



# STPS20150CT/CG/CR/CFP

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## HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

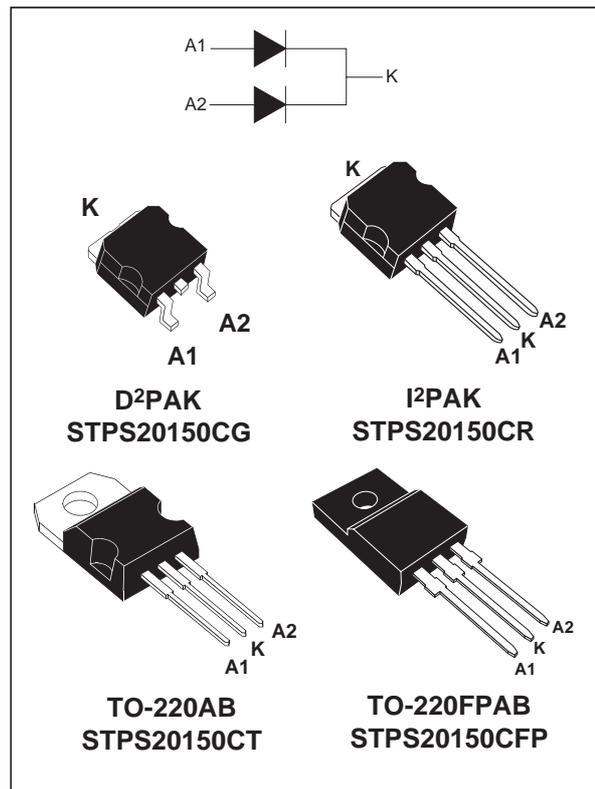
$I_{F(AV)}$	2 x 10 A
$V_{RRM}$	150 V
$T_j$	175°C
$V_F(max)$	0.75 V

### 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			150	V	
$I_{F(RMS)}$	RMS forward current			30	A	
$I_{F(AV)}$	Average forward current $\delta = 0.5$	TO-220AB D <sup>2</sup> PAK / I <sup>2</sup> PAK	$T_c = 155^\circ\text{C}$	Per diode	10	A
		TO-220FPAB	$T_c = 135^\circ\text{C}$	Per device	20	
$I_{FSM}$	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/ $\mu\text{s}$	

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### THERMAL RESISTANCES

Symbol	Parameter			Value	Unit
$R_{th(j-c)}$	Junction to case	TO-220AB / D <sup>2</sup> PAK / I <sup>2</sup> PAK	Per diode	2.2	°C/W
		TO-220FPAB		4.5	
		TO-220AB / D <sup>2</sup> PAK / I <sup>2</sup> PAK	Total	1.3	
		TO-220FPAB		3.5	
$R_{th(c)}$		TO-220AB / D <sup>2</sup> PAK / I <sup>2</sup> PAK	Coupling	0.3	
		TO-220FPAB		2.5	

When the diodes 1 and 2 are used simultaneously :

$$\Delta T_j(\text{diode 1}) = P(\text{diode1}) \times R_{th(j-c)}(\text{Per diode}) + P(\text{diode 2}) \times R_{th(c)}$$

### STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
$I_R^*$	Reverse leakage current	T <sub>j</sub> = 25°C	$V_R = V_{RRM}$			5.0	μA
		T <sub>j</sub> = 125°C				5.0	mA
$V_F^{**}$	Forward voltage drop	T <sub>j</sub> = 25°C	I <sub>F</sub> = 10 A			0.92	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			1	
		T <sub>j</sub> = 125°C	I <sub>F</sub> = 20 A		0.79	0.86	

