



STPS16H100CT/CG/CFP/CR

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

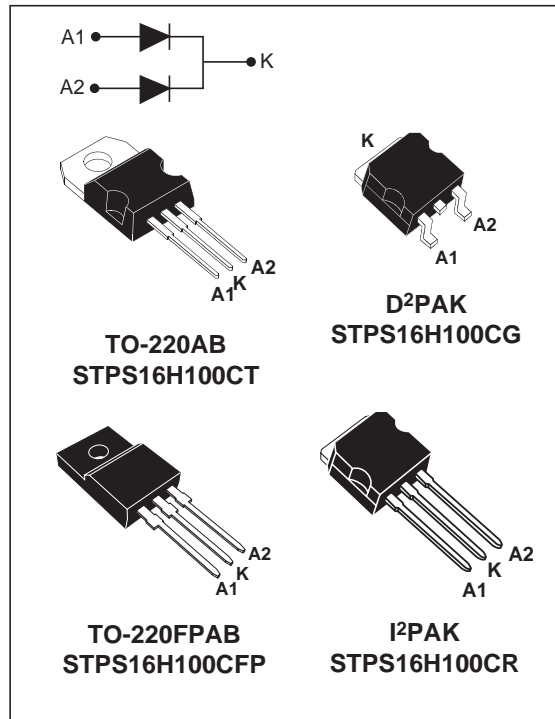
$I_{F(AV)}$	2 x 8 A
V_{RRM}	100 V
T_j (max)	175 °C
V_F (max)	0.64 V

FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- HIGH JUNCTION TEMPERATURE CAPABILITY
- LOW LEAKAGE CURRENT
- GOOD TRADE OFF BETWEEN LEAKAGE CURRENT AND FORWARD VOLTAGE DROP
- AVALANCHE CAPABILITY SPECIFIED

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	
P_{ARM}	Repetitive peak avalanche power		$t_p = 1\mu\text{s}$ $T_j = 25^\circ\text{C}$	8700	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/ 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	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			3.6	μA
		$T_j = 125^\circ\text{C}$			1.6	5	mA
V_F^{**}	Forward Voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 8 \text{ A}$			0.77	V
		$T_j = 125^\circ\text{C}$			0.59	0.64	
		$T_j = 25^\circ\text{C}$	$I_F = 16 \text{ A}$			0.88	
		$T_j = 125^\circ\text{C}$			0.67	0.73	

Pulse test : * $t_p = 5 \text{ ms}$, $\delta < 2\%$
 ** $t_p = 380 \mu\text{s}$, $\delta < 2\%$

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.

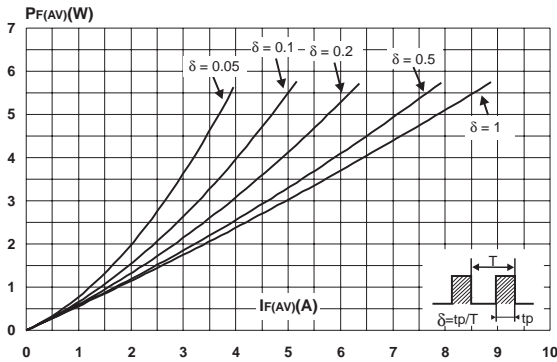


Fig. 2: Average forward current versus ambient temperature ($\delta=0.5$).

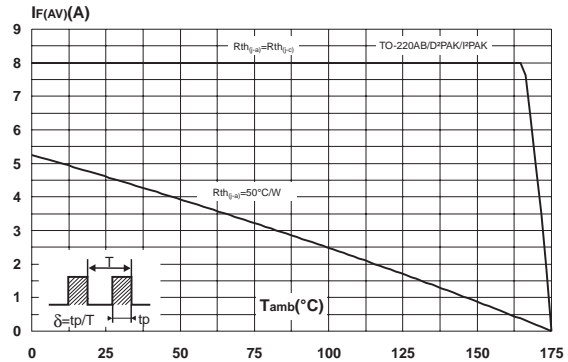


Fig. 3: Normalized avalanche power derating versus pulse duration.

