



STPS1545D/F/FP/R/G

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	15 A
V_{RRM}	45 V
T_j (max)	175 °C
V_F (max)	0.57 V

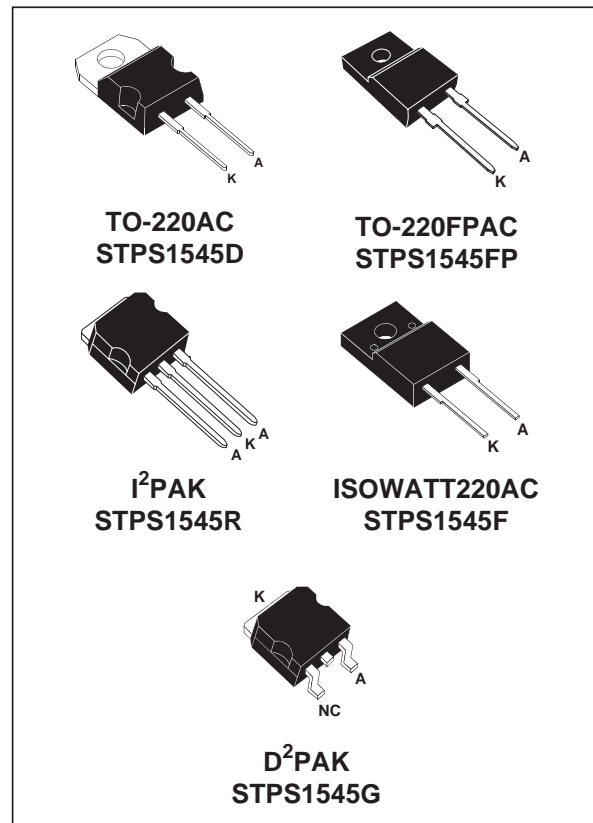
FEATURES AND BENEFITS

- Very small conduction losses
- Negligible switching losses
- Extremely fast switching
- Insulated package: ISOWATT220AC, TO-220FPAC
Insulating voltage = 2000V DC
Capacitance = 12pF

DESCRIPTION

Single chip Schottky rectifier suited for Switch Mode Power Supply and high frequency DC to DC converters.

Packaged in TO-220AC, ISOWATT220AC, TO-220FPAC, I²PAK or D²PAK, this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit	
V_{RRM}	Repetitive peak reverse voltage		45	V	
$I_{F(RMS)}$	RMS forward current		30	A	
$I_{F(AV)}$	Average forward current $\delta = 0.5$	TO-220AC, I ² PAK, D ² PAK	$T_c = 155^\circ\text{C}$	15	A
		ISOWATT220AC TO-220FPAC	$T_c = 130^\circ\text{C}$		
I_{FSM}	Surge non repetitive forward current	$t_p = 10\text{ ms}$ Sinusoidal	220	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	3	A	
T_{stg}	Storage temperature range		- 65 to + 175	°C	
T_j	Maximum operating junction temperature *		175	°C	

* : $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th}(j-a)}$ 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	TO-220AC, I ² PAK, D ² PAK	1.6
		ISOWATT220AC TO-220FPAC	4.0

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests Conditions	Min.	Typ.	Max.	Unit	
I_R^*	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$		200	μA	
		$T_j = 125^\circ\text{C}$		11	40	mA	
V_F^*	Forward voltage drop	$T_j = 125^\circ\text{C}$	$I_F = 15\text{ A}$		0.5	0.57	V
		$T_j = 25^\circ\text{C}$	$I_F = 30\text{ A}$			0.84	
		$T_j = 125^\circ\text{C}$	$I_F = 30\text{ A}$		0.65	0.72	

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

To evaluate the conduction losses use the following equation :

$$P = 0.42 \times I_{F(AV)} + 0.01 I_{F(RMS)}^2$$

Fig. 1: Average forward power dissipation versus average forward current.

