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STPS16L40CT

LOW DROP POWER SCHOTTKY RECTIFIER

MAIN PRODUCTS CHARACTERISTICS

I_{F(AV)}	2 x 8 A
V_{RRM}	40 V
T_{j (max)}	150 °C
V_{F (max)}	0.45 V

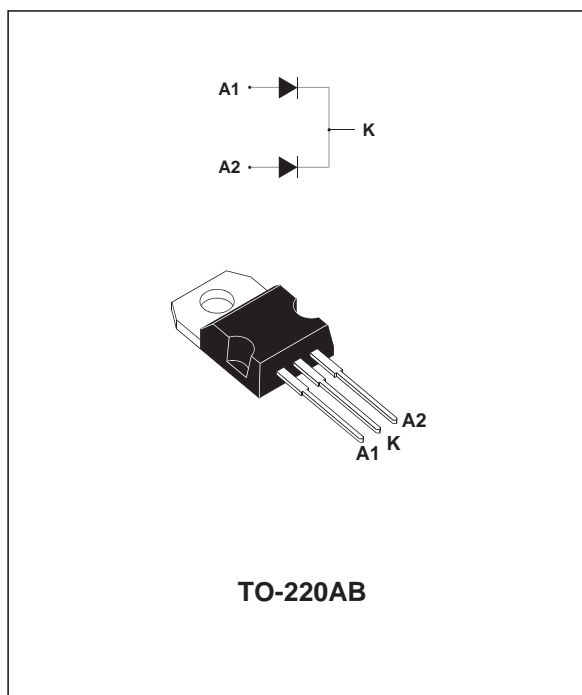
FEATURES AND BENEFITS

- LOW FORWARD VOLTAGE DROP FOR LESS POWER DISSIPATION
- NEGLIGIBLE SWITCHING LOSSES ALLOWING HIGH FREQUENCY OPERATION
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

Dual center tap Schottky barrier rectifier designed for high frequency Switched Mode Power Supplies and high frequency DC to DC converters.

Packaged in TO-220AB this device is intended for use in low voltage, high frequency converters, 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		30	A	
I _{F(AV)}	Average forward current	T _c = 140°C	Per diode	8	A
		δ = 0.5	Per device	16	A
I _{FSM}	Surge non repetitive forward current	tp = 10 ms sinusoidal	180	A	
I _{R(RM)}	Repetitive peak reverse current	tp = 2 μs square F=1kHz	1	A	
I _{R(SM)}	Non repetitive peak reverse current	tp = 100 μs square	2	A	
P _{ARM}	Repetitive peak avalanche power	tp = 1 μs T _j = 25°C	4000	W	
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/μs	

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

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THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
R _{th(j-c)}	Junction to case	Per diode	2.2	°C/W
		Total	1.3	
R _{th(c)}		Coupling	0.3	

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°C	V _R = V _{RRM}			0.7	mA
		T _j = 100°C			15	35	mA
V _F *	Forward voltage drop	T _j = 25°C	I _F = 8 A			0.5	V
		T _j = 125°C	I _F = 8 A		0.39	0.45	
		T _j = 25°C	I _F = 16 A			0.63	
		T _j = 125°C	I _F = 16 A		0.55	0.64	

Pulse test : * tp = 380 μs, δ < 2%

To evaluate the conduction losses use the following equation :

$$P = 0.26 \times I_{F(AV)} + 0.024 I_{F(RMS)}^2$$

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

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

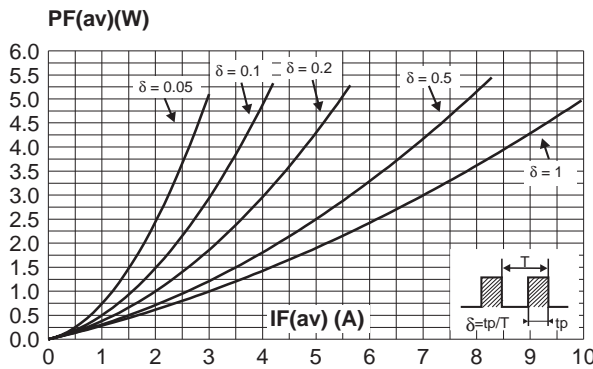


Fig. 3: Normalized avalanche power derating versus pulse duration.

