



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

LOW DROP POWER SCHOTTKY RECTIFIER

MAJOR PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	2 x 20 A
V_{RRM}	30 V
T_j (max)	150°C
V_F (max)	0.40 V

FEATURES AND BENEFITS

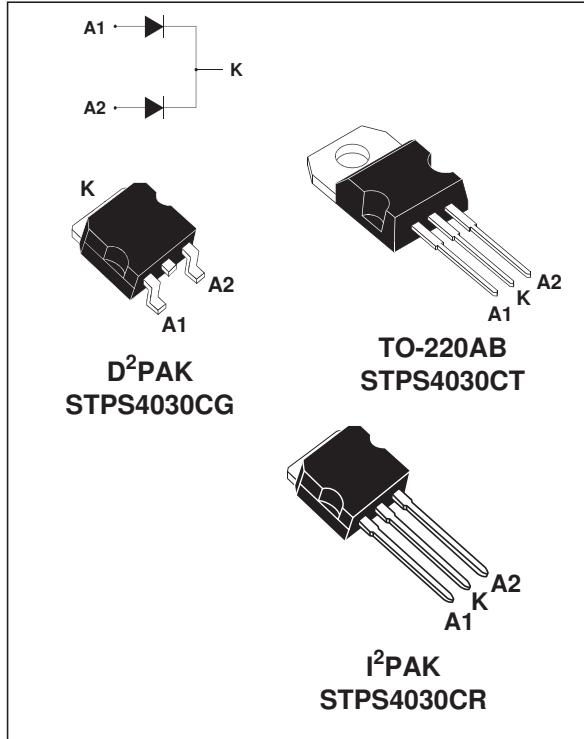
- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- EXTREMELY FAST SWITCHING
- LOW FORWARD VOLTAGE DROP FOR HIGHER EFFICIENCY
- LOW THERMAL RESISTANCE
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

Dual Schottky rectifier suited for switch Mode Power Supply and high frequency DC to DC converters.

Packaged in TO-220AB, D²PAK and I²PAK, this device is intended for use in low voltage high frequency inverters, free wheeling and polarity protection applications.

ABSOLUTE RATINGS (limiting values, per diode)



Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			30	V
$I_{F(RMS)}$	RMS forward current			32	A
$I_{F(AV)}$	Average forward current	$T_c = 130^\circ\text{C}$	Per diode $\delta = 0.5$	20 40	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ Sinusoidal		220	A
I_{RRM}	Peak repetitive reverse current	$t_p = 2 \mu\text{s}$ square $F = 1\text{kHz}$		2	A
P_{ARM}	Repetitive peak avalanche power	$t_p = 1\mu\text{s}$ $T_j = 25^\circ\text{C}$		5300	W
T_{stg}	Storage temperature range				- 65 to + 150 °C
T_j	Maximum operating junction temperature *				150 °C
dV/dt	Critical rate of rise of reverse voltage (rated V_R , $T_j = 25^\circ\text{C}$)				10000 V/ μs

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

STPS4030CT/CG/CR

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case TO-220AB - D ² PAK - I ² PAK	Per diode	1.6 °C/W
		Total	0.85
$R_{th(c)}$	Coupling	0.1	°C/W

STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$		0.50	1.0	mA
		$T_j = 125^\circ\text{C}$			170	350	
V_F *	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 20 \text{ A}$		0.44	0.49	V
		$T_j = 125^\circ\text{C}$	$I_F = 20 \text{ A}$		0.35	0.40	
		$T_j = 25^\circ\text{C}$	$I_F = 40 \text{ A}$		0.52	0.61	
		$T_j = 125^\circ\text{C}$	$I_F = 40 \text{ A}$		0.46	0.55	

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

To evaluate the conduction losses use the following equation :
 $P = 0.25 \times I_F(\text{AV}) + 0.0075 I_F^2(\text{RMS})$

Fig. 1: Conduction losses versus average current.

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

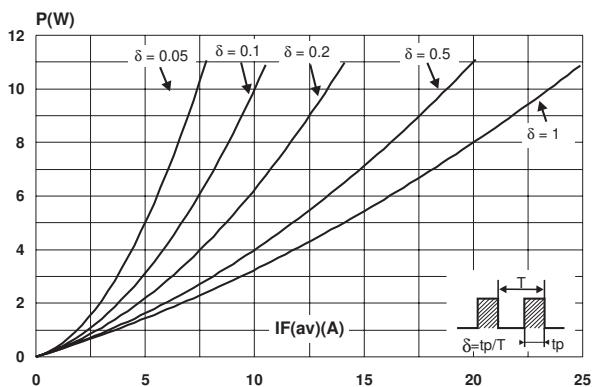


Fig. 3: Normalized avalanche power derating versus pulse duration.

