

## POWER SCHOTTKY RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 7.5 A
$V_{RRM}$	45 V
$T_j(\text{max})$	175 °C
$V_F(\text{max})$	0.57 V

### FEATURES AND BENEFITS

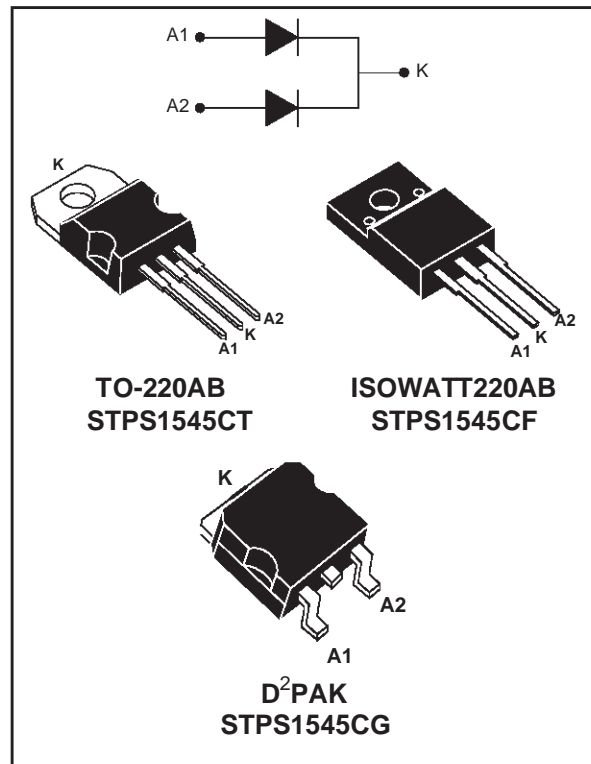
- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- EXTREMELY FAST SWITCHING
- INSULATED PACKAGE: ISOWATT220AB  
Insulating voltage = 2000V DC  
Capacitance = 12pF

### DESCRIPTION

Dual center tap Schottky rectifier suited for Switch-Mode Power Supply and high frequency DC to DC converters.

Packaged either in TO-220AB, ISOWATT220AB or D<sup>2</sup>PAK, this device is especially intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.

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



Symbol	Parameter			Value	Unit	
$V_{RRM}$	Repetitive peak reverse voltage			45	V	
$I_{F(RMS)}$	RMS forward current			20	A	
$I_{F(AV)}$	Average forward current $\delta = 0.5$	TO-220AB/ D <sup>2</sup> PAK	$T_c = 157^\circ\text{C}$	Per diode	7.5	A
		ISOWATT220AB	$T_c = 130^\circ\text{C}$	Per device	15	
$I_{FSM}$	Surge non repetitive forward current		$t_p = 10 \text{ ms}$ Sinusoidal	150	A	
$I_{RRM}$	Repetitive peak reverse current		$t_p = 2 \mu\text{s}$ square $F = 1 \text{ kHz}$	1	A	
$I_{RSM}$	Non repetitive peak reverse current		$t_p = 100 \mu\text{s}$ square	2	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

## STPS1545CT/CF/CG

### THERMAL RESISTANCES

Symbol	Parameter			Value	Unit
R <sub>th(j-c)</sub>	Junction to case	TO-220AB/ D <sup>2</sup> PAK	Per diode Total	3.0 1.7	°C/W
		ISOWATT220AB	Per diode Total	5.5 4.2	
R <sub>th(c)</sub>		TO-220AB/ D <sup>2</sup> PAK	Coupling	0.35	
		ISOWATT220AB		2.9	

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)

