

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

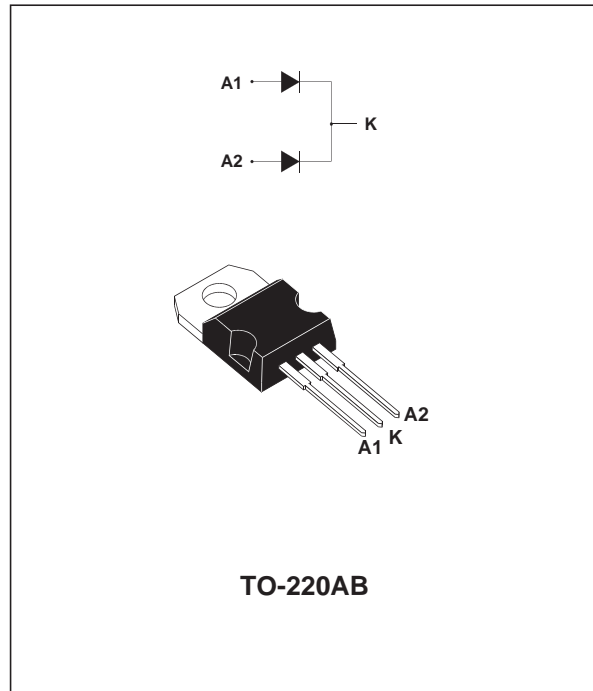
FEATURES AND BENEFITS

- 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	$T_c = 140^\circ\text{C}$	Per diode	8	A
		$\delta = 0.5$	Per device	16	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ sinusoidal	180	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	
P_{ARM}	Repetitive peak avalanche power	$t_p = 1 \mu\text{s}$ $T_j = 25^\circ\text{C}$	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

STPS16L40CT

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	2.2	$^{\circ}\text{C}/\text{W}$
		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	$T_j = 25^{\circ}\text{C}$	$V_R = V_{RRM}$			0.7	mA
		$T_j = 100^{\circ}\text{C}$			15	35	mA
V_F^*	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 8\text{ A}$			0.5	V
		$T_j = 125^{\circ}\text{C}$	$I_F = 8\text{ A}$		0.39	0.45	
		$T_j = 25^{\circ}\text{C}$	$I_F = 16\text{ A}$			0.63	
		$T_j = 125^{\circ}\text{C}$	$I_F = 16\text{ A}$		0.55	0.64	

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

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).

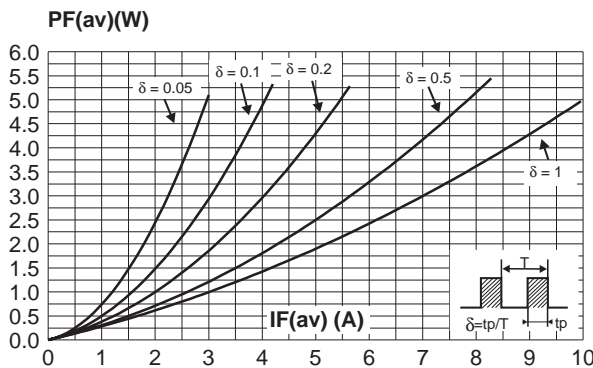


Fig. 3: Normalized avalanche power derating versus pulse duration.

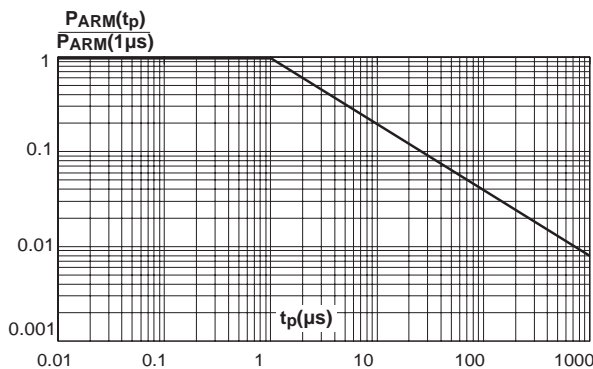


Fig. 2: Average current versus ambient temperature ($\delta = 0.5$) (per diode).

