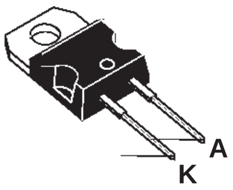
STPS8H100D/F/G/G-1

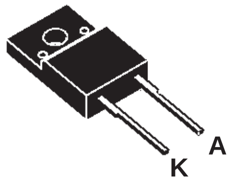
HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

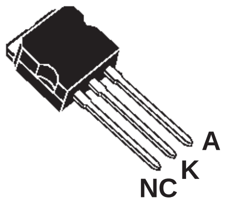
$I_{F(AV)}$	**8 A**
V_{RRM}	**100 V**
Tj (max)	**175 °C**
V_F (max)	**0.58 V**



TO-220AC
STPS8H100D



ISOWATT220AC
STPS8H100F



I^2PAK
STPS8H100G-1

D^2PAK
STPS8H100G

FEATURES AND BENEFITS

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

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 $\delta = 0.5$	TO-220AC / I^2PAK / D^2PAK	Tc= 165°C	8	A
		ISOWATT220AC	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
E_{as}	Non repetitive avalanche energy	T_j = 25°C L = 60 mH I_{as} = 2 A		24	mJ
I_{ar}	Repetitive avalanche current	Va = 1.5 x V_R typ Current decaying linearly to 0 in 1µs Frequency limited by Tj max.		2	A
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

November 1998 - Ed: 4A

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th\ (j-c)}$	Junction to case	TO-220AC / I^2PAK / D^2PAK	1.6	°C/W
$R_{th\ (j-c)}$	Junction to case	ISOWATT220AC	4	°C/W

STATIC ELECTRICAL CHARACTERISTICS

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

Pulse test : * tp = 5 ms, $\delta < 2\%$
** tp = 380 µs, $\delta < 2\%$

To evaluate the maximum conduction losses use the following equation :
$P = 0.48 \times I_{F(AV)} + 0.0125 \times I_{F}^{2}{}_{(RMS)}$

Fig. 1: Average forward power dissipation versus average forward current. (TO-220AC / ISOWATT220AC / I^2PAK / D^2PAK)

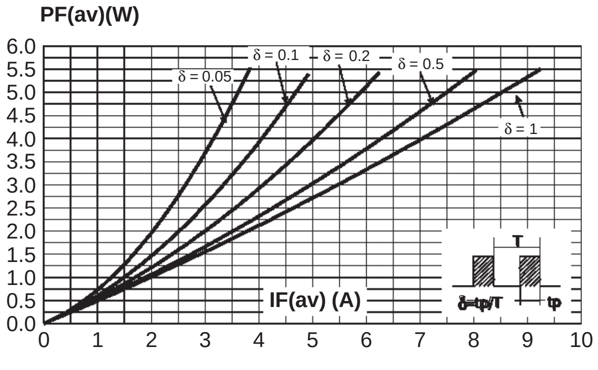


Fig. 2-1: Average forward current versus ambient temperature (δ=0.5) (TO-220AC / I^2PAK / D^2PAK).

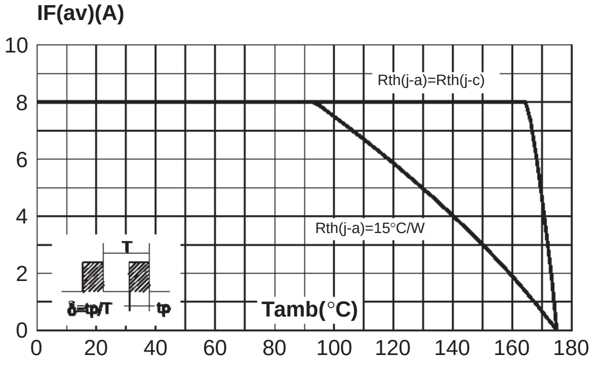


Fig. 2-2: Average forward current versus ambient temperature (δ=0.5) (ISOWATT220AC).

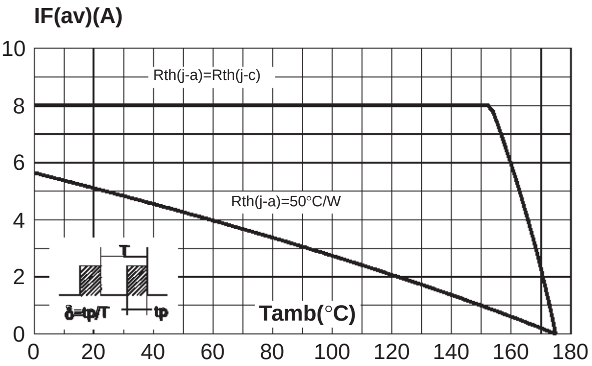


Fig. 3-1: Non repetitive surge peak forward current versus overload duration (maximum values) (TO-220AC / I^{2}PAK / D^{2}PAK).