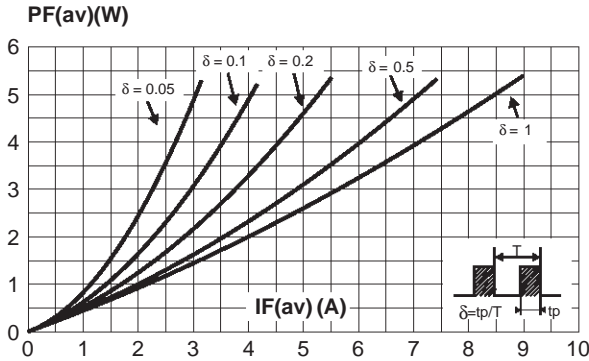
Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I <sub>R</sub> *	Reverse leakage current	T <sub>j</sub> = 25°C	V <sub>R</sub> = V <sub>RRM</sub>			100	μA
		T <sub>j</sub> = 125°C			5	15	mA
V <sub>F</sub> *	Forward voltage drop	T <sub>j</sub> = 125°C	I <sub>F</sub> = 7.5 A		0.5	0.57	V
		T <sub>j</sub> = 25°C	I <sub>F</sub> = 15 A			0.84	
		T <sub>j</sub> = 125°C	I <sub>F</sub> = 15 A		0.65	0.72	

Pulse test : \* t<sub>p</sub> = 380 μs, δ < 2%

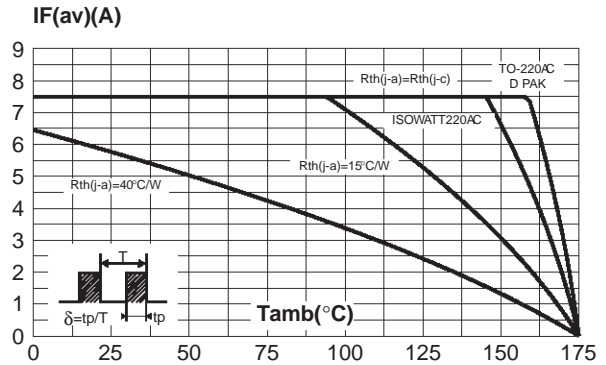
To evaluate the conduction losses use the following equation :

$$P = 0.42 \times I_{F(AV)} + 0.020 I_{F(RMS)}^2$$

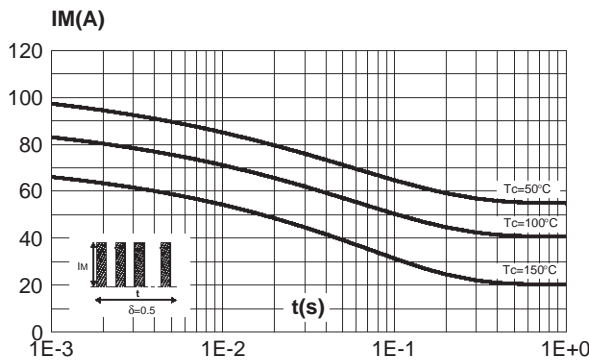
**Fig. 1:** Average forward power dissipation versus average forward current (per diode).



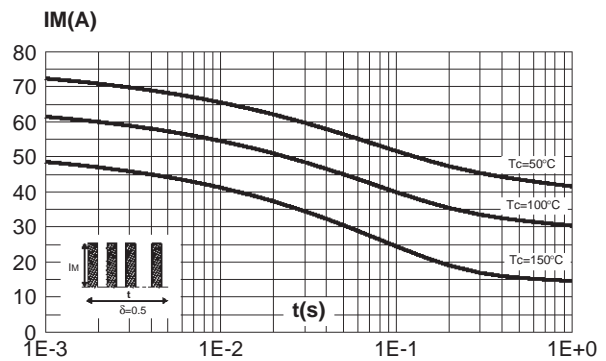
**Fig. 2:** Average current versus ambient temperature ( $\delta = 0.5$ , per diode).



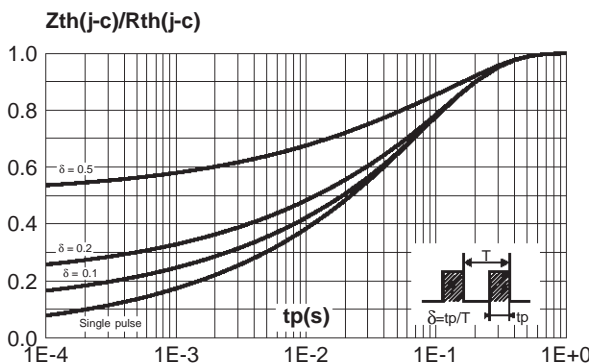
**Fig. 3-1:** Non repetitive surge peak forward current versus overload duration (maximum values, per diode) (TO-220AB and D<sup>2</sup>PAK).