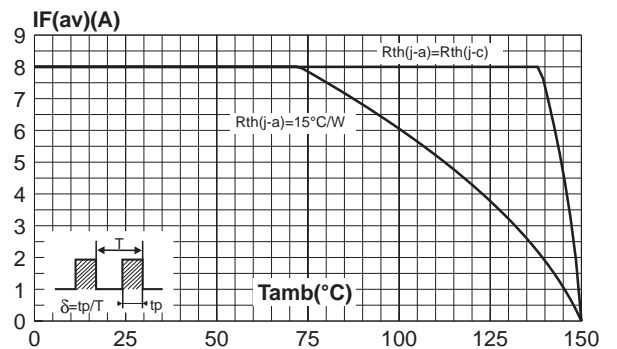
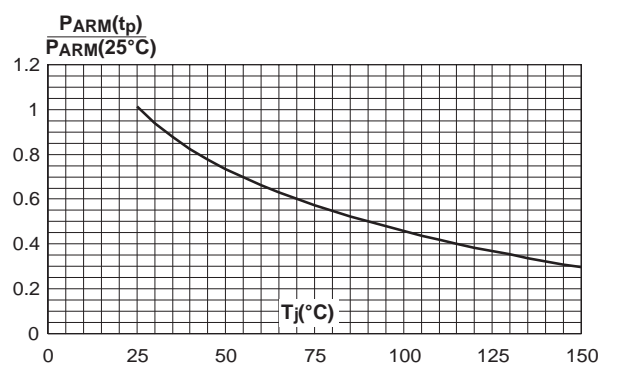
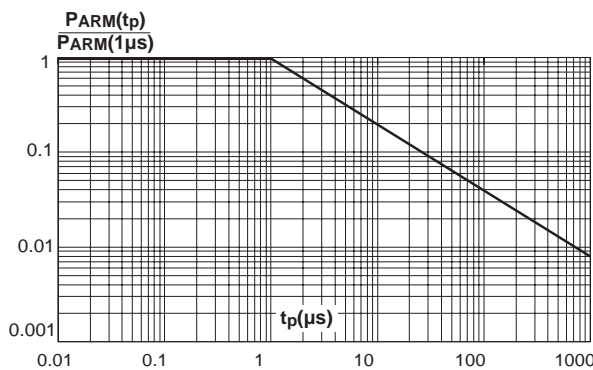


Fig. 4: Normalized avalanche power derating versus junction temperature.



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Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values) (per diode).

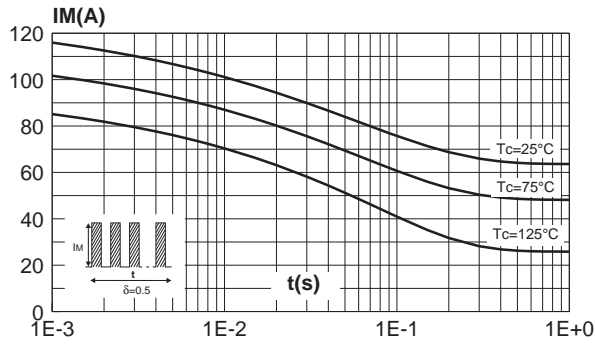


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

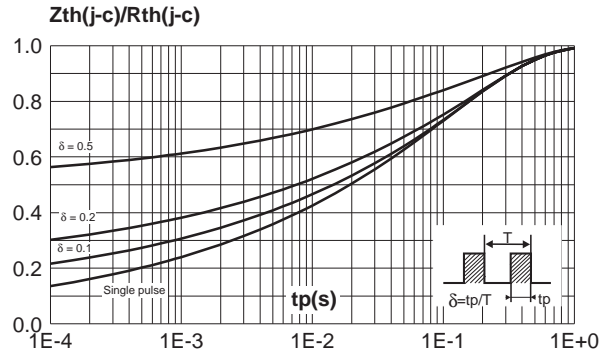


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values) (per diode).

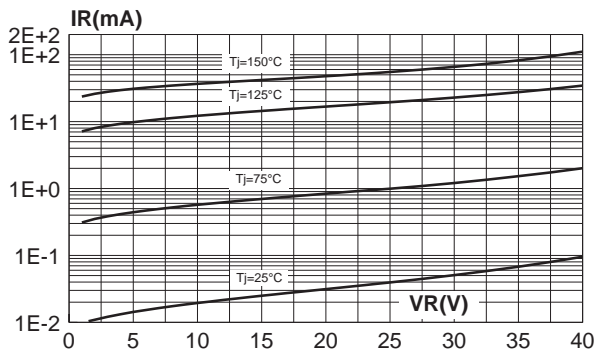


Fig. 8: Junction capacitance versus reverse voltage applied (typical values) (per diode).

