



STPS20L60CT/CG/CR

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 10 A
V_{RRM}	60 V
$T_j (max)$	150 °C
$V_F (max)$	0.56 V

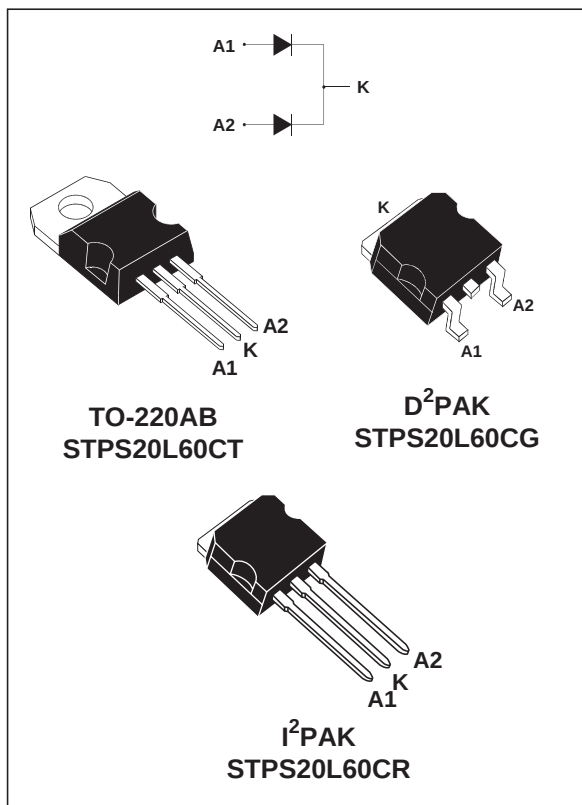
FEATURES AND BENEFITS

- LOW FORWARD VOLTAGE DROP
- NEGLIGIBLE SWITCHING LOSSES
- LOW THERMAL RESISTANCE
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

Dual center tap Schottky rectifiers suited for Switched Mode Power Supplies and high frequency DC to DC converters.

Packaged in TO-220AB, I²PAK and D²PAK, this device is intended for use in high frequency inverters.



ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter			Value	Unit
V _{RRM}	Repetitive peak reverse voltage			60	V
I _{F(RMS)}	RMS forward current			30	A
I _{F(AV)}	Average forward current	T _C = 140°C δ = 0.5	Per diode Per device	10 20	A
I _{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal		220	A
I _{RRM}	Repetitive peak reverse current	tp = 2 μs square F = 1kHz		1	A
P _{ARM}	Repetitive peak avalanche power	tp = 1μs Tj = 25°C		5800	W
T _{stg}	Storage temperature range			- 65 to + 175	°C
Tj	Maximum operating junction temperature *			150	°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

STPS20L60CT/CG/CR

THERMAL RESISTANCE

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

When the diodes 1 and 2 are used simultaneously :

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

STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			350	μA
		$T_j = 125^\circ\text{C}$			65	95	mA
V_F^*	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 10\text{ A}$			0.6	V
		$T_j = 125^\circ\text{C}$	$I_F = 10\text{ A}$		0.48	0.56	
		$T_j = 25^\circ\text{C}$	$I_F = 20\text{ A}$			0.74	
		$T_j = 125^\circ\text{C}$	$I_F = 20\text{ A}$		0.62	0.7	

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

To evaluate the conduction losses use the following equation :

$$P = 0.42 \times I_{F(AV)} + 0.014 I_{F(RMS)}^2$$

Fig. 1: Average forward power dissipation versus average forward current (per diode).

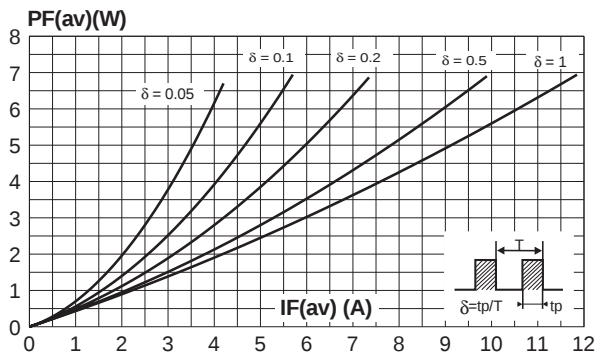


Fig. 2: Average current versus ambient temperature ($\delta=0.5$) (per diode).

