



STPS16H100CT/CG/CFP/CR

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

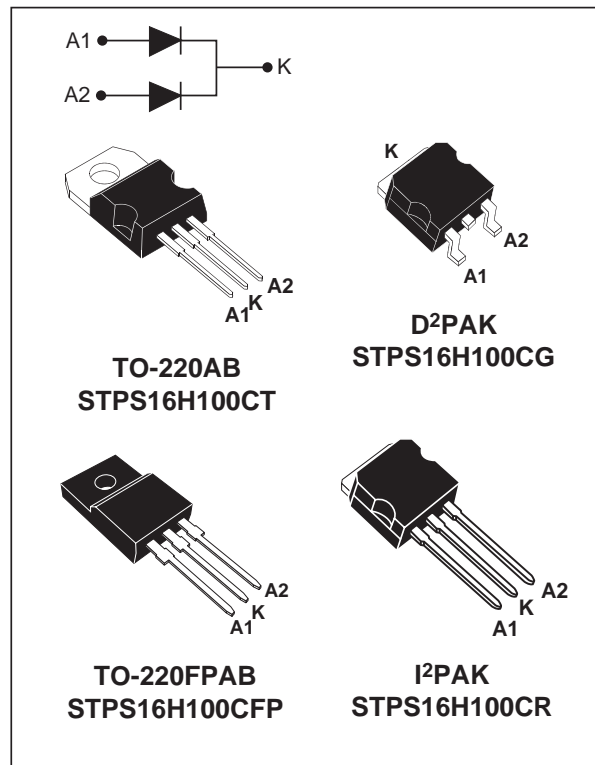
$I_{F(AV)}$	2 x 8 A
V_{RRM}	100 V
$T_j(\text{max})$	175 °C
$V_F(\text{max})$	0.64 V

FEATURES AND BENEFITS

- Negligible switching losses
- High junction temperature capability
- Low leakage current
- Good trade off between leakage current and forward voltage drop

DESCRIPTION

Dual center tap Schottky rectifier designed for high frequency miniature Switch 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	$T_c = 165^\circ\text{C}$	Per diode	8	A
		TO-220FPAB	$T_c = 150^\circ\text{C}$	Per device	16	
I_{FSM}	Surge non repetitive forward current		$t_p = 10 \text{ ms}$ sinusoidal	200	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/ 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 ambient	TO-220AB / D ² PAK / I ² PAK	Per diode	1.6	°C/W
		TO-220FPAB		4	
		TO-220AB / D ² PAK / I ² PAK	Total	1.1	°C/W
		TO-220FPAB		3.5	
R _{th(c)}		TO-220AB / D ² PAK / I ² PAK	Coupling	0.6	°C/W
		TO-220FPAB		3	

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}			3.6	μA
		T _j = 125°C			1.6	5	mA
V _F **	Forward Voltage drop	T _j = 25°C	I _F = 8 A			0.77	V
		T _j = 125°C	I _F = 8 A		0.59	0.64	
		T _j = 25°C	I _F = 16 A			0.88	
		T _j = 125°C	I _F = 16 A		0.67	0.73	

Pulse test : * t_p = 5 ms, δ < 2%
 ** t_p = 380 μs, δ < 2%

To evaluate the conduction losses use the following equation :
 $P = 0.55 \times I_{F(AV)} + 0.011 \times I_{F(RMS)}^2$

Fig. 1: Conduction losses versus average current.

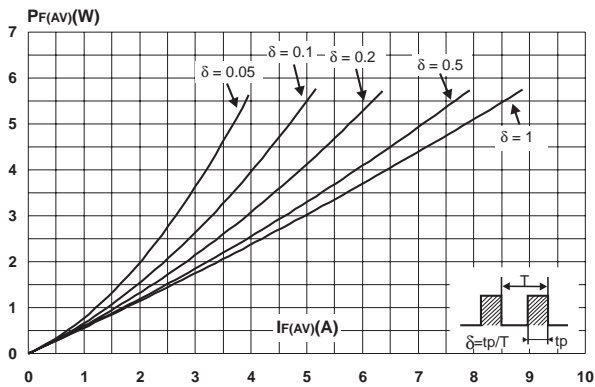


Fig. 2: Average forward current versus ambient temperature (δ=0.5).

