

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

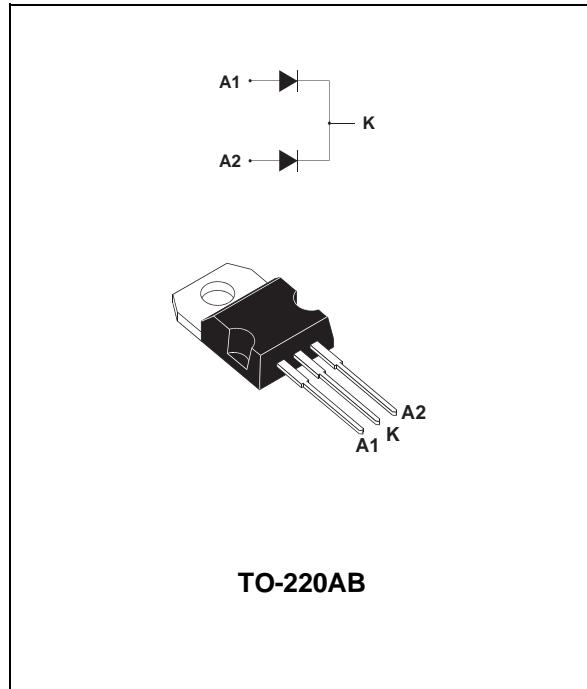
FEATURES AND BENEFITS

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

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 δ = 0.5	Per diode	8	A
			Per device	16	A
I _{FSM}	Surge non repetitive forward current	tp = 10 ms sinusoidal		180	A
I _{IRRM}	Repetitive peak reverse current	tp=2 μs square F=1kHz		1	A
I _{IRSM}	Non repetitive peak reverse current	tp = 100 μs 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/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	2.2 1.3	$^{\circ}\text{C}/\text{W}$
$R_{th(c)}$	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 :

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

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

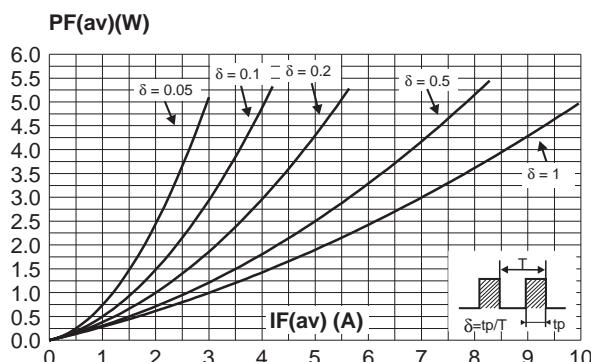


Fig. 2: Average current versus ambient temperature ($\delta = 0.5$) (per diode).

