diode)

Symbol	Parameter	Test conditions		Min.	Тур	Max.	Unit
IR ⁽¹⁾ Reverse leakage current	Roverse leakage current	T _j = 25 °C	V V	-	-	100	μΑ
	T _j = 125 °C	V _R = V _{RRM}	-	2	10	mA	
			1 2 4	-	-	0.63	
V _F ⁽²⁾	V _F ⁽²⁾ Forward voltage drop	T _j = 125 °C	I _F = 3 A	-	0.50	0.57	V
VF ^V Forward voltage drop	T _j = 25 °C		-	-	0.84	v	
		T _j = 125 °C	I _F = 6 A	-	0.67	0.72	

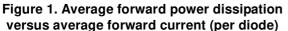
1. Pulse test: $t_p = 5 \text{ ms}, \delta < 2\%$

2. Pulse test: $t_p = 380 \ \mu s, \delta < 2\%$

To evaluate the conduction losses use the following equation:

$$P = 0.42 \times I_{F(AV)} + 0.050 I_{F}^{2}(RMS)$$





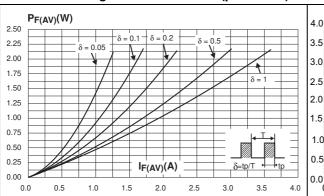


Figure 3. Normalized avalanche power derating versus pulse duration at T_i = 125 °C

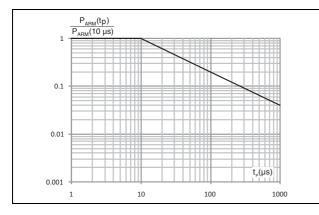


Figure 5. Reverse leakage current versus reverse voltage applied (typical values, per diode)

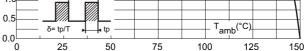


Figure 4. Relative variation of thermal impedance junction to case versus pulse duration

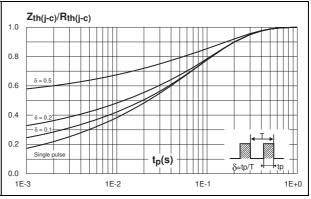


Figure 6. Junction capacitance versus reverse voltage applied (typical values, per diode)

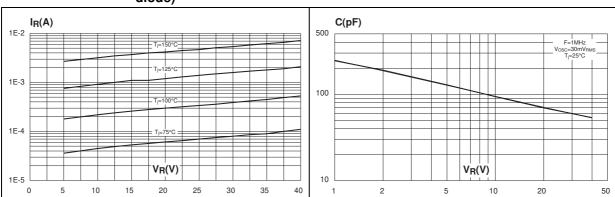


Figure 2. Average forward current versus ambient temperature (δ = 0.5, per diode)

 $R_{th(j-a)} = R_{th(j-c)}$

 $I_{F(AV)}(A)$

т



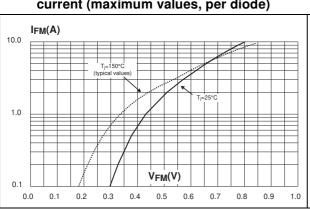
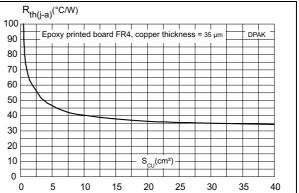
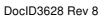


Figure 7. Forward voltage drop versus forward current (maximum values, per diode)

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





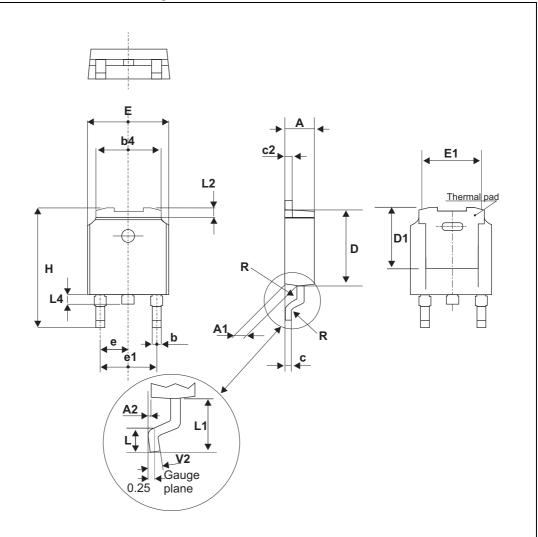


2 Package Information

- Epoxy meets UL94,V0
- Cooling method: by conduction (C)

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.





Note:

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



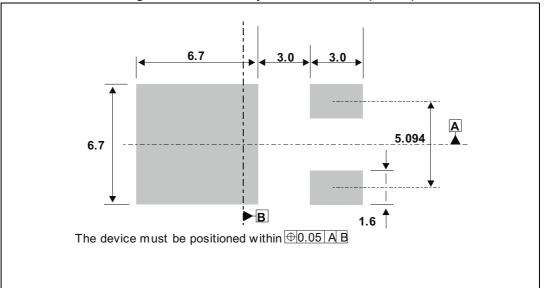
DocID3628 Rev 8

A7

	Dimensions						
Ref.	Millimeters			Inches			
	Min.	Тур.	Max.	Min.	Тур.	Max.	
А	2.18		2.40	0.085		0.094	
A1	0.90		1.1	0.035		0.043	
A2	0.03		0.23	0.001		0.01	
b	0.64		0.90	0.025		0.035	
b4	4.95		5.46	0.195		0.215	
С	0.46		0.61	0.018		0.024	
c2	0.46		0.60	0.018		0.024	
D	5.97		6.22	0.235		0.245	
D1	5.10			0.201			
E	6.35		6.73	0.250		0.265	
E1	4.32			0.170			
e1	4.4		4.7	0.173		0.185	
Н	9.35		10.40	0.368		0.407	
L	1.0		1.78	0.039		0.070	
L2			1.27			0.05	
L4	0.6		1.02	0.024		0.040	
V2	0°		8°	0°		8°	

Table 5. DPAK dimension values

Figure 10. DPAK footprint dimensions (in mm)



3 Ordering information

Table 6. 0	Ordering	information
------------	----------	-------------

Order code	Marking	Package	Weight	Base qty	Delivery mode
STPS640CB	S640C	DPAK	0.32 g	75	Tube
STPS640CB-TR	S640C	DFAN	0.32 y	2500	Tape and reel

4 Revision history

Date	Revision	Changes	
Aug-2003	6B	Last issue	
22-Mar-2007	7	Updated Figure 8 Updated ECOPACK statement.	
20-Nov-2014 8		Updated DPAK package information, <i>Table 2</i> and <i>Figure 3</i> . Removed P_{ARM} (T _j = 25 °C), TO-220AB and TO-220FPAB package information.	

Table 7. Document revision history



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. 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.

© 2014 STMicroelectronics – All rights reserved

DocID3628 Rev 8

