



STPS8H100D/F/G/R/FP

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

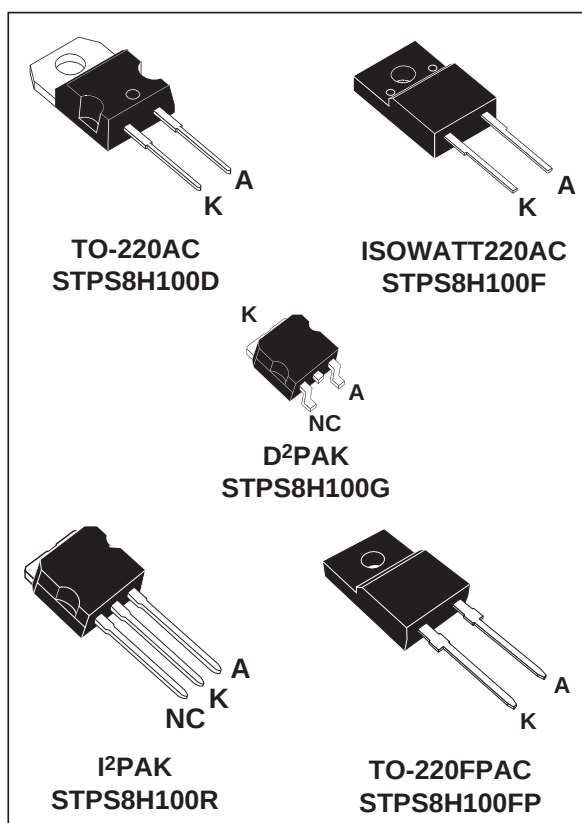
$I_{F(AV)}$	8 A
V_{RRM}	100 V
T_j (max)	175 °C
V_F (max)	0.58 V

FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- HIGH JUNCTION TEMPERATURE CAPABILITY
- LOW LEAKAGE CURRENT
- GOOD TRADE OFF BETWEEN LEAKAGE CURRENT AND FORWARD VOLTAGE DROP
- INSULATED PACKAGE:
ISOWATT220AC, TO-220FPAC
Insulating voltage = 2000V DC
Capacitance = 12pF
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

Schottky barrier rectifier designed for high frequency compact Switched Mode Power Supplies such as adaptators and on board DC/DC converters.



ABSOLUTE RATINGS (limiting values)

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 δ = 0.5	TO-220AC / I ² PAK / D ² PAK	Tc= 165°C	8	A
		ISOWATT220AC TO-220FPAC	Tc = 150°C		
I _{FSM}	Surge non repetitive forward current	tp = 10 ms sinusoidal		250	A
I _{RRM}	Repetitive peak reverse current	tp = 2 μs F = 1kHz square		1	A
I _{RSM}	Non repetitive peak reverse current	tp = 100 μs square		3	A
P _{ARM}	Repetitive peak avalanche power	tp = 1μs Tj = 25°C		10800	W
T _{stg}	Storage temperature range			- 65 to + 175	°C
Tj	Maximum operating junction temperature			175	°C
dV/dt	Critical rate of rise of rise voltage			10000	V/μs

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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	°C/W
$R_{th(j-c)}$	Junction to case	ISOWATT220AC / TO-220FPAC	4	°C/W

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			4.5	μA
		$T_j = 125^\circ\text{C}$			2	6	mA
V_F^{**}	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 8\text{ A}$			0.71	V
		$T_j = 25^\circ\text{C}$	$I_F = 10\text{ A}$			0.77	
		$T_j = 25^\circ\text{C}$	$I_F = 16\text{ A}$			0.81	
		$T_j = 125^\circ\text{C}$	$I_F = 8\text{ A}$		0.56	0.58	
		$T_j = 125^\circ\text{C}$	$I_F = 10\text{ A}$		0.59	0.64	
		$T_j = 125^\circ\text{C}$	$I_F = 16\text{ A}$		0.65	0.68	

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

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

To evaluate the maximum conduction losses use the following equation :

$$P = 0.48 \times I_{F(AV)} + 0.0125 \times I_{F(RMS)}^2$$

Fig. 1: Average forward power dissipation versus average forward current.
(TO-220AC / ISOWATT220AC / I²PAK / D²PAK)