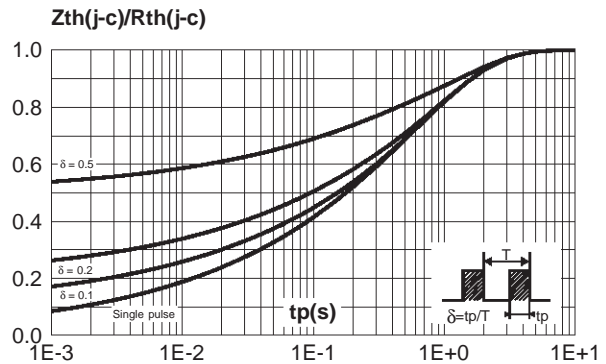
**Fig. 3-2:** Non repetitive surge peak forward current versus overload duration (maximum values, per diode) (ISOWATT220AB).



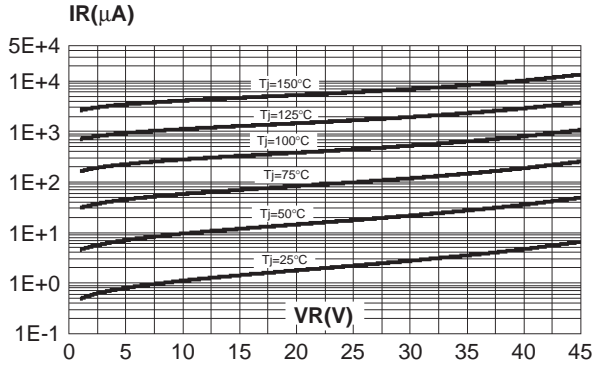
**Fig. 4-1:** Relative variation of thermal transient impedance junction to case versus pulse duration (per diode) (TO-220AB and D<sup>2</sup>PAK).



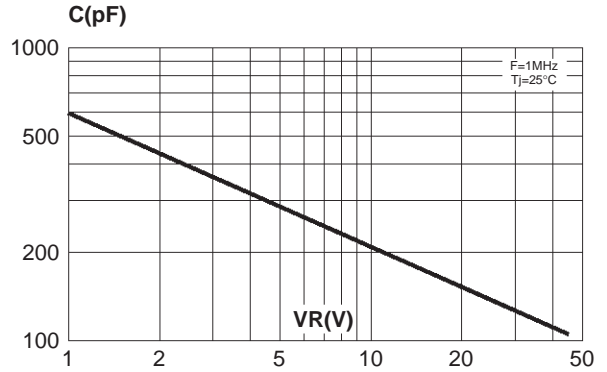
**Fig. 4-2:** Relative variation of thermal transient impedance junction to case versus pulse duration (per diode) (ISOWATT220AB).



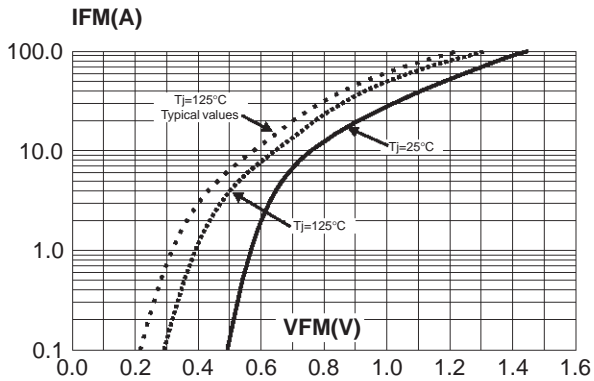
**Fig. 5:** Reverse leakage current versus reverse voltage applied (typical values, per diode).



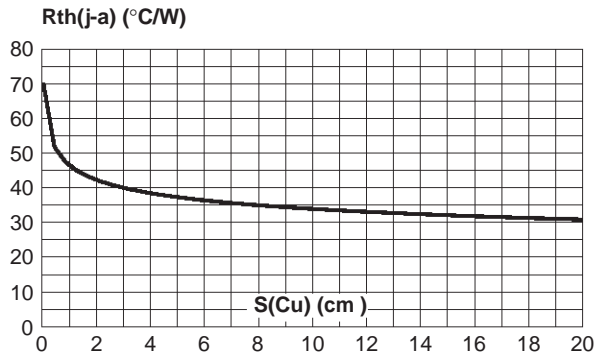
**Fig. 6:** Junction capacitance versus reverse voltage applied (typical values, per diode).



