



# STPS10L40CT/CG/CF

## LOW DROP POWER SCHOTTKY RECTIFIER

### MAIN PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	2x5 A
$V_{RRM}$	40 V
$T_j(max)$	150°C
$V_F(max)$	0.46 V

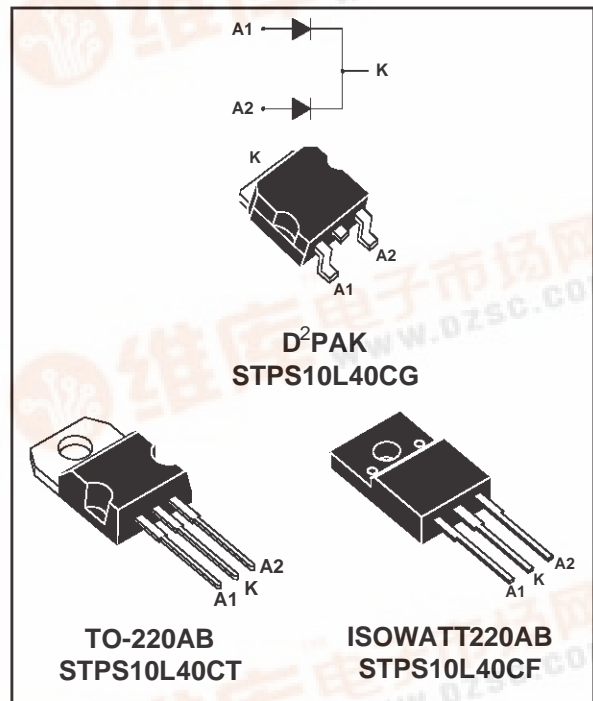
### FEATURES AND BENEFITS

- LOW FORWARD VOLTAGE DROP MEANING VERY SMALL CONDUCTION LOSSES
- LOW DYNAMIC LOSSES AS A RESULT OF THE SCHOTTKY BARRIER
- AVALANCHERATED

### DESCRIPTION

Dual center tap Schottky rectifiers suited for Switched Mode Power Supplies and high frequency DC to DC converters.

Packaged in TO-220AB, ISOWATT220AB and D<sup>2</sup>PAK, these devices are intended for use in low voltage, high frequency inverters, free-wheeling and polarity protection applications.



### ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter		Value	Unit
$V_{RRM}$	Repetitive peak reverse voltage		40	V
$I_{F(RMS)}$	RMS forward current		20	A
$I_{F(AV)}$	Average forward current	$T_c = 135^\circ\text{C}$ $\delta = 0.5$ Per diode Per device	5 10	A
$I_{FSM}$	Surge non repetitive forward current	$t_p = 10\text{ ms}$ Sinusoidal	150	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
$T_{stg}$	Storage temperature range		- 65 to + 150	°C
$T_j$	Maximum operating junction temperature *		150	°C
$dV/dt$	Critical rate of rise of reverse voltage		10000	V/ $\mu\text{s}$

\* :  $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th(j-a)}}$  thermal runaway condition for a diode on its own heatsink

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### THERMAL RESISTANCES

Symbol	Parameter		Value	Unit	
R <sub>th(j-c)</sub>	Junction to case	TO-220AB D <sup>2</sup> PAK	Per diode	3 1.7	°C/W
			Total		
R <sub>th(c)</sub>			Coupling	0.35	
R <sub>th(j-c)</sub>	Junction to case	ISOWATT220AB	Per diode	5 3.8	°C/W
			Total		
R <sub>th(c)</sub>			Coupling	2.5	

When the diodes 1 and 2 are used simultaneously :  
 $\Delta T_j(\text{diode 1}) = P(\text{diode 1}) \times R_{th(j-c)}(\text{Per diode}) + P(\text{diode 2}) \times R_{th(c)}$

