



# STPS16H100CT/CG/CFP/CR

## HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

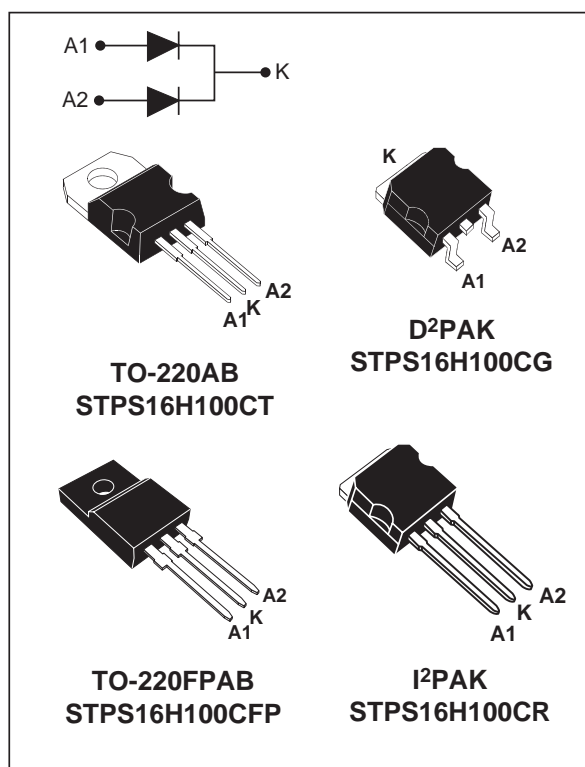
$I_{F(AV)}$	2 x 8 A
$V_{RRM}$	100 V
$T_j (max)$	175 °C
$V_F (max)$	0.64 V

### FEATURES AND BENEFITS

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

### 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 <sub>RRM</sub>	Repetitive peak reverse voltage				100	V
I <sub>F(RMS)</sub>	RMS forward current				30	A
I <sub>F(AV)</sub>	Average forward current δ = 0.5	TO-220AB D <sup>2</sup> PAK / I <sup>2</sup> PAK	T <sub>c</sub> = 165°C	Per diode	8	A
		TO-220FPAB	T <sub>c</sub> = 150°C	Per device	16	
I <sub>FSM</sub>	Surge non repetitive forward current		tp = 10 ms sinusoidal		200	A
I <sub>RRM</sub>	Repetitive peak reverse current		tp = 2 μs square F = 1kHz		1	A
I <sub>RSM</sub>	Non repetitive peak reverse current		tp = 100 μs square		2	A
T <sub>stg</sub>	Storage temperature range				-65 to +175	°C
T <sub>j</sub>	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

**THERMAL RESISTANCES**

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to ambient	TO-220AB / D <sup>2</sup> PAK / I <sup>2</sup> PAK	Per diode	1.6
		TO-220FPAB		4
		TO-220AB / D <sup>2</sup> PAK / I <sup>2</sup> PAK	Total	1.1
		TO-220FPAB		3.5
$R_{th(c)}$		TO-220AB / D <sup>2</sup> PAK / I <sup>2</sup> PAK	Coupling	0.6
		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	$\mu\text{A}$
		$T_j = 125^\circ\text{C}$			1.6	5	mA
$V_F^{**}$	Forward Voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 8\text{ A}$			0.77	V
		$T_j = 125^\circ\text{C}$	$I_F = 8\text{ A}$		0.59	0.64	
		$T_j = 25^\circ\text{C}$	$I_F = 16\text{ A}$			0.88	
		$T_j = 125^\circ\text{C}$	$I_F = 16\text{ A}$		0.67	0.73	

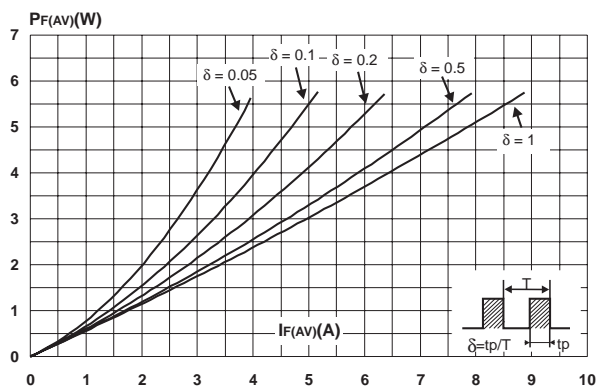
Pulse test : \*  $t_p = 5\text{ ms}$ ,  $\delta < 2\%$