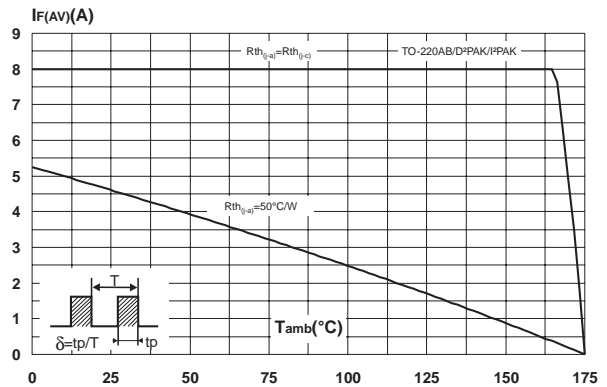


Fig. 3-1: Non repetitive surge peak forward current versus overload duration (maximum values) (TO-220AB, D²PAK, I²PAK).

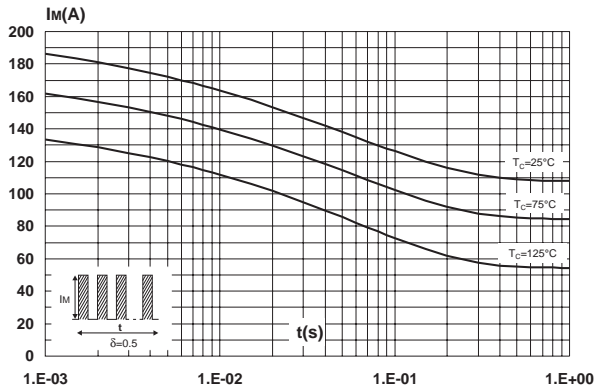


Fig. 3-2: Non repetitive surge peak forward current versus overload duration (maximum values) (TO-220FPAB).

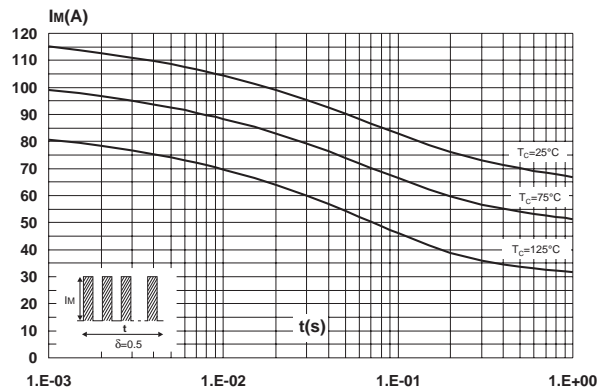


Fig. 4-1: Relative variation of thermal impedance junction to case versus pulse duration (TO-220AB, D²PAK & I²PAK).

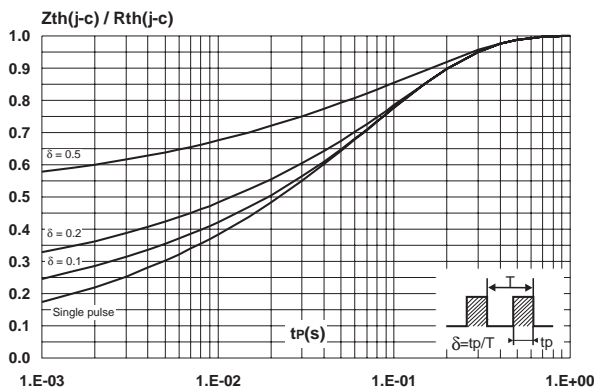


Fig. 4-2: Relative variation of thermal impedance junction to case versus pulse duration (TO-220FPAB).