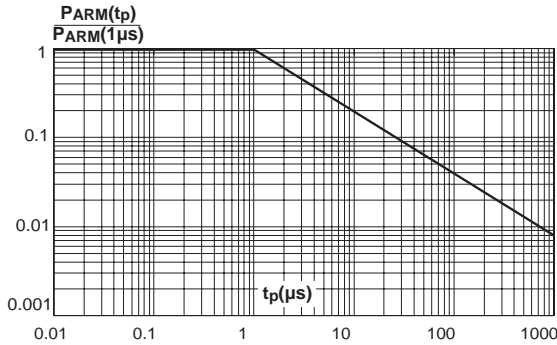


Fig. 4: Normalized avalanche power derating versus junction temperature.

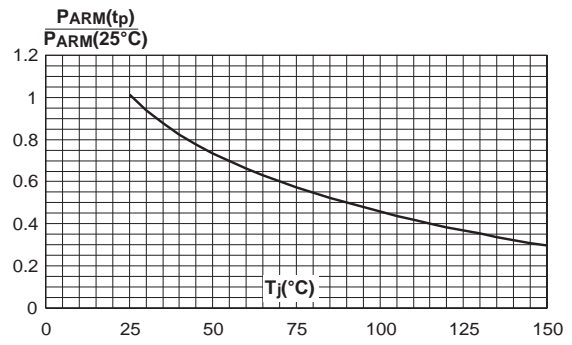


Fig. 5-1: Non repetitive surge peak forward current versus overload duration (maximum values) (TO-220AB, D²PAK, I²PAK).

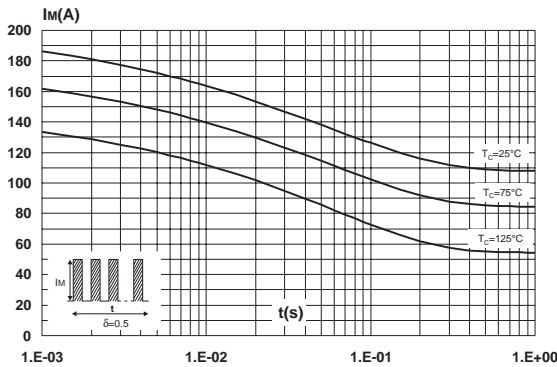


Fig. 5-2: Non repetitive surge peak forward current versus overload duration (maximum values) (TO-220FPAB).

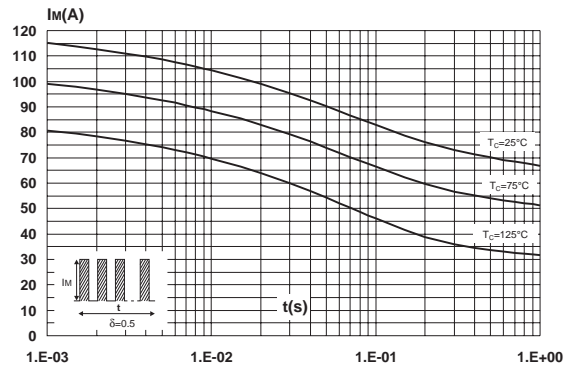


Fig. 6-1: Relative variation of thermal impedance junction to case versus pulse duration (TO-220AB, D²PAK & I²PAK).

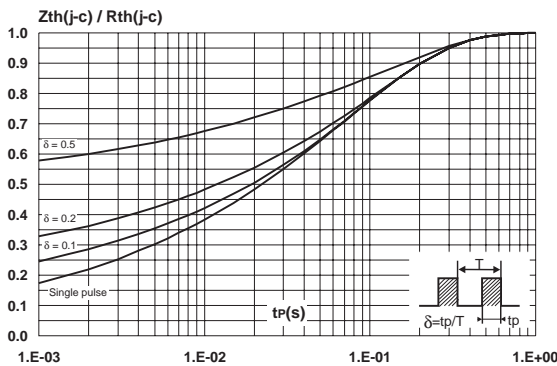


Fig. 6-2: Relative variation of thermal impedance junction to case versus pulse duration (TO-220FPAB).

