



STPS20H100CT/CF/CG/CR/CFP

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

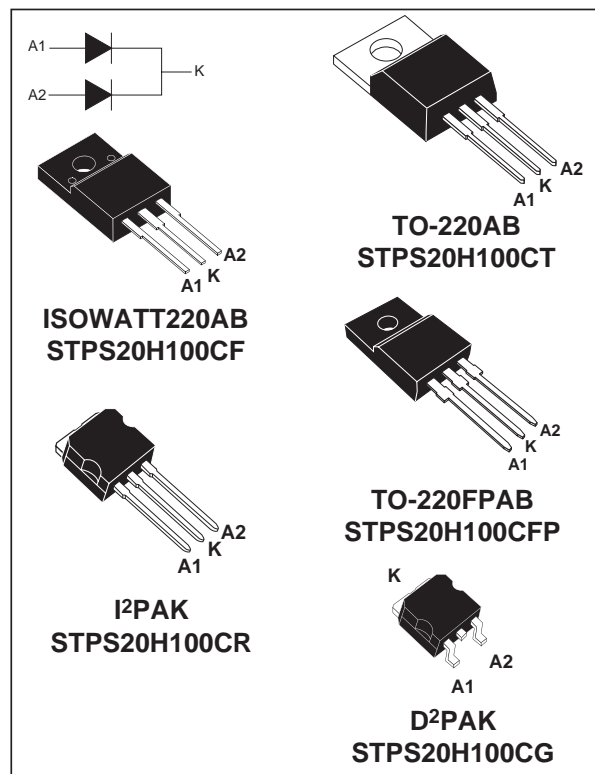
$I_{F(AV)}$	2 x 10 A
V_{RRM}	100 V
T_j	175°C
V_F (max)	0.64 V

FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- HIGH JUNCTION TEMPERATURE CAPABILITY
- GOOD TRADE OFF BETWEEN LEAKAGE CURRENT AND FORWARD VOLTAGE DROP
- LOW LEAKAGE CURRENT
- AVALANCHE RATED
- INSULATED PACKAGE: ISOWATT220AB, TO-220FPAB
Insulating Voltage = 2000V DC
Capacitance = 45 pF

DESCRIPTION

Dual center tap schottky rectifier designed for high frequency miniature Switched Mode Power Supplies such as adaptators and on board DC/DC converters.



ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter			Value	Unit	
V_{RRM}	Repetitive peak reverse voltage			100	V	
$I_{F(RMS)}$	RMS forward current			30	A	
$I_{F(AV)}$	Average forward current $\delta = 0.5$	TO-220AB D ² PAK / I ² PAK	$T_c = 160^\circ\text{C}$	per diode per device	10	A
		ISOWATT220AB TO-220FPAB	$T_c = 145^\circ\text{C}$		20	
I_{FSM}	Surge non repetitive forward current		$t_p = 10 \text{ ms}$ sinusoidal	250	A	
I_{RRM}	Repetitive peak reverse current		$t_p = 2 \mu\text{s}$ square F = 1kHz	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	
dV/dt	Critical rate of rise of reverse voltage			10000	V/ μs	

* : $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th}(j-a)}$ 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-220AB / D ² PAK / I ² PAK	Per diode	1.6	°C/W
		ISOWATT220AB / TO-220FPAB	Per diode	4	
		TO-220AB / D ² PAK / I ² PAK	Total	0.9	
		ISOWATT220AB / TO-220FPAB	Total	3.2	°C/W
R _{th(c)}		TO-220AB / D ² PAK / I ² PAK	Coupling	0.15	°C/W
		ISOWATT220AB / TO-220FPAB	Coupling	2.5	

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°C	V _R = V _{RRM}			4.5	μA
		T _j = 125°C			2	6	mA
V _F **	Forward voltage drop	T _j = 25°C	I _F = 8 A			0.71	V
		T _j = 25°C	I _F = 10 A			0.77	
		T _j = 25°C	I _F = 16 A			0.81	
		T _j = 25°C	I _F = 20 A			0.88	
		T _j = 125°C	I _F = 8 A		0.56	0.58	
		T _j = 125°C	I _F = 10 A		0.59	0.64	
		T _j = 125°C	I _F = 16 A		0.65	0.68	
		T _j = 125°C	I _F = 20 A		0.67	0.73	