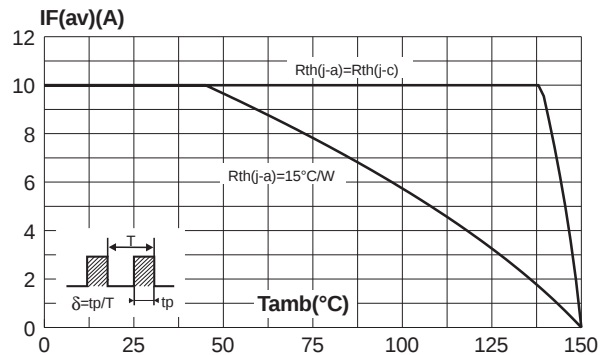


Fig. 3: Normalized avalanche power derating versus pulse duration.

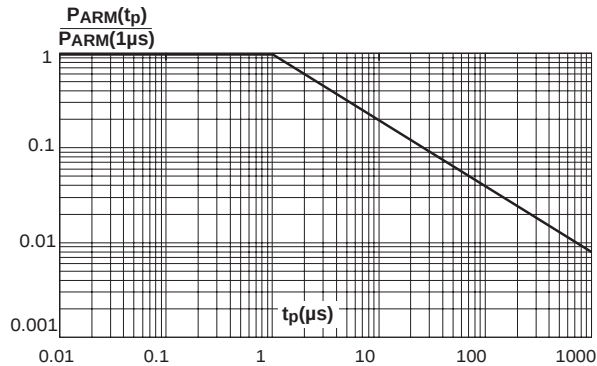


Fig. 4: Normalized avalanche power derating versus junction temperature.

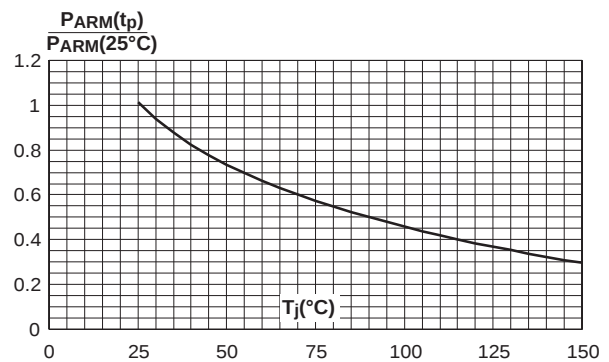


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values, per diode).

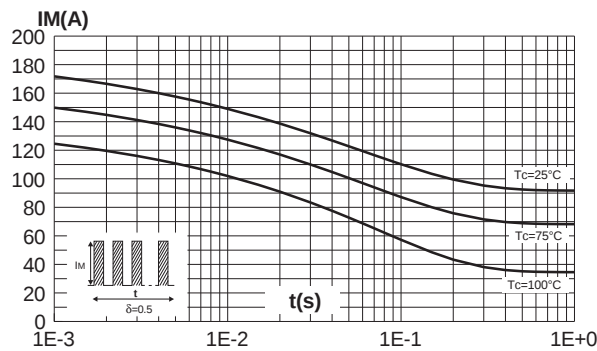


Fig. 6: Relative variation of thermal transient impedance junction to case versus pulse duration.

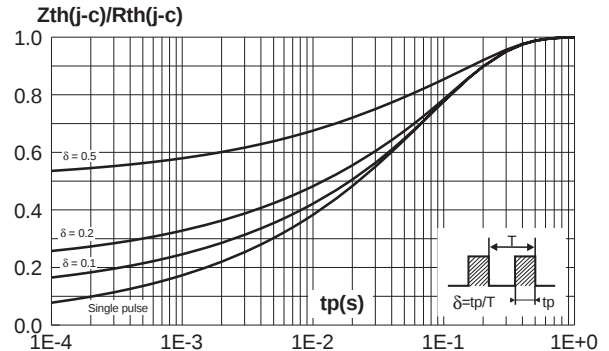


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values, per diode).

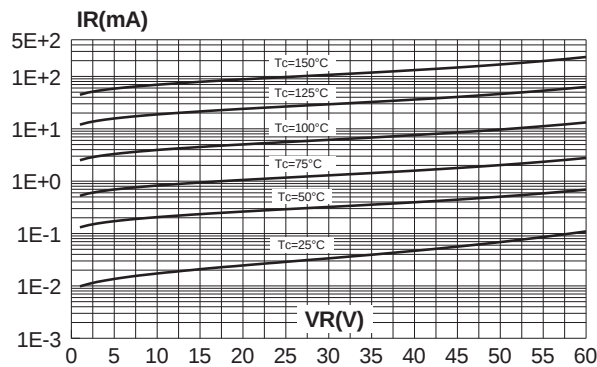


Fig. 8: Junction capacitance versus reverse voltage applied (typical values, per diode).