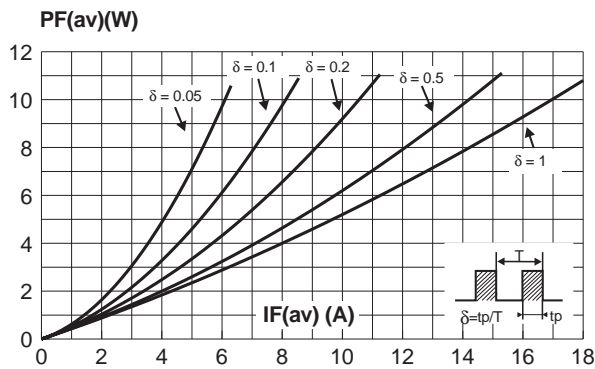


Fig. 3-1: Non repetitive surge peak forward current versus overload duration (maximum values) (TO-220AC, I²PAK and D²PAK).

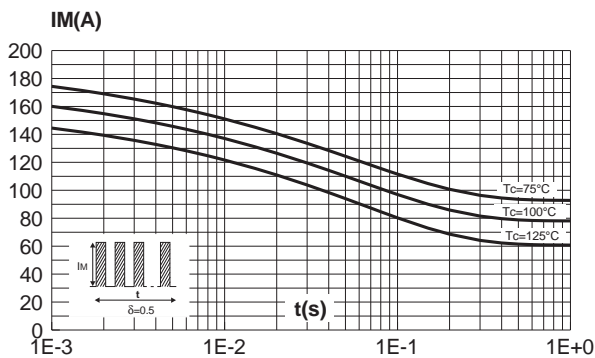


Fig. 2: Average current versus ambient temperature ($\delta : 0.5$).

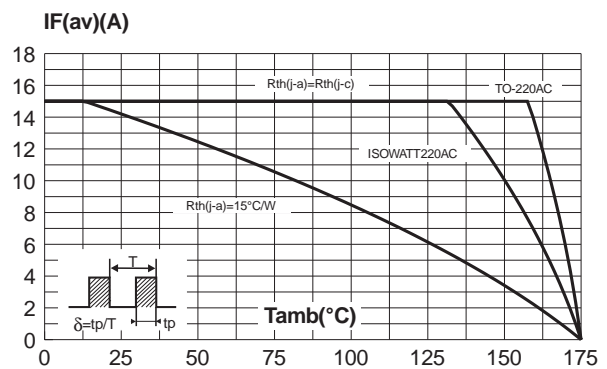


Fig. 3-2: Non repetitive surge peak forward current versus overload duration (maximum values) (ISOWATT220AC, TO-220FPAC).

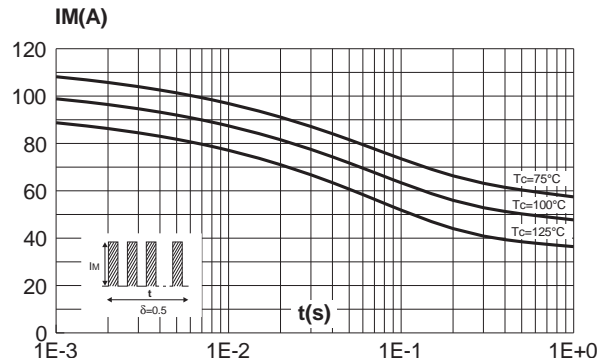


Fig. 4-1: Relative variation of thermal transient impedance junction to case versus pulse duration (TO-220AC, I²PAK and D²PAK).

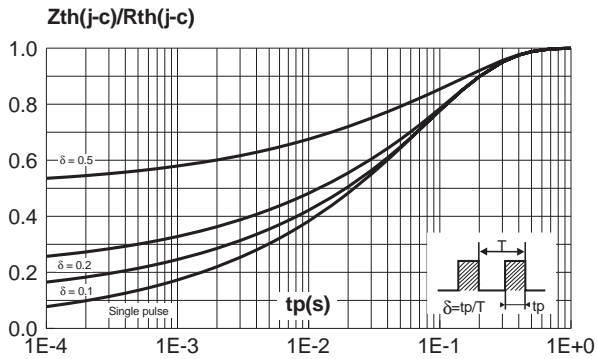


Fig. 4-2: Relative variation of thermal transient impedance junction to case versus pulse duration (ISOWATT220AC, TO-220FPAC).

