



STPS20H100CT/CF/CG/CG-1

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

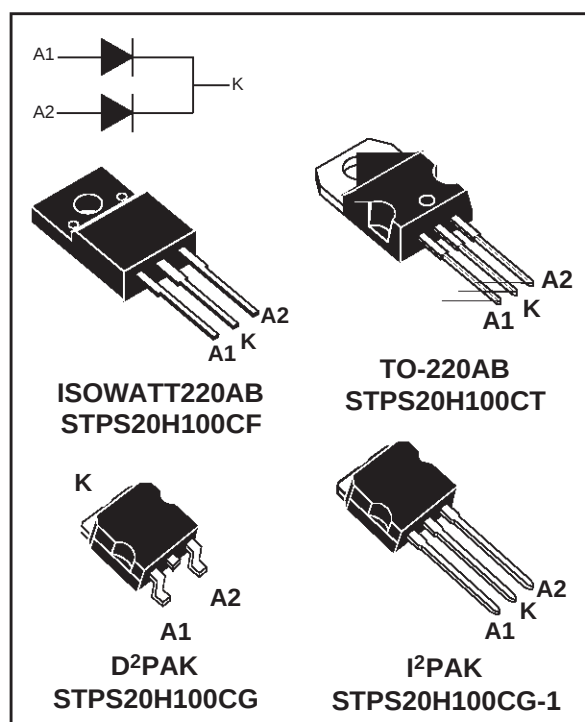
$I_{F(AV)}$	2 x 10 A
V_{RRM}	100 V
T_j	175°C
$V_F (max)$	0.64 V

FEATURES AND BENEFITS

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

DESCRIPTION

Dual center tap schottky rectifier designed for high frequency miniature Switched 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	$T_c = 160^\circ\text{C}$	per diode per device	10 20 A
		ISOWATT220AB	$T_c = 145^\circ\text{C}$		
I_{FSM}	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ sinusoidal		250	A
I_{RRM}	Repetitive peak reverse current	$t_p = 2 \mu\text{s}$ $F = 1\text{kHz}$ square		1	A
I_{RSM}	Non repetitive peak reverse current	$t_p = 100 \mu\text{s}$ square		3	A
E_{as}	Non Repetitive avalanche energy	$T_j = 25^\circ\text{C}$ $L = 60 \text{ mH}$ $L_{as} = 2 \text{ A}$		24	mJ
I_{ar}	Repetitive avalanche current	$V_a = 1.5 \times V_R$ typ Current decaying linearly to 0 in $1 \mu\text{s}$ Frequency limited by T_j max.		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 rise voltage			10000	V/ μs

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THERMAL RESISTANCES

Symbol	Parameter			Value	Unit
$R_{th(j-c)}$	Junction to case	TO-220AB / D ² PAK / I ² PAK	Per diode	1.6	°C/W
		ISOWATT220AB	Per diode	4	
		TO-220AB / D ² PAK / I ² PAK	Total	0.9	
		ISOWATT220AB	Total	3.2	°C/W
$R_{th(c)}$		TO-220AB / D ² PAK / I ² PAK	Coupling	0.15	
		ISOWATT220AB	Coupling	2.5	

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	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			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	
		$T_j = 25^\circ\text{C}$	$I_F = 20\text{ A}$			0.88	
		$T_j = 125^\circ\text{C}$	$I_F = 8\text{ A}$		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	
		$T_j = 125^\circ\text{C}$	$I_F = 20\text{ A}$		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 maximum conduction losses use the following equation :
 $P = 0.55 \times I_{F(AV)} + 0.009 \times I_{F(RMS)}^2$

Fig. 1: Average forward power dissipation versus average forward current (per diode).

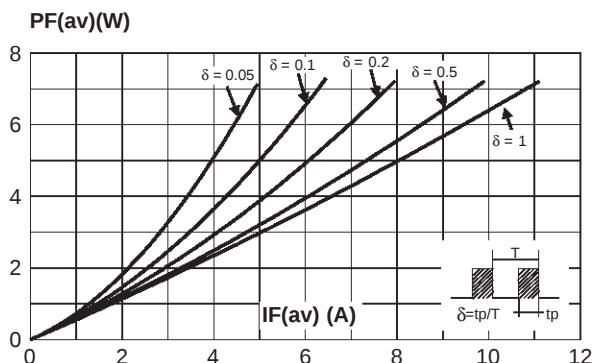


Fig. 2: Average forward current versus ambient temperature ($\delta=0.5$, per diode).

