



# STPS10H100CT/CG/CG-1

## HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

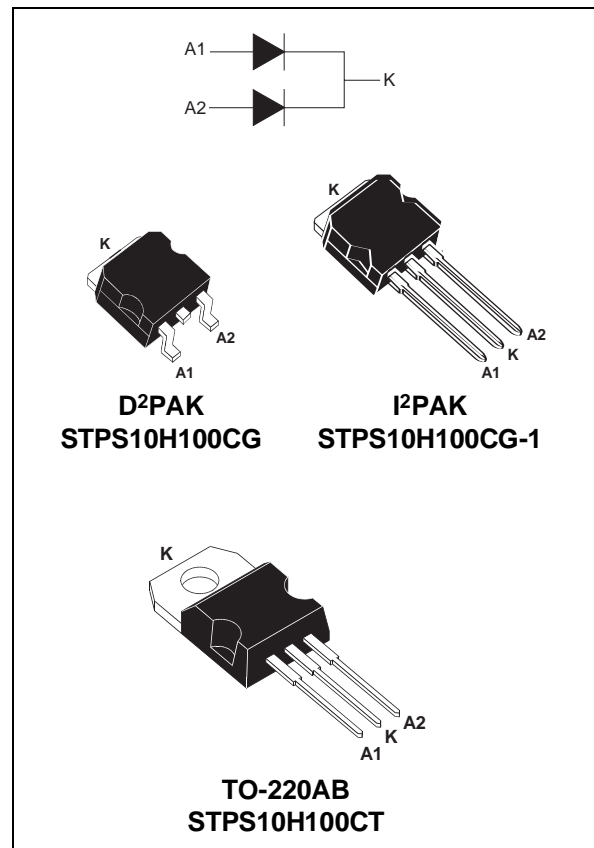
$I_{F(AV)}$	2 x 5 A
$V_{RRM}$	100 V
$T_j$	175°C
$V_F(\text{max})$	0.61 V

### FEATURES AND BENEFITS

- HIGH JUNCTION TEMPERATURE CAPABILITY FOR CONVERTERS LOCATED IN CONFINED ENVIRONMENT.
- LOW LEAKAGE CURRENT AT HIGH TEMPERATURE.
- LOW STATIC AND DYNAMIC LOSSES AS A RESULT OF THE SCHOTTKY BARRIER.

### DESCRIPTION

Schottky barrier rectifier designed for high frequency miniature Switched Mode Power Supplies such as adaptators and on board DC/DC converters. Packaged in TO220AB, D<sup>2</sup>PAK and I<sup>2</sup>PAK.



### ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter		Value	Unit
$V_{RRM}$	Repetitive peak reverse voltage		100	V
$I_{F(RMS)}$	RMS forward current		10	A
$I_{F(AV)}$	Average forward current	$T_c = 165^\circ\text{C}$ $\delta = 0.5$	per diode 10 per device	A
$I_{FSM}$	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ sinusoidal	180	A
$I_{RRM}$	Repetitive peak reverse current	$t_p = 2 \mu\text{s}$ square $F = 1\text{kHz}$	1	A
$T_{stg}$	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/ $\mu\text{s}$

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

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## THERMAL RESISTANCES

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

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

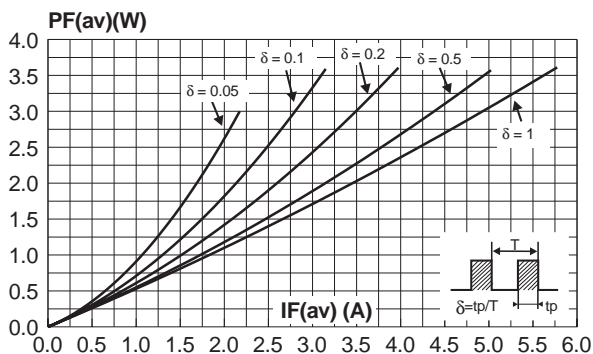
## STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
$I_R^*$	Reverse leakage current	$T_j = 25^{\circ}\text{C}$	$V_R = V_{RRM}$			3.5	$\mu\text{A}$
		$T_j = 125^{\circ}\text{C}$			1.3	4.5	mA
$V_F^{**}$	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 5\text{ A}$			0.73	V
		$T_j = 125^{\circ}\text{C}$			0.57	0.61	
		$T_j = 25^{\circ}\text{C}$	$I_F = 10\text{ A}$			0.85	
		$T_j = 125^{\circ}\text{C}$			0.66	0.71	