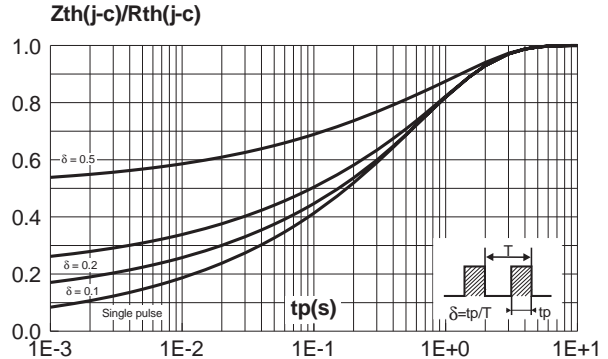


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values).

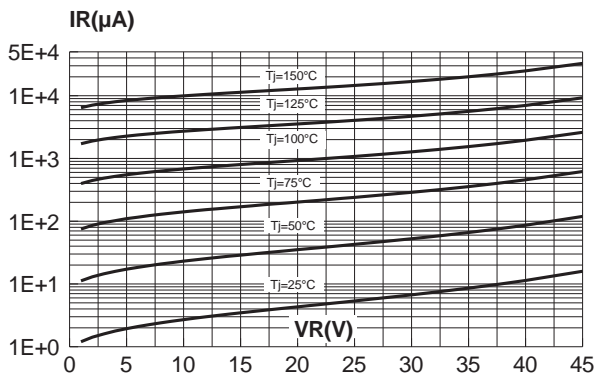


Fig. 6: Junction capacitance versus reverse voltage applied (typical values).

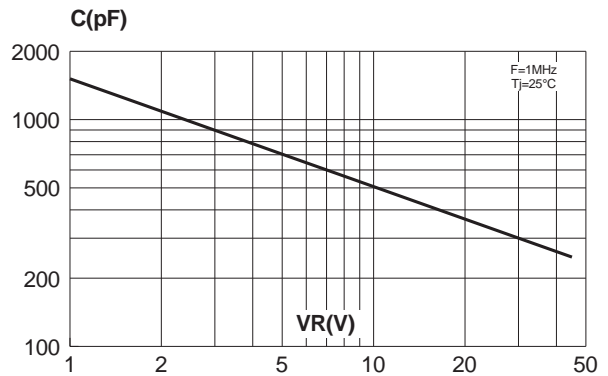


Fig. 7: Forward voltage drop versus forward current (maximum values).