Pulse test : * tp = 5 ms, δ < 2%

** tp = 380 μs, δ < 2%

To evaluate the maximum conduction losses use the following equation :

$$P = 0.55 \times I_{F(AV)} + 0.009 \times I_{F(RMS)}^2$$

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

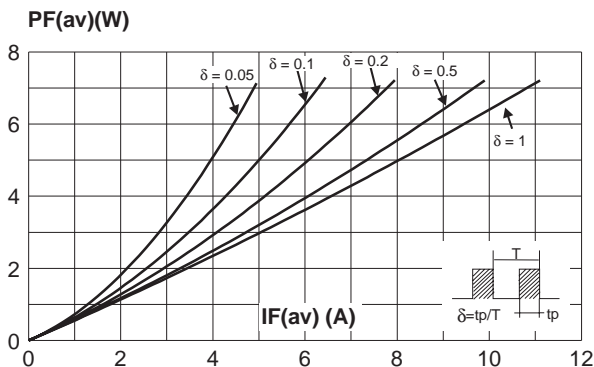


Fig. 2: Average forward current versus ambient temperature (δ=0.5, per diode).

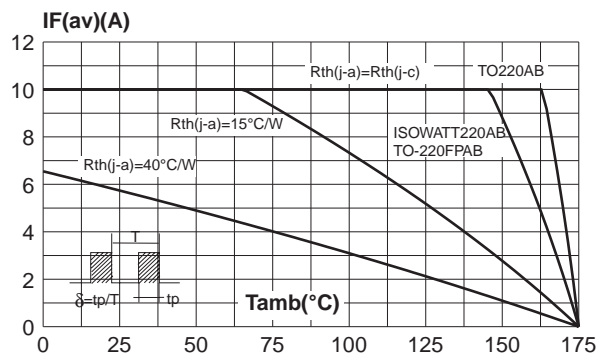


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values, per diode) (TO-220AB, D²PAK, I²PAK)

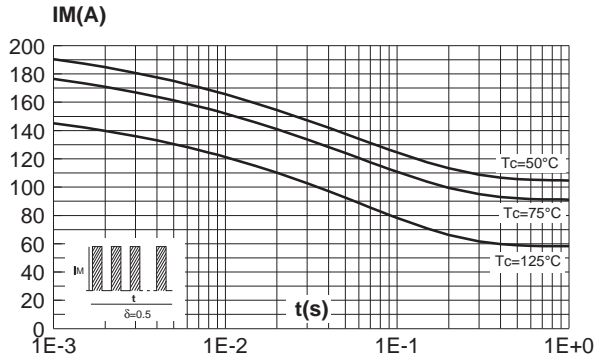


Fig. 4: Non repetitive surge peak forward current versus overload duration (maximum values, per diode) (ISOWATT220AB, TO-220FPAB).

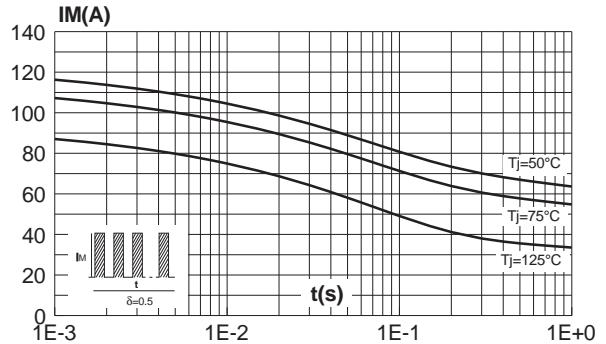


Fig. 5: Relative variation of thermal impedance junction to case versus pulse duration (per diode) (TO-220AB, D²PAK, I²PAK).

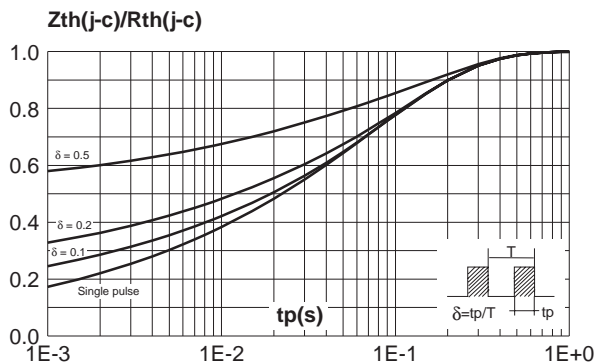


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration (per diode) (ISOWATT220AB, TO-220FPAB).