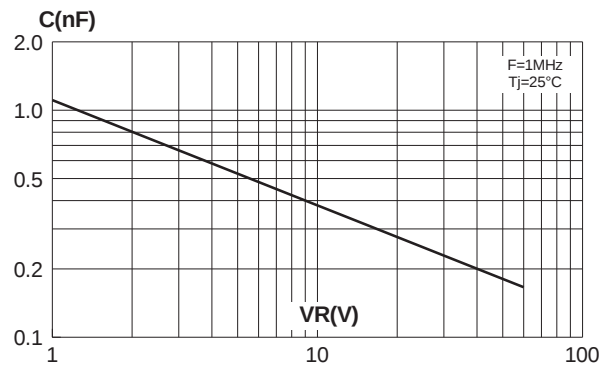
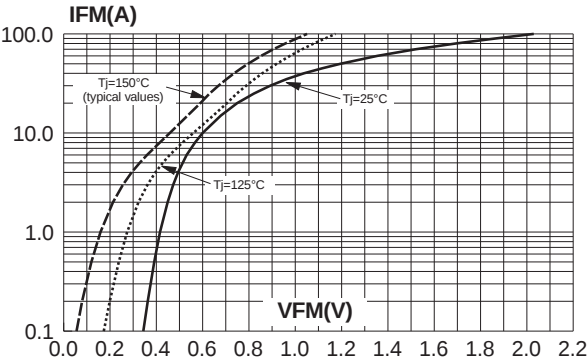
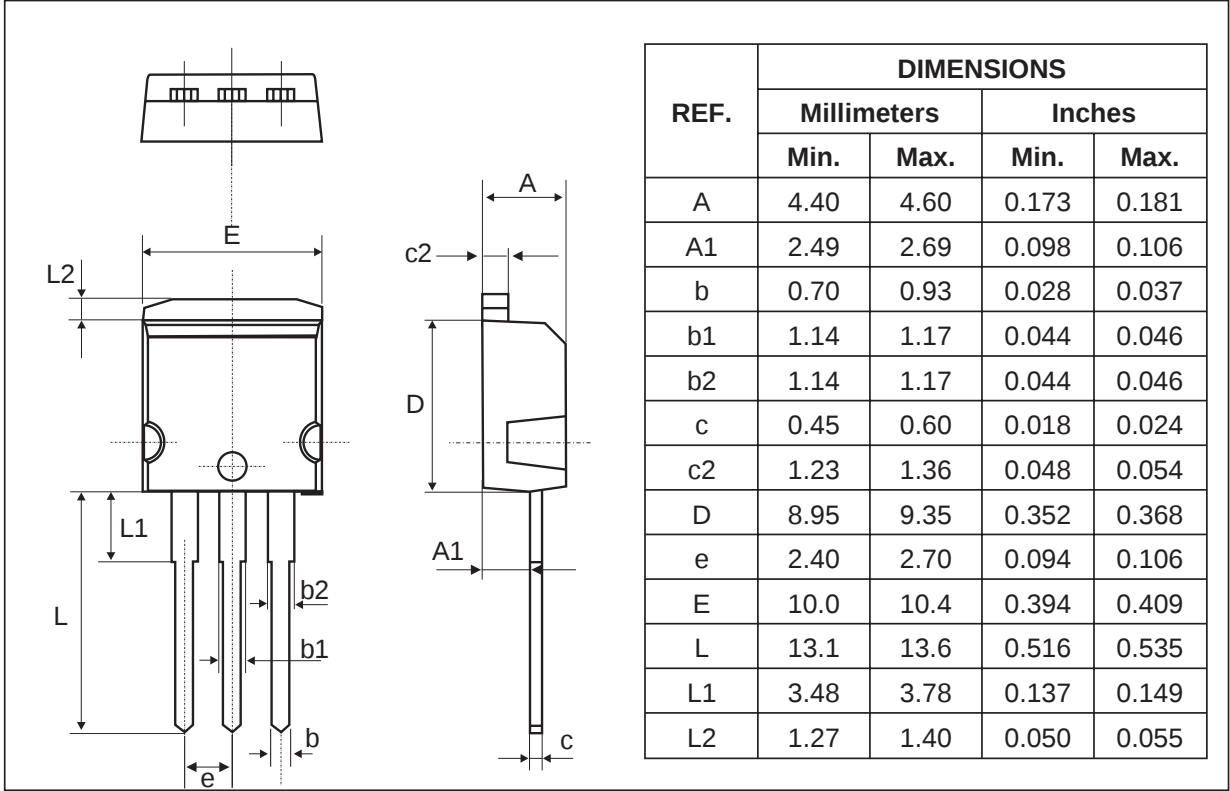


Fig. 9: Forward voltage drop versus forward current (maximum values, per diode).