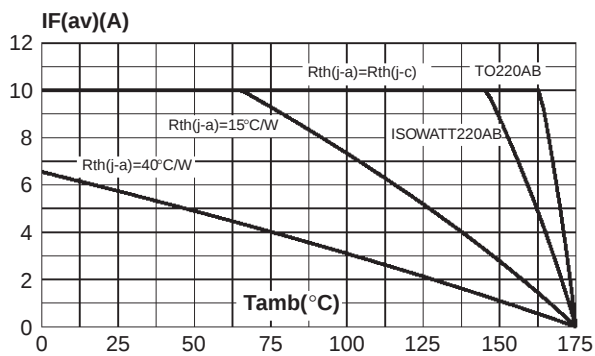


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values, per diode) (TO-220AB, D²PAK, I²PAK)

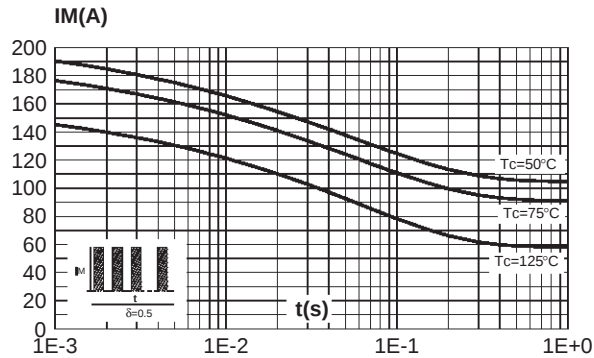


Fig. 4: Non repetitive surge peak forward current versus overload duration (maximum values, per diode) (ISOWATT220AB).

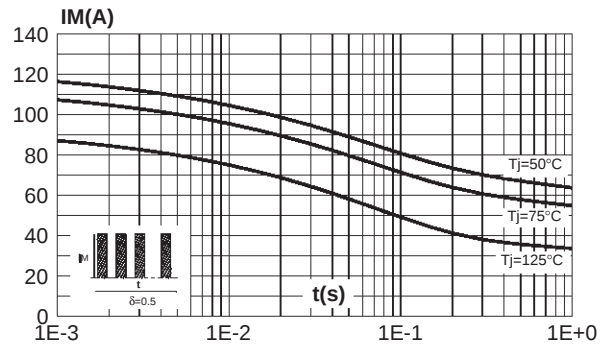


Fig. 5: Relative variation of thermal impedance junction to case versus pulse duration (per diode) (TO-220AB, D²PAK, I²PAK).

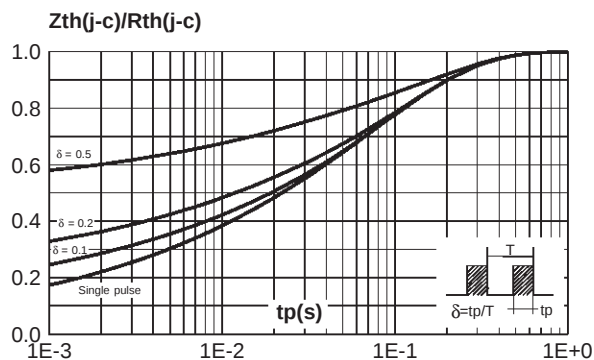


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration (per diode) (ISOWATT220AB).

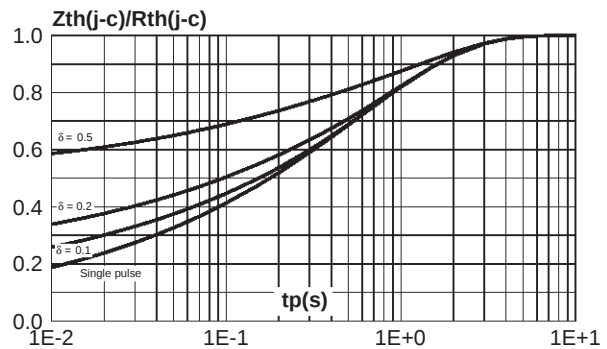


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values, per diode).