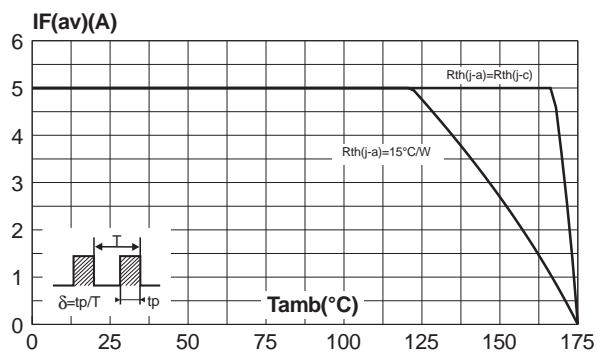
Pulse test : \*  $t_p = 5\text{ ms}$ ,  $\delta < 2\%$   
 \*\*  $t_p = 380\text{ }\mu\text{s}$ ,  $\delta < 2\%$

To evaluate the maximum conduction losses use the following equation :  
 $P = 0.51 \times I_{F(AV)} + 0.02 \times I_{F(RMS)}^2$

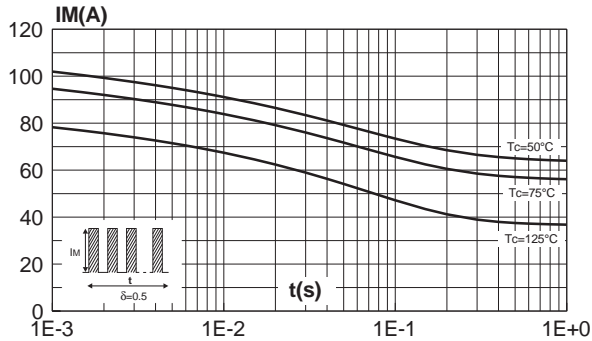
**Fig. 1:** Average forward power dissipation versus average forward current (per diode).



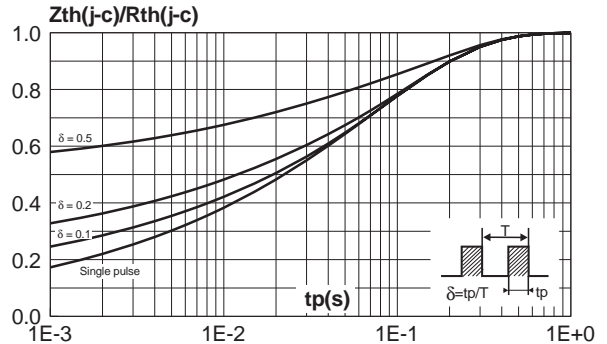
**Fig. 2:** Average forward current versus ambient temperature ( $\delta=0.5$ , per diode).



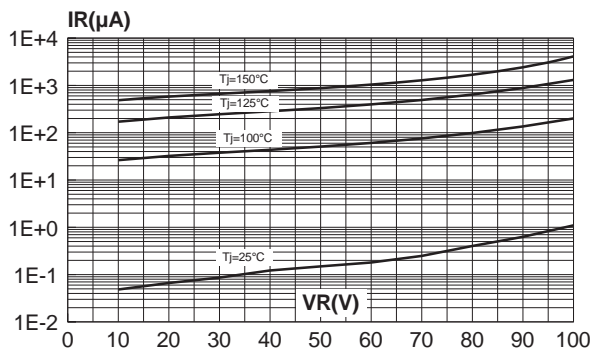
**Fig. 3:** Non repetitive surge peak forward current versus overload duration (maximum values, per diode)



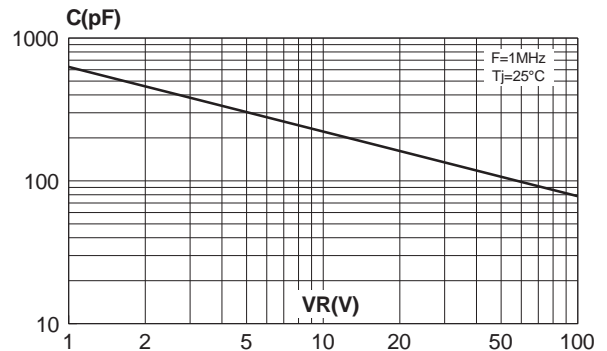
**Fig. 4:** Relative variation of thermal impedance junction to case versus pulse duration (per diode).