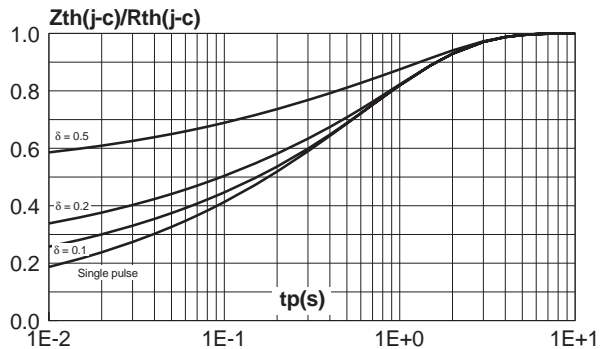


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values, per diode).

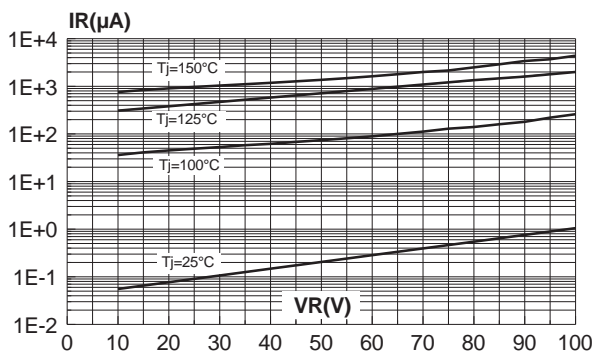
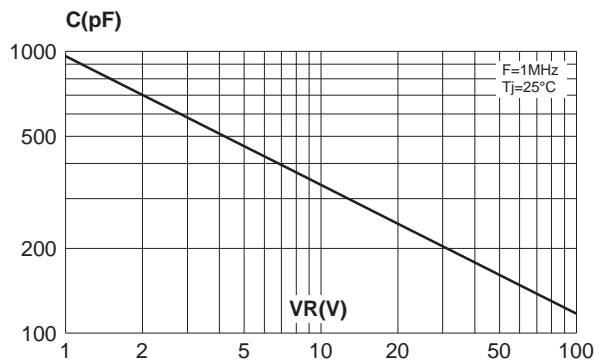


Fig. 8: Junction capacitance versus reverse voltage applied (typical values, per diode).



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Fig. 9: Forward voltage drop versus forward current (maximum values, per diode).