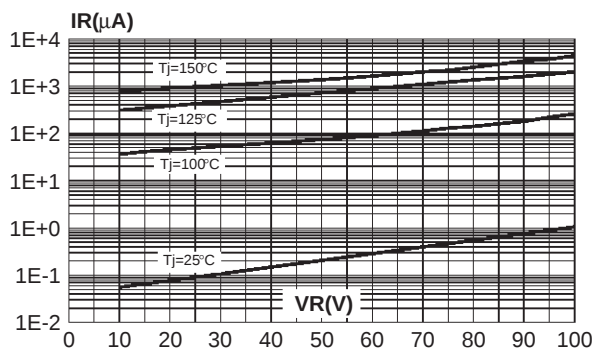
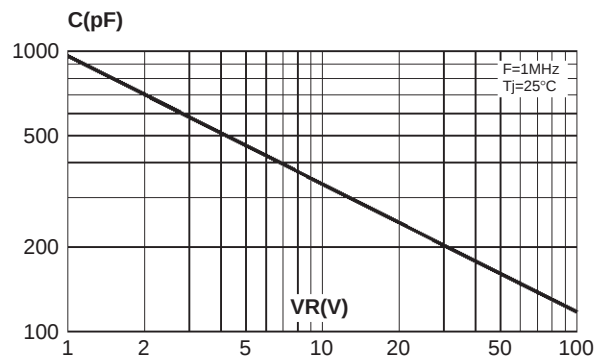


Fig. 8: Junction capacitance versus reverse voltage applied (typical values, per diode).



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

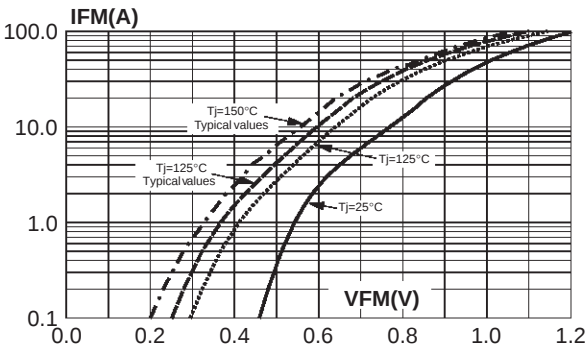
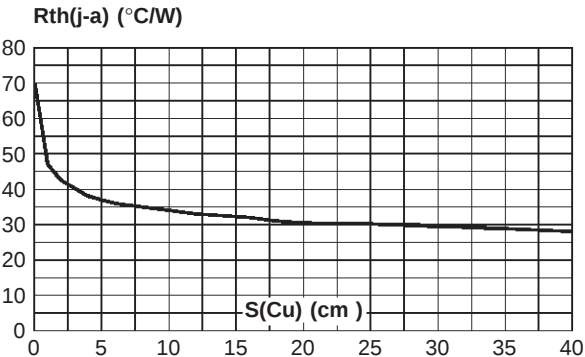
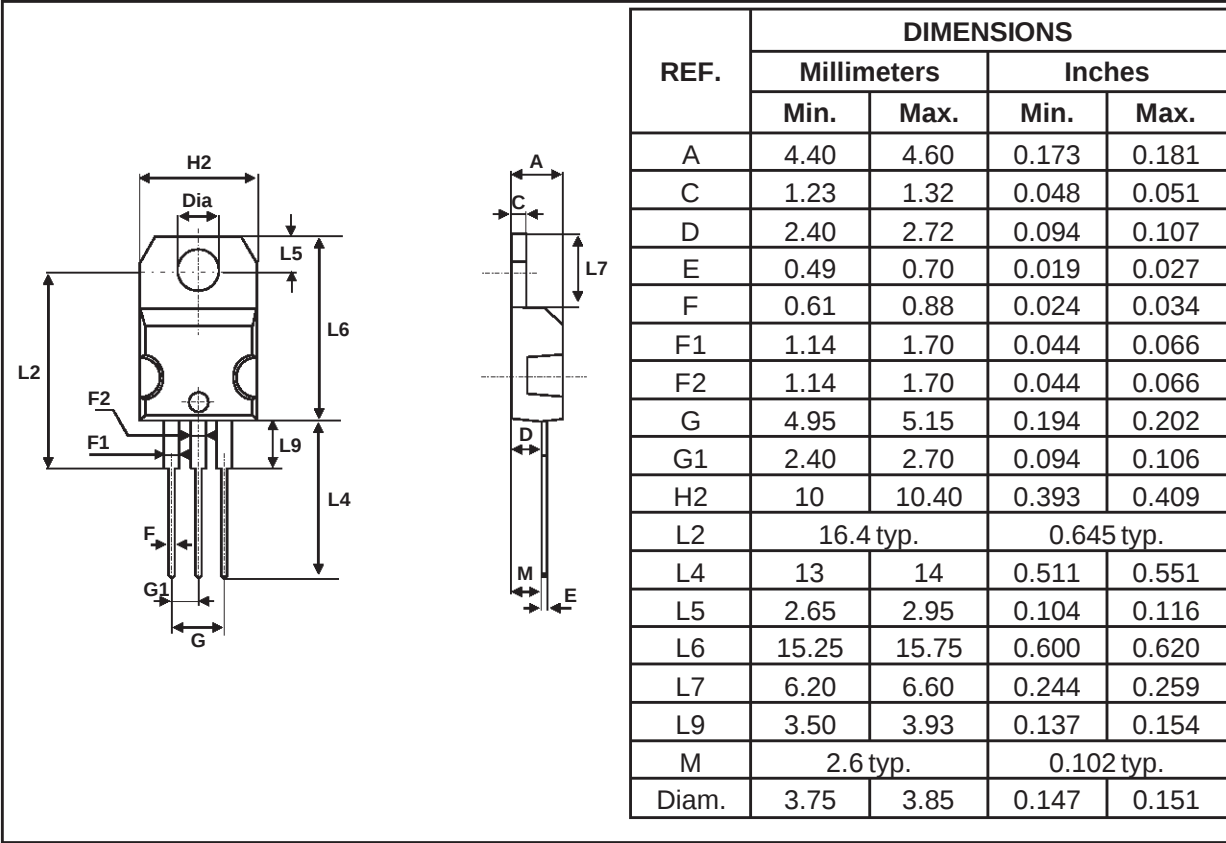