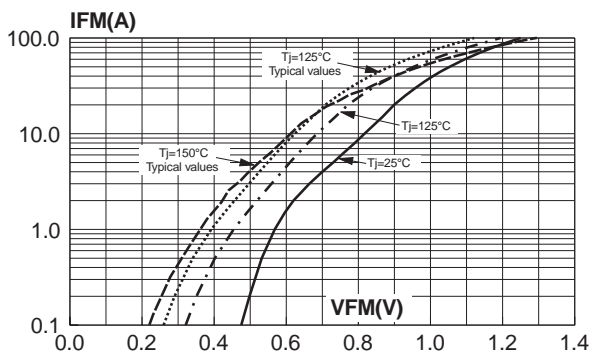
**Fig. 5:** Reverse leakage current versus reverse voltage applied (typical values, per diode).



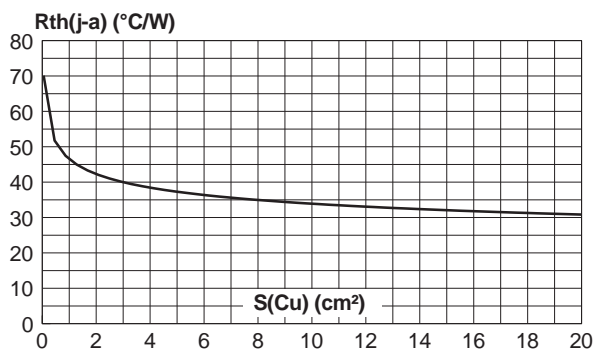
**Fig. 6:** Junction capacitance versus reverse voltage applied (typical values, per diode).