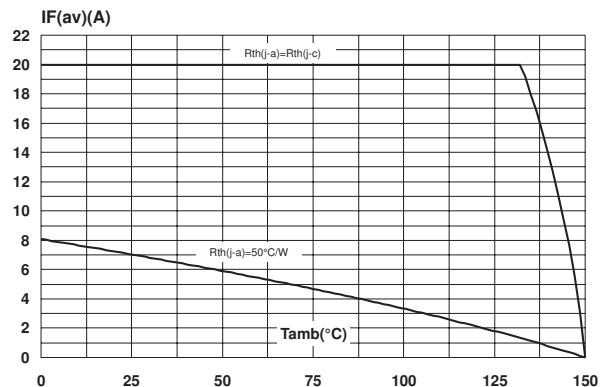


Fig. 4: Normalized avalanche power derating versus junction temperature.

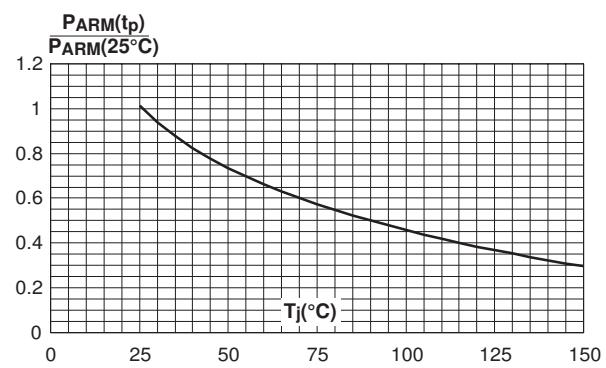
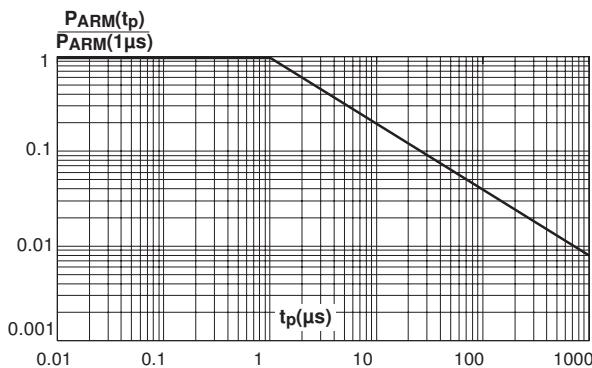


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values).

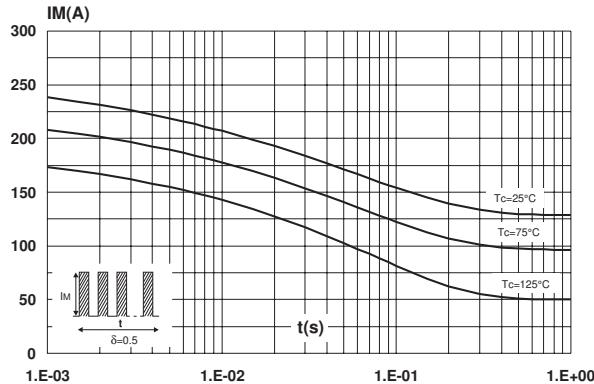


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

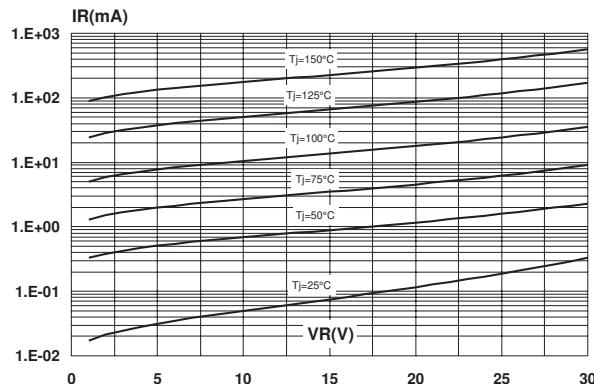


Fig. 9: Forward voltage drop versus forward current.

