



STPS20170CT

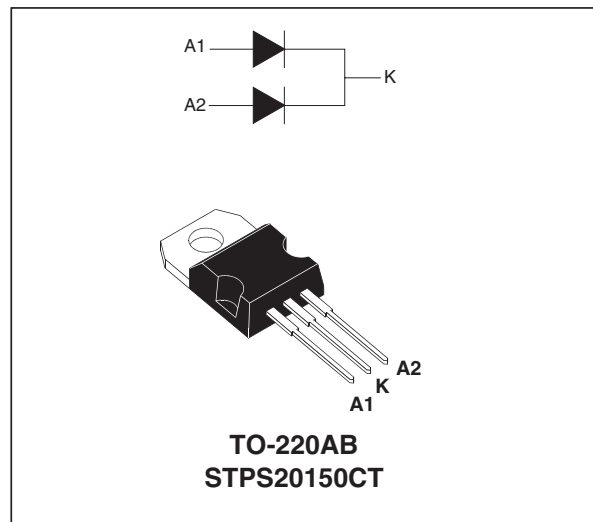
HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

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/ 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).

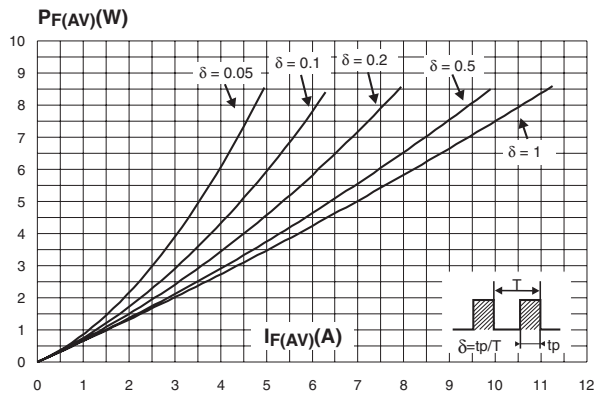


Fig. 2: Average forward current versus ambient temperature ($\delta = 0.5$, per diode).

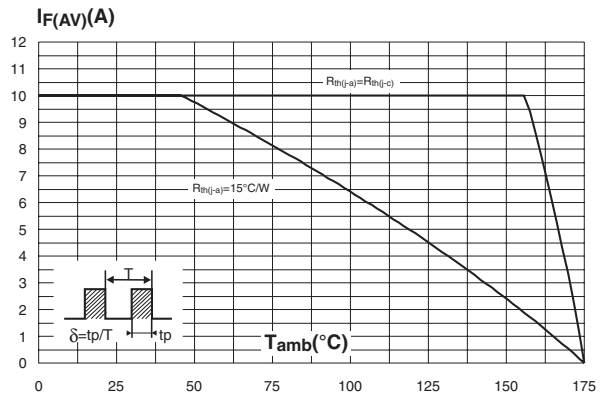


Fig. 3: Normalized avalanche power derating versus pulse duration.

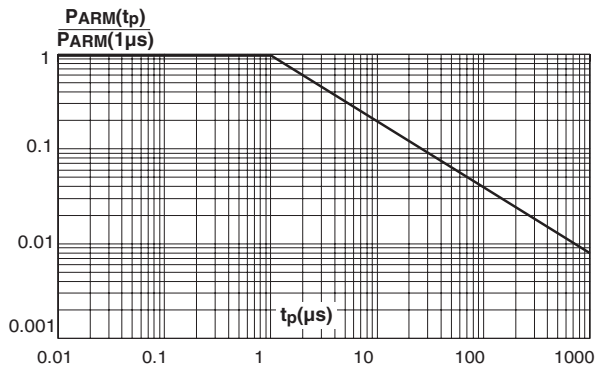


Fig. 4: Normalized avalanche power derating versus junction temperature.