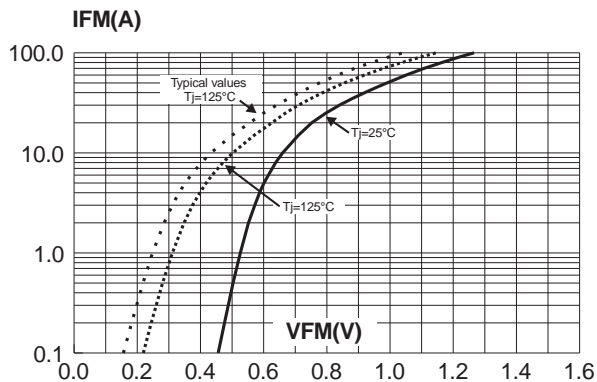
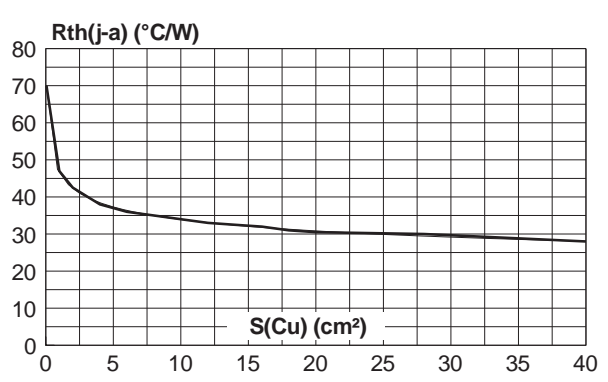
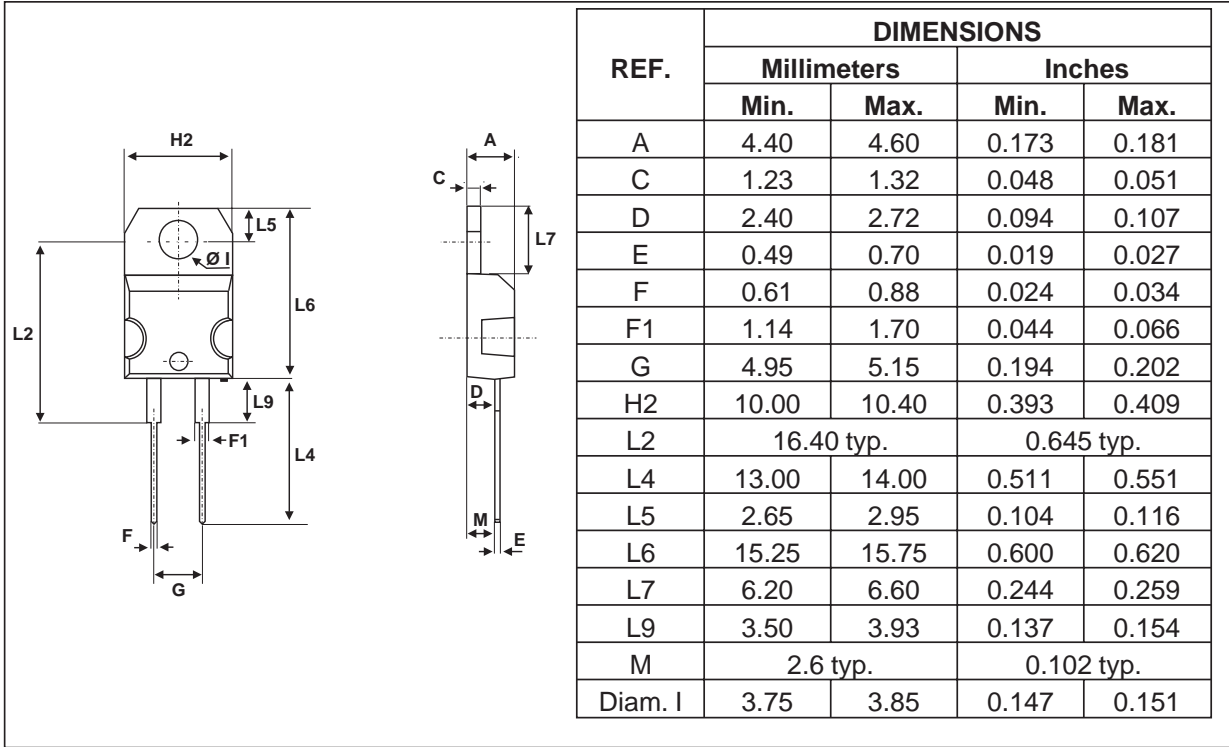


Fig. 8: Thermal resistance junction to ambient versus copper surface under tab (epoxy printed circuit board FR4, Cu=35μm) (D²PAK).