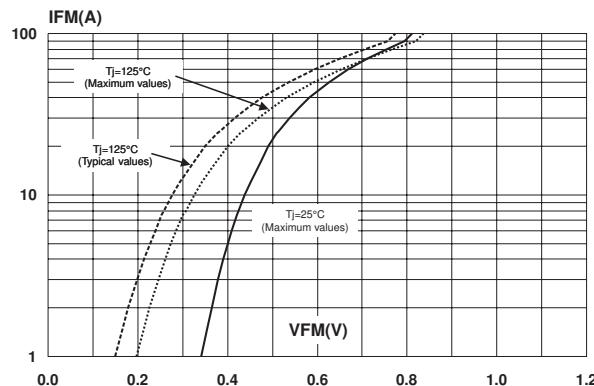


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

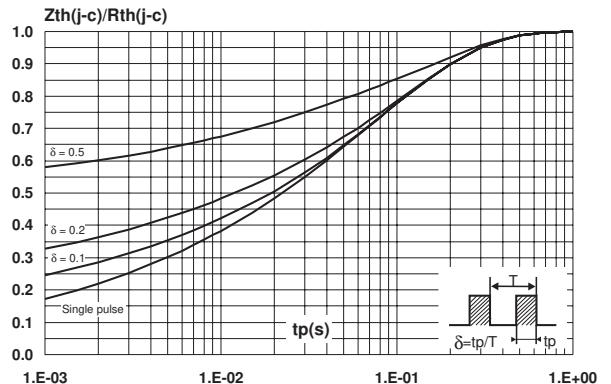


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

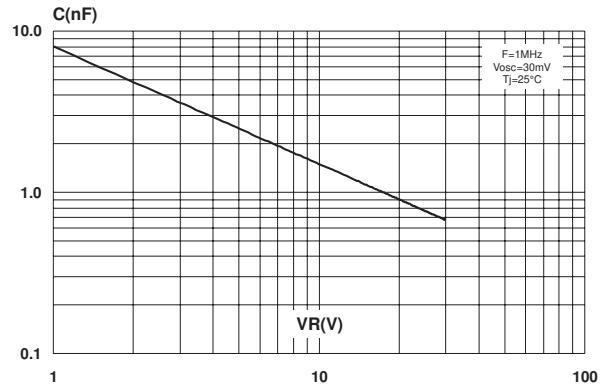
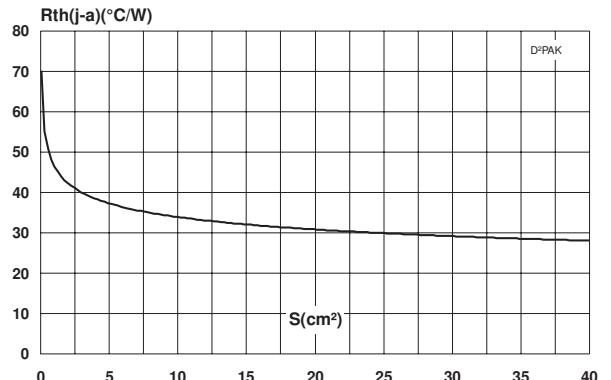


Fig. 10: Thermal resistance junction to ambient versus copper surface under tab (epoxy printed board FR4, $\text{Cu} = 35\mu\text{m}$).