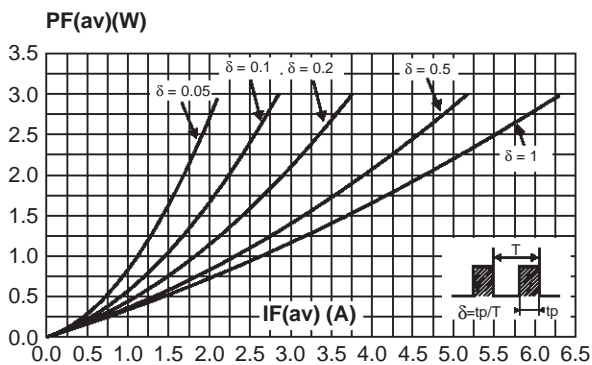
### STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I <sub>R</sub> *	Reverse leakage current	T <sub>j</sub> = 25°C	V <sub>R</sub> = V <sub>RRM</sub>			0.2	mA
		T <sub>j</sub> = 100°C			8	25	mA
V <sub>F</sub> *	Forward voltage drop	T <sub>j</sub> = 25°C	I <sub>F</sub> = 5 A			0.53	V
		T <sub>j</sub> = 125°C	I <sub>F</sub> = 5 A		0.36	0.46	
		T <sub>j</sub> = 25°C	I <sub>F</sub> = 10 A			0.67	
		T <sub>j</sub> = 125°C	I <sub>F</sub> = 10 A		0.49	0.59	

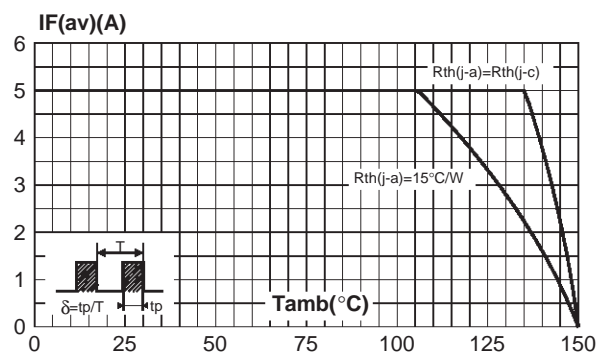
Pulse test : \* t<sub>p</sub> = 380 μs, δ < 2%

To evaluate the conduction losses use the following equation :  
 $P = 0.33 \times I_{F(AV)} + 0.026 I_{F(RMS)}^2$

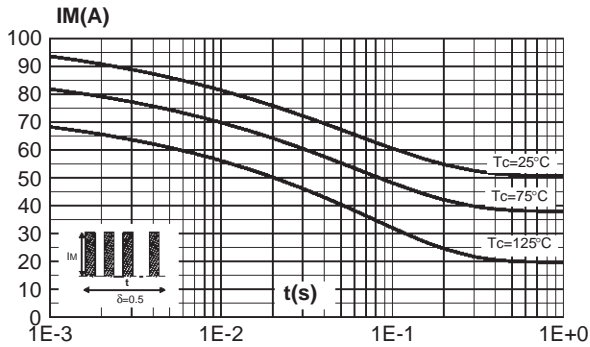
**Fig. 1:** Average forward power dissipation versus average forward current (per diode).



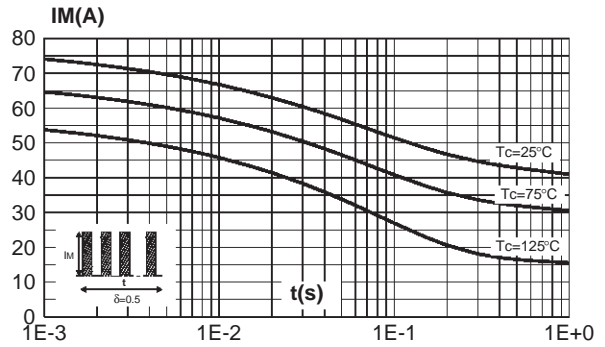
**Fig. 2:** Average forward current versus ambient temperature (δ=0.5, per diode).