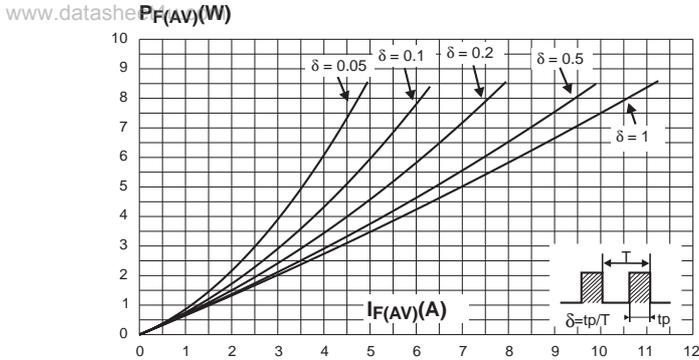
Pulse test : \* tp = 5 ms, δ < 2%

\*\* tp = 380 μs, δ < 2%

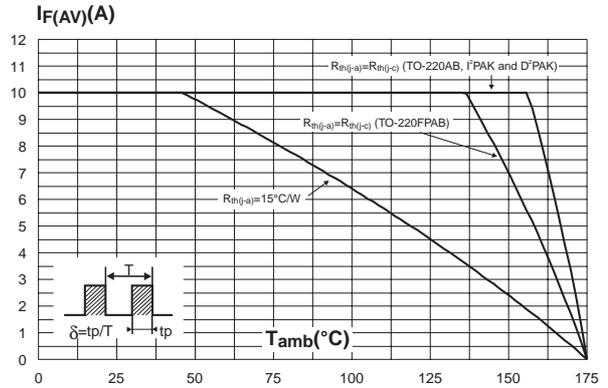
To evaluate the conduction losses use the following equation:

$$P = 0.64 \times I_{F(AV)} + 0.011 I_{F(RMS)}^2$$

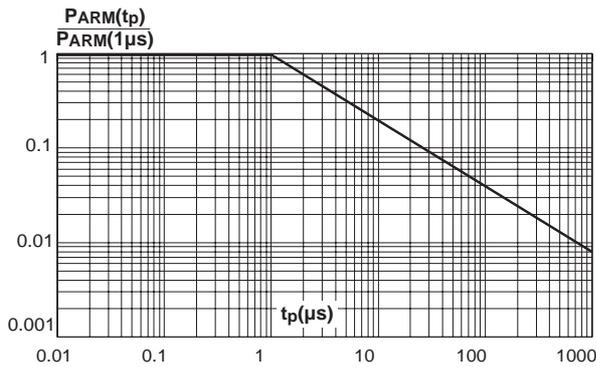
**Fig. 1:** Average forward power dissipation versus average forward current (per diode).



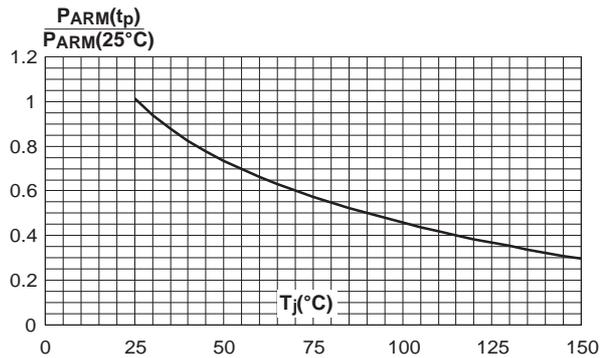
**Fig. 2:** Average forward current versus ambient temperature ( $\delta = 0.5$ , per diode).



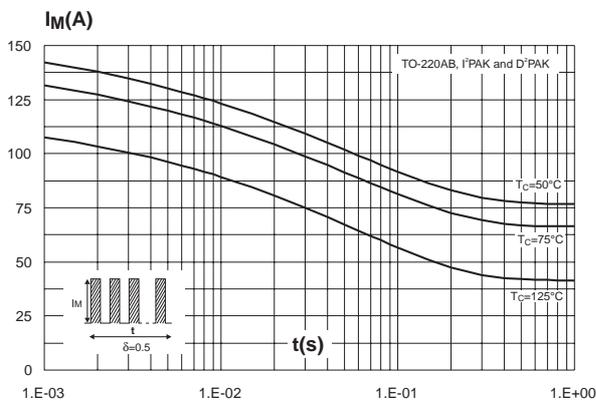
**Fig. 3:** Normalized avalanche power derating versus pulse duration.