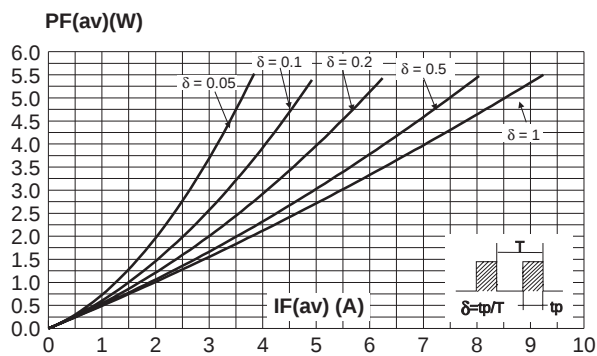


Fig. 2: Normalized avalanche power derating versus pulse duration.

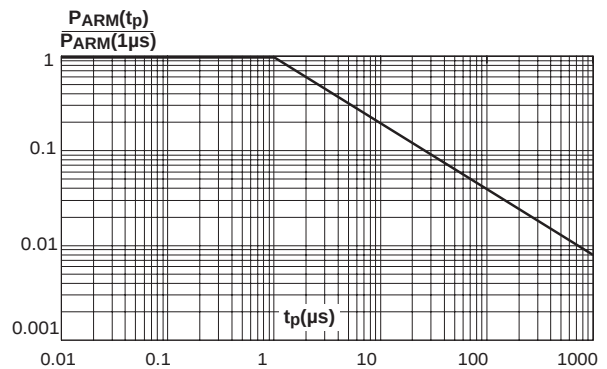


Fig. 3: Normalized avalanche power derating versus junction temperature.

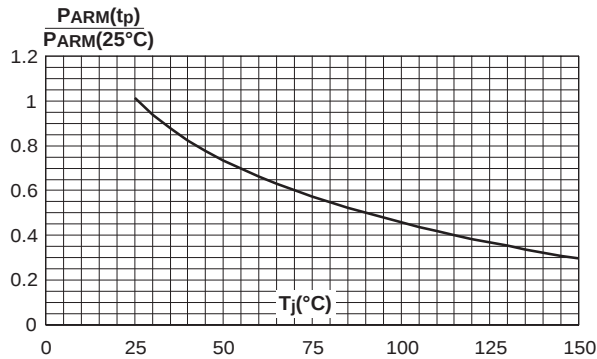


Fig. 4-1: Average forward current versus ambient temperature ($\delta=0.5$) (TO-220AC / I²PAK / D²PAK).

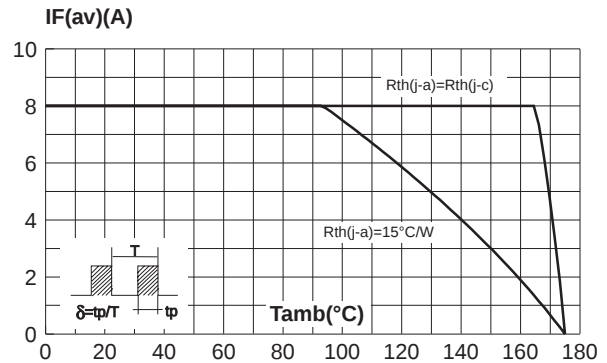


Fig. 4-2: Average forward current versus ambient temperature ($\delta=0.5$) (ISOWATT220AC, TO-220FPAC).

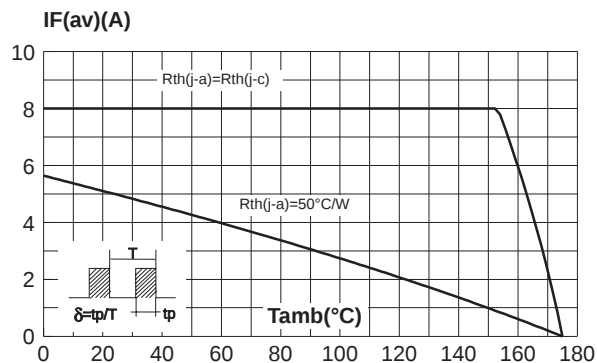


Fig. 5-1: Non repetitive surge peak forward current versus overload duration (maximum values) (TO-220AC / I²PAK / D²PAK).