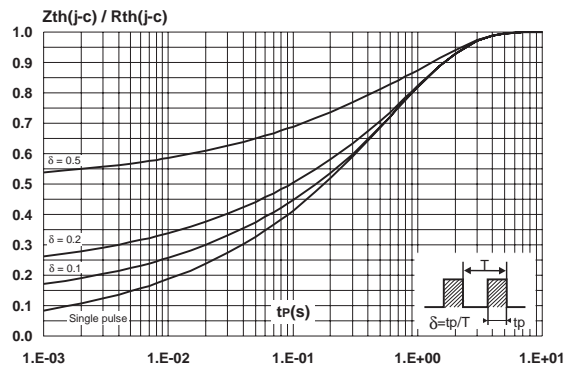


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

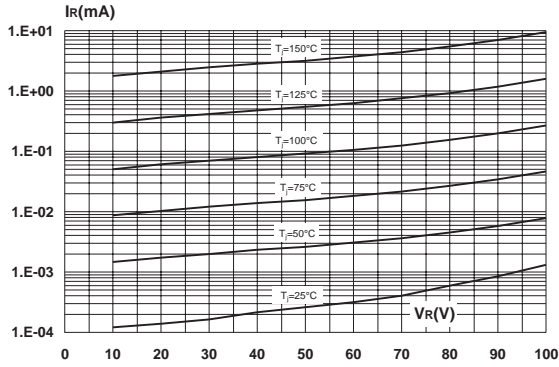


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

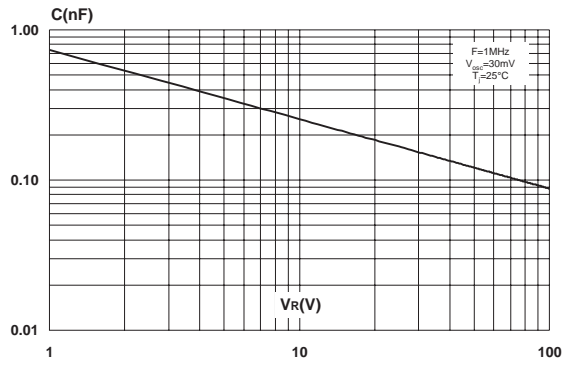


Fig. 9: Forward voltage drop versus forward current.