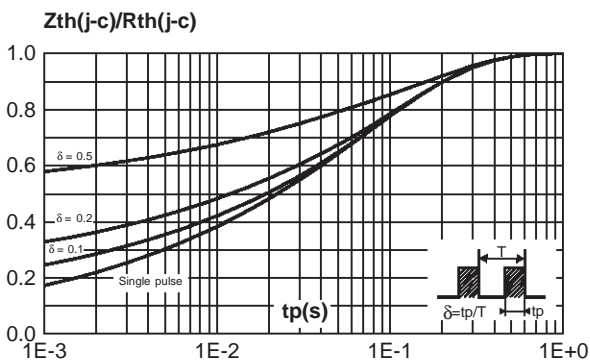
**Fig. 3-1:** Non repetitive surge peak forward current versus overload duration (maximum values, per diode) (TO-220AB and D<sup>2</sup>PAK).



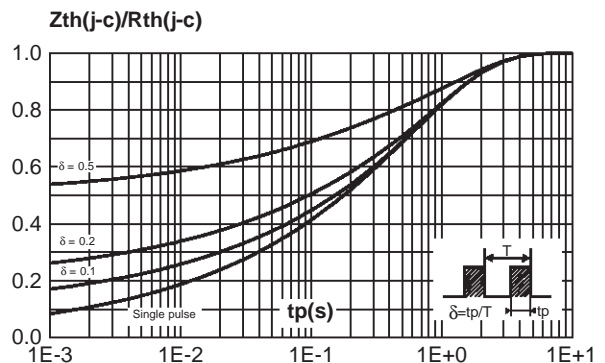
**Fig. 3-2:** Non repetitive surge peak forward current versus overload duration (maximum values, per diode) (ISOWATT220AB).



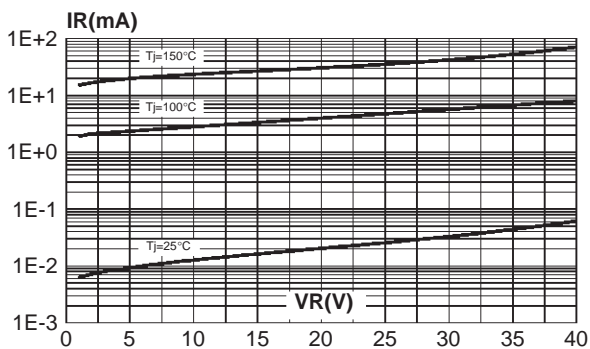
**Fig. 4-1:** Relative variation of thermal impedance junction to case versus pulse duration. (TO-220AB and D<sup>2</sup>PAK).



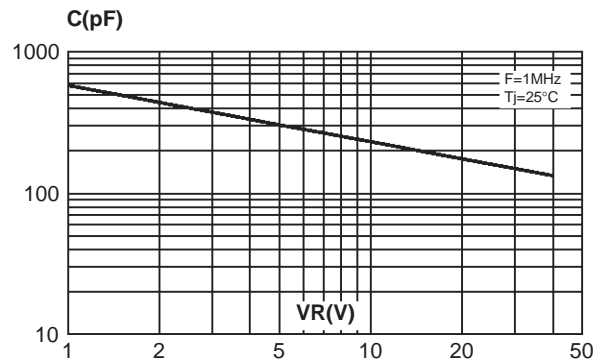
**Fig. 4-2:** Relative variation of thermal impedance junction to case versus pulse duration. (ISOWATT220AB).