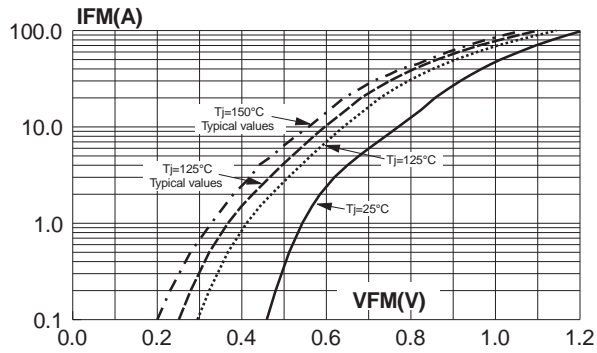
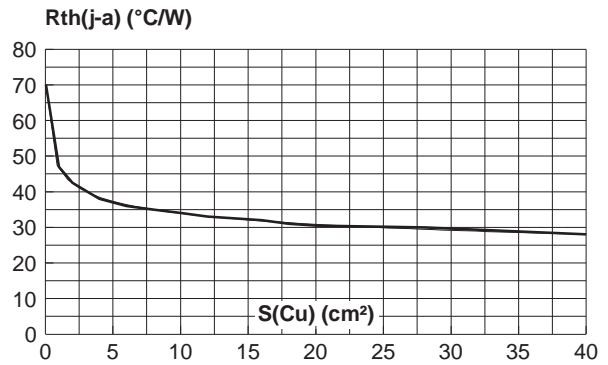
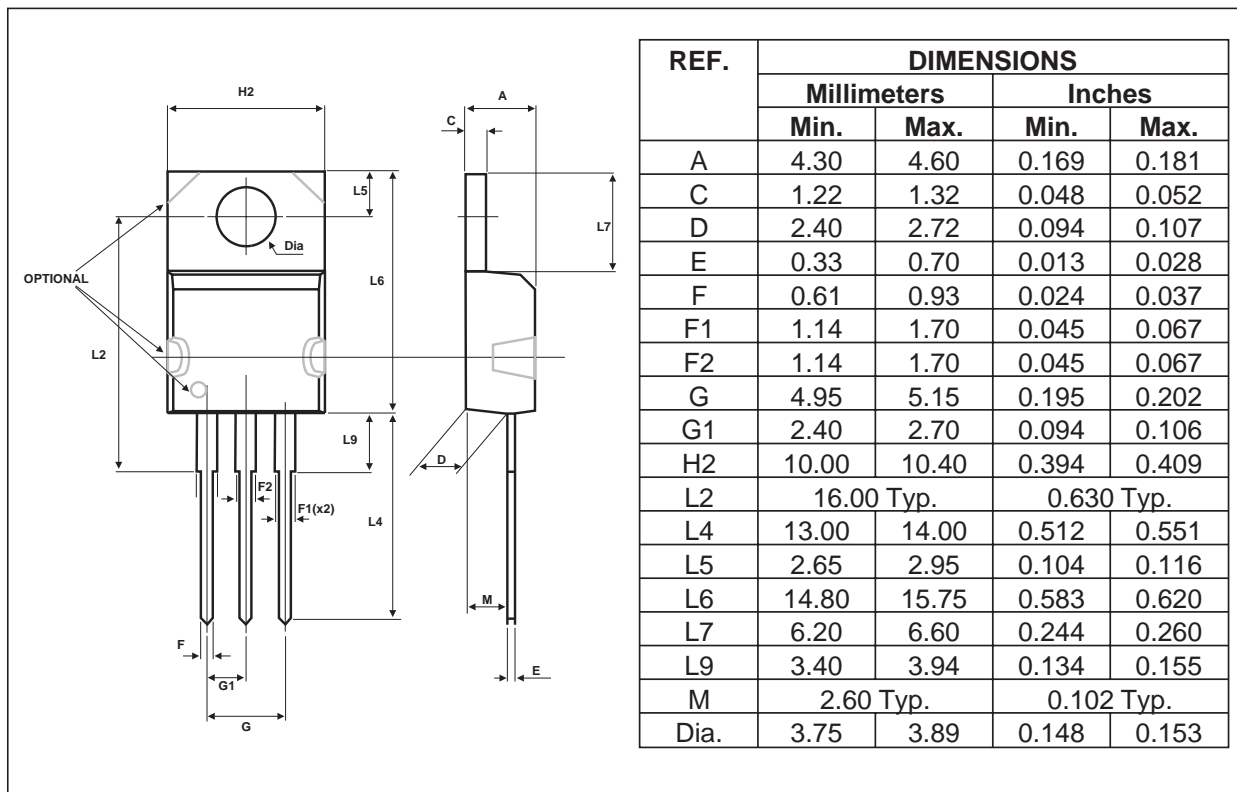