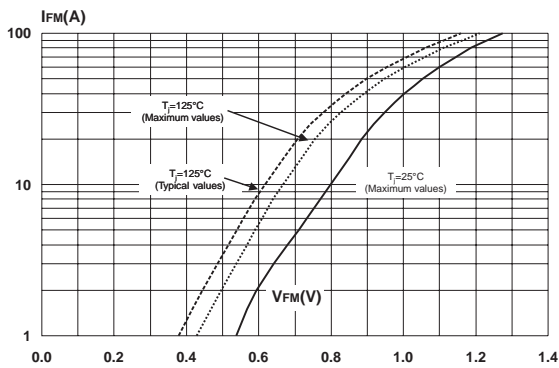
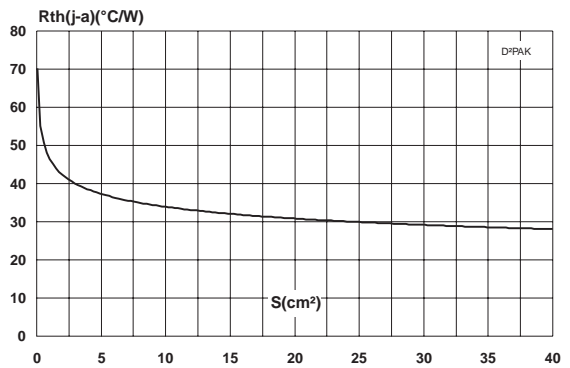
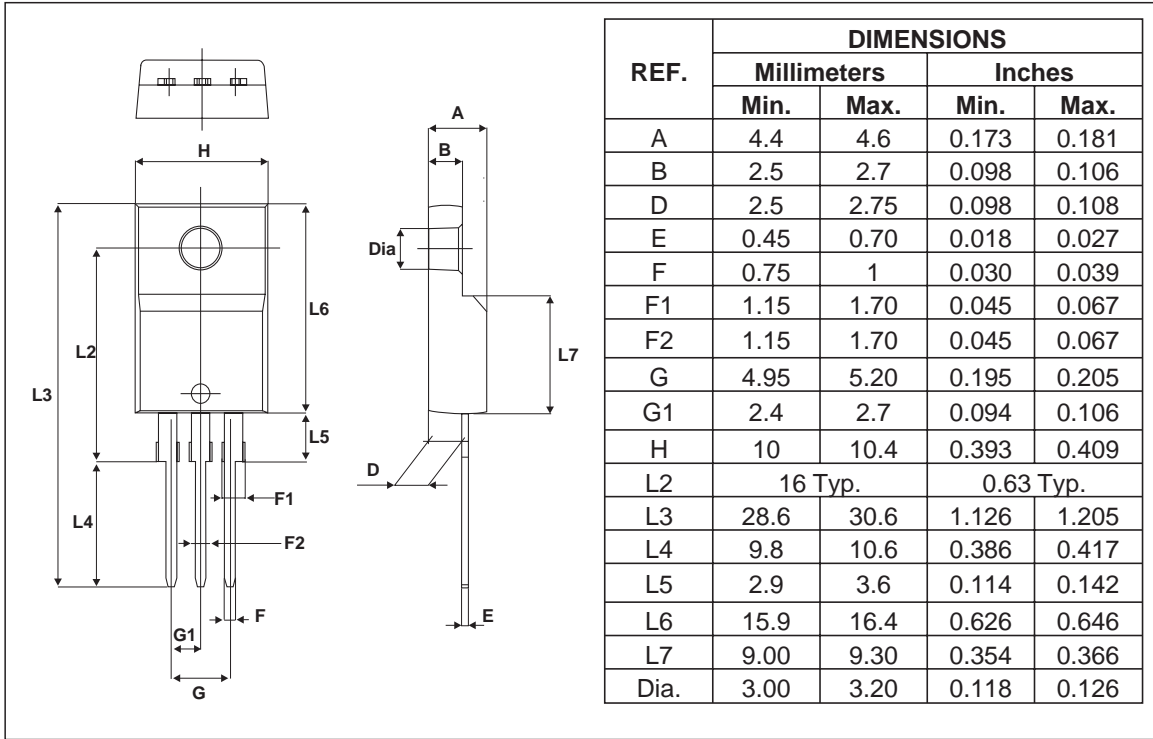


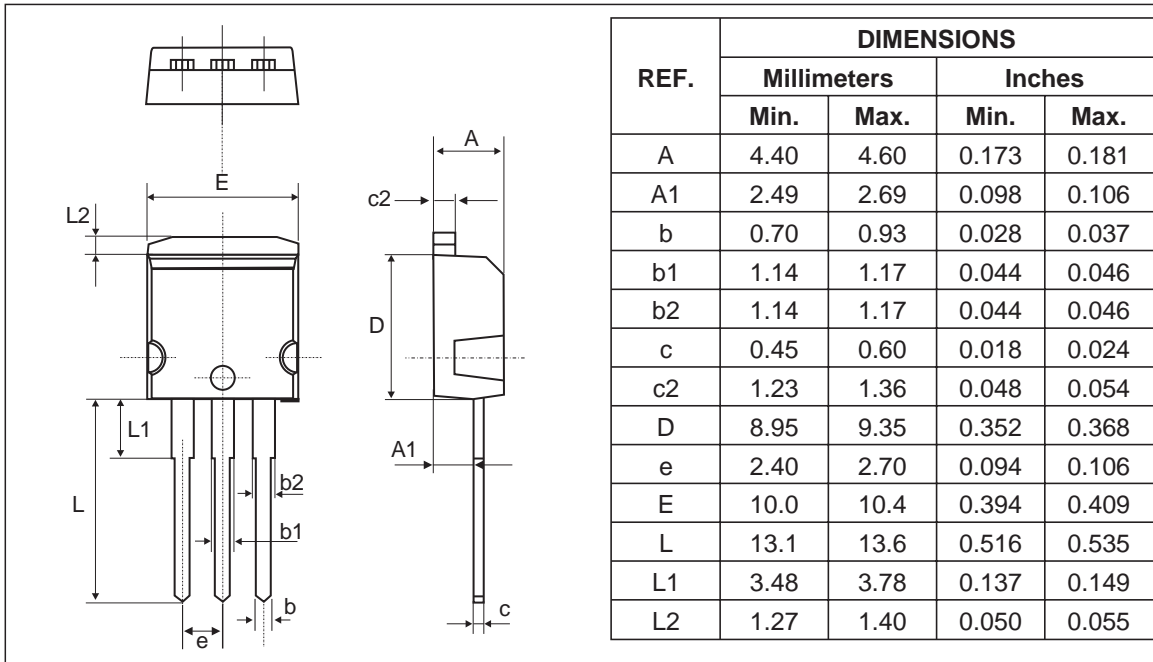
Fig. 10: Thermal resistance junction to ambient versus copper surface under tab (epoxy printed board FR4, Cu = 35 μm).