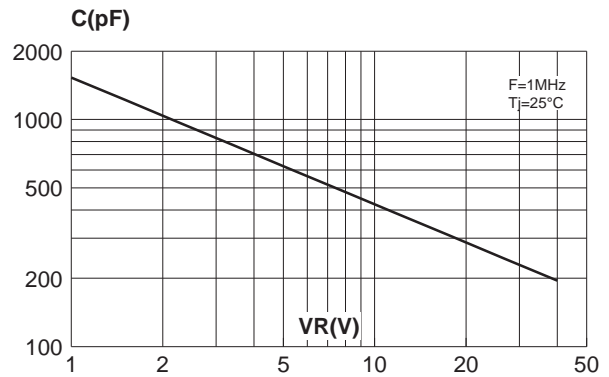
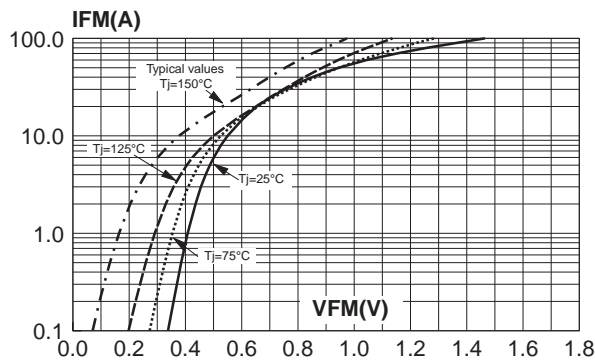


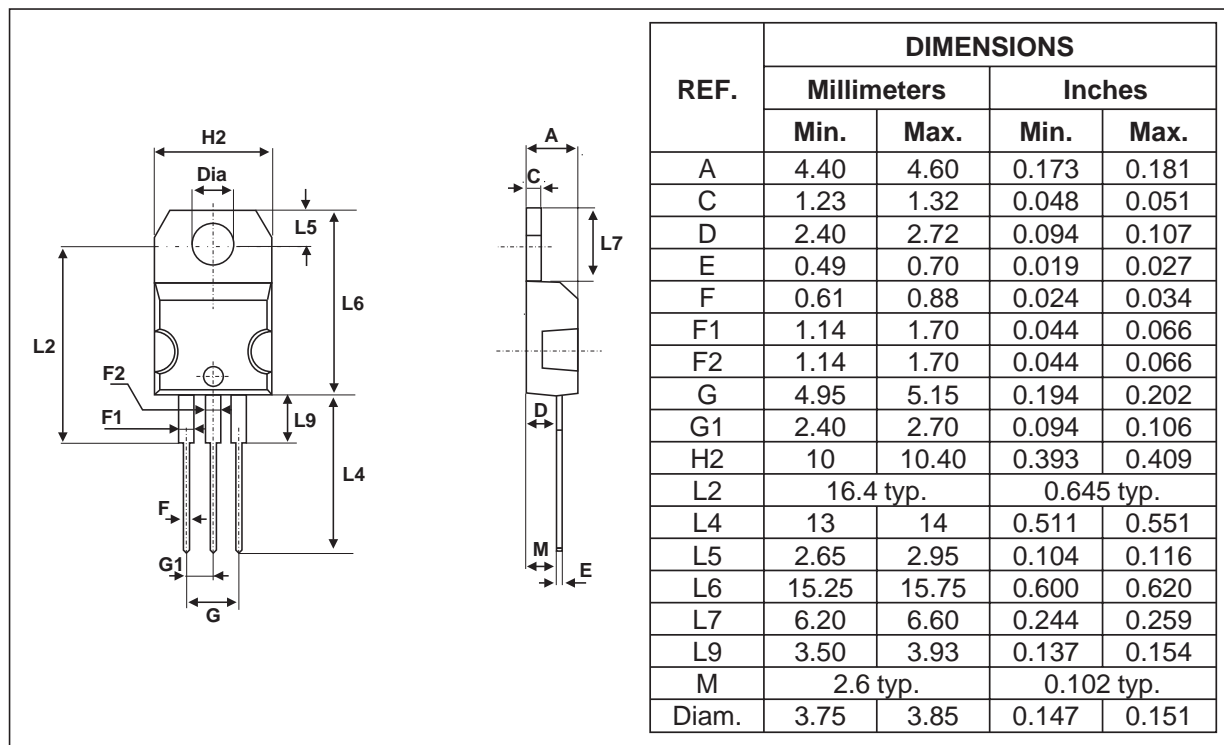
Fig. 9: Forward voltage drop versus forward current (maximum values) (per diode).



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PACKAGE MECHANICAL DATA

TO-220AB



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS16L40CT	STPS16L40CT	TO-220AB	2g	50	Tube

- EPOXY MEETS UL94,V0
- COOLING METHOD : C
- RECOMMENDED TORQUE VALUE : 0.55 M.N
- MAXIMUM TORQUE VALUE : 0.70 M.N

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