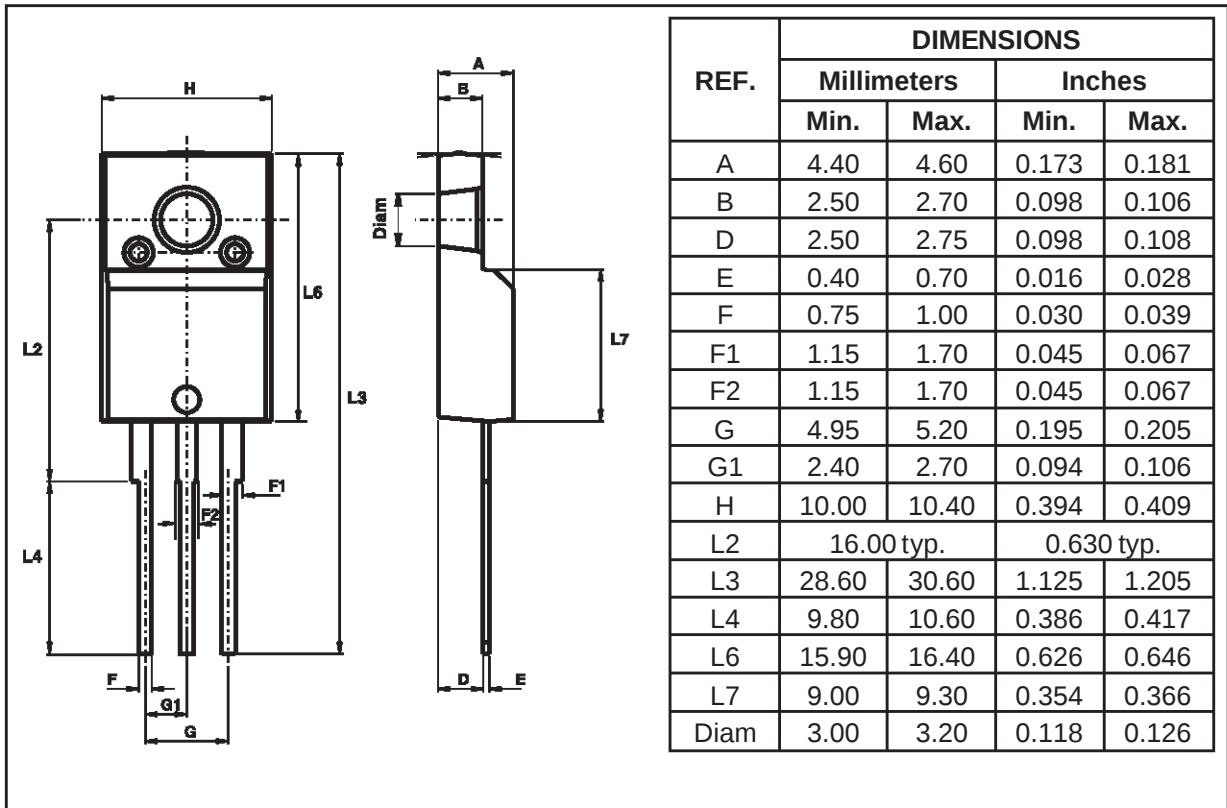
Fig. 10: Thermal resistance junction to ambient versus copper surface undertab (Epoxy printed circuit board FR4, copper thickness: 35µm) (D²PAK).