PACKAGE MECHANICAL DATA
TO-220FPAB

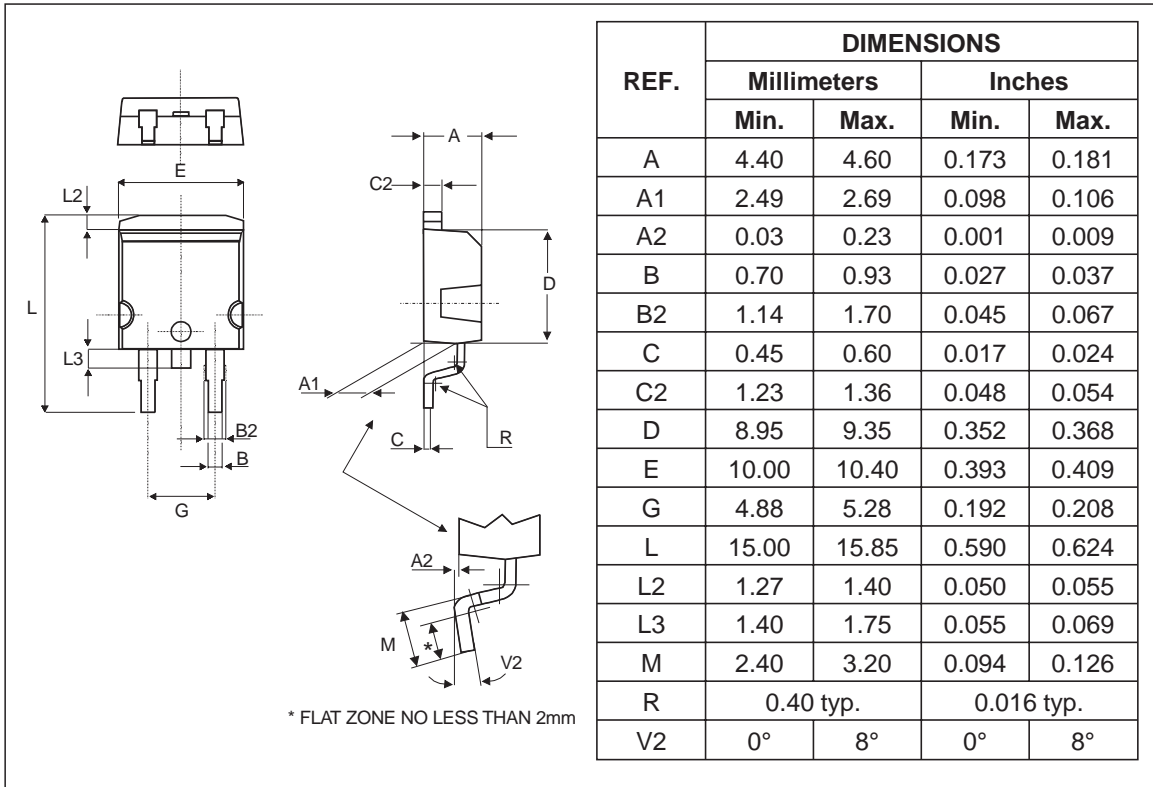


PACKAGE MECHANICAL DATA
I²PAK

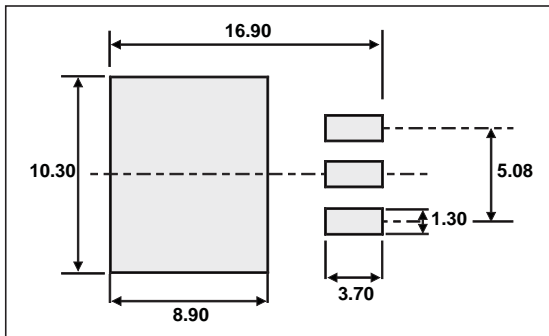


STPS16H100CT/CG/CFP/CR

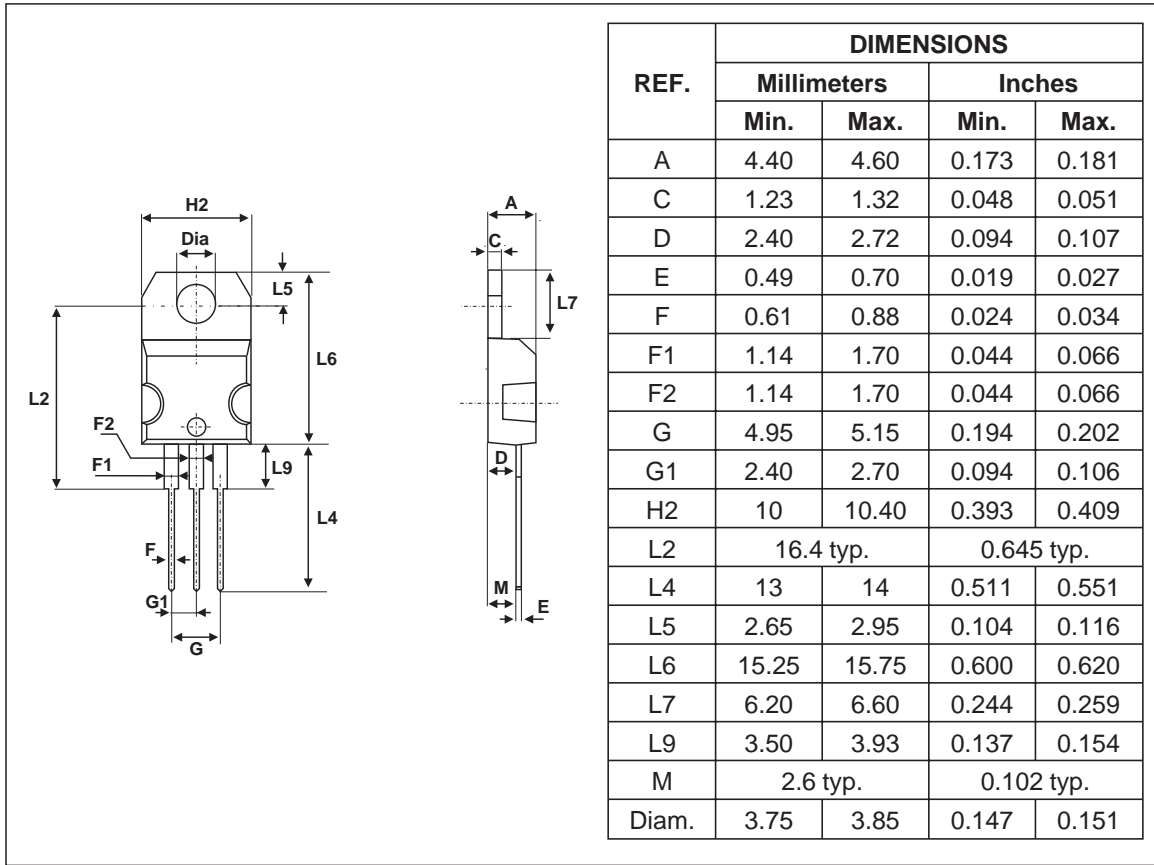
PACKAGE MECHANICAL DATA D²PAK



FOOTPRINT



PACKAGE MECHANICAL DATA
TO-220AB



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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