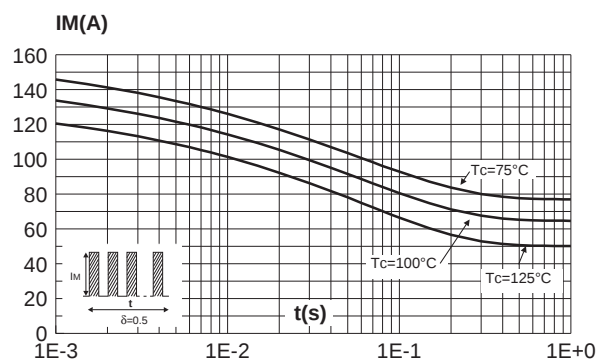


Fig. 5-2: Non repetitive surge peak forward current versus overload duration (maximum values) (ISOWATT220AC, TO-220FPAC).

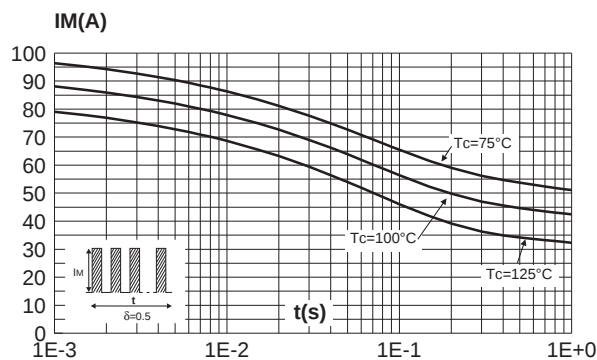


Fig. 6-1: Relative variation of thermal impedance junction to case versus pulse duration (TO-220AC / I²PAK / D²PAK).

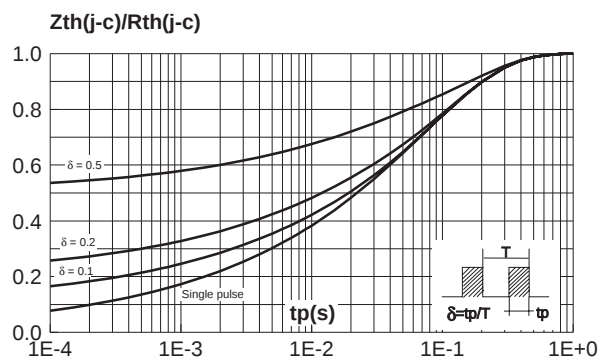


Fig. 6-2: Relative variation of thermal impedance junction to case versus pulse duration (ISOWATT220AC, TO-220FPAC).

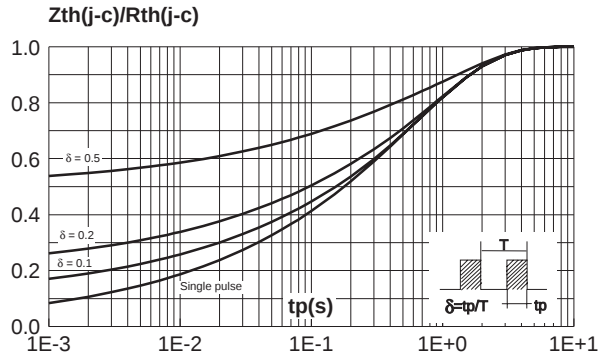


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

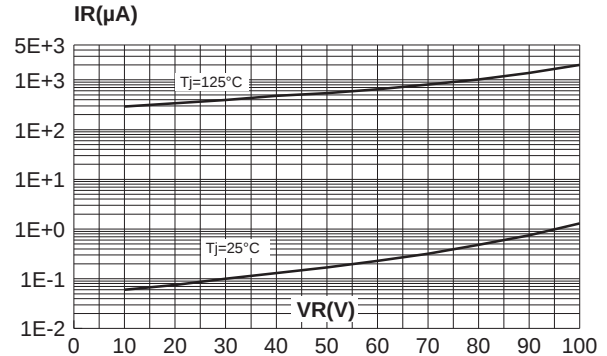


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

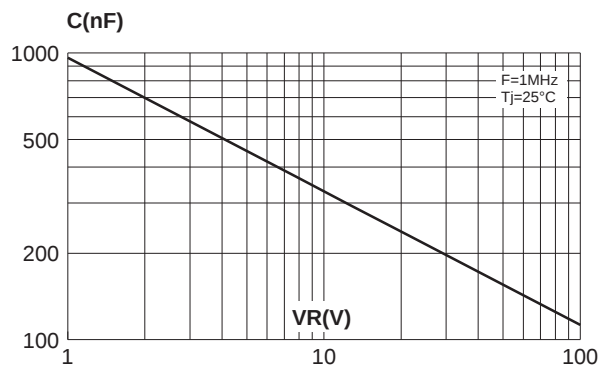


Fig. 9: Forward voltage drop versus forward current (maximum values).