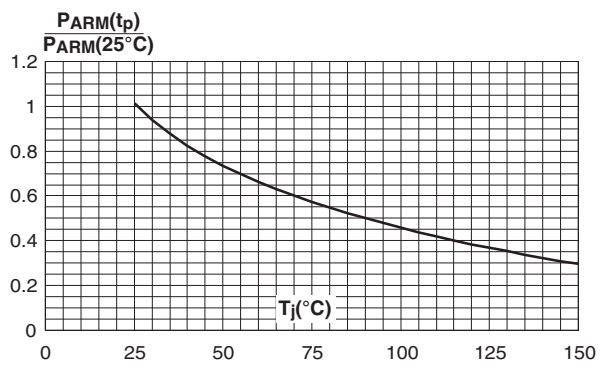


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values, per diode).

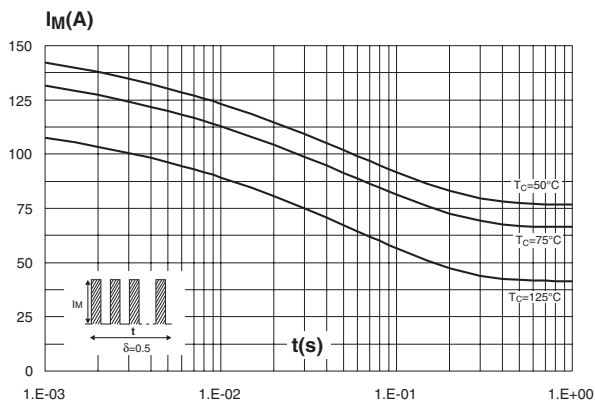


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

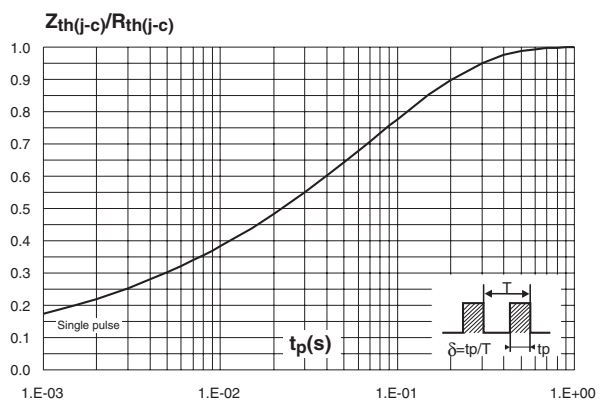


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values, per diode).

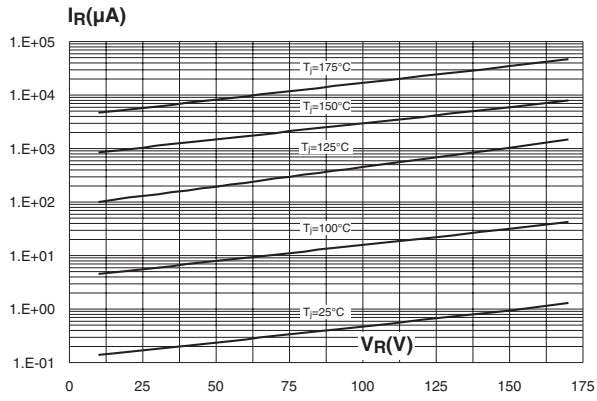


Fig. 8: Junction capacitance versus reverse voltage applied (typical values, per diode).