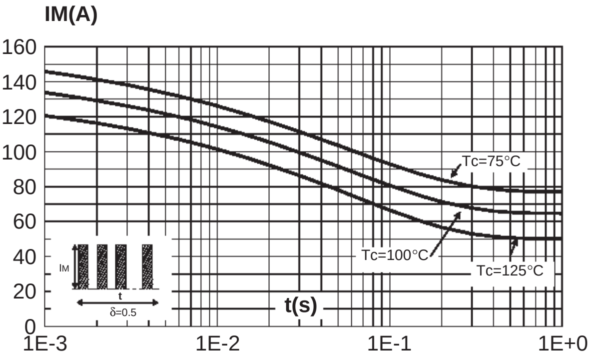


Fig. 3-2: Non repetitive surge peak forward current versus overload duration (maximum values) (ISOWATT220AC).

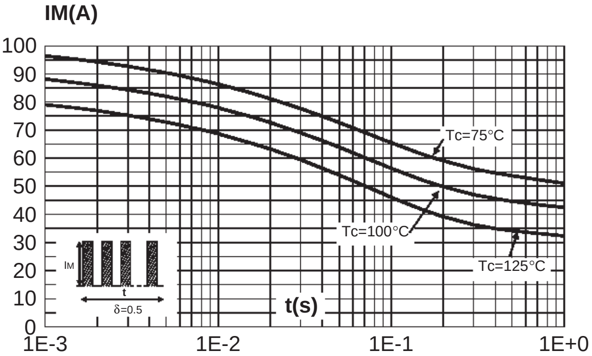


Fig. 4-1: Relative variation of thermal impedance junction to case versus pulse duration (TO-220AC / I^{2}PAK / D^{2}PAK).

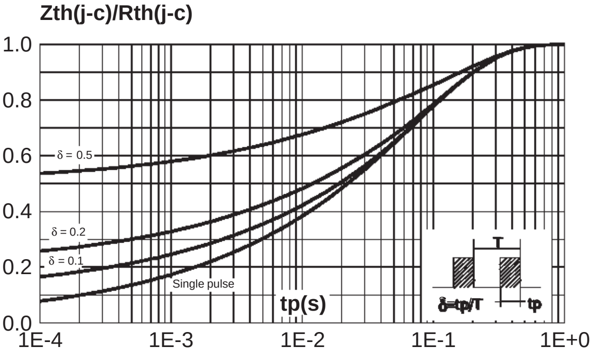


Fig. 4-2: Relative variation of thermal impedance junction to case versus pulse duration (ISOWATT220AC).

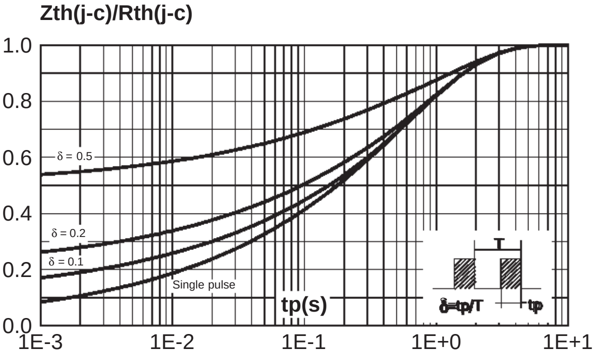


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values).

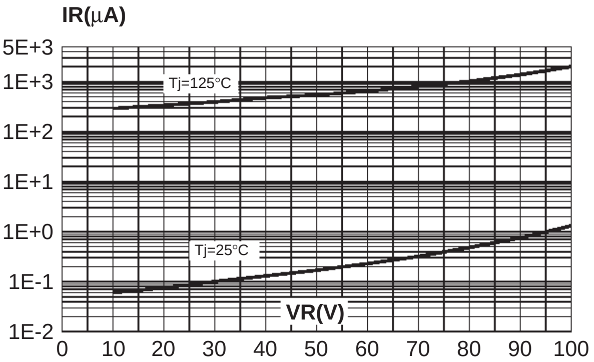


Fig. 6: Junction capacitance versus reverse voltage applied (typical values).