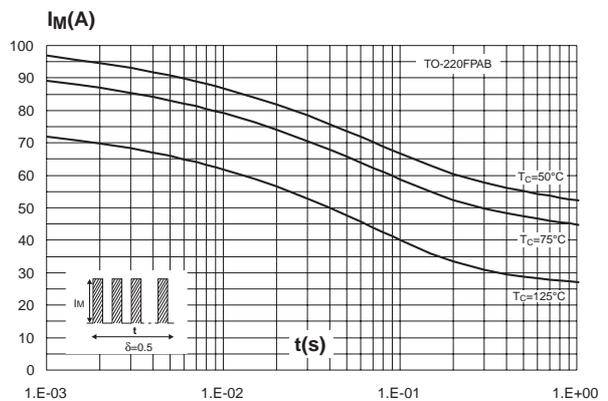
**Fig. 4:** Normalized avalanche power derating versus junction temperature.



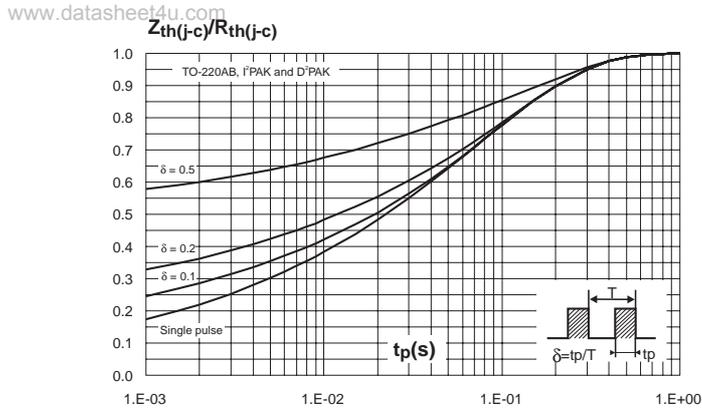
**Fig. 5-1:** Non repetitive surge peak forward current versus overload duration (maximum values, per diode). TO-220AB, I2PAK and D2PAK



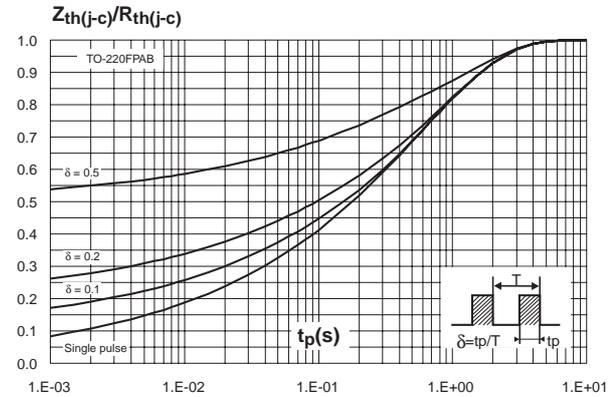
**Fig. 5-2:** Non repetitive surge peak forward current versus overload duration (maximum values, per diode). TO-220FPAB



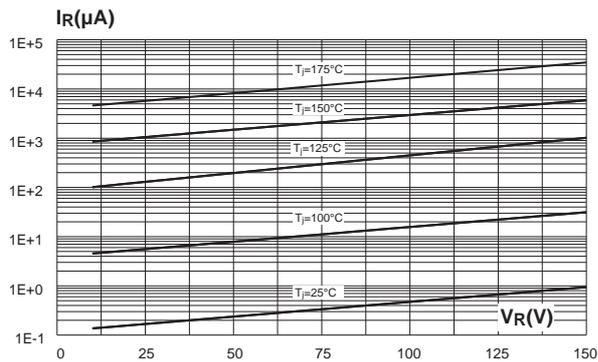
**Fig. 6-1:** Relative variation of thermal impedance junction to case versus pulse duration. TO-220AB, I<sup>2</sup>PAK and D<sup>2</sup>PAK



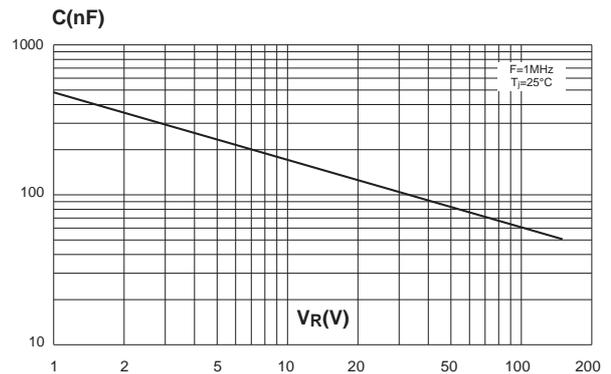
**Fig. 6-2:** Relative variation of thermal impedance junction to case versus pulse duration. TO-220FPAB