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

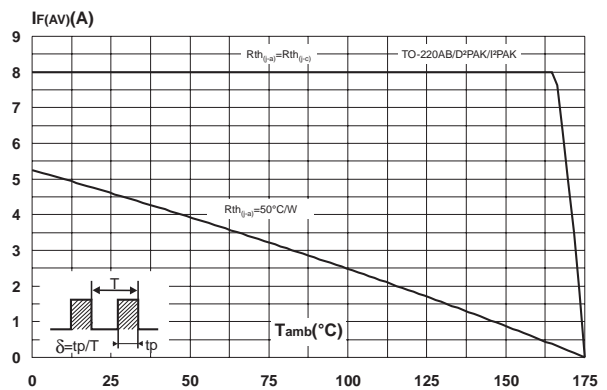
To evaluate the conduction losses use the following equation :

$$P = 0.55 \times I_{F(AV)} + 0.011 \times I_{F(RMS)}^2$$

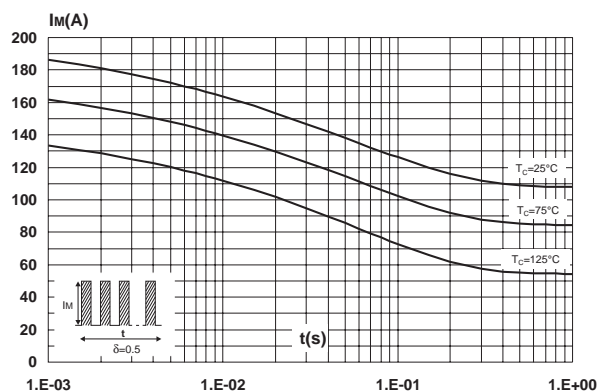
**Fig. 1:** Conduction losses versus average current.



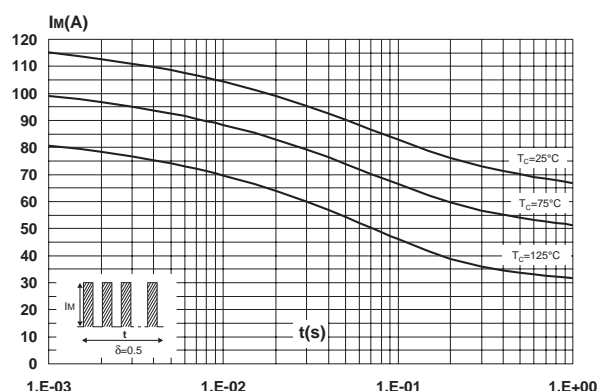
**Fig. 2:** Average forward current versus ambient temperature ( $\delta=0.5$ ).



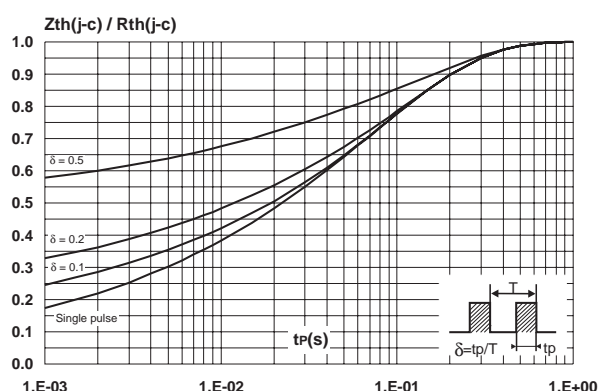
**Fig. 3-1:** Non repetitive surge peak forward current versus overload duration (maximum values) (TO-220AB, D<sup>2</sup>PAK, I<sup>2</sup>PAK).



