

## HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

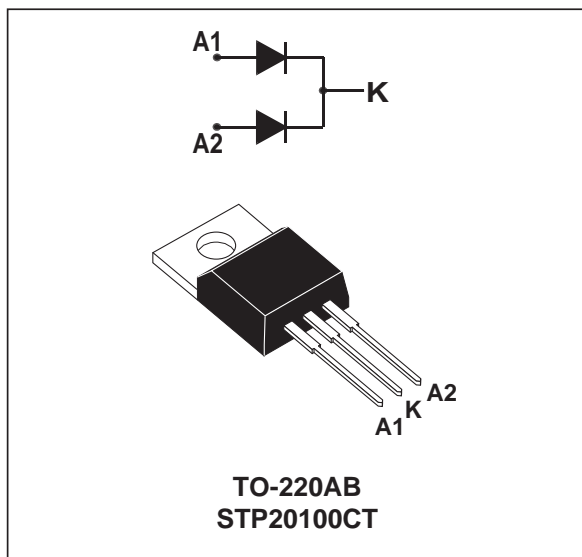
$I_{F(AV)}$	2 x 10A
$V_{RRM}$	100V
$V_F (max)$	0.7V
$T_j (max)$	175°C

### FEATURES

- Negligible switching losses
- Low forward voltage drop
- Low capacitance
- High reverse avalanche surge capability

### DESCRIPTION

High voltage dual Schottky rectifier suited for switchmode power supplies and other power converters. Packaged in TO-220AB, this device is intended for use in medium voltage operation, and particularly, in high frequency circuitries where low switching losses and low noise are required.



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
$V_{RRM}$	Repetitive peak reverse voltage		100	V
$I_{F(RMS)}$	RMS forward current	Per diode	30	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	$T_C = 110^\circ\text{C}$ $V_R = 60\text{V}$	Per diode 20	A A
$I_{FSM}$	Surge non repetitive forward current	$t_p = 10\text{ms}$ sinusoidal	Per diode	200 A
$I_{RRM}$	Repetitive peak reverse current	$t_p = 2\mu\text{s}$ $F = 1\text{KHz}$	Per diode	1 A
$I_{RSM}$	Non repetitive peak reverse current	$t_p = 100\mu\text{s}$	Per diode	1 A
$T_{stg}$	Storage temperature range		- 65 to + 175	°C
$T_j$	Maximum junction temperature (*)		175	°C
$dV/dt$	Critical rate of rise of reverse voltage		1000	V/ $\mu\text{s}$

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

**THERMAL RESISTANCES**

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case	Per diode	1.6	°C/W
		Total	0.9	
Rth (c)	Coupling		0.15	°C/W

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

**ELECTRICAL CHARACTERISTICS (Per diode)**

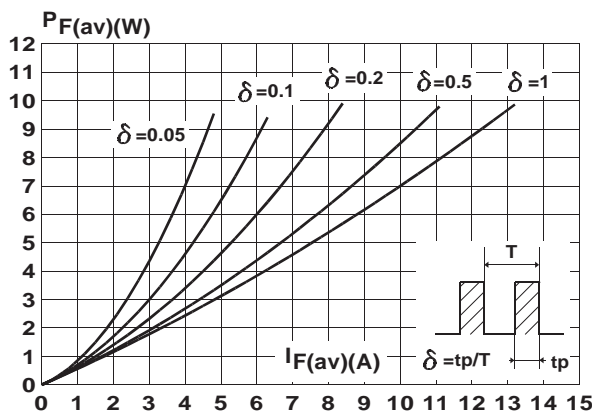
**STATIC CHARACTERISTICS**

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I <sub>R</sub> <sup>*</sup>	Reverse leakage current	V <sub>R</sub> = V <sub>RRM</sub>	T <sub>j</sub> = 25°C			150	μA
			T <sub>j</sub> = 125°C			100	mA
V <sub>F</sub> <sup>**</sup>	Forward voltage drop	IF = 20A	T <sub>j</sub> = 125°C			0.85	V
		IF = 10A	T <sub>j</sub> = 125°C		0.60	0.70	
		IF = 20A	T <sub>j</sub> = 25°C			0.95	