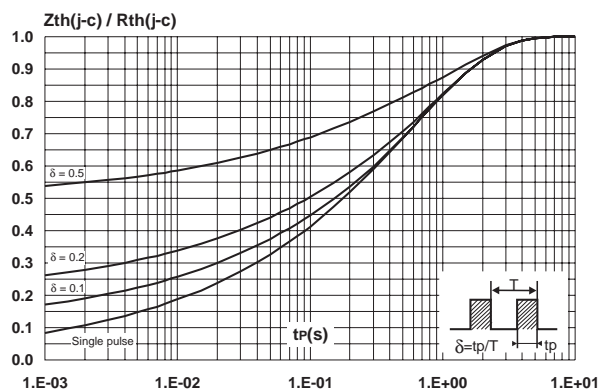


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values).

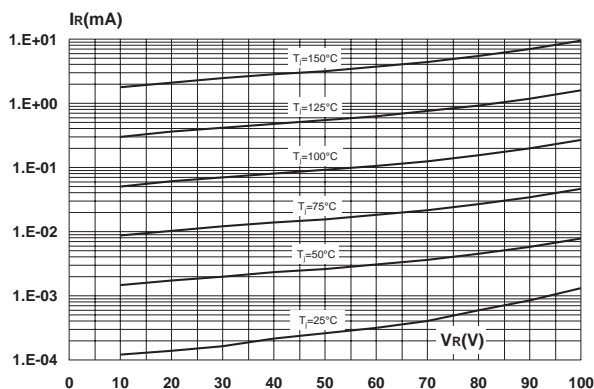
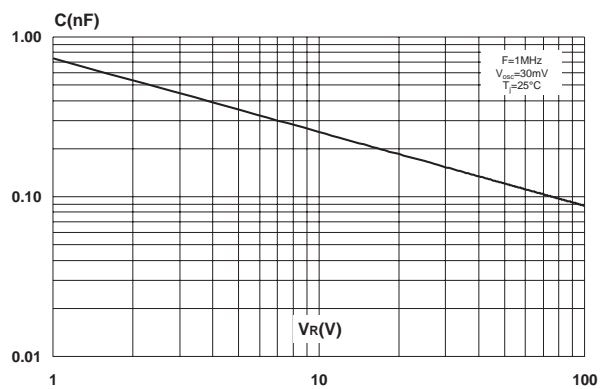


Fig. 6: Junction capacitance versus reverse voltage applied (typical values).



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Fig. 7: Forward voltage drop versus forward current.