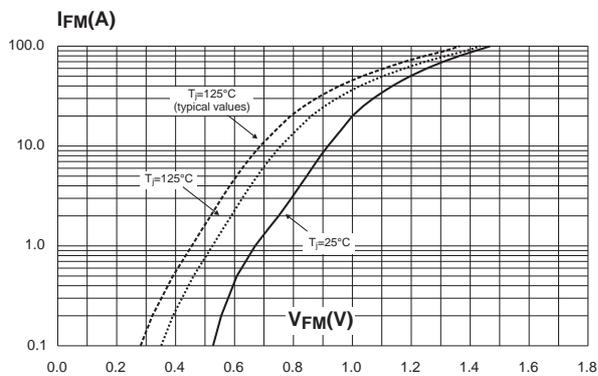
**Fig. 7:** Reverse leakage current versus reverse voltage applied (typical values, per diode).



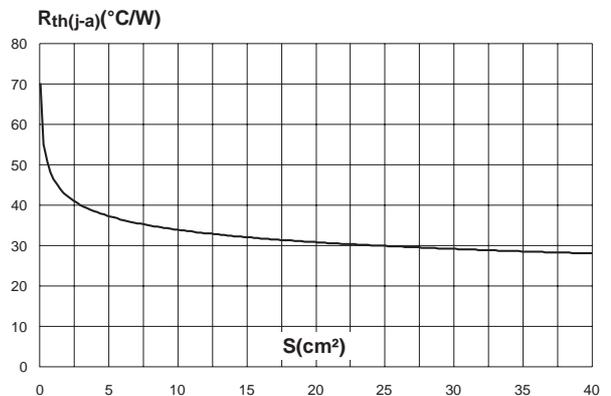
**Fig. 8:** Junction capacitance versus reverse voltage applied (typical values, per diode).