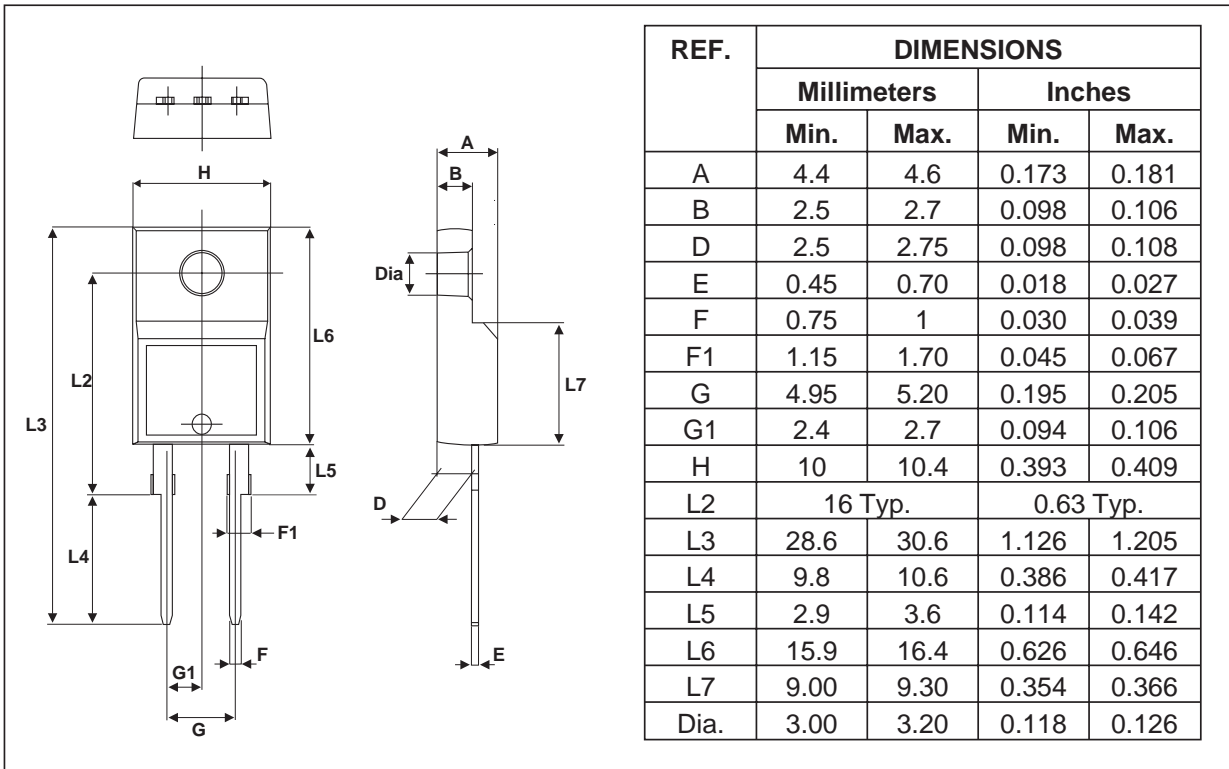


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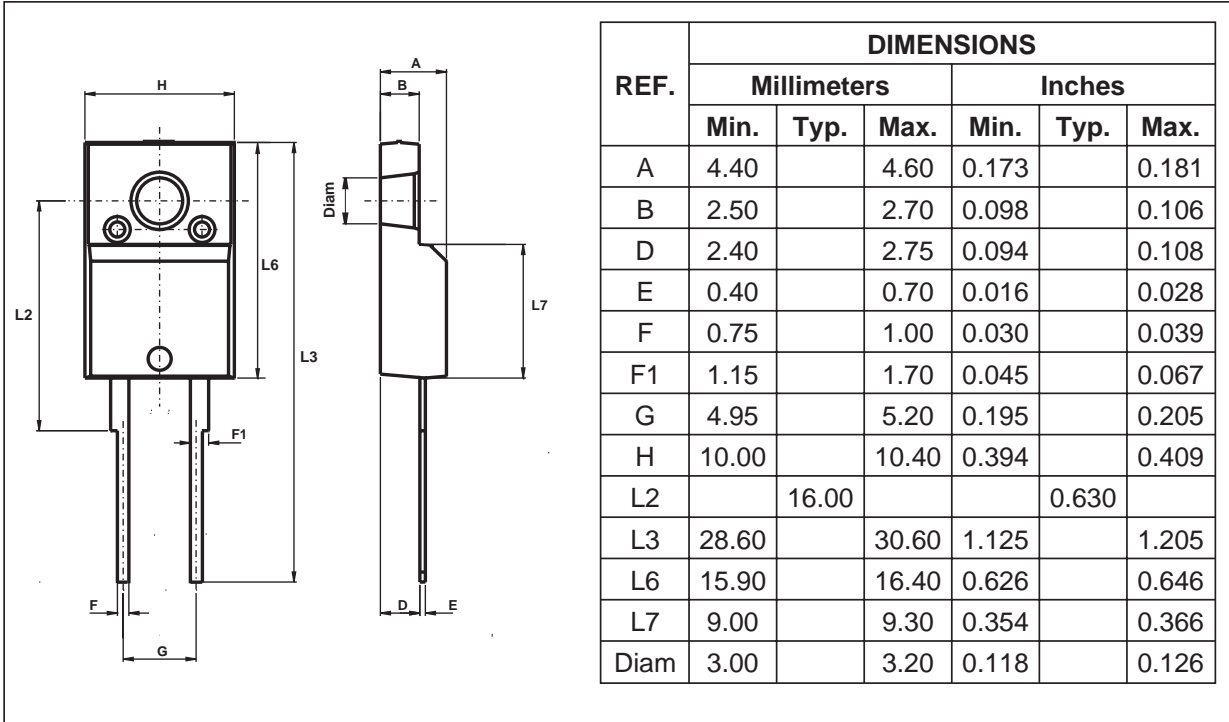
PACKAGE MECHANICAL DATA
TO-220AC