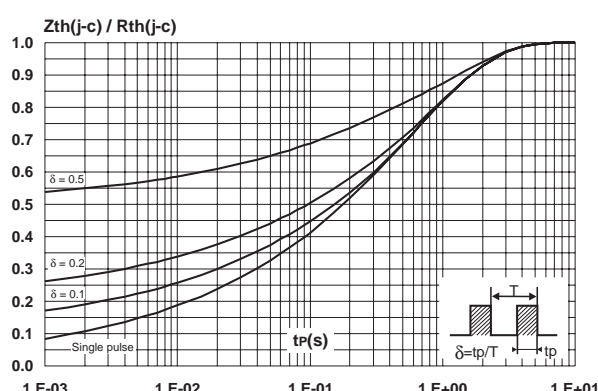
**Fig. 3-2:** Non repetitive surge peak forward current versus overload duration (maximum values) (TO-220FPAB).



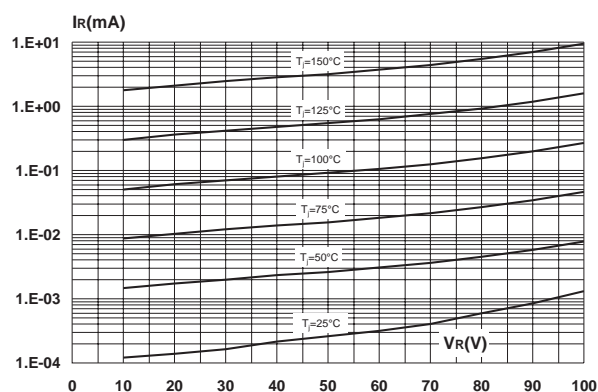
**Fig. 4-1:** Relative variation of thermal impedance junction to case versus pulse duration (TO-220AB, D<sup>2</sup>PAK & I<sup>2</sup>PAK).



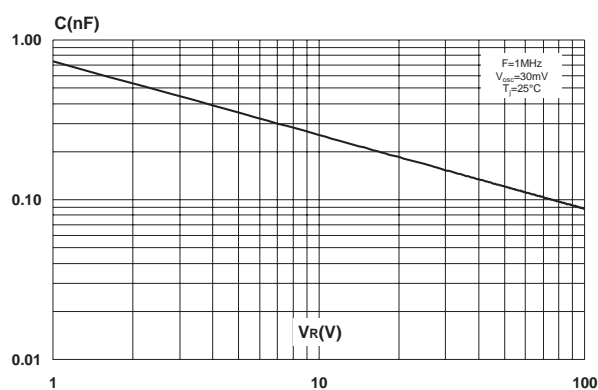
**Fig. 4-2:** Relative variation of thermal impedance junction to case versus pulse duration (TO-220FPAB).



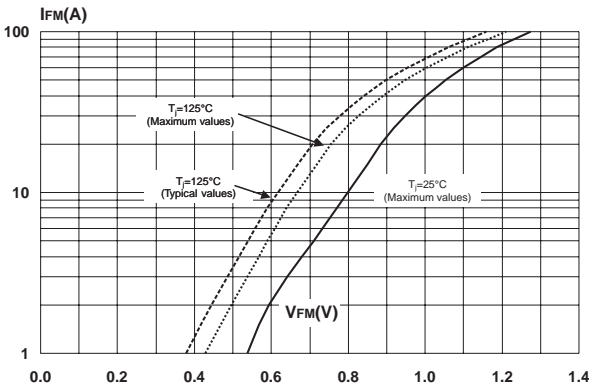
**Fig. 5:** Reverse leakage current versus reverse voltage applied (typical values).



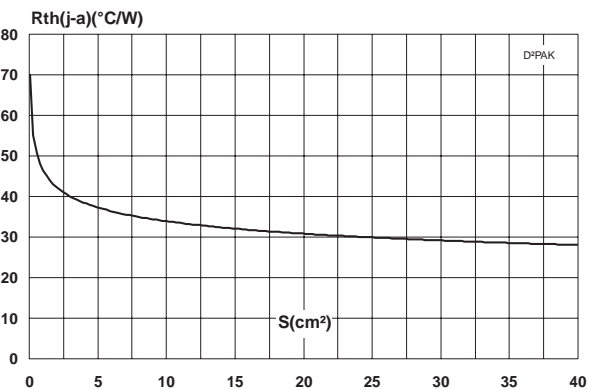
**Fig. 6:** Junction capacitance versus reverse voltage applied (typical values).