**Fig. 8:** Forward voltage drop versus forward current (per diode).

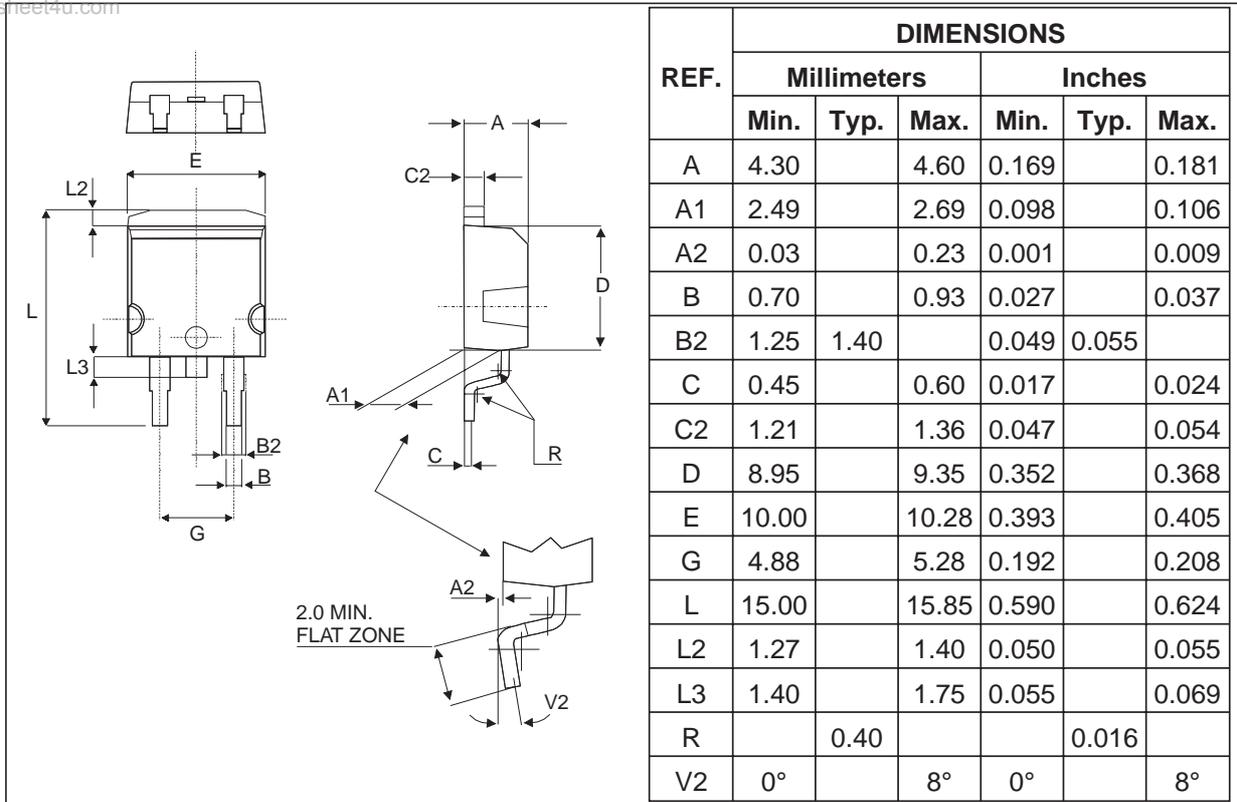


**Fig. 9:** Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board,  $Cu = 35\mu m$ ) (STPS20150CG only).