**Fig. 7:** Forward voltage drop versus forward current (maximum values, per diode).

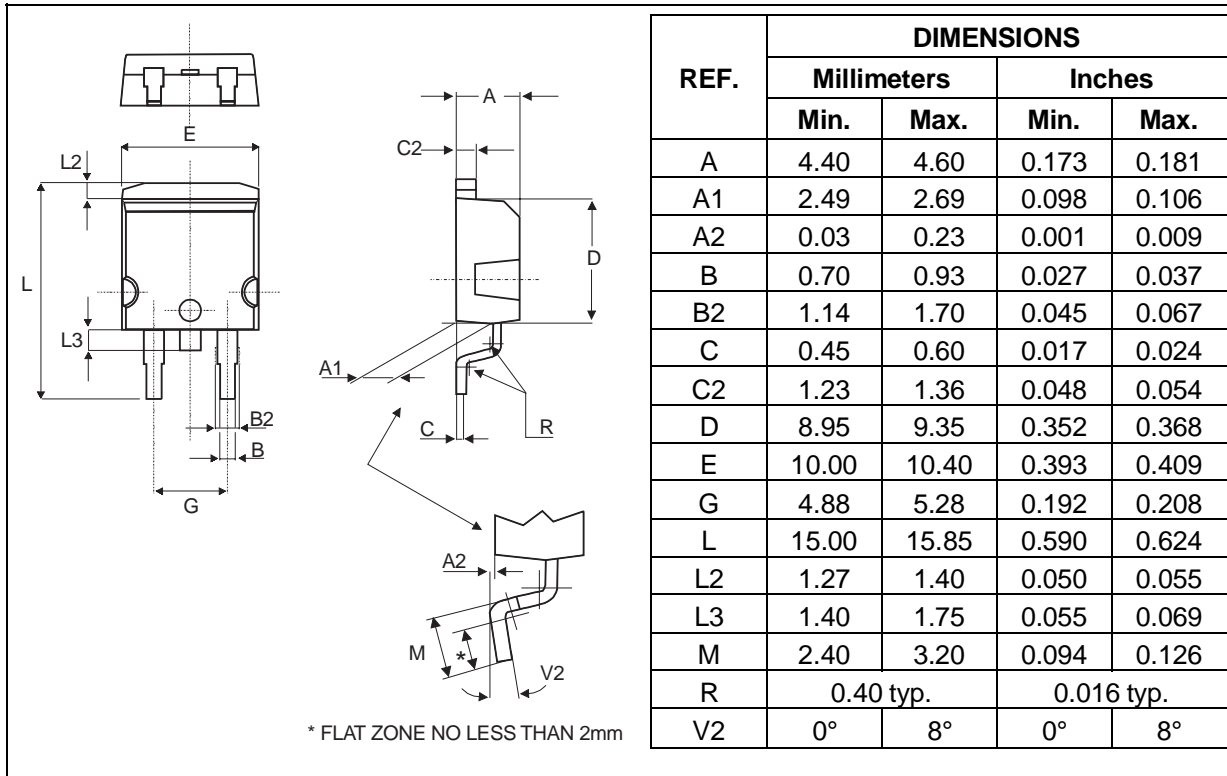


**Fig. 8:** Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35 $\mu\text{m}$ ) (D<sup>2</sup>PAK).

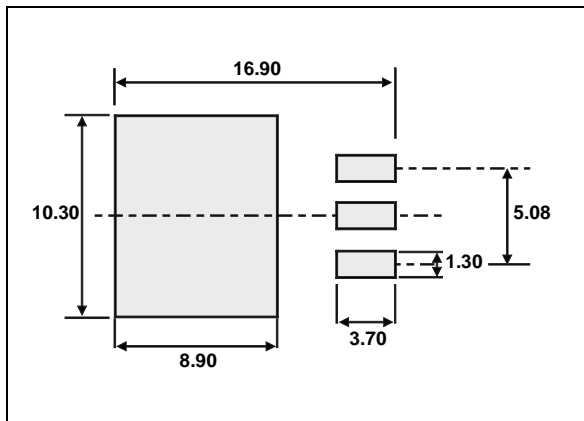


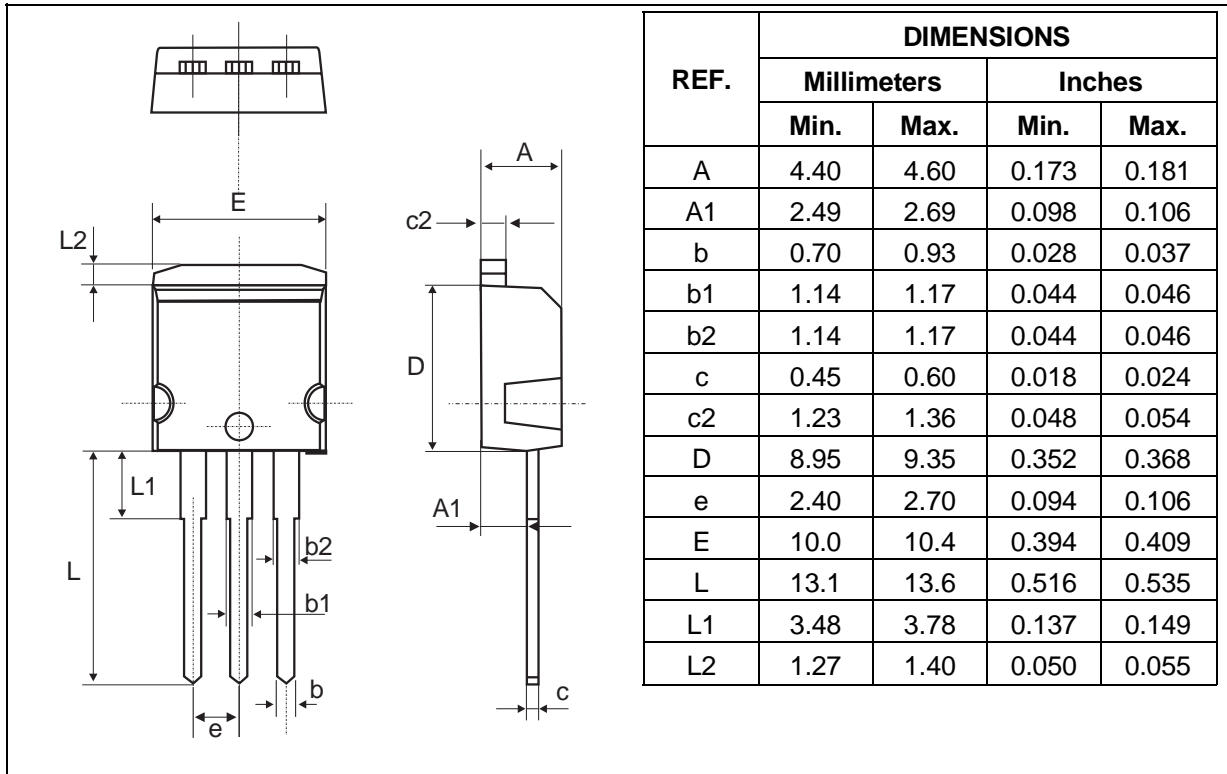
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## PACKAGE MECHANICAL DATA D<sup>2</sup>PAK



