

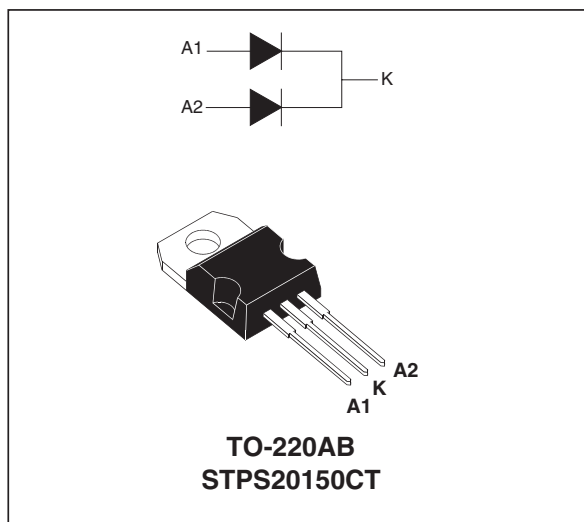
HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 10 A
V_{RRM}	170 V
T_j	175°C
$V_F(max)$	0.75 V

FEATURES AND BENEFITS

- HIGH JUNCTION TEMPERATURE CAPABILITY
- GOOD TRADE OFF BETWEEN LEAKAGE CURRENT AND FORWARD VOLTAGE DROP
- LOW LEAKAGE CURRENT
- AVALANCHE CAPABILITY SPECIFIED



DESCRIPTION

Dual center tap schottky rectifier designed for high frequency Switched Mode Power Supplies.

ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter			Value	Unit
V _{RRM}	Repetitive peak reverse voltage			170	V
I _{F(RMS)}	RMS forward current			30	A
I _{F(AV)}	Average forward current δ = 0.5	T _c = 155°C	Per diode Per device	10 20	A
I _{FSM}	Surge non repetitive forward current	t _p = 10 ms sinusoidal		180	A
P _{ARM}	Repetitive peak avalanche power	t _p = 1μs T _j = 25°C		6700	W
T _{stg}	Storage temperature range			- 65 to + 175	°C
T _j	Maximum operating junction temperature*			175	°C
dV/dt	Critical rate of rise of reverse voltage			10000	V/μs

* Thermal runaway condition for a diode on its own heatsink $\delta P_{tot}/\delta T_j < 1/(R_{th(j-a)})$

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	2.2	°C/W
		Total	1.3	
$R_{th(c)}$		Coupling	0.3	

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	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			15	μA
		$T_j = 125^\circ\text{C}$				15	mA
V_F **	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 10\text{ A}$			0.90	V
		$T_j = 125^\circ\text{C}$	$I_F = 10\text{ A}$		0.69	0.75	
		$T_j = 25^\circ\text{C}$	$I_F = 20\text{ A}$			0.99	
		$T_j = 125^\circ\text{C}$	$I_F = 20\text{ A}$		0.79	0.86	

Pulse test : * $t_p = 5\text{ ms}$, $\delta < 2\%$
 ** $t_p = 380\text{ }\mu\text{s}$, $\delta < 2\%$

To evaluate the conduction losses use the following equation:
 $P = 0.64 \times I_{F(AV)} + 0.011 I_{F(RMS)}^2$

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

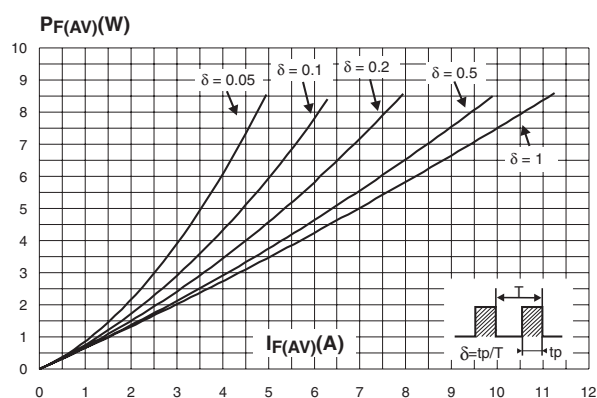


Fig. 2: Average forward current versus ambient temperature ($\delta = 0.5$, per diode).

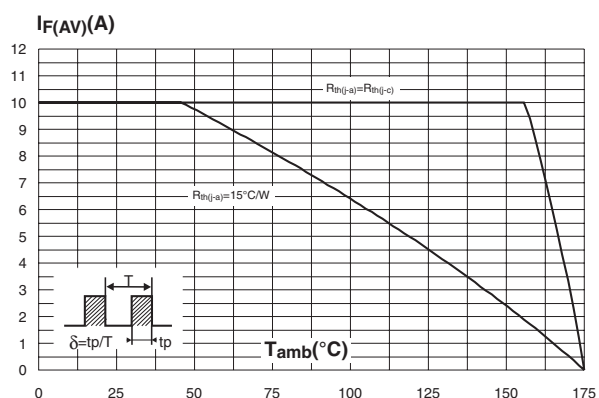


Fig. 3: Normalized avalanche power derating versus pulse duration.