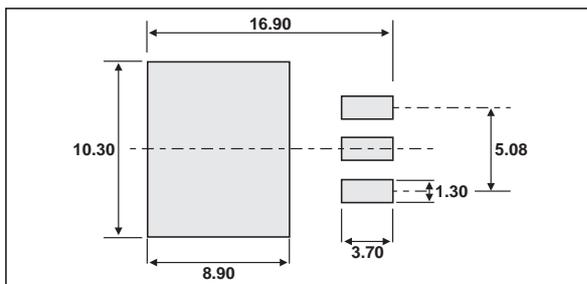


**PACKAGE MECHANICAL DATA**  
D<sup>2</sup>PAK

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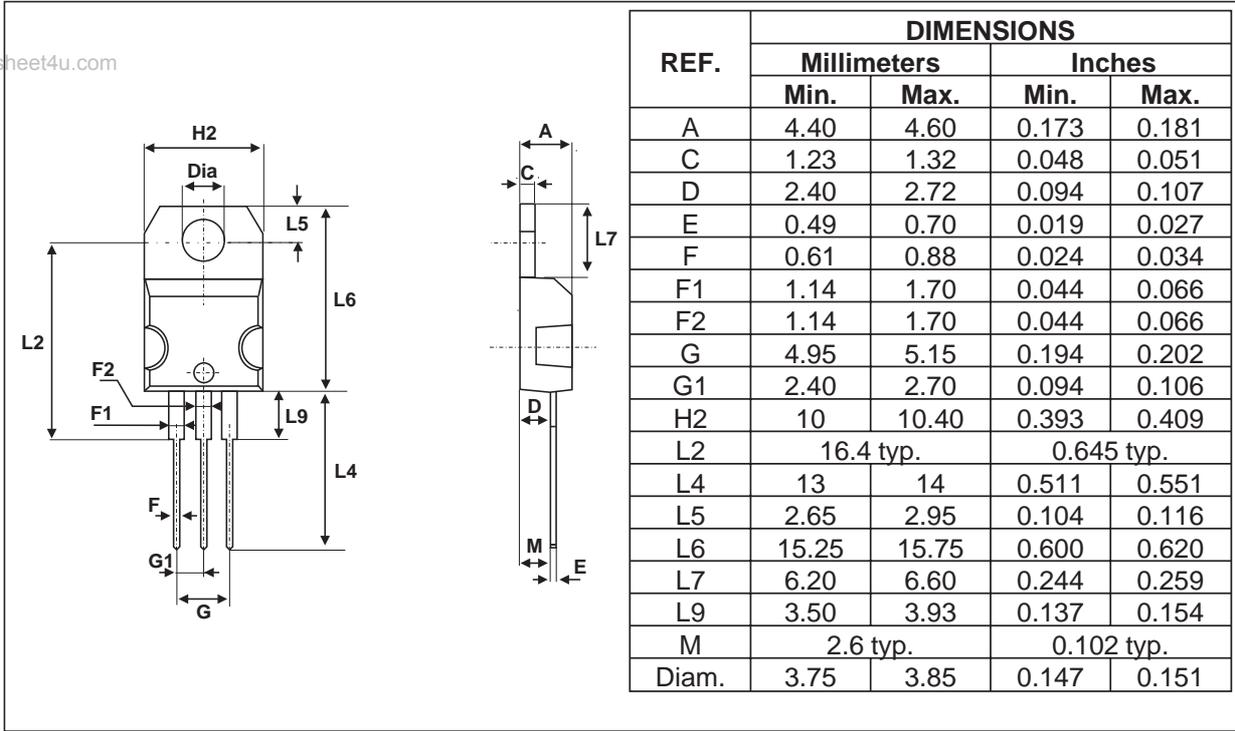
**FOOT PRINT DIMENSIONS (in millimeters)**