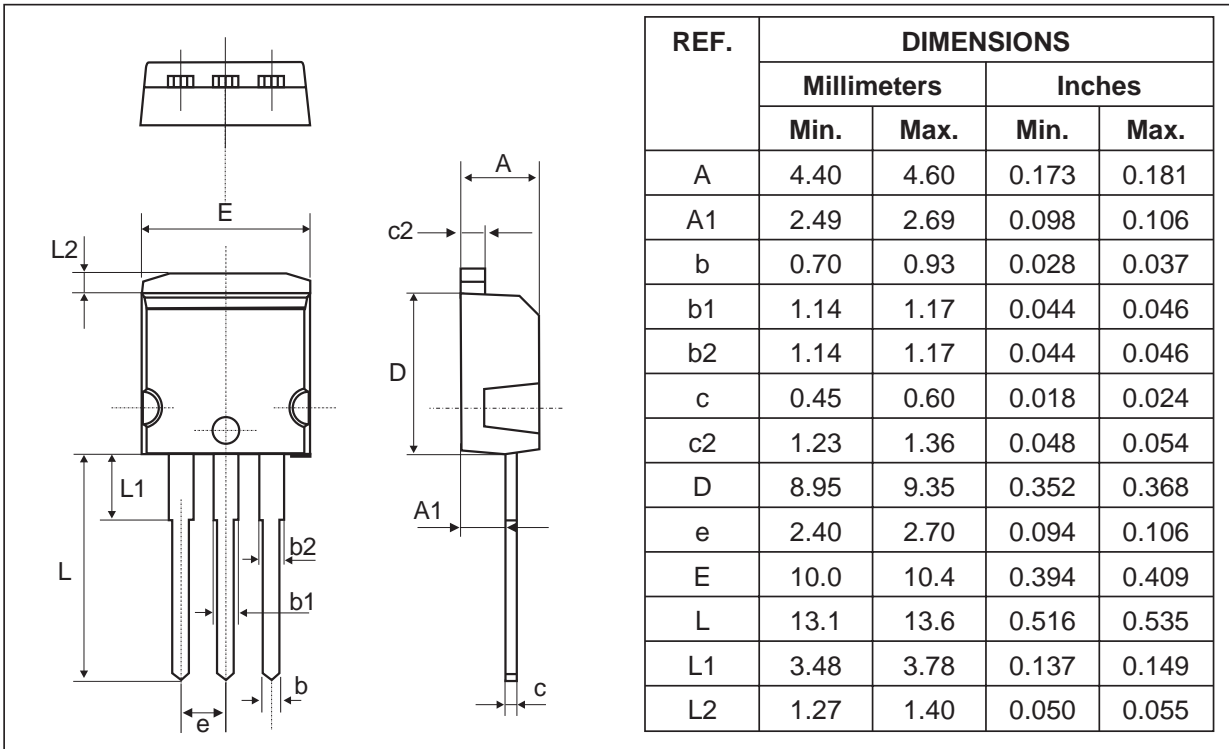
PACKAGE MECHANICAL DATA
TO-220FPAC



PACKAGE MECHANICAL DATA
ISOWATT220AC

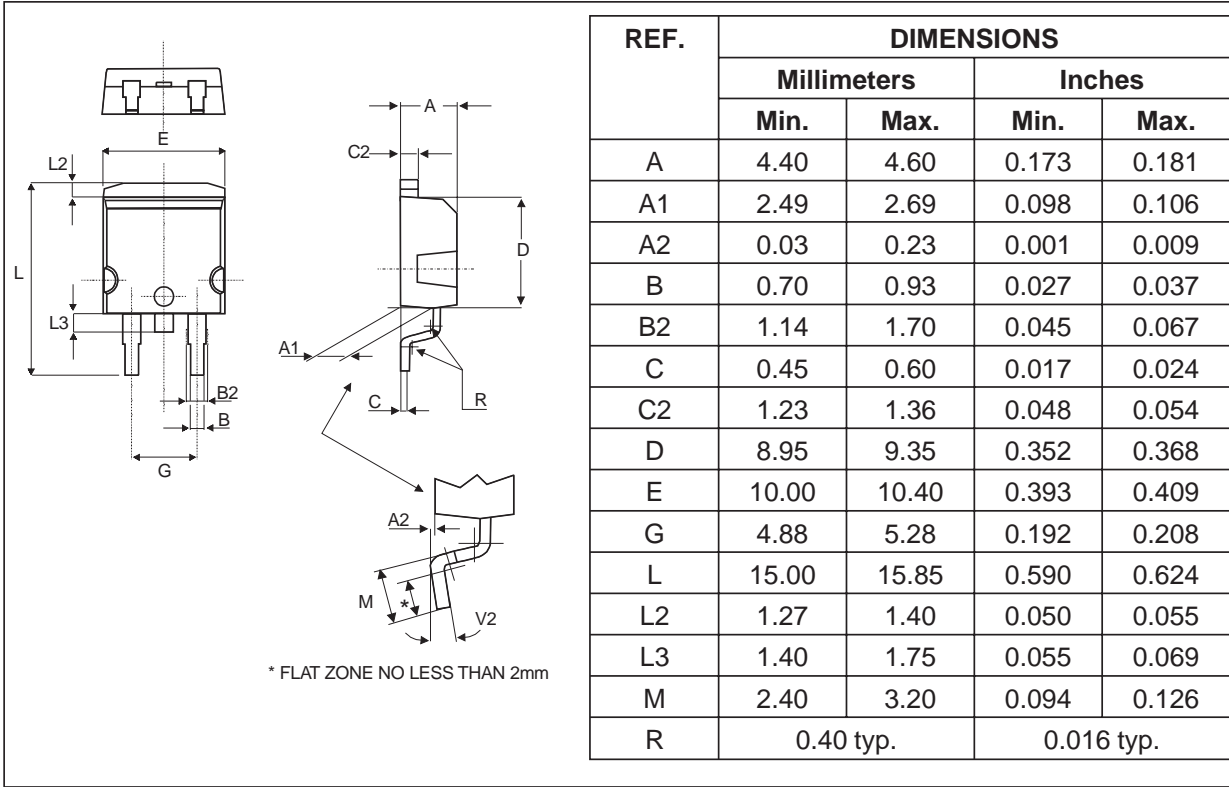


PACKAGE MECHANICAL DATA
I²PAK

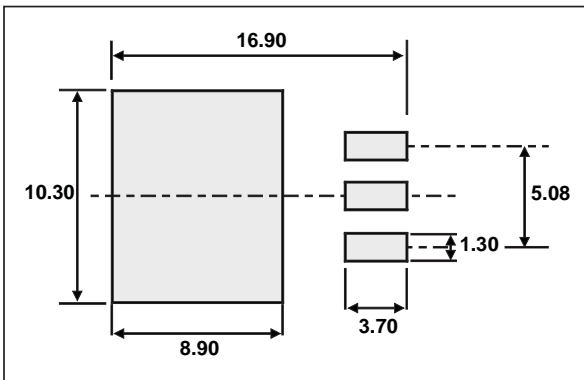


STPS1545D/F/FP/R/G

PACKAGE MECHANICAL DATA
D²PAK



FOOR PRINT DIMENSIONS (in millimeters)



Type	Marking	Package	Weight	Base qty	Delivery mode
STPS1545D	STPS1545D	TO-220AC	1.86 g	50	Tube
STPS1545F	STPS1545F	ISOWATT220AC	2.0 g	50	Tube
STPS1545FP	STPS1545FP	TO-220FPAC	1.9 g	50	Tube
STPS1545R	STPS1545R	I ² PAK	1.7 g	50	Tube
STPS1545G	STPS1545G	D ² PAK	1.48 g	50	Tube
STPS1545G-TR	STPS1545G	D ² PAK	1.48 g	1000	Tape & Reel

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

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