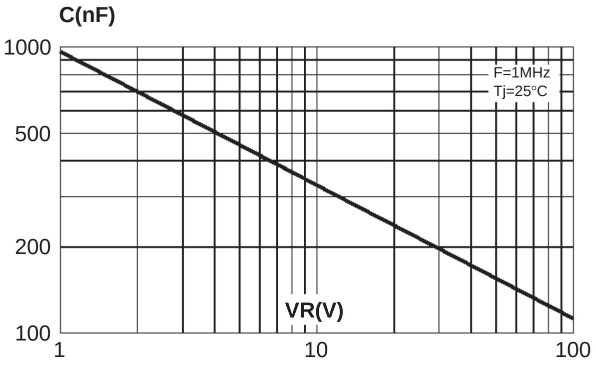


Fig. 7: Forward voltage drop versus forward current (maximum values).

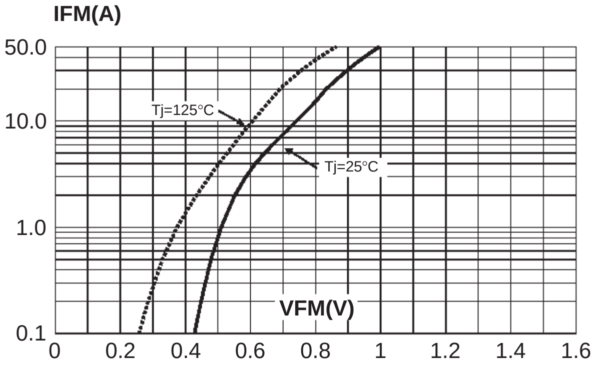
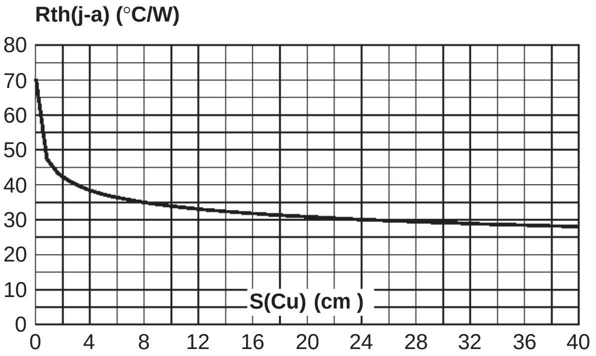
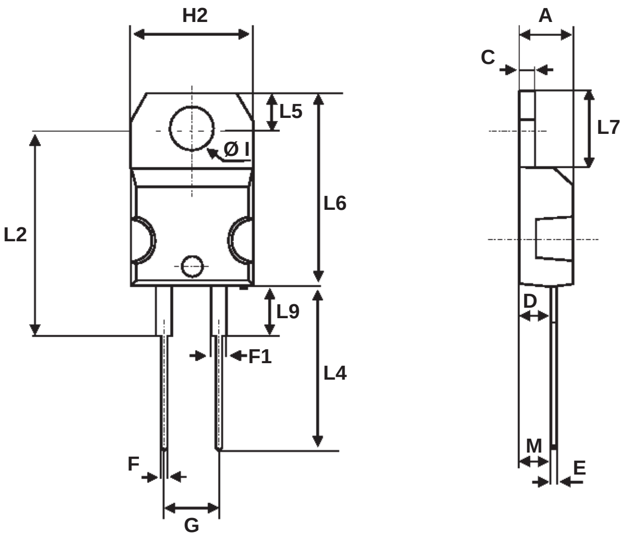


Fig. 8: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35µm)(D^2PAK).