PACKAGE MECHANICAL DATA
TO-220AB

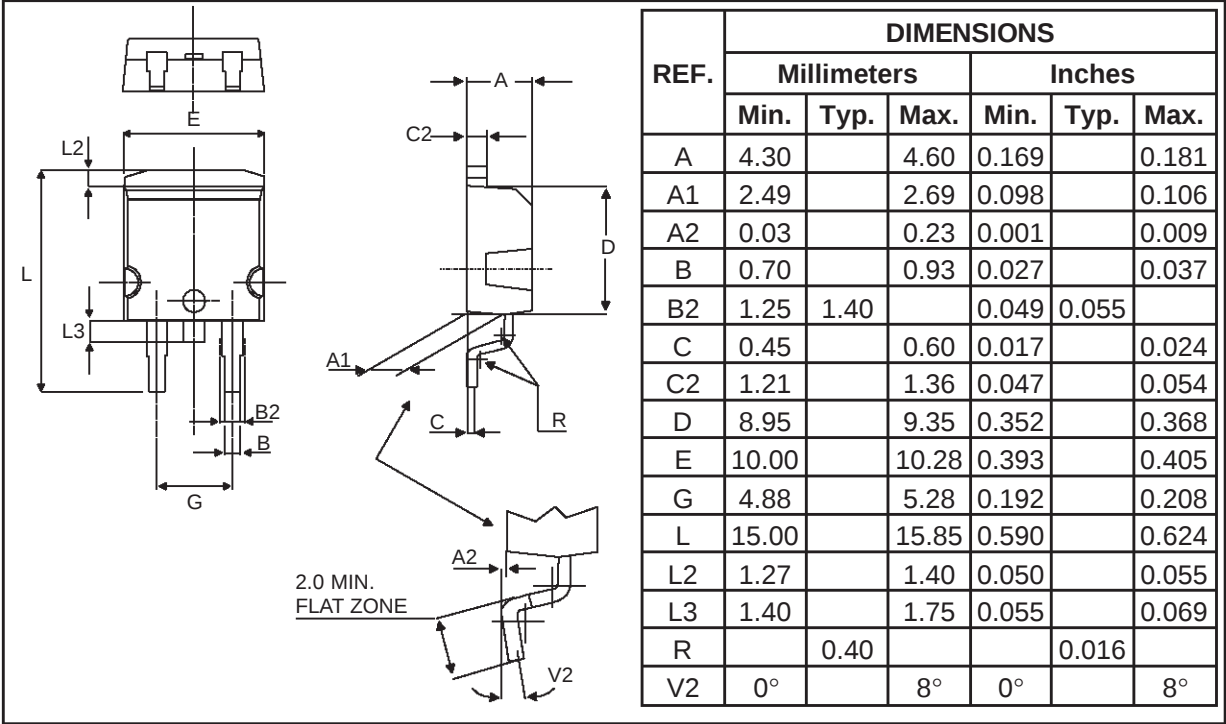


PACKAGE MECHANICAL DATA
ISOWATT220AB

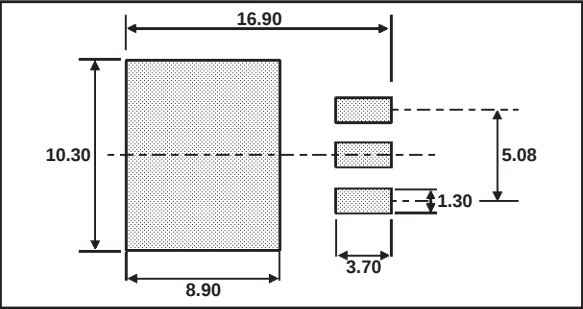


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PACKAGE MECHANICAL DATA
D²PAK



FOOT PRINT DIMENSIONS (in millimeters)



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
STPS20H100CT	STPS20H100CT	TO-220AB	2.20g	50	Tube
STPS20H100CF	STPS20H100CF	ISOWATT220AB	2.08g	50	Tube
STPS20H100CG-1	STPS20H100CG	I ² PAK	1.49g	50	Tube
STPS20H100CG	STPS20H100CG	D ² PAK	1.48g	50	Tube
STPS20H100CG-TR	STPS20H100CG	D ² PAK	1.48g	500	Tape & reel

■ Epoxy meets UL94,V0

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