



# STPS20170CT

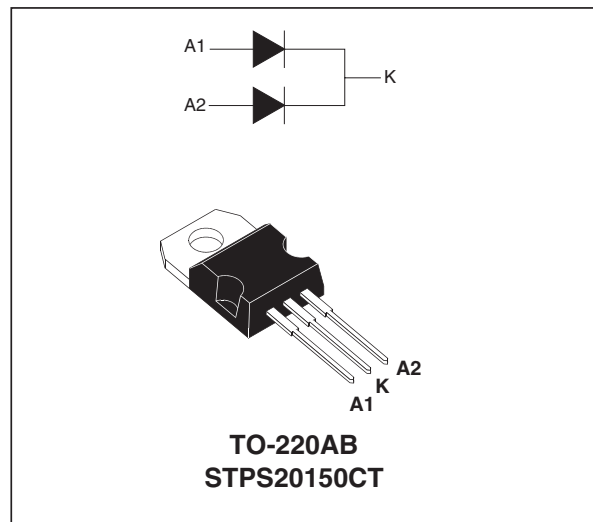
## HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

### 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 $\delta = 0.5$	$T_c = 155^\circ\text{C}$ Per diode: 10 Per device: 20	A
$I_{FSM}$	Surge non repetitive forward current	$t_p = 10\text{ ms}$ sinusoidal	180 A
$P_{ARM}$	Repetitive peak avalanche power	$t_p = 1\mu\text{s}$ $T_j = 25^\circ\text{C}$	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/ $\mu\text{s}$

\* 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 <sub>th(j-c)</sub>	Junction to case	Per diode	2.2	°C/W
		Total	1.3	
R <sub>th(c)</sub>		Coupling	0.3	

When the diodes 1 and 2 are used simultaneously :  
 $\Delta T_j(\text{diode 1}) = P(\text{diode 1}) \times R_{th(j-c)}(\text{Per diode}) + P(\text{diode 2}) \times R_{th(c)}$

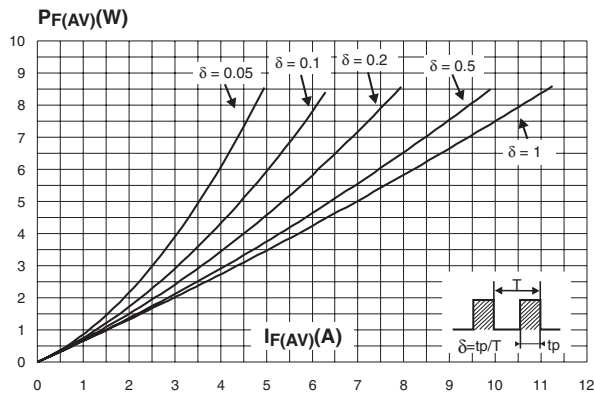
**STATIC ELECTRICAL CHARACTERISTICS (per diode)**

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I <sub>R</sub> *	Reverse leakage current	T <sub>j</sub> = 25°C	V <sub>R</sub> = V <sub>RRM</sub>			15	μA
		T <sub>j</sub> = 125°C				15	mA
V <sub>F</sub> **	Forward voltage drop	T <sub>j</sub> = 25°C	I <sub>F</sub> = 10 A			0.90	V
		T <sub>j</sub> = 125°C	I <sub>F</sub> = 10 A		0.69	0.75	
		T <sub>j</sub> = 25°C	I <sub>F</sub> = 20 A			0.99	
		T <sub>j</sub> = 125°C	I <sub>F</sub> = 20 A		0.79	0.86	

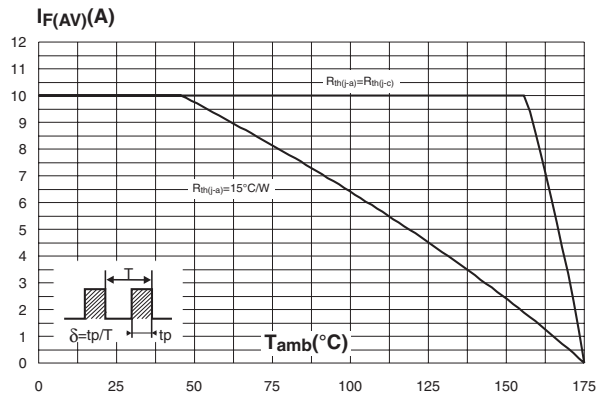
Pulse test : \* tp = 5 ms, δ < 2%  
 \*\* tp = 380 μs, δ < 2%