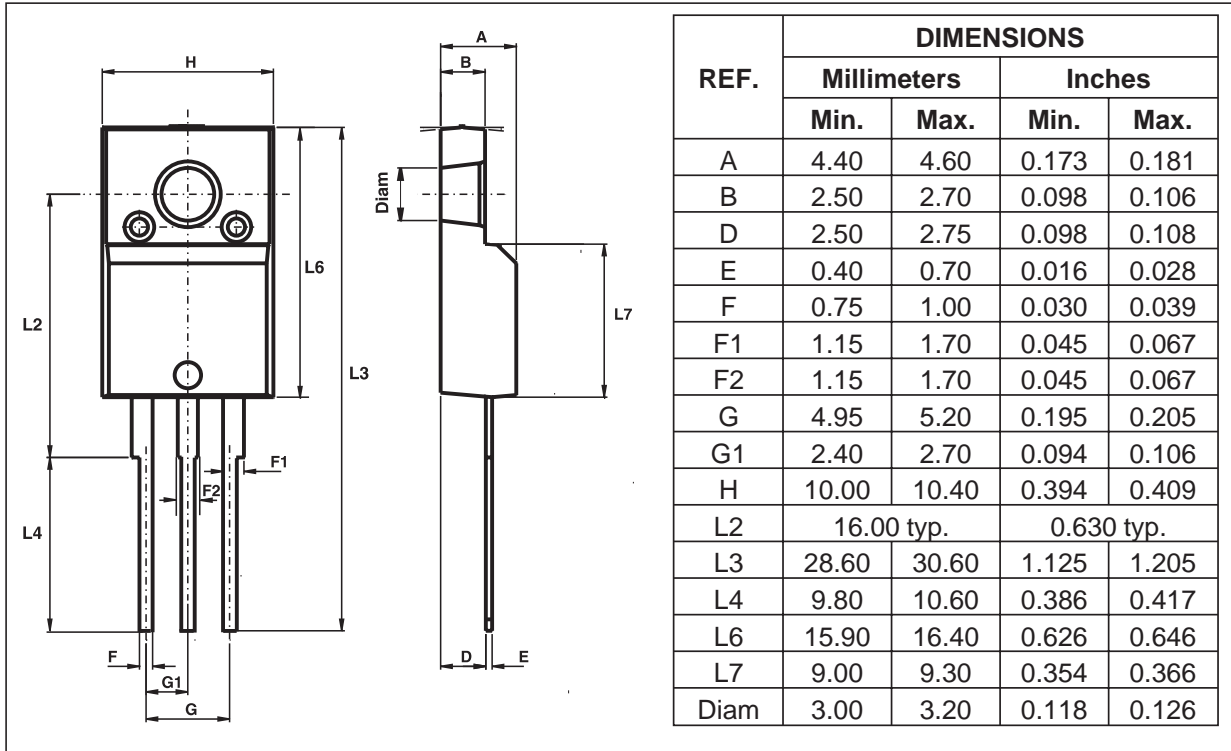
Fig. 10: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35µm) (D²PAK).