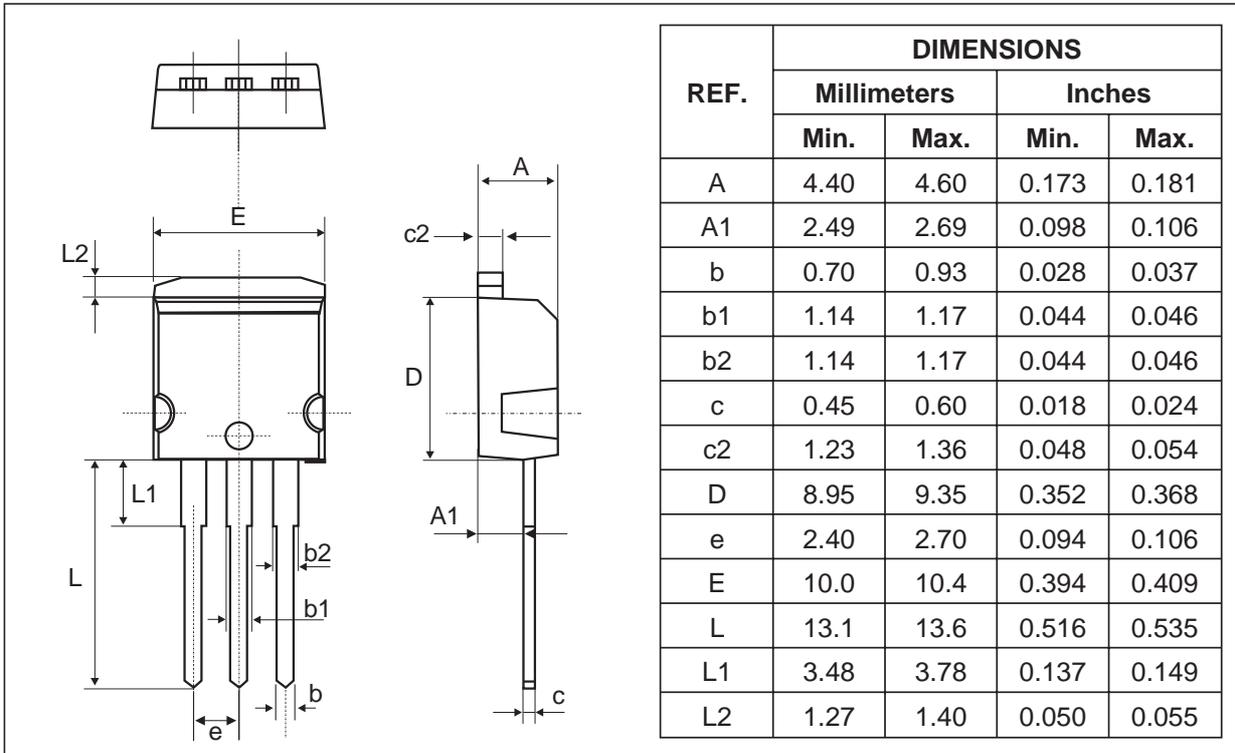
**STPS20150CT/CG/CR/CFP**

**PACKAGE MECHANICAL DATA**  
TO-220AB

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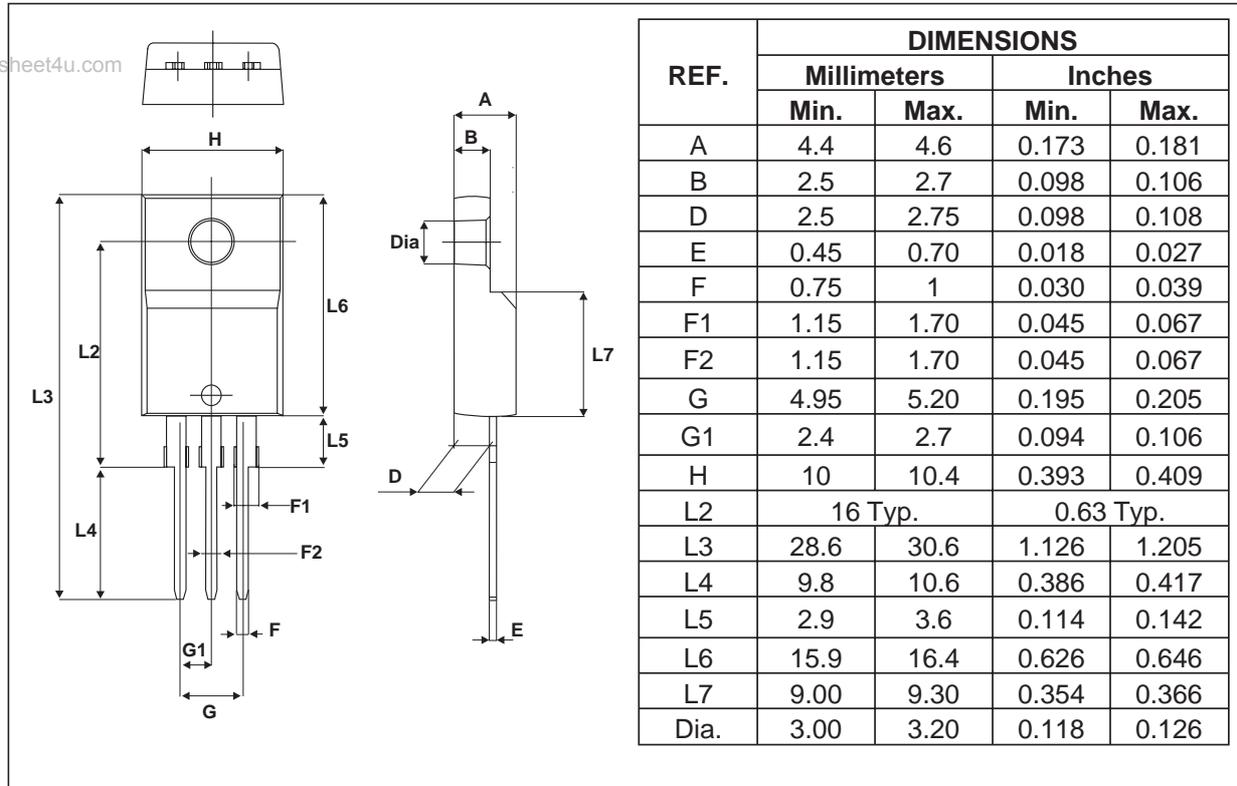


**PACKAGE MECHANICAL DATA**  
I<sup>2</sup>PAK



**PACKAGE MECHANICAL DATA**  
TO-220FPAB

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**OTHER INFORMATION**

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS20150CT	STPS20150CT	TO-220AB	2.20 g	50	Tube
STPS20150CG	STPS20150CG	D <sup>2</sup> PAK	1.48 g	50	Tube
STPS20150CG-TR	STPS20150CG	D <sup>2</sup> PAK	1.48 g	1000	Tape & Reel
STPS20150CR	STPS20150CR	I <sup>2</sup> PAK	1.49 g	50	Tube
STPS20150CFP	STPS20150CFP	TO-220FPAB	2.0 g	50	Tube

■ EPOXY MEETS UL94,V0

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