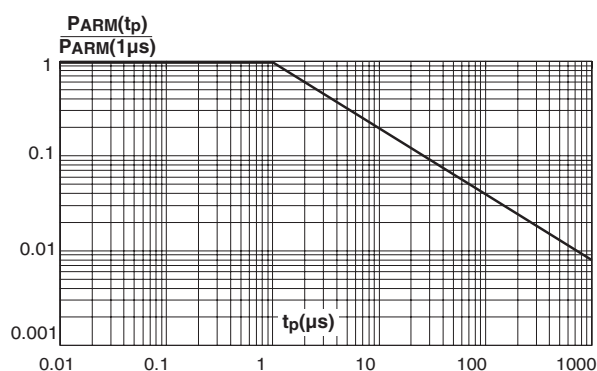


Fig. 4: Normalized avalanche power derating versus junction temperature.

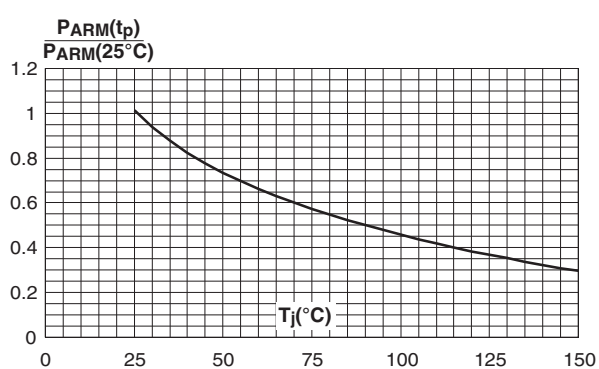


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values, per diode).

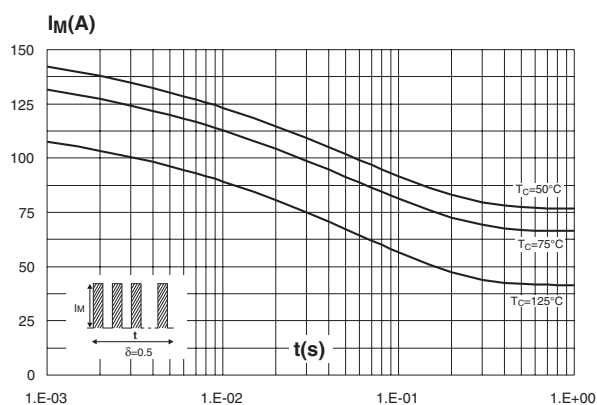


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

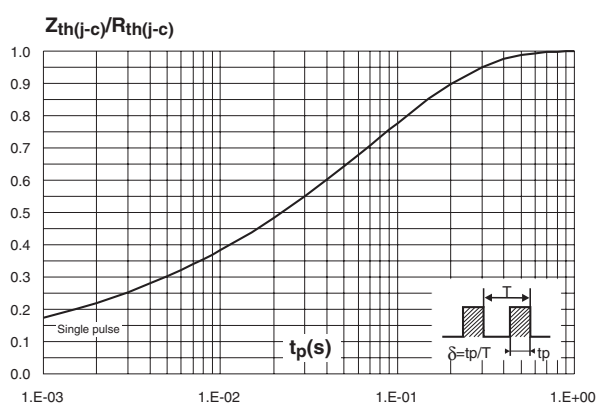


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values, per diode).

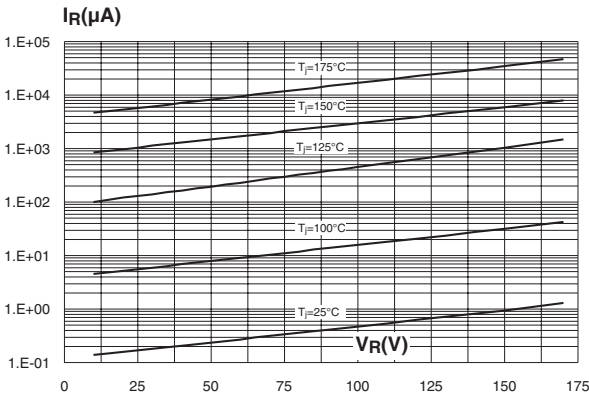


Fig. 8: Junction capacitance versus reverse voltage applied (typical values, per diode).