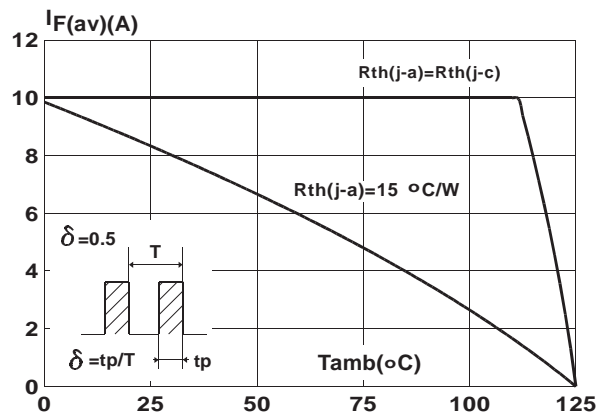
Pulse test : \* tp = 5 ms, duty cycle < 2 %  
 \*\* tp = 380 μs, duty cycle < 2 %

To evaluate the conduction losses use the following equation :  
 $P = 0.55 \times I_{F(AV)} + 0.015 \times I_{F(RMS)}^2$

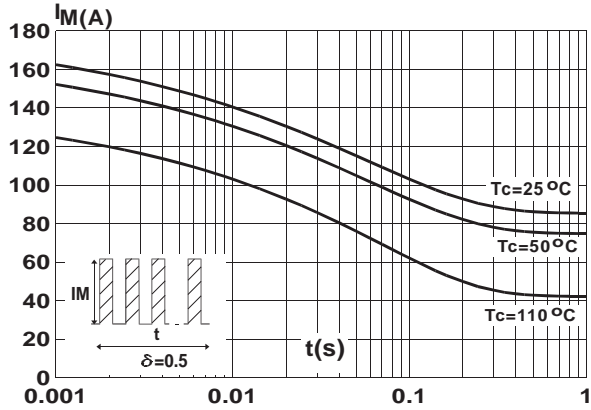
**Fig. 1 :** Average forward power dissipation versus average forward current. (Per diode)



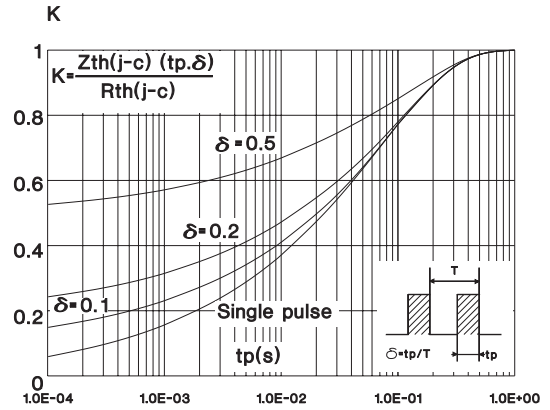
**Fig. 2 :** Average current versus ambient temperature. (duty cycle : 0.5) (Per diode)



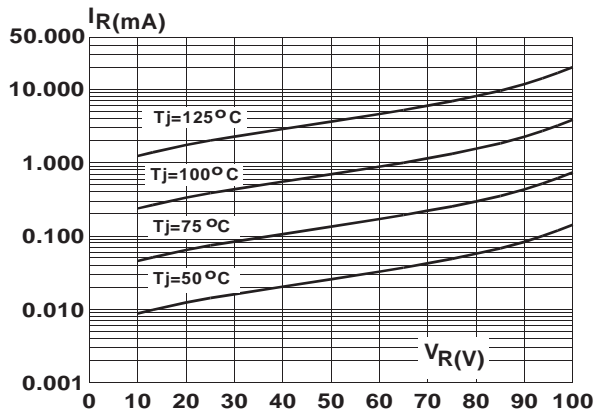
**Fig. 3 :** Non repetitive surge peak forward current versus overload duration. (Maximum values) (Per diode)



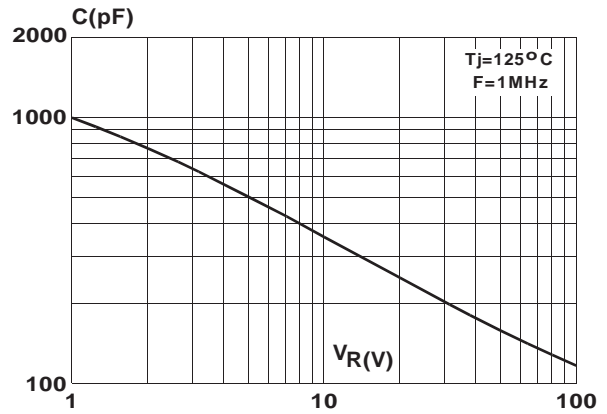
**Fig. 4 :** Relative variation of thermal transient impedance junction to case versus pulse duration.