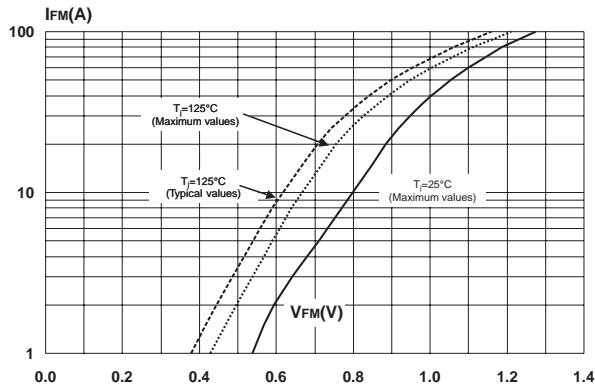
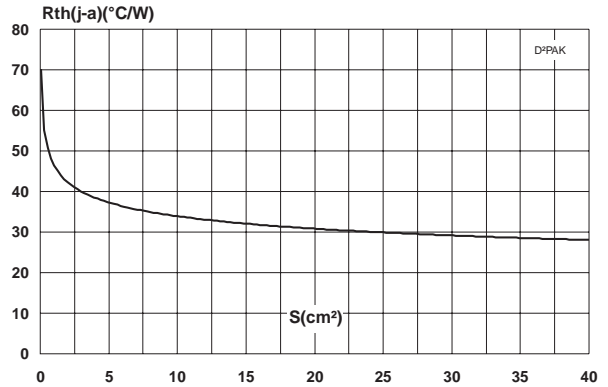
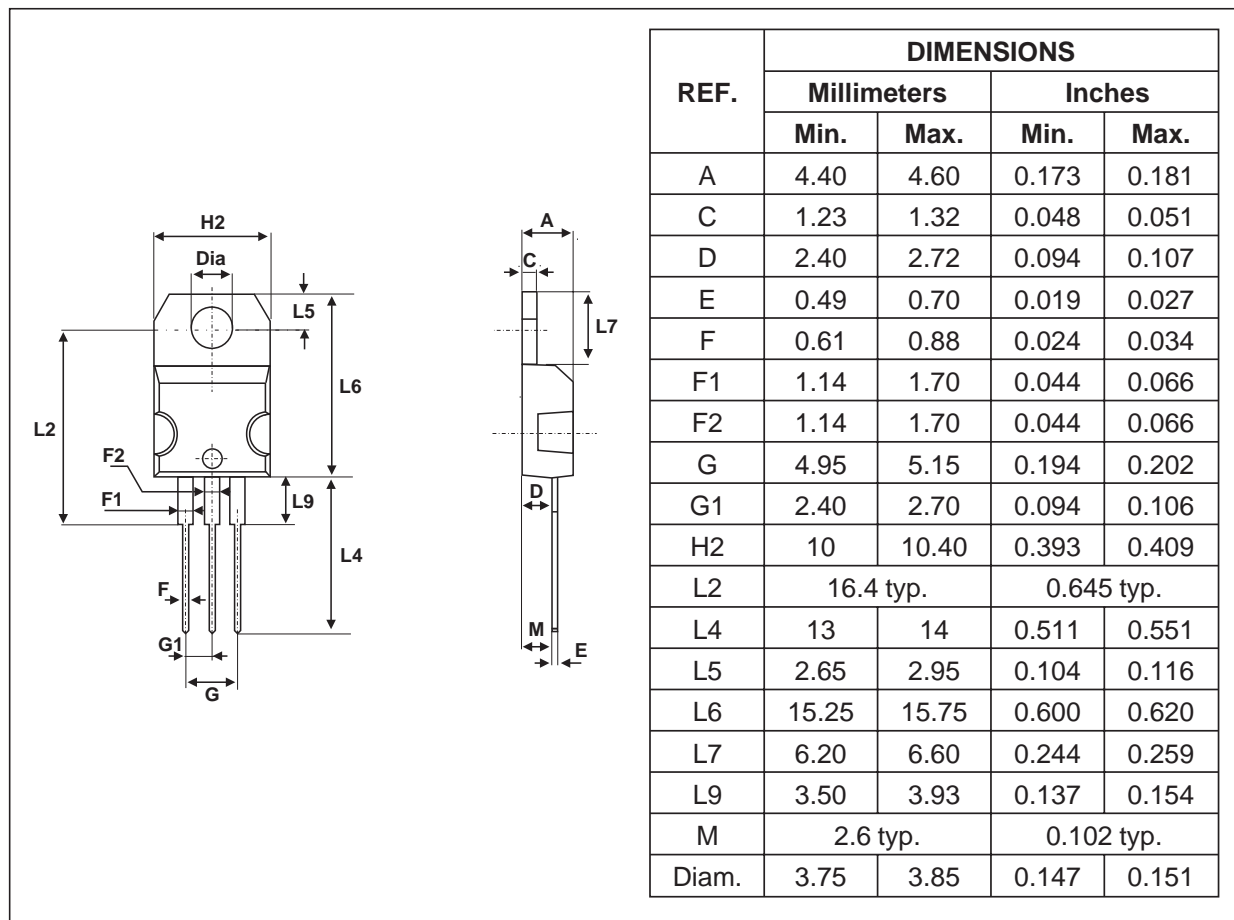