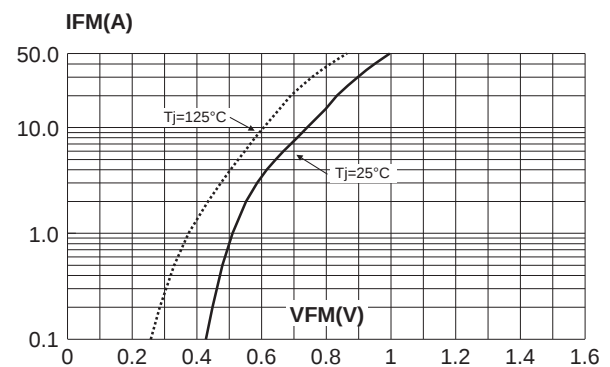
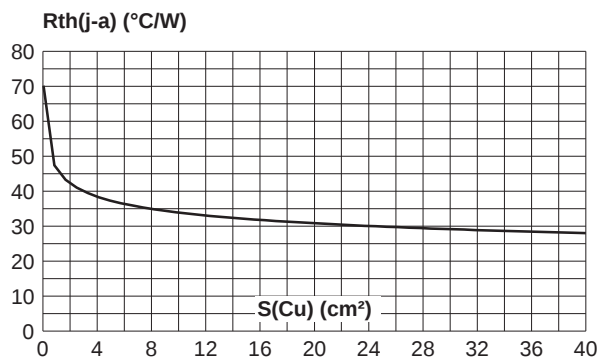
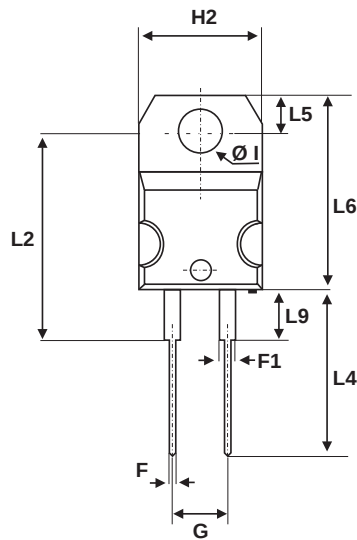
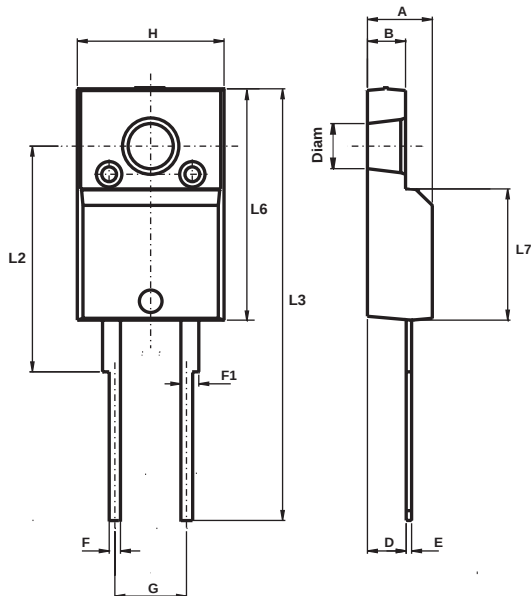


Fig. 10: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: $35\mu m$)(D²PAK).