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

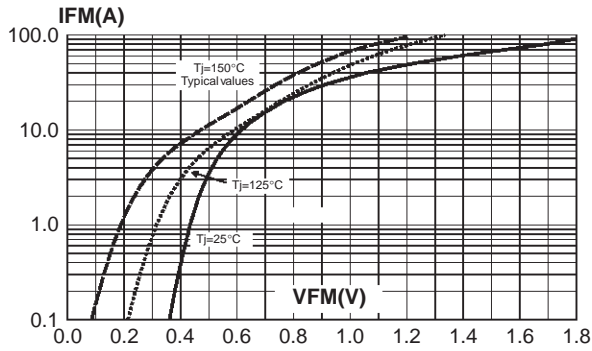


**Fig. 6:** Junction capacitance versus reverse voltage applied (typical values, per diode).

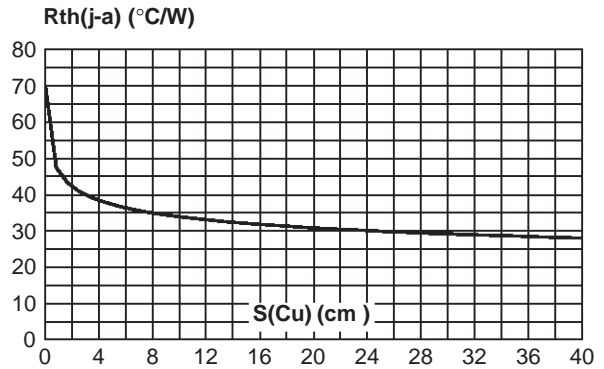


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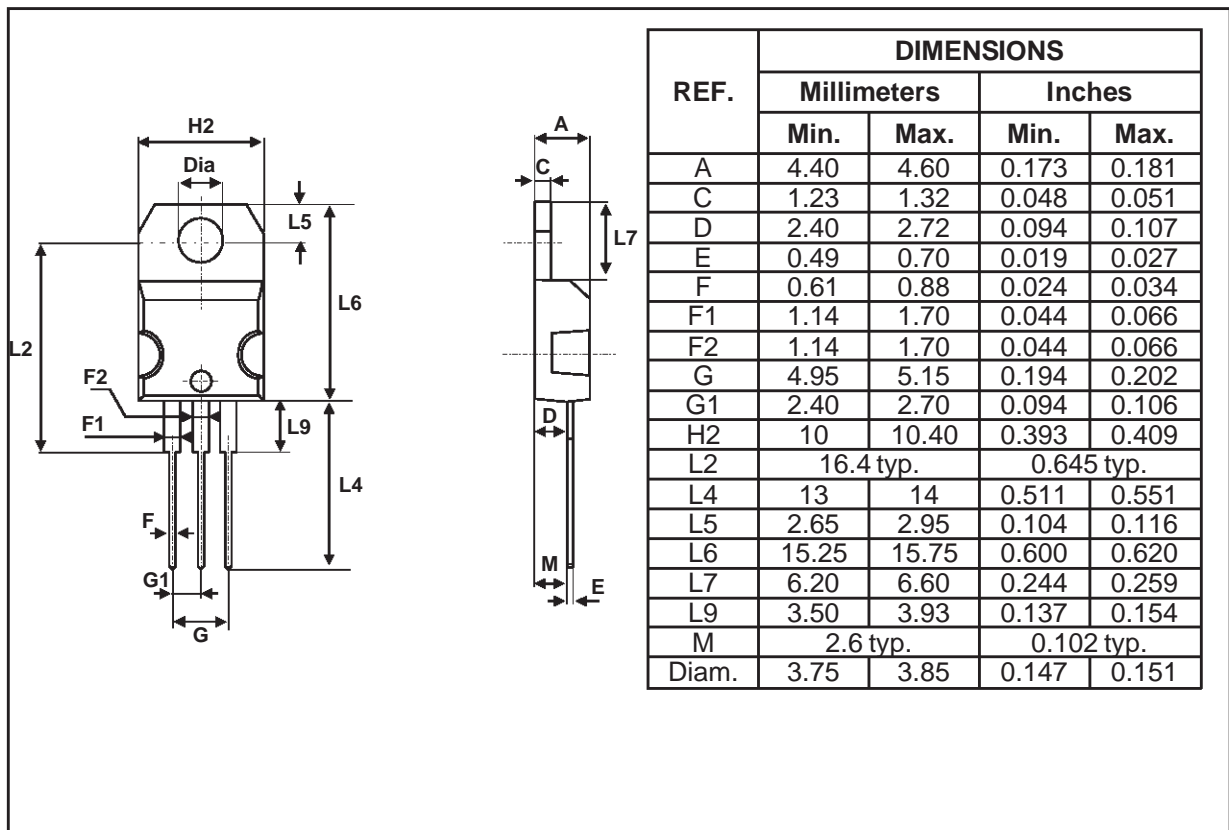
**Fig. 7:** Forward voltage drop versus forward current (maximum values, per diode).