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

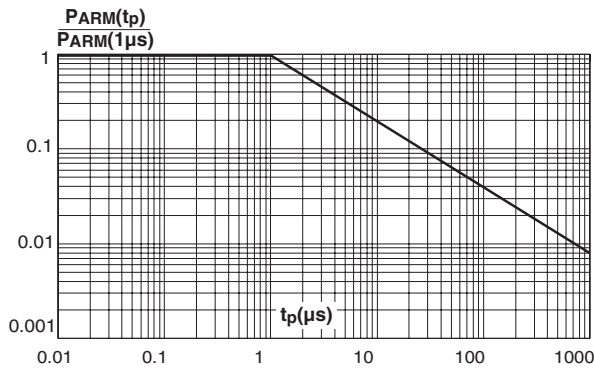
**Fig. 1:** Average forward power dissipation versus average forward current (per diode).



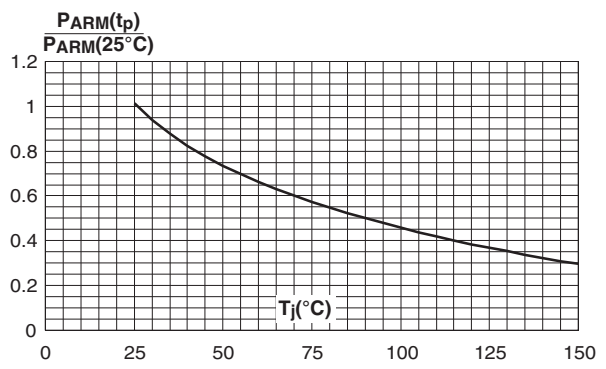
**Fig. 2:** Average forward current versus ambient temperature ( $\delta = 0.5$ , per diode).



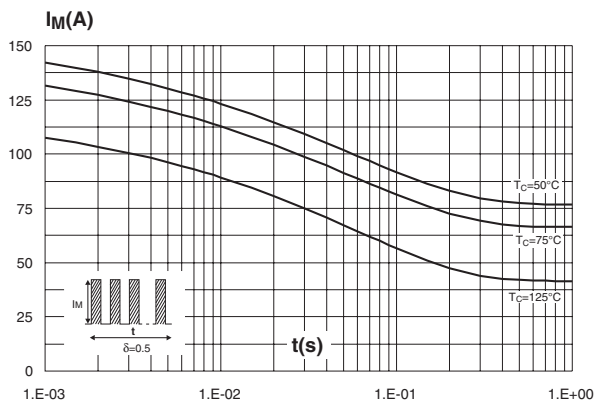
**Fig. 3:** Normalized avalanche power derating versus pulse duration.



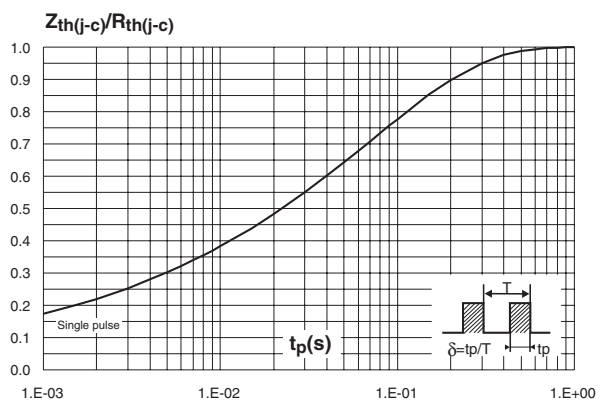
**Fig. 4:** Normalized avalanche power derating versus junction temperature.



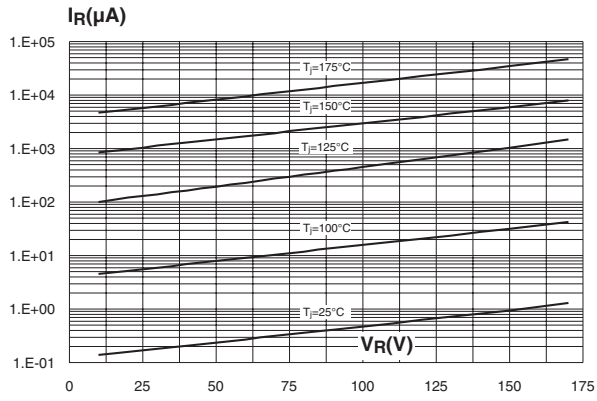
**Fig. 5:** Non repetitive surge peak forward current versus overload duration (maximum values, per diode).