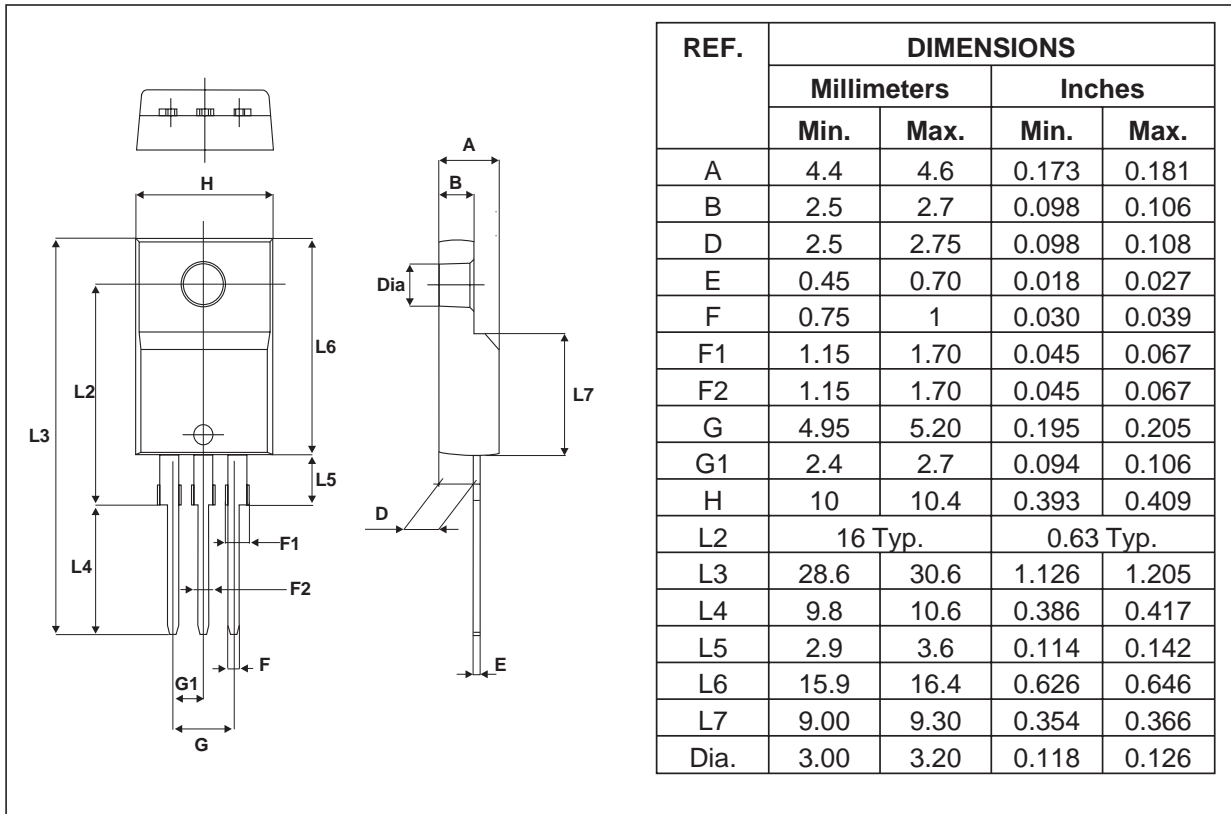
PACKAGE MECHANICAL DATA TO-220AB



PACKAGE MECHANICAL DATA
ISOWATT220AB

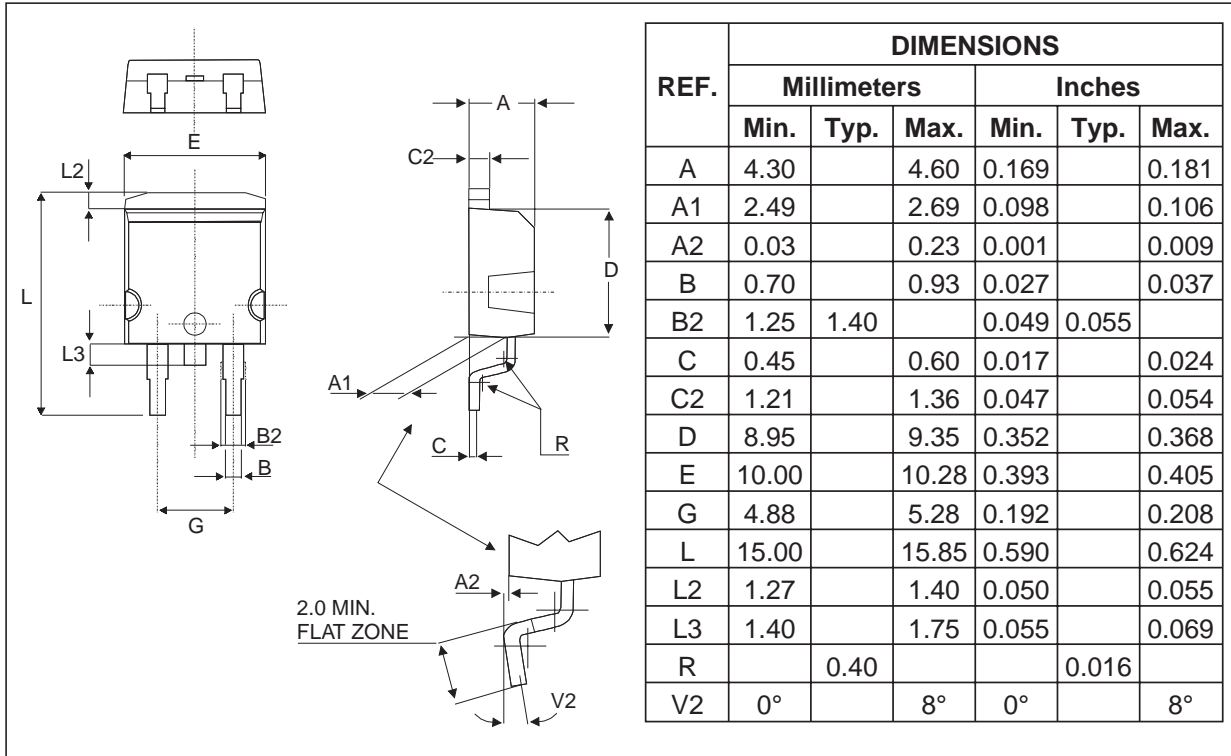


PACKAGE MECHANICAL DATA
TO-220FPAB

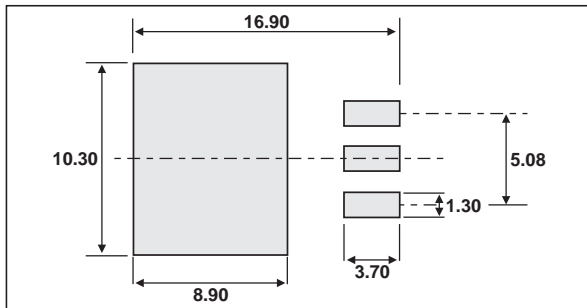


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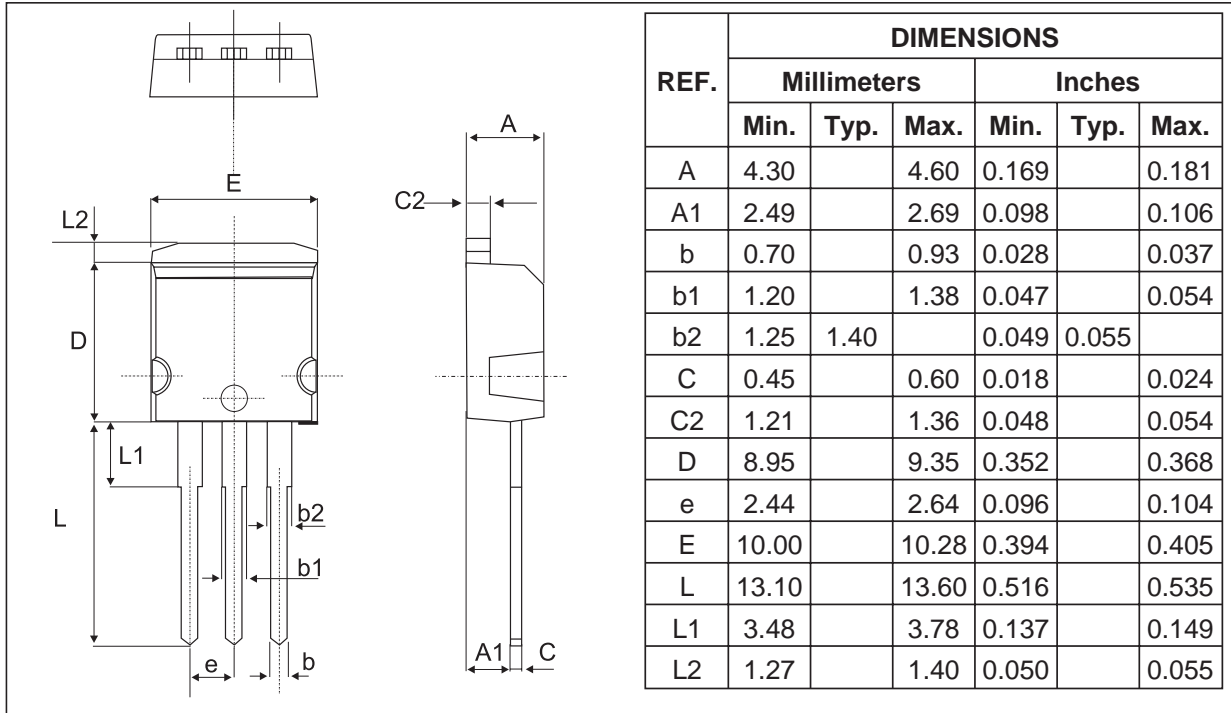
PACKAGE MECHANICAL DATA
D²PAK



FOOT PRINT DIMENSIONS (in millimeters)



PACKAGE MECHANICAL DATA
I²PAK



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS20H100CT	STPS20H100CT	TO-220AB	2.20g	50	Tube
STPS20H100CF	STPS20H100CF	ISOWATT220AB	2.08g	50	Tube
STPS20H100CFP	STPS20H100CFP	TO-220FPAB	2.0 g	50	Tube
STPS20H100CR	STPS20H100CR	I ² PAK	1.49g	50	Tube
STPS20H100CG	STPS20H100CG	D ² PAK	1.48g	50	Tube
STPS20H100CG-TR	STPS20H100CG	D ² PAK	1.48g	1000	Tape & reel

- Epoxy meets UL94,V0

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