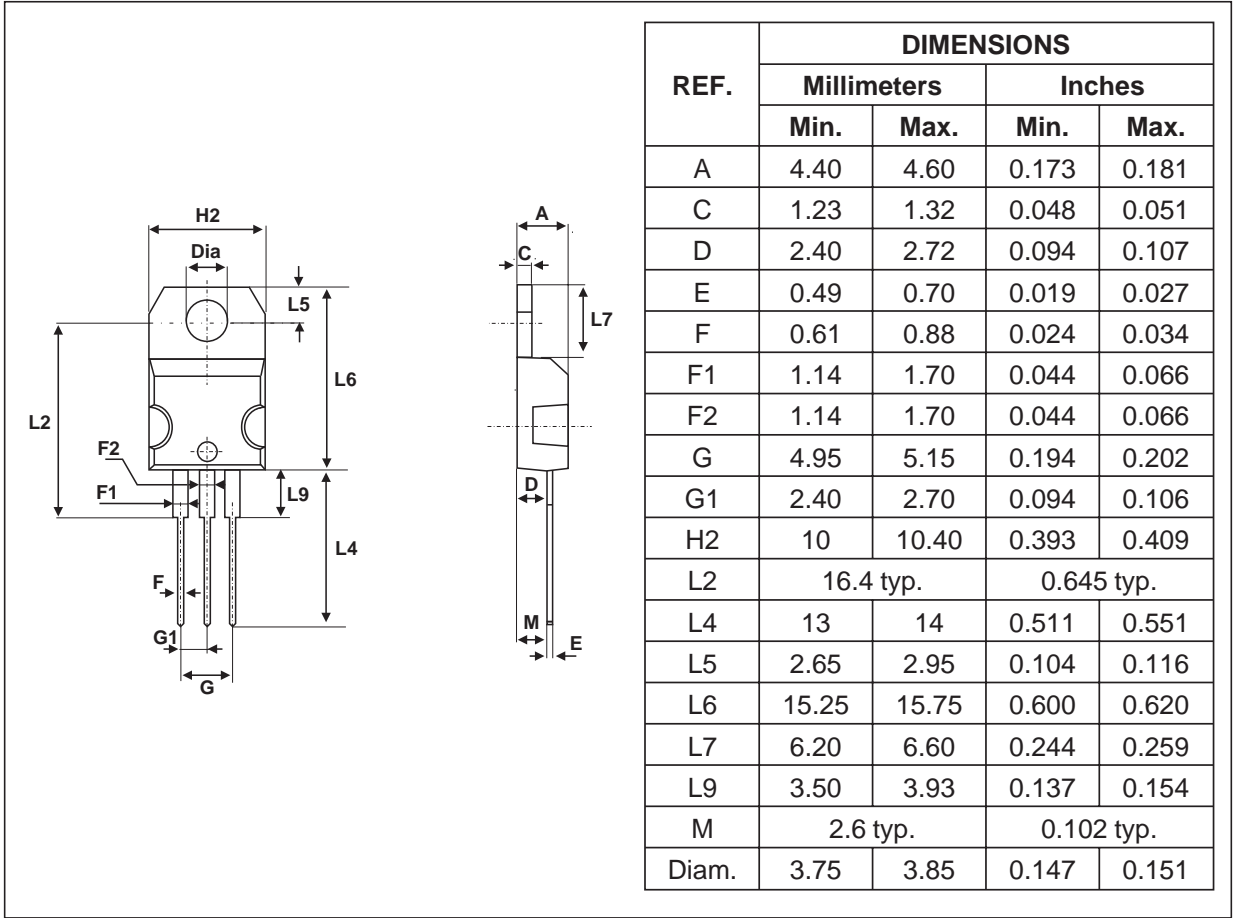
**Fig. 7:** Forward voltage drop versus forward current.