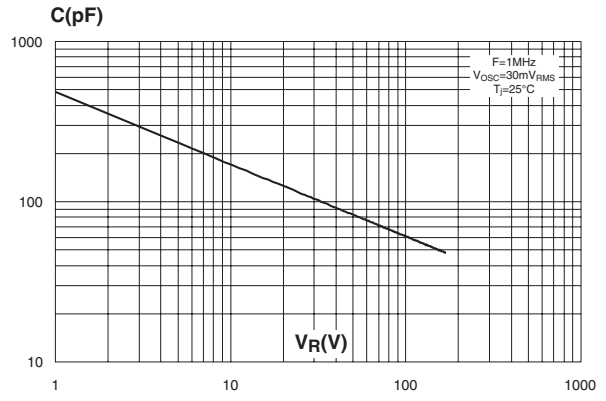
**Fig. 6:** Relative variation of thermal impedance junction to case versus pulse duration.



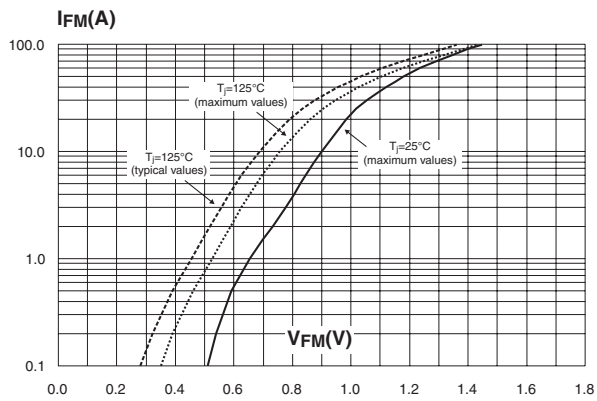
**Fig. 7:** Reverse leakage current versus reverse voltage applied (typical values, per diode).

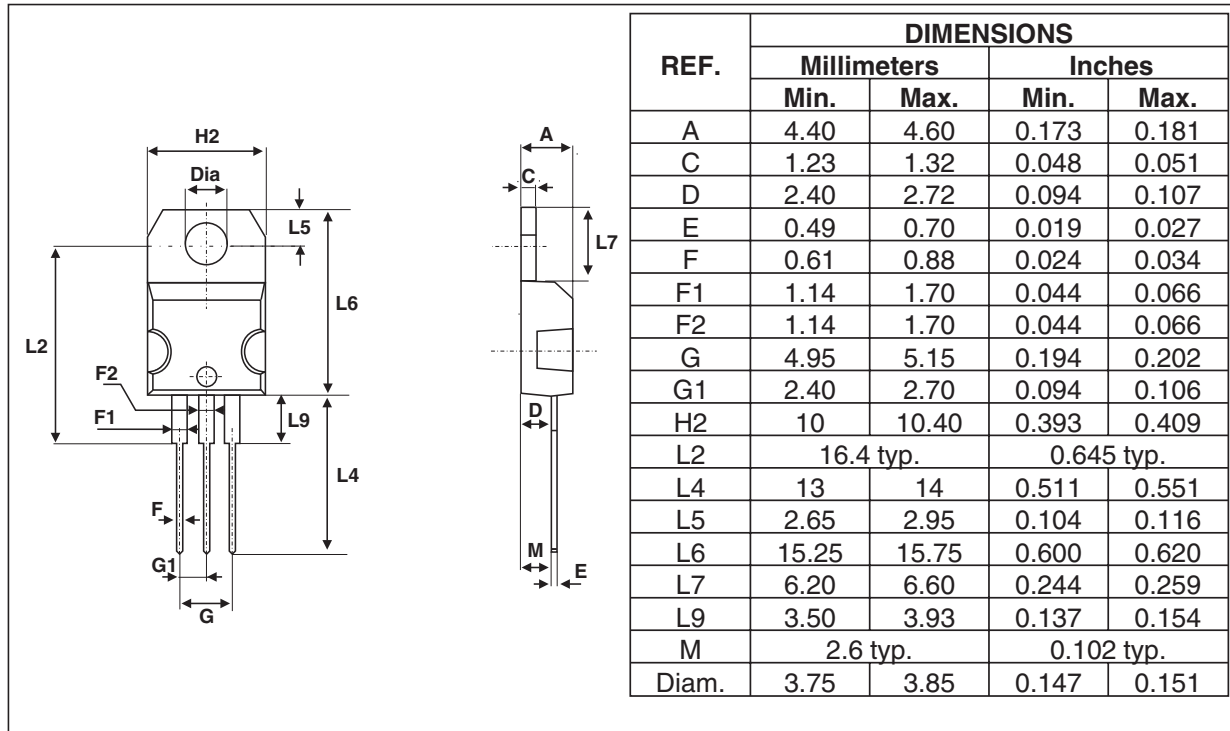


**Fig. 8:** Junction capacitance versus reverse voltage applied (typical values, per diode).



**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**

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