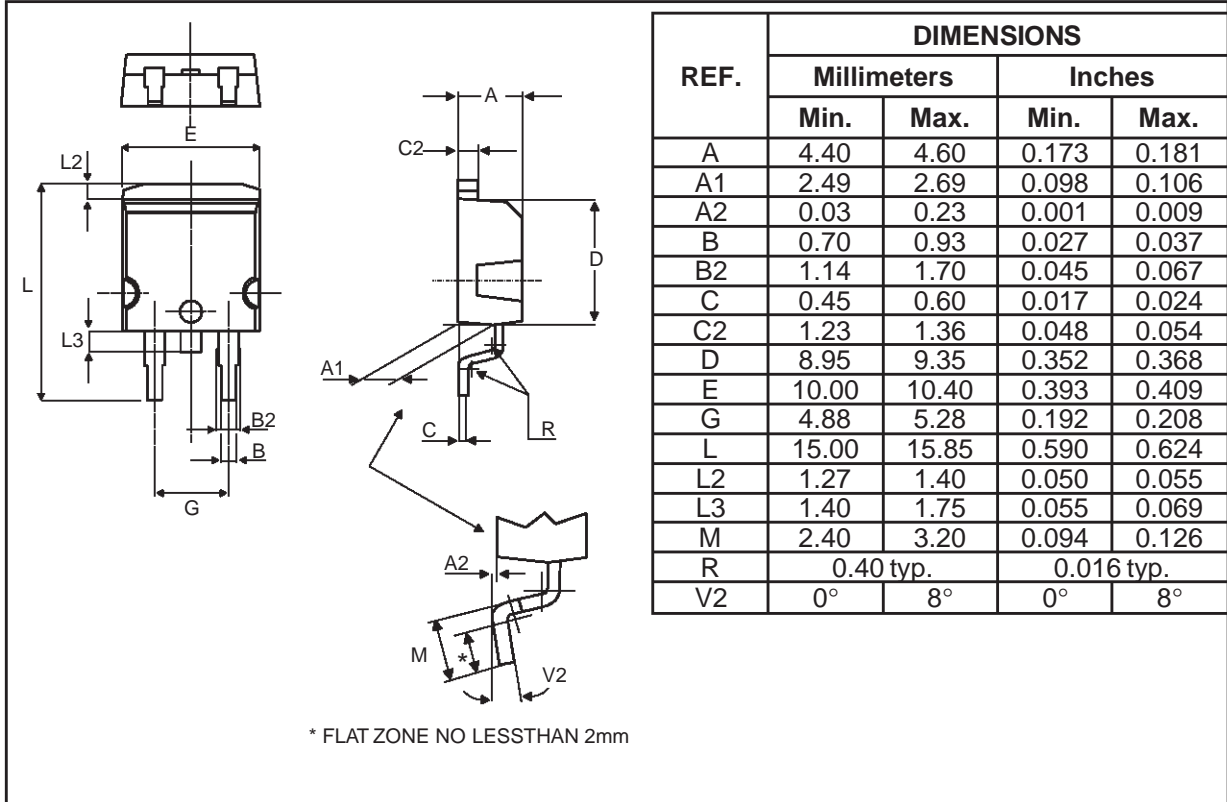
**Fig. 8:** Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35µm)(D<sup>2</sup>PAK).