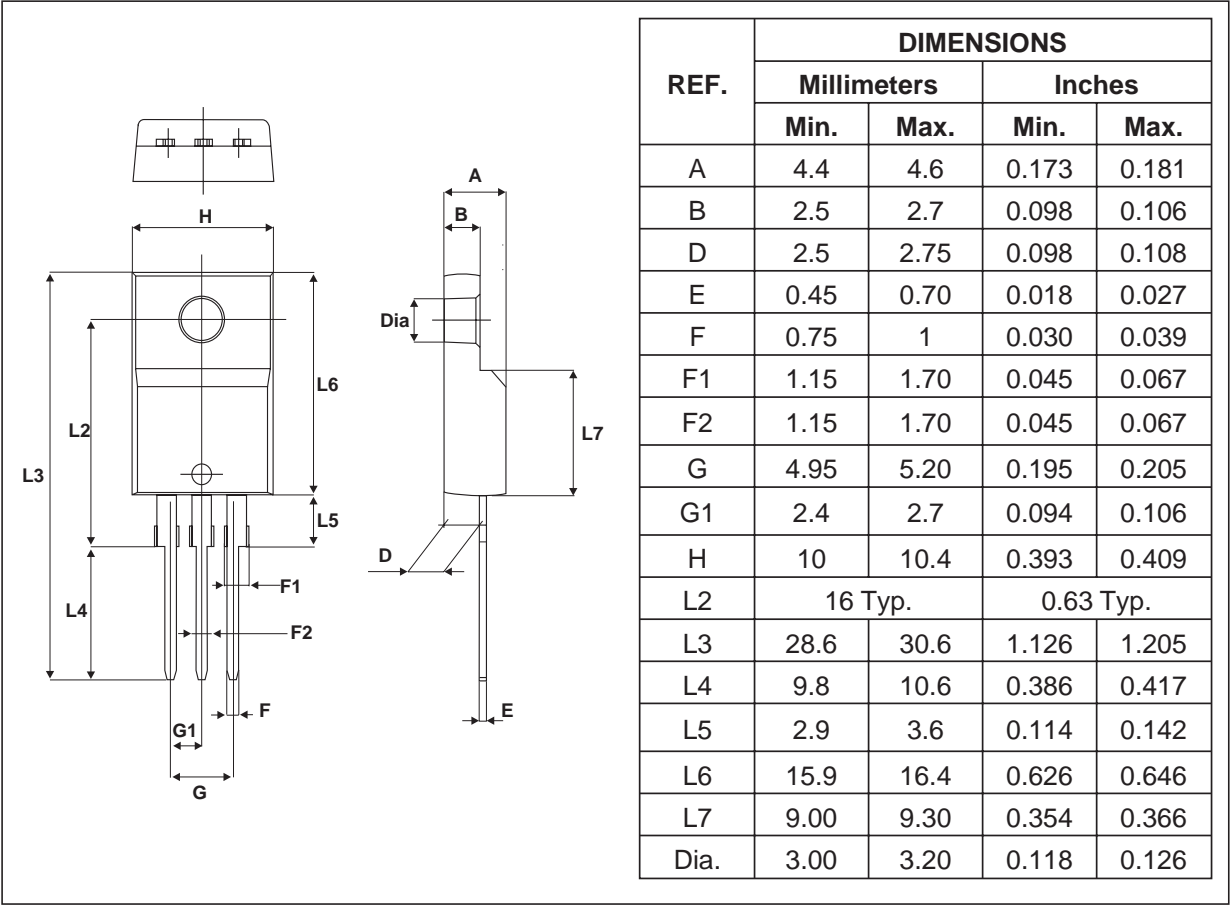
**Fig. 8:** Thermal resistance junction to ambient versus copper surface under tab (epoxy printed board FR4, Cu = 35µm).