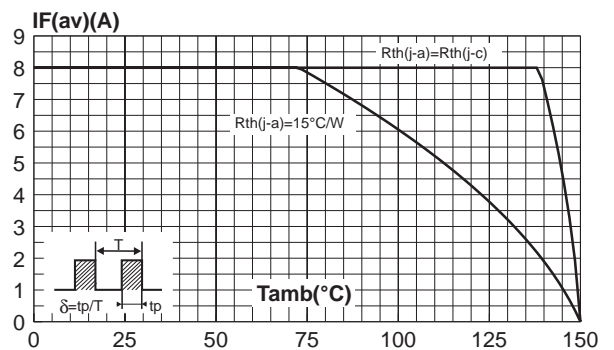


Fig. 4: Normalized avalanche power derating versus junction temperature.

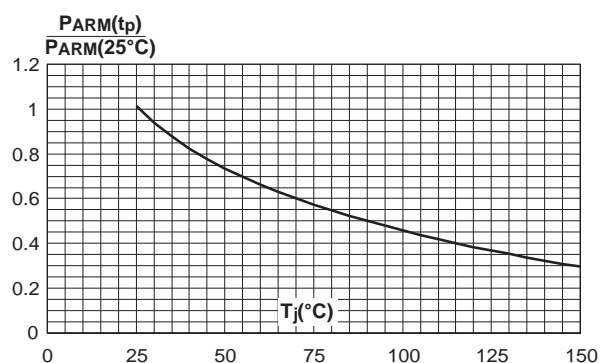


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values) (per diode).

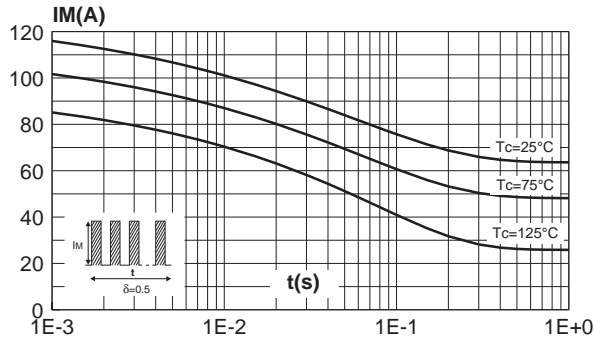


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

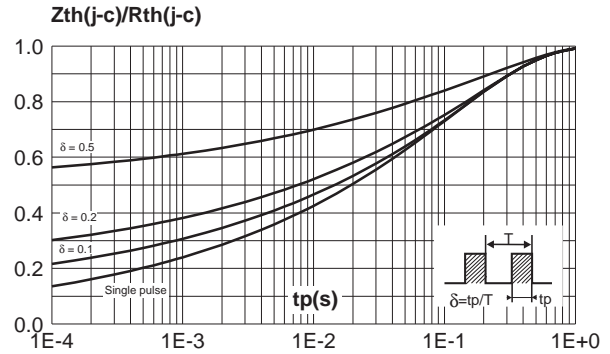


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values) (per diode).

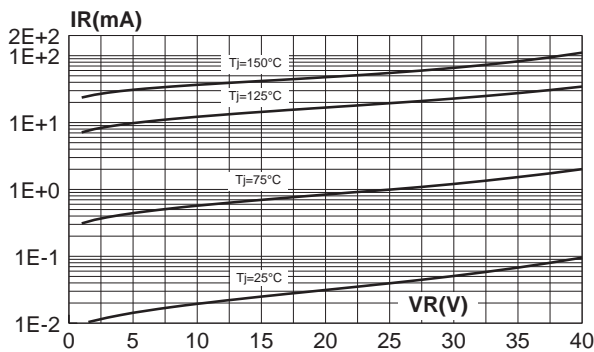


Fig. 8: Junction capacitance versus reverse voltage applied (typical values) (per diode).