PACKAGE MECHANICAL DATA

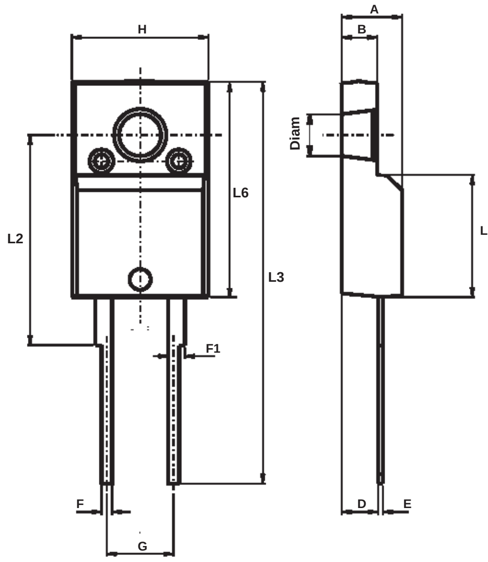
TO-220AC



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

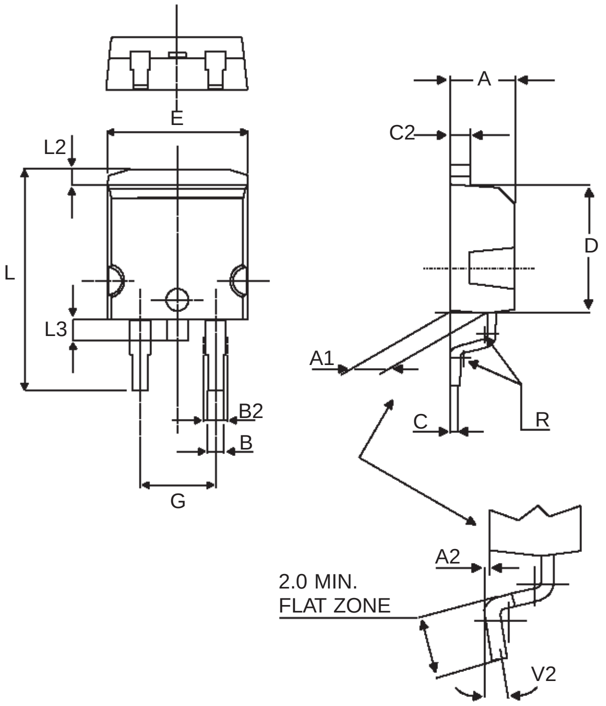
ISOWATT220AC



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

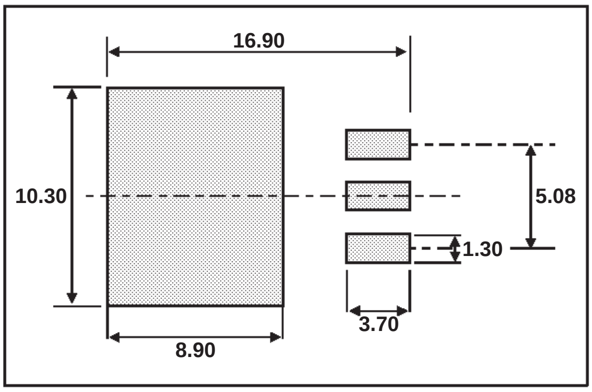
PACKAGE MECHANICAL DATA

D^2PAK

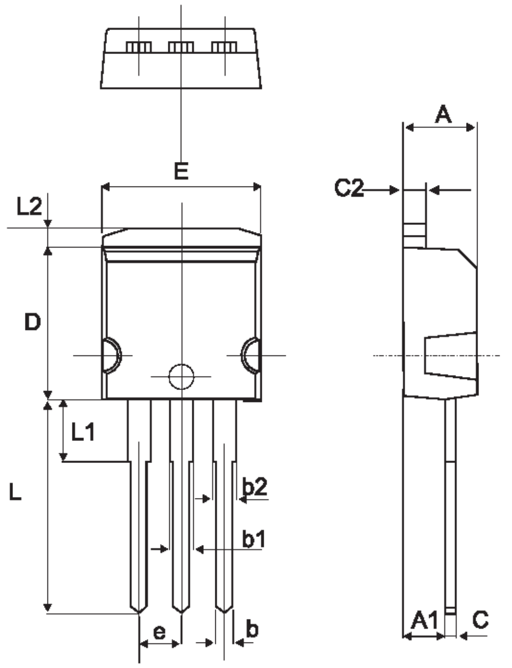


REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.30		4.60	0.169		0.181
A1	2.49		2.69	0.098		0.106
A2	0.03		0.23	0.001		0.009
B	0.70		0.93	0.027		0.037
B2		1.40			0.055	
C	0.45		0.60	0.017		0.024
C2	1.21		1.36	0.047		0.054
D	8.95		9.35	0.352		0.368
E	10.00		10.28	0.393		0.405
G	4.88		5.28	0.192		0.208
L	15.00		15.85	0.590		0.624
L2	1.27		1.40	0.050		0.055
L3	1.40		1.75	0.055		0.069
R		0.40			0.016	
V2	0°		8°	0°		8°

FOOTPRINT (in millimeters)D^2PAK



PACKAGE MECHANICAL DATA
I^2PAK



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
STPS8H100G-1	STPS8H100G	I^2PAK	1.49g	50	Tube
STPS8H100G	STPS8H100G	D^2PAK	1.48g	50	Tube
STPS8H100G-TR	STPS8H100G	D^2PAK	1.48g	500	Tape & reel

- Epoxy meets UL94,V0

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