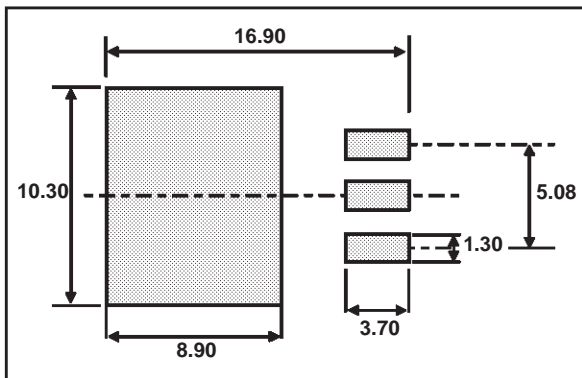
## PACKAGE MECHANICAL DATA TO-220AB



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

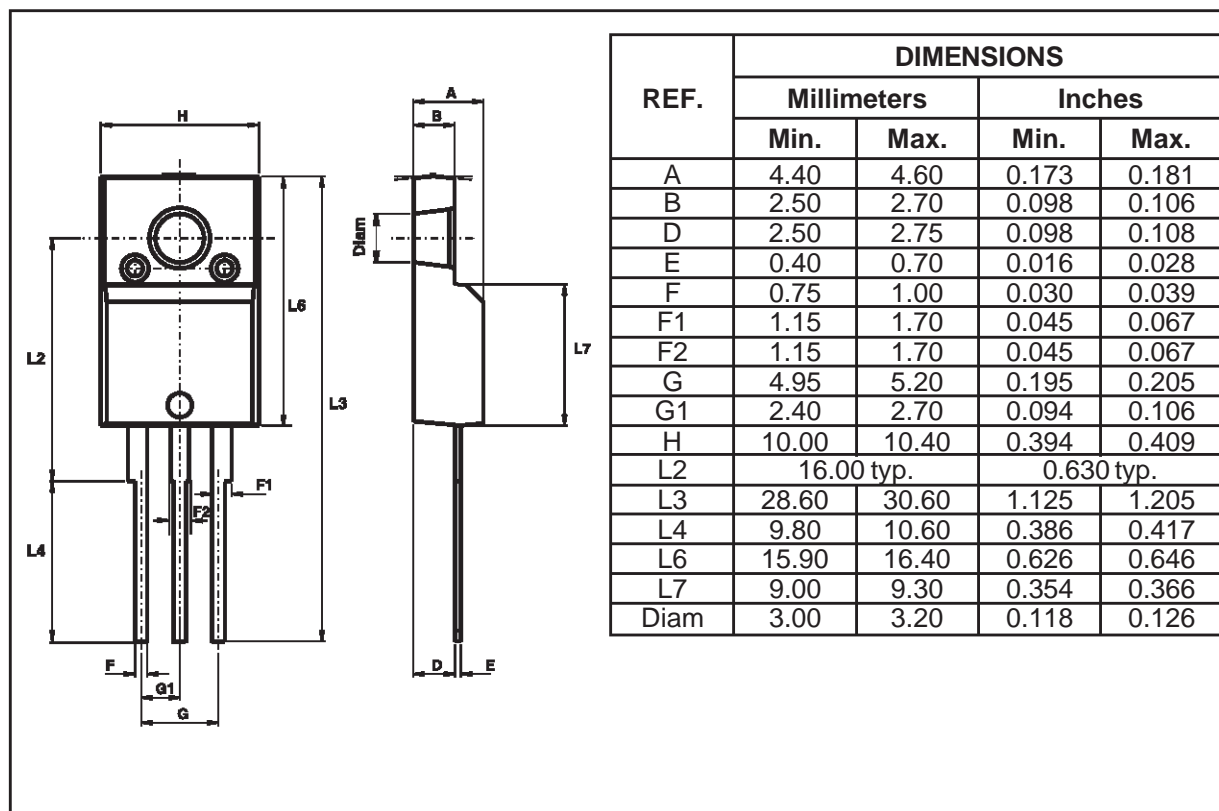


**FOOT PRINT DIMENSIONS (in millimeters)**



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### PACKAGE MECHANICAL DATA ISOWATT220AB



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS10L40CT	STPS10L40CT	TO-220AB	2.23g	50	Tube
STPS10L40CG	STPS10L40CG	D <sup>2</sup> PAK	1.48g	50	Tube
STPS10L40CG-TR	STPS10L40CG	D <sup>2</sup> PAK	1.48g	1000	Tape & reel
STPS10L40CF	STPS10L40CF	ISOWATT220AB	2.08g	50	Tube

- Cooling method : by conduction (C)
- Recommended torque value : 0.55 N.m.
- Maximum torque value : 0.70 N.m.
- Epoxy meets UL94,V0

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