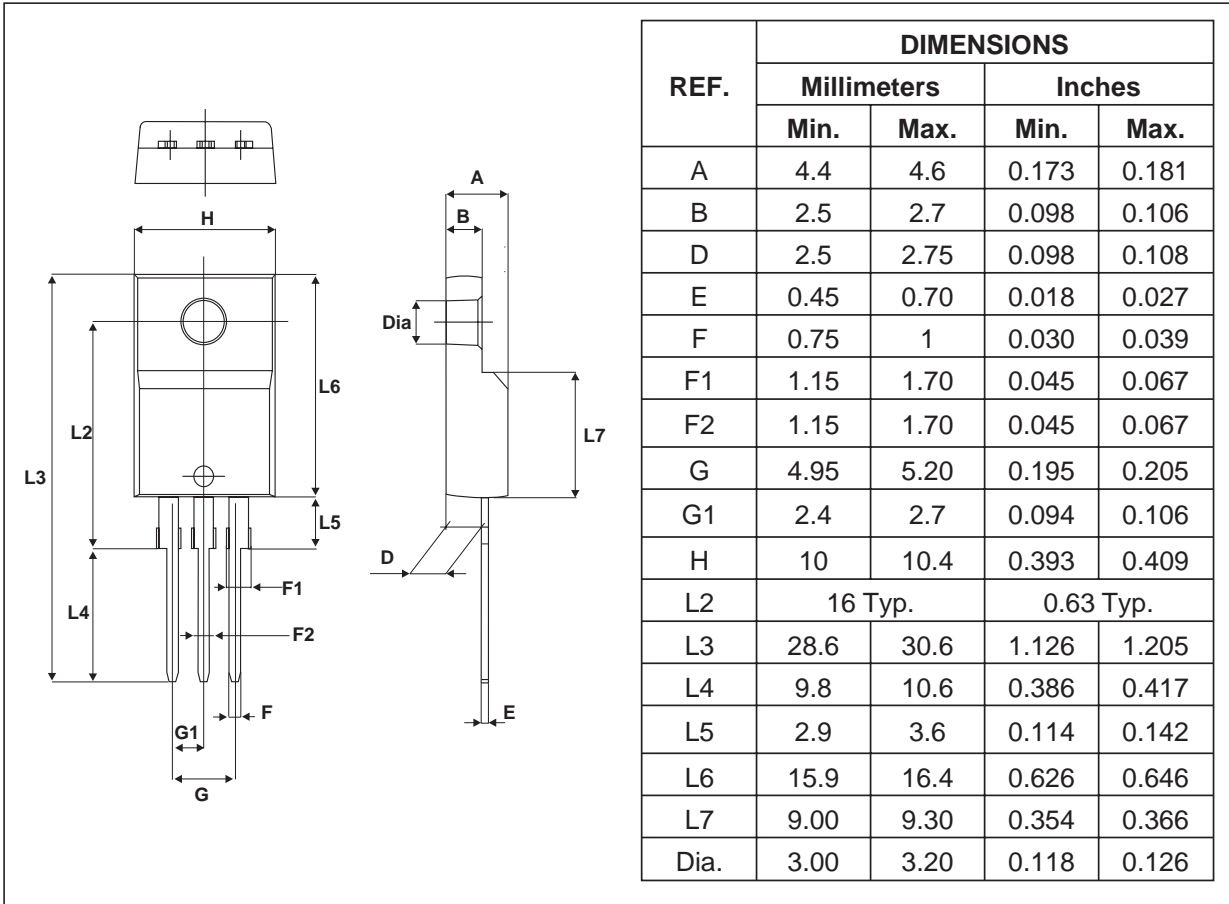
Fig. 8: Thermal resistance junction to ambient versus copper surface under tab (epoxy printed board FR4, Cu = 35µm).