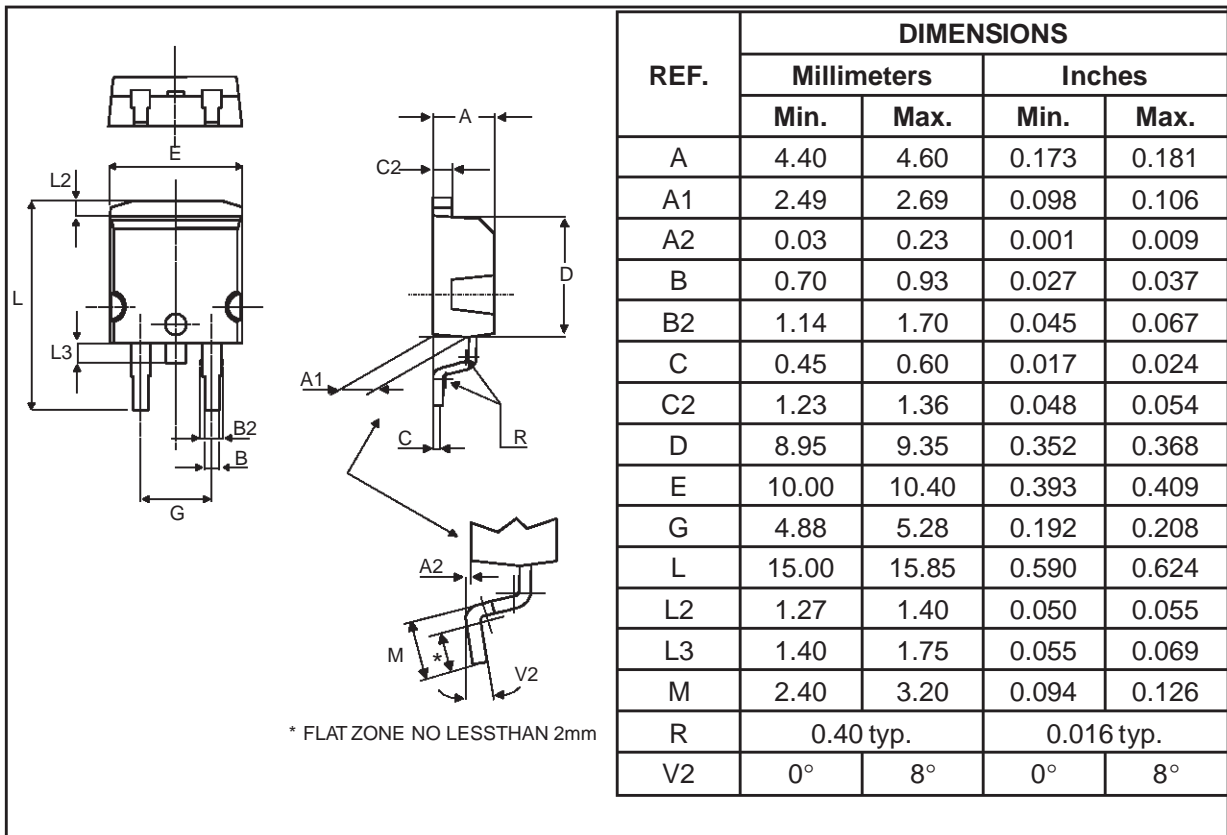
**Fig. 7:** Forward voltage drop versus forward current (maximum values, per diode).



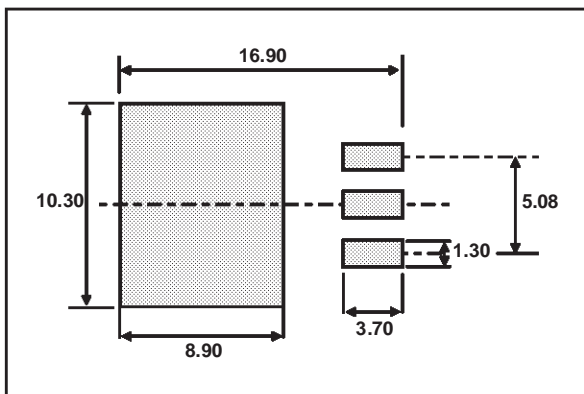
**Fig. 8:** Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board, copper thickness:  $35\mu\text{m}$ ).