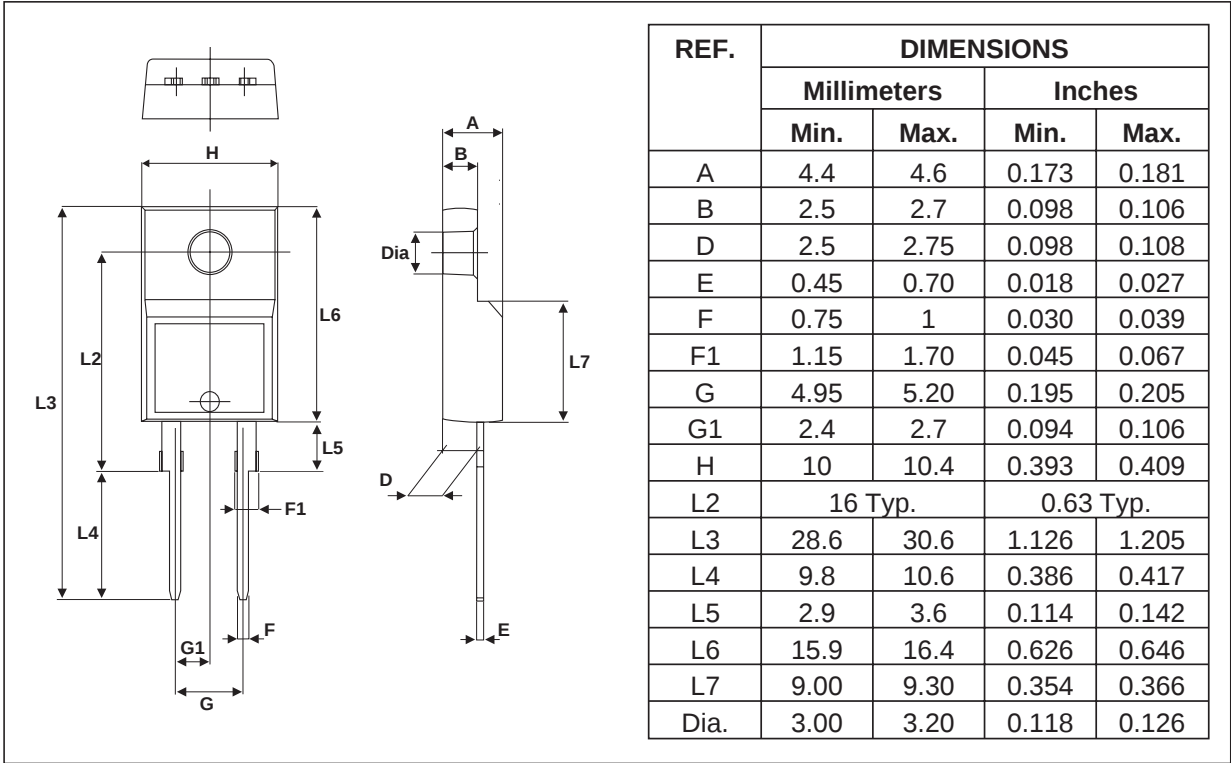
PACKAGE MECHANICAL DATA
 TO-220AC


REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
C	1.23	1.32	0.048	0.051
D	2.40	2.72	0.094	0.107
E	0.49	0.70	0.019	0.027
F	0.61	0.88	0.024	0.034
F1	1.14	1.70	0.044	0.066
G	4.95	5.15	0.194	0.202
H2	10.00	10.40	0.393	0.409
L2	16.40 typ.		0.645 typ.	
L4	13.00	14.00	0.511	0.551
L5	2.65	2.95	0.104	0.116
L6	15.25	15.75	0.600	0.620
L7	6.20	6.60	0.244	0.259
L9	3.50	3.93	0.137	0.154
M	2.6 typ.		0.102 typ.	
Diam. I	3.75	3.85	0.147	0.151