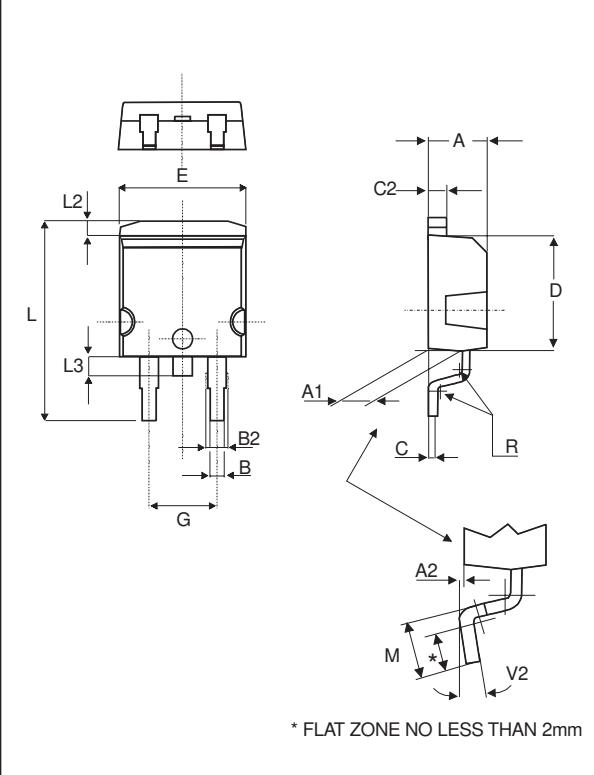


PACKAGE MECHANICAL DATA
I²PAK

The diagram illustrates the physical dimensions of the STPS4030CT/CG/CR package. The top view shows the chip outline with width E and height L2. The side view shows the total height L, lead spacing L1, lead thickness b, lead pitch e, and lead height b1, b2. Other dimensions include lead width c, lead spacing c2, and lead thickness A1.

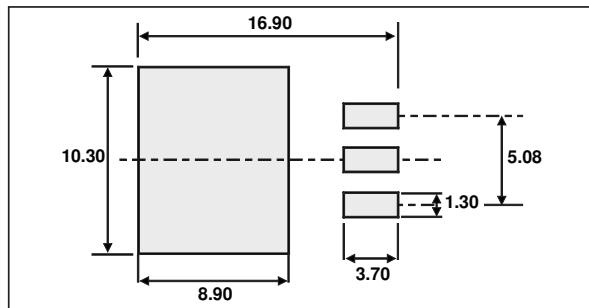
REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
A1	2.49	2.69	0.098	0.106
b	0.70	0.93	0.028	0.037
b1	1.14	1.17	0.044	0.046
b2	1.14	1.17	0.044	0.046
c	0.45	0.60	0.018	0.024
c2	1.23	1.36	0.048	0.054
D	8.95	9.35	0.352	0.368
e	2.40	2.70	0.094	0.106
E	10.0	10.4	0.394	0.409
L	13.1	13.6	0.516	0.535
L1	3.48	3.78	0.137	0.149
L2	1.27	1.40	0.050	0.055

PACKAGE MECHANICAL DATA
D²PAK



* FLAT ZONE NO LESS THAN 2mm

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
A1	2.49	2.69	0.098	0.106
A2	0.03	0.23	0.001	0.009
B	0.70	0.93	0.027	0.037
B2	1.14	1.70	0.045	0.067
C	0.45	0.60	0.017	0.024
C2	1.23	1.36	0.048	0.054
D	8.95	9.35	0.352	0.368
E	10.00	10.40	0.393	0.409
G	4.88	5.28	0.192	0.208
L	15.00	15.85	0.590	0.624
L2	1.27	1.40	0.050	0.055
L3	1.40	1.75	0.055	0.069
M	2.40	3.20	0.094	0.126
R	0.40 typ.		0.016 typ.	
V2	0°	8°	0°	8°

FOOTPRINT

STPS4030CT/CG/CR

PACKAGE MECHANICAL DATA TO-220AB

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
C	1.23	1.32	0.048	0.051
D	2.40	2.72	0.094	0.107
E	0.49	0.70	0.019	0.027
F	0.61	0.88	0.024	0.034
F1	1.14	1.70	0.044	0.066
F2	1.14	1.70	0.044	0.066
G	4.95	5.15	0.194	0.202
G1	2.40	2.70	0.094	0.106
H2	10	10.40	0.393	0.409
L2	16.4 typ.		0.645 typ.	
L4	13	14	0.511	0.551
L5	2.65	2.95	0.104	0.116
L6	15.25	15.75	0.600	0.620
L7	6.20	6.60	0.244	0.259
L9	3.50	3.93	0.137	0.154
M	2.6 typ.		0.102 typ.	
Diam.	3.75	3.85	0.147	0.151

- COOLING METHOD : C
- RECOMMENDED TORQUE VALUE : 0.55 M.N
- MAXIMUM TORQUE VALUE : 0.70 M.N

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS4030CT	STPS4030CT	TO-220AB	2.2 g	50	Tube
STPS4030CG	STPS4030CG	D ² PAK	1.48 g	50	Tube
STPS4030CG-TR	STPS4030CG	D ² PAK	1.48 g	1000	Tape & reel
STPS4030CR	STPS4030CR	I ² PAK	1.49 g	50	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>