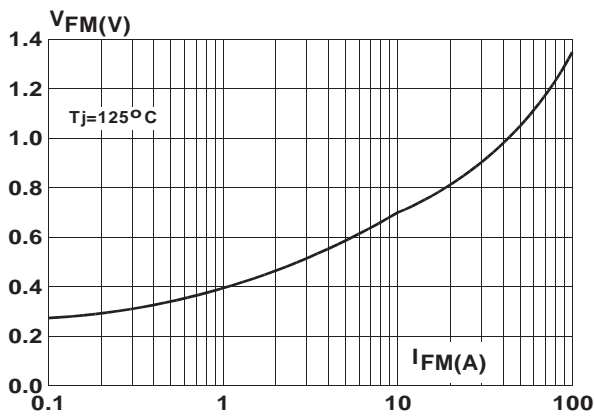
**Fig. 5 :** Reverse leakage current versus reverse voltage applied. (Typical values) (Per diode)



**Fig. 6 :** Junction capacitance versus reverse voltage applied. (Typical values) (Per diode)

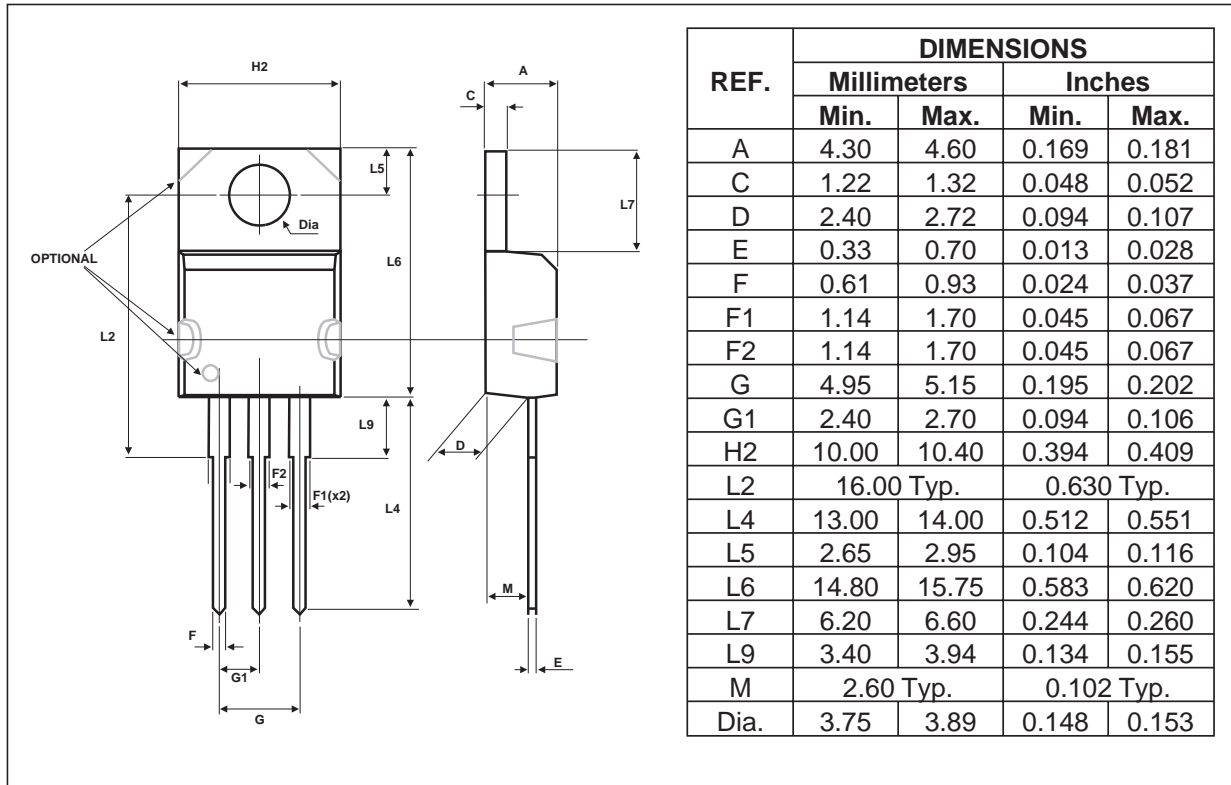


**Fig. 7 :** Forward voltage drop versus forward current. (Maximum values) (Per diode)



# STPS20100CT

## PACKAGE MECHANICAL DATA TO-220AB (JEDEC outline)



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS20100CT	STPS20100CT	TO-220AB	2.23g	50	Tube

- Cooling method : by conduction (C)
- Recommended torque value : 0.55N.m.
- Maximum torque value : 0.7N.m.
- Epoxy meets UL94,V0

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