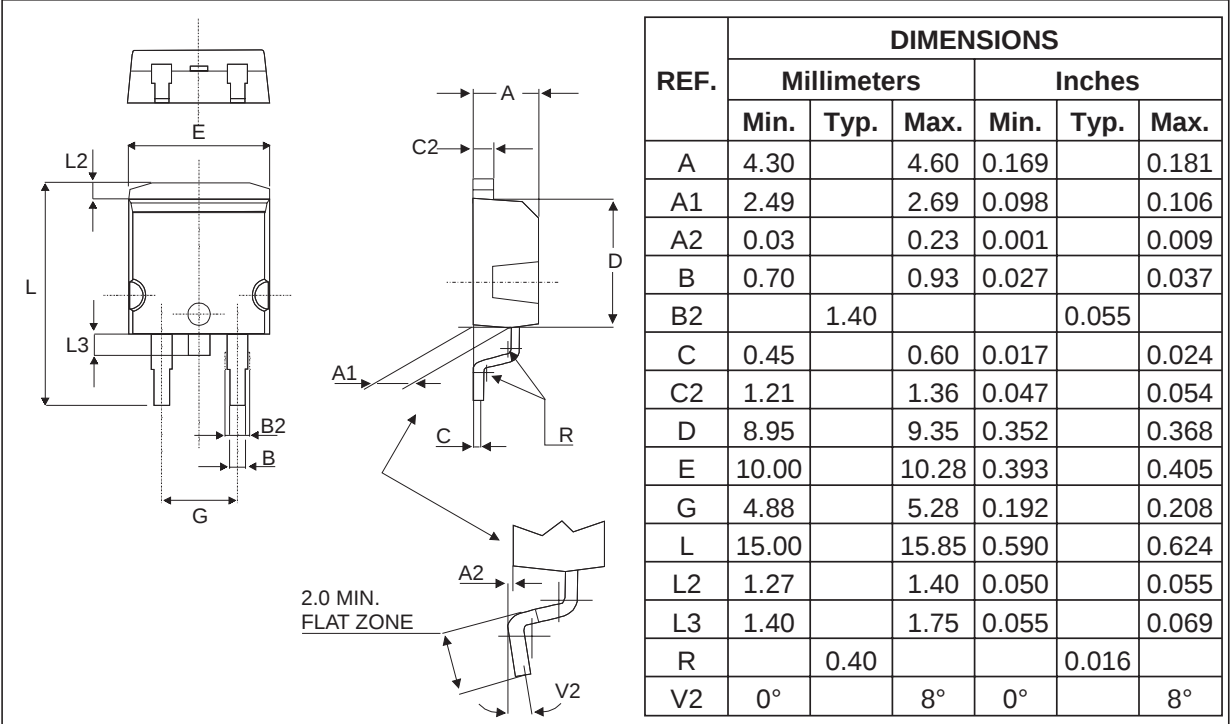
PACKAGE MECHANICAL DATA
 ISOWATT220AC


REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	2.50		2.70	0.098		0.106
D	2.40		2.75	0.094		0.108
E	0.40		0.70	0.016		0.028
F	0.75		1.00	0.030		0.039
F1	1.15		1.70	0.045		0.067
G	4.95		5.20	0.195		0.205
H	10.00		10.40	0.394		0.409
L2		16.00			0.630	
L3	28.60		30.60	1.125		1.205
L6	15.90		16.40	0.626		0.646
L7	9.00		9.30	0.354		0.366
Diam	3.00		3.20	0.118		0.126

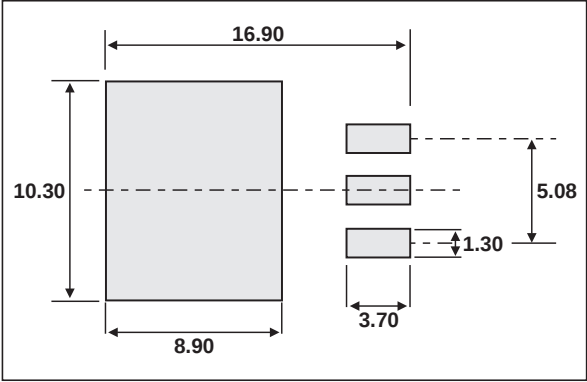
PACKAGE MECHANICAL DATA
TO-220FPAC



PACKAGE MECHANICAL DATA
D²PAK



FOOTPRINT (in millimeters)D²PAK



STPS8H100D/F/G/R/FP

PACKAGE MECHANICAL DATA I²PAK

REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.30		4.60	0.169		0.181
A1	2.49		2.69	0.098		0.106
b	0.70		0.93	0.028		0.037
b1	1.20		1.38	0.047		0.054
b2	1.25	1.40		0.049	0.055	
C	0.45		0.60	0.018		0.024
C2	1.21		1.36	0.048		0.054
D	8.95		9.35	0.352		0.368
e	2.44		2.64	0.096		0.104
E	10.00		10.28	0.394		0.405
L	13.10		13.60	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
STPS8H100D	STPS8H100D	TO-220AC	1.86g	50	Tube
STPS8H100F	STPS8H100F	ISOWATT220AC	2.00g	50	Tube
STPS8H100FP	STPS8H100FP	TO-220FPAC	1.9 g	50	Tube
STPS8H100R	STPS8H100R	I ² PAK	1.49g	50	Tube
STPS8H100G	STPS8H100G	D ² PAK	1.48g	50	Tube
STPS8H100G-TR	STPS8H100G	D ² PAK	1.48g	500	Tape & reel

- Epoxy meets UL94,V0

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