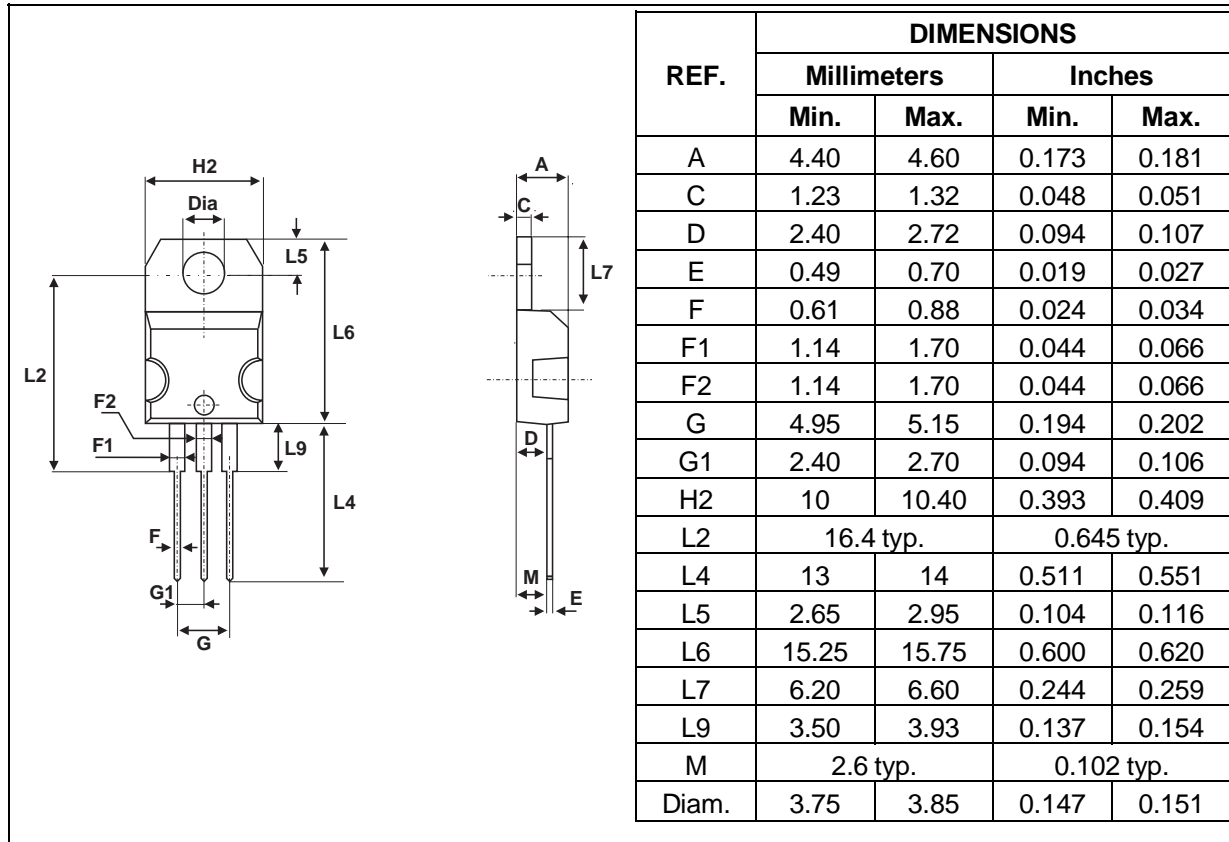
### FOOT PRINT in millimeters



**PACKAGE MECHANICAL DATA**  
 I<sup>2</sup>PAK


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## PACKAGE MECHANICAL DATA TO-220AB



- 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
STPS10H100CT	STPS10H100CT	TO-220AB	2.20g	50	Tube
STPS10H100CG	STPS10H100CG	D <sup>2</sup> PAK	1.48g	50	Tube
STPS10H100CG-TR	STPS10H100CG	D <sup>2</sup> PAK	1.48g	1000	Tape and reel
STPS10H100CG-1	STPS10H100CG	I <sup>2</sup> PAK	1.49g	50	Tube

- Epoxy meets UL94,V0

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