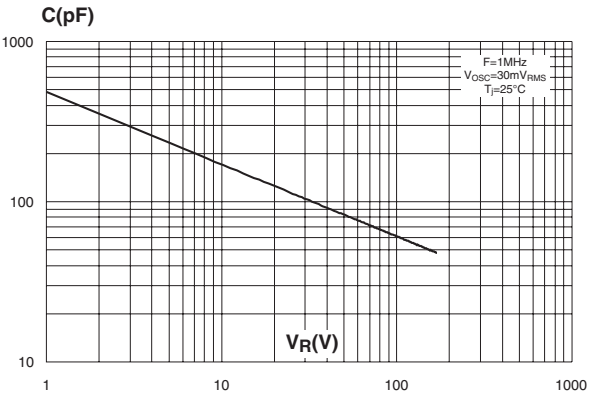
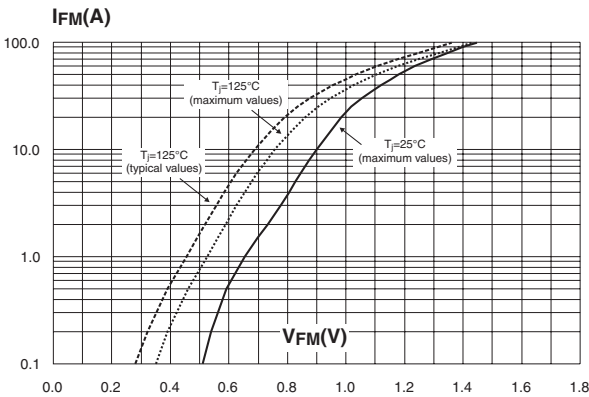
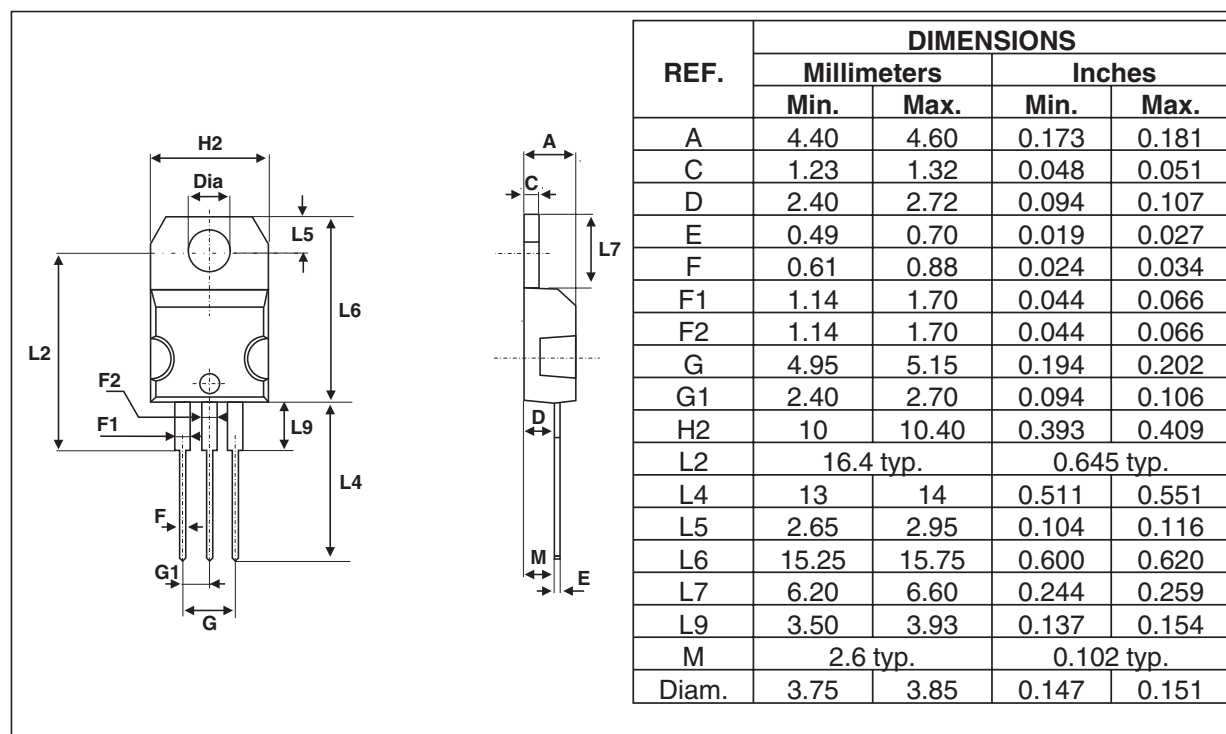


Fig. 9: Forward voltage drop versus forward current (per diode).



PACKAGE MECHANICAL DATA
 TO-220AB

OTHER INFORMATION

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS20170CT	STPS20170CT	TO-220AB	2.20 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.

All other names are the property of their respective owners.

© 2004 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 - Singapore - Spain -
 Sweden - Switzerland - United Kingdom - United States



www.st.com