PACKAGE MECHANICAL DATA TO-220AB

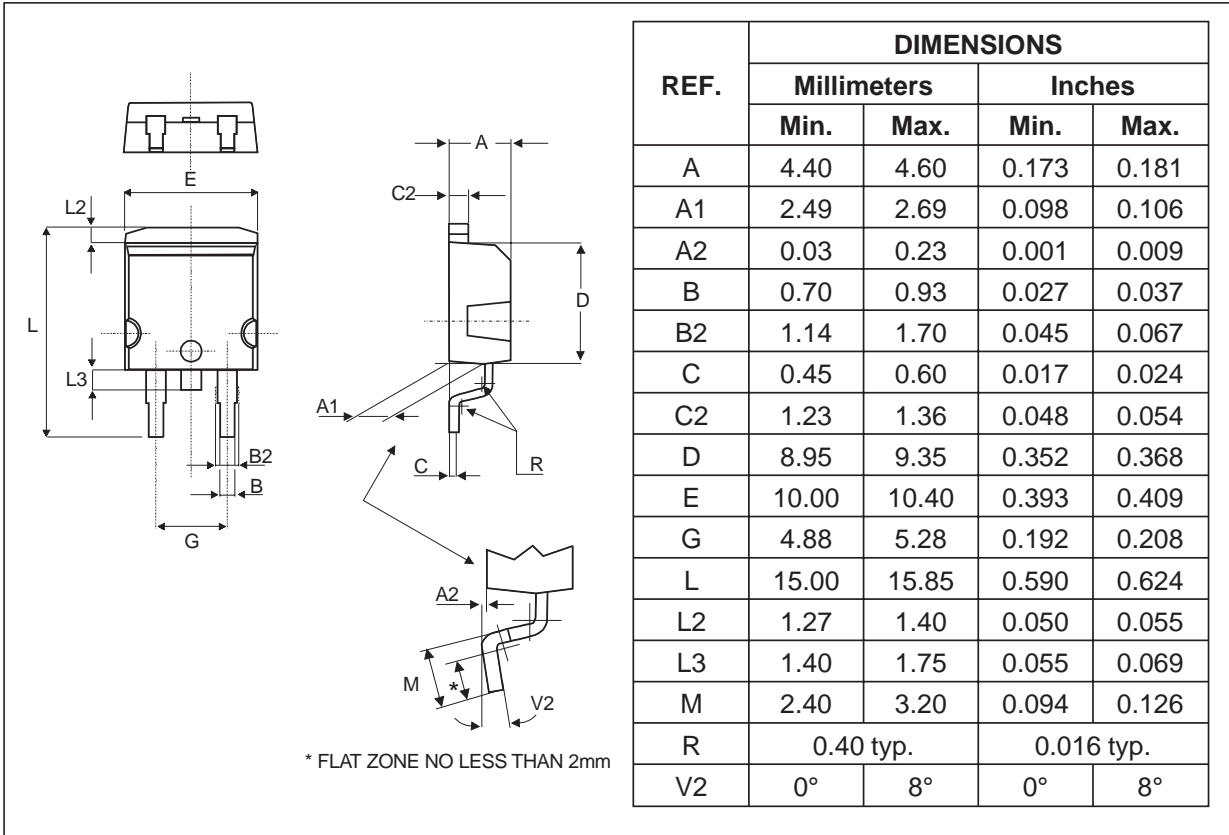


PACKAGE MECHANICAL DATA
TO-220FPAB

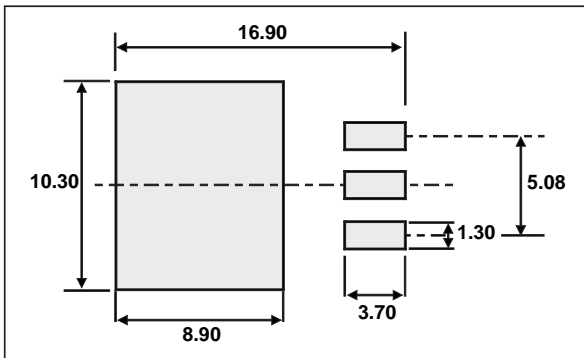


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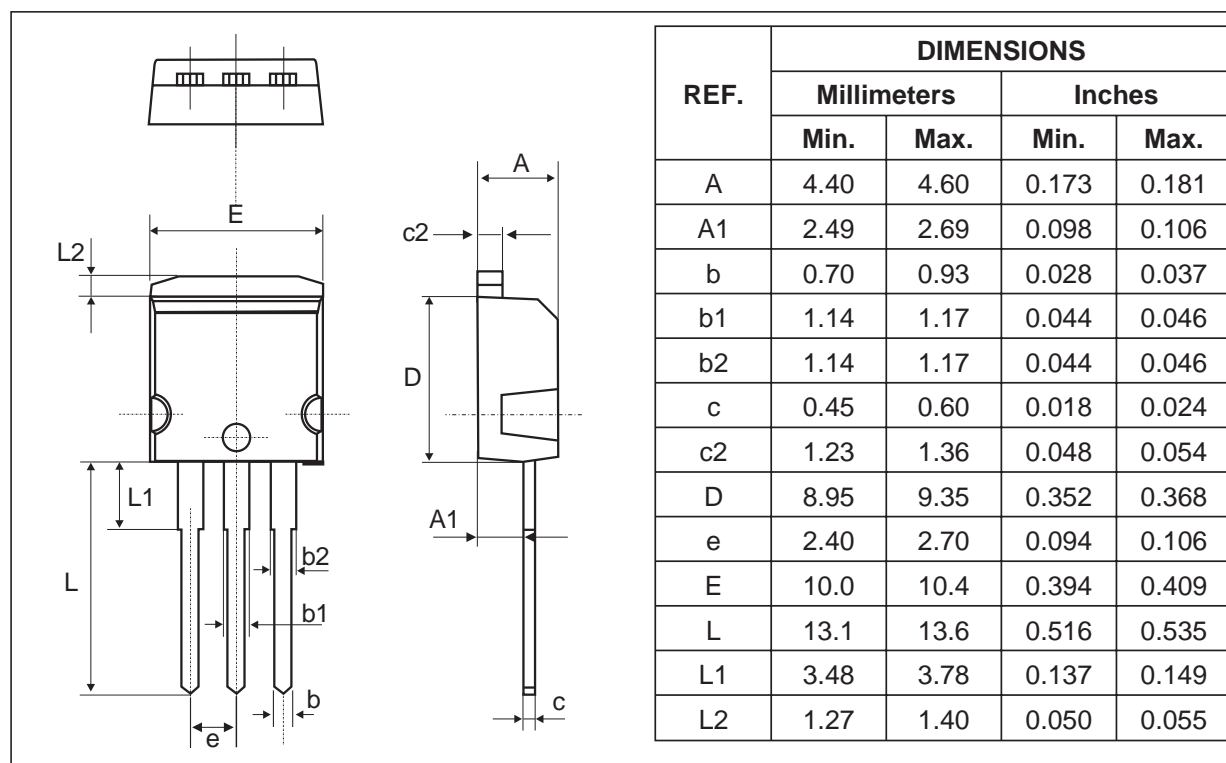
PACKAGE MECHANICAL DATA
D²PAK



FOOTPRINT



PACKAGE MECHANICAL DATA

I²PAK

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS16H100CT	STPS16H100CT	TO-220AB	2.20 g	50	Tube
STPS16H100CFP	STPS16H100CFP	TO-220FPAB	2.0 g	50	Tube
STPS16H100CG	STPS16H100CG	D ² PAK	1.48 g	50	Tube
STPS16H100CG-TR	STPS16H100CG	D ² PAK	1.48 g	1000	Tape & reel
STPS16H100CR	STPS16H100CR	I ² PAK	1.9 g	50	Tube

- Epoxy meets UL94,V0

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