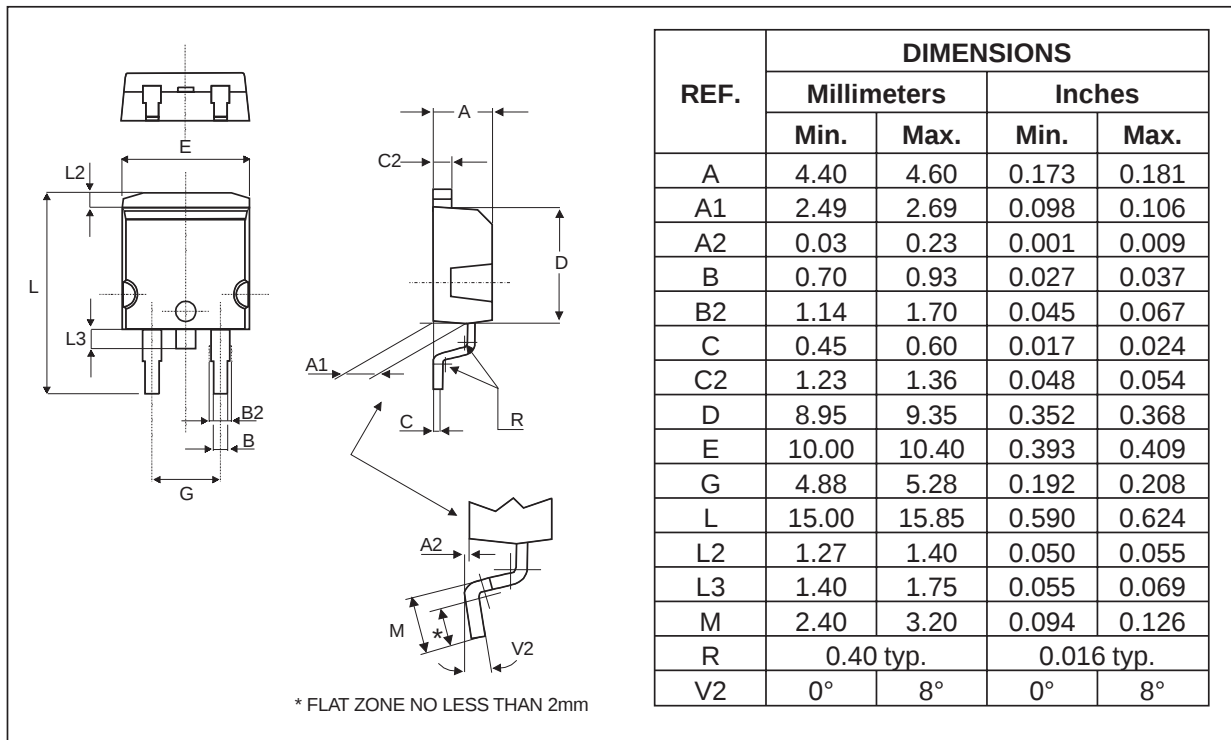


PACKAGE MECHANICAL DATA
I²PAK

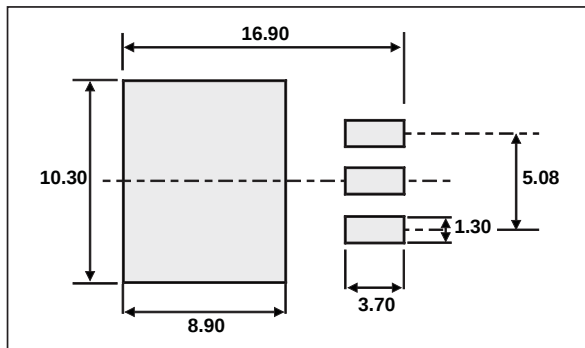


PACKAGE MECHANICAL DATA

D²PAK



FOOTPRINT



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
STPS20L60CT	STPS20L60CT	TO-220AB	2.2g	50	Tube
STPS20L60CT	STPS20L60CT	TO-220AB	2.2g	1000	Bulk
STPS20L60CG	STPS20L60CG	D ² PAK	1.48 g	50	Tube
STPS20L60CG-TR	STPS20L60CG	D ² PAK	1.48 g	1000	Tape & reel
STPS20L60CR	STPS20L60CR	I2PAK	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>