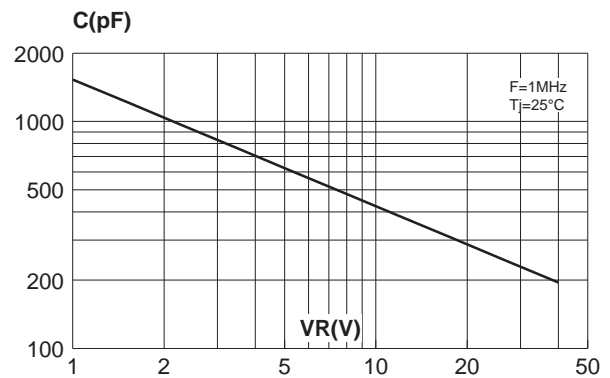
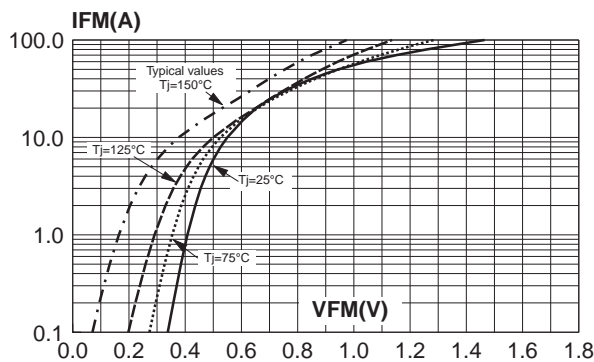


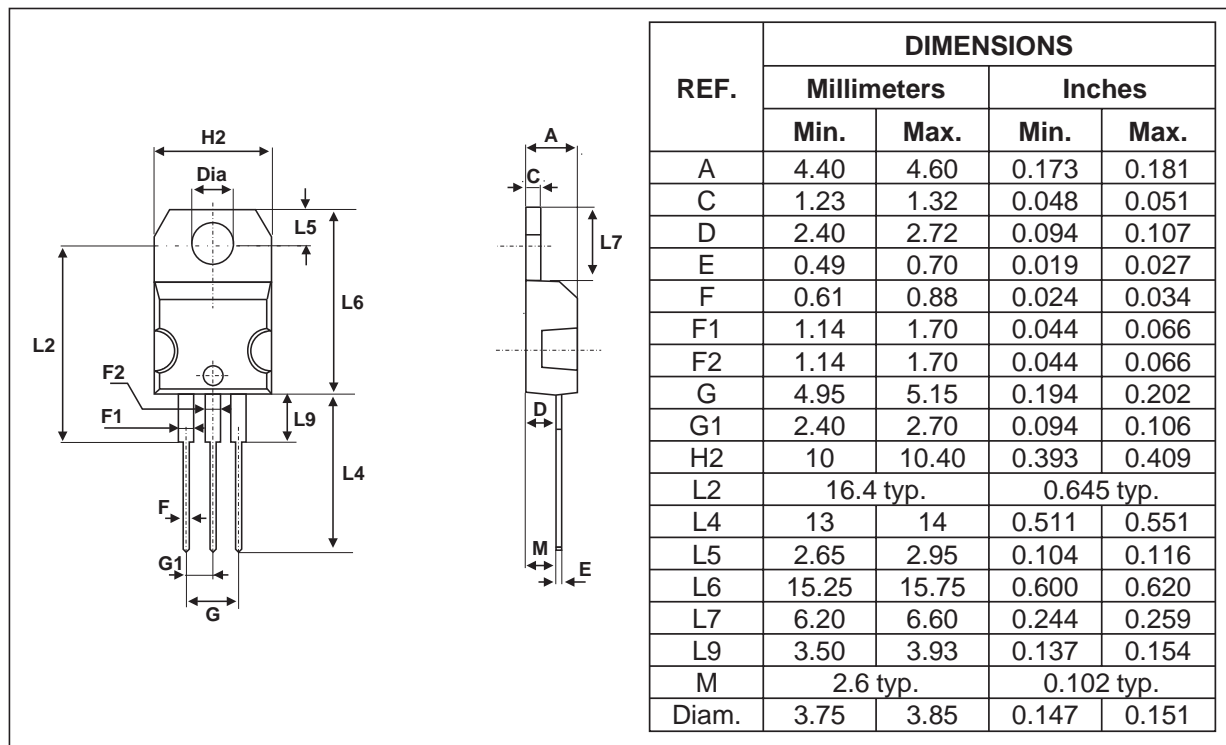
Fig. 9: Forward voltage drop versus forward current (maximum values) (per diode).



STPS16L40CT

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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