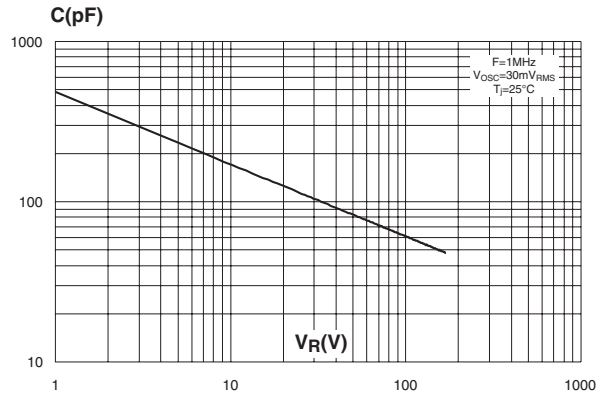
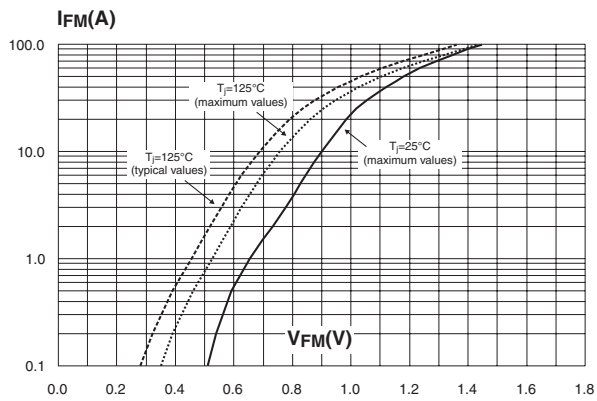
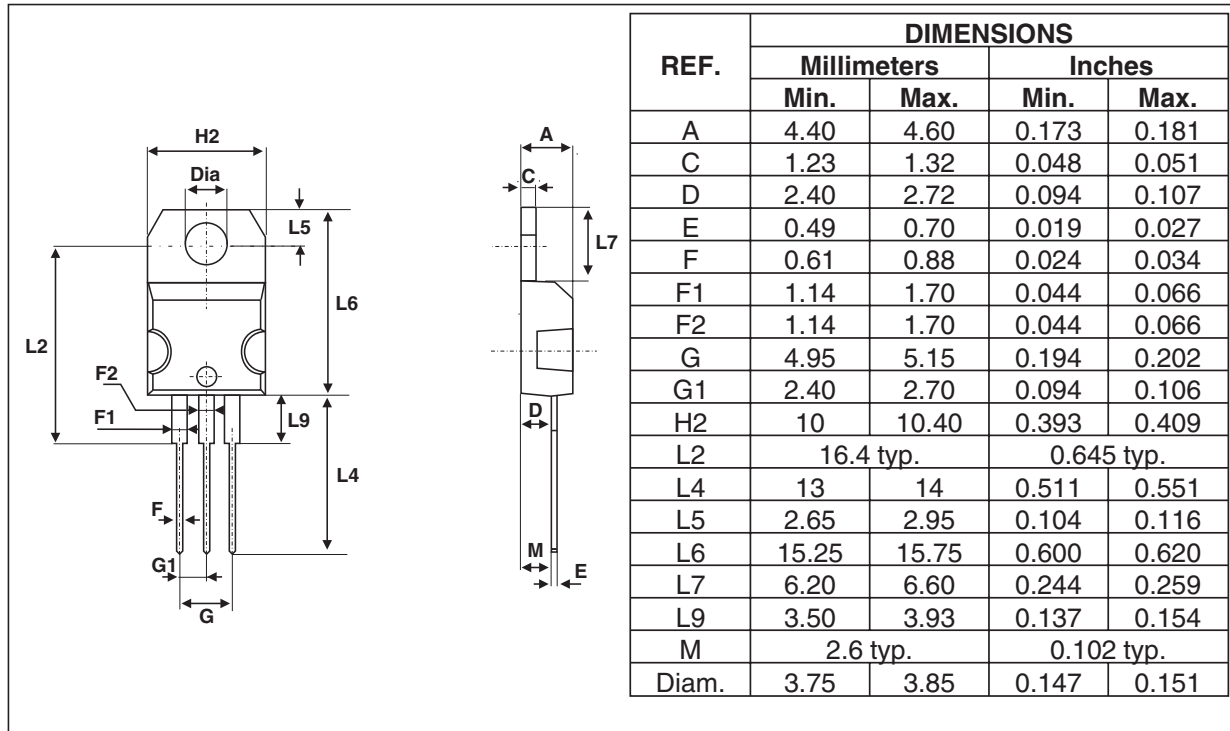


Fig. 9: Forward voltage drop versus forward current (per diode).



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

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