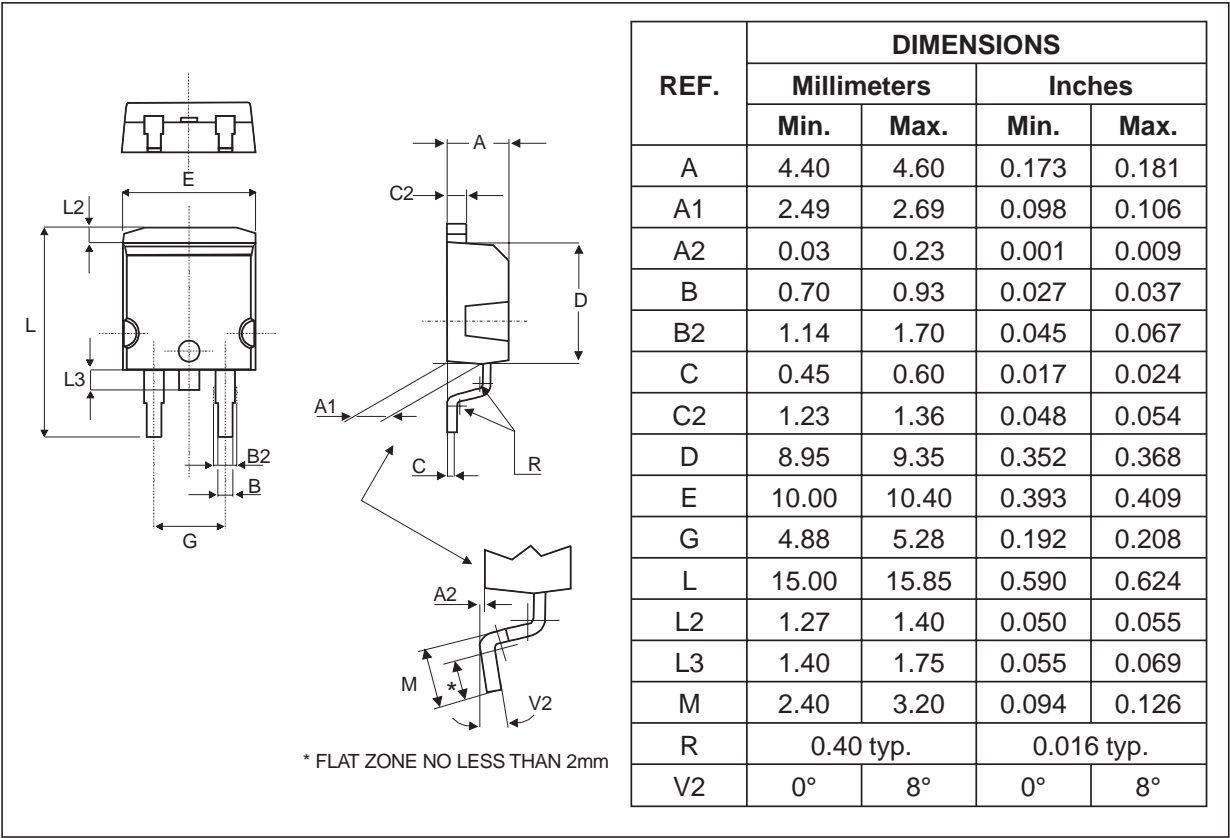
**PACKAGE MECHANICAL DATA**  
**TO-220AB**



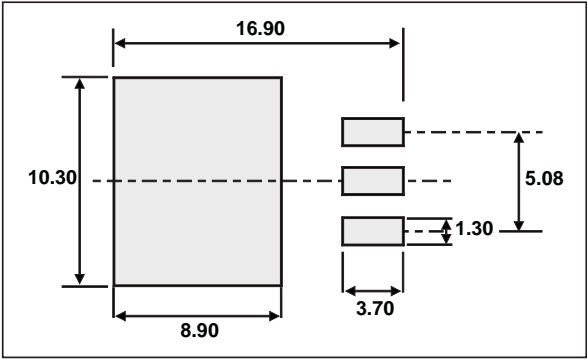
PACKAGE MECHANICAL DATA  
TO-220FPAB



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



FOOTPRINT



## PACKAGE MECHANICAL DATA

I<sup>2</sup>PAK

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
A1	2.49	2.69	0.098	0.106
b	0.70	0.93	0.028	0.037
b1	1.14	1.17	0.044	0.046
b2	1.14	1.17	0.044	0.046
c	0.45	0.60	0.018	0.024
c2	1.23	1.36	0.048	0.054
D	8.95	9.35	0.352	0.368
e	2.40	2.70	0.094	0.106
E	10.0	10.4	0.394	0.409
L	13.1	13.6	0.516	0.535
L1	3.48	3.78	0.137	0.149
L2	1.27	1.40	0.050	0.055

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 <sup>2</sup> PAK	1.48 g	50	Tube
STPS16H100CG-TR	STPS16H100CG	D <sup>2</sup> PAK	1.48 g	1000	Tape & reel
STPS16H100CR	STPS16H100CR	I <sup>2</sup> PAK	1.9 g	50	Tube

- Epoxy meets UL94,V0

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