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

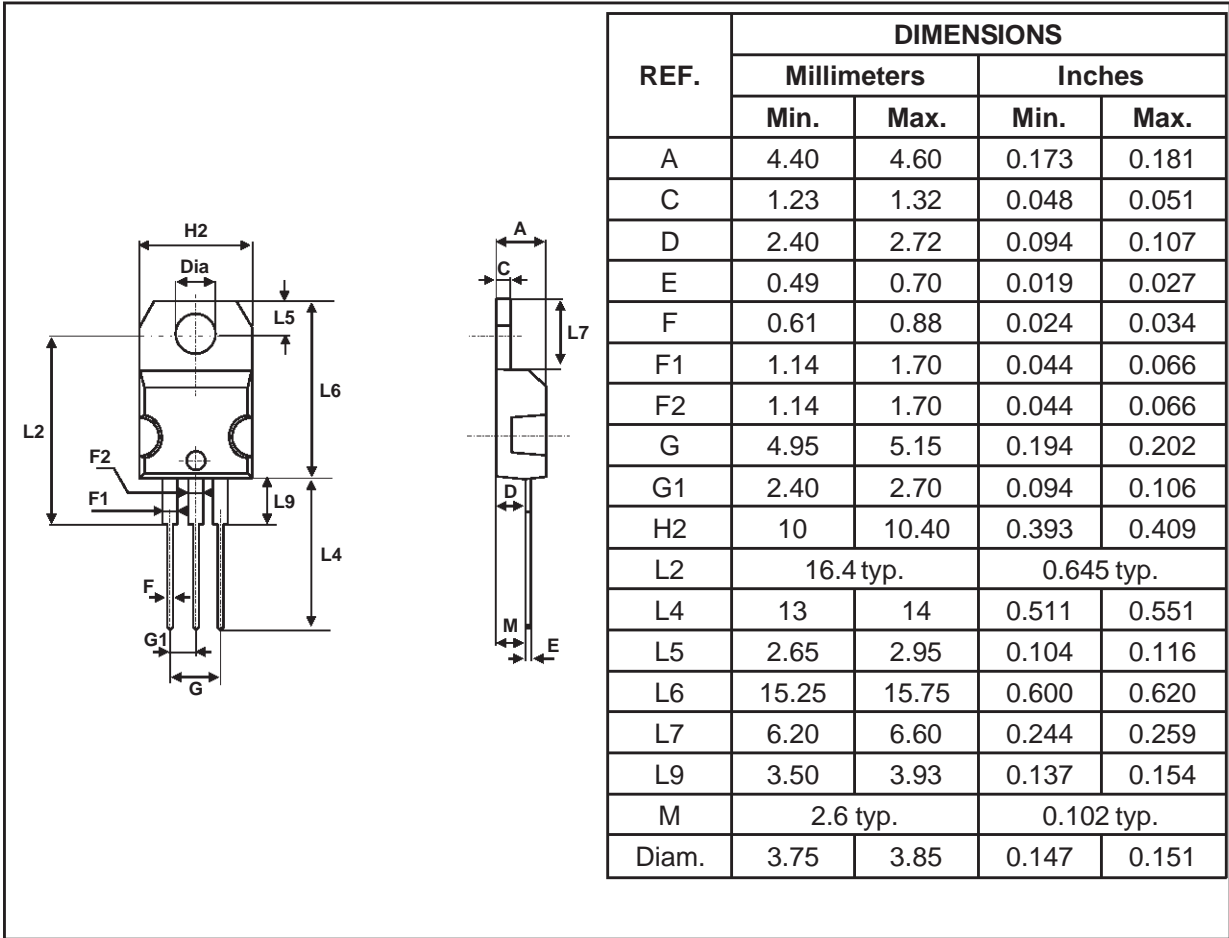


**FOOTPRINT DIMENSIONS** (in millimeters)

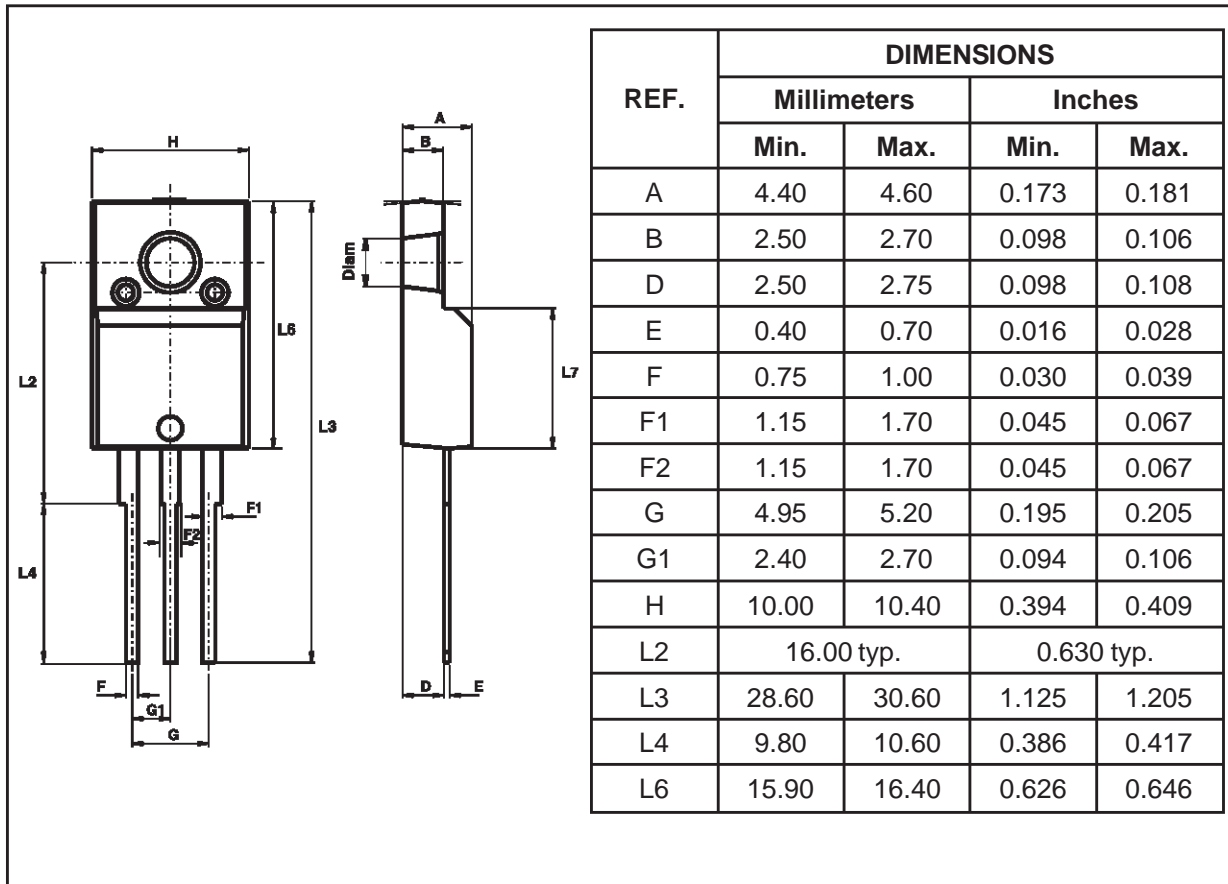


**STPS1545CT/CF/CG**

**PACKAGE MECHANICAL DATA**  
TO-220AB



**PACKAGE MECHANICAL DATA**  
ISOWATT220AB



Type	Marking	Package	Weight	Base qty	Delivery mode
STPS1545CT	STPS1545CT	TO-220AB	2.23 g.	50	Tube
STPS1545CF	STPS1545CF	ISOWATT220AB	2.08 g.	50	Tube
STPS1545CG	STPS1545CG	D2PAK	1.48 g.	50	Tube
STPS1545CG-TR	STPS1545CG	D2PAK	1.48 g.	1000	Tape & reel

- Cooling method: by conduction (C)
- Epoxy meets UL94,V0

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