STPS16L40CT

LOW DROP POWER SCHOTTKY RECTIFIER

MAIN PRODUCTS CHARACTERISTICS

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

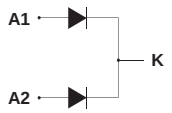
FEATURES AND BENEFITS

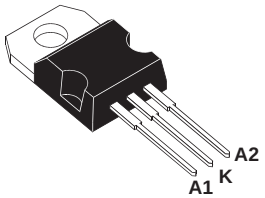
- LOW FORWARD VOLTAGE DROP FOR LESS POWER DISSIPATION
- NEGLIGIBLE SWITCHING LOSSES ALLOWING HIGH FREQUENCY OPERATION
- AVALANCHE RATED

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.





TO-220AB

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	Tc = 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_{RRM}	Repetitive peak reverse current	tp=2 µs square F=1kHz		1	A
I_{RSM}	Non repetitive peak reverse current	tp = 100 µs square		2	A
T_{stg}	Storage temperature range			- 65 to + 150	°C
Tj	Maximum operating junction temperature *			150	°C
dV/dt	Critical rate of rise of reverse voltage			10000	V/µs

$* : \frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$ thermal runaway condition for a diode on its own heatsink

THERMAL RESISTANCES

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

When the diodes 1 and 2 are used simultaneously :
Δ Tj(diode 1) = P(diode1) x $R_{th(j-c)}$(Per diode) + P(diode 2) x $R_{th(c)}$

STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	Tj = 25°C	$V_R = V_{RRM}$			0.7	mA
		Tj = 100°C			15	35	mA
V_F *	Forward voltage drop	Tj = 25°C	I_F = 8 A			0.5	V
		Tj = 125°C	I_F = 8 A		0.39	0.45	
		Tj = 25°C	I_F = 16 A			0.63	
		Tj = 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 :
$P = 0.26 \times I_{F(AV)} + 0.024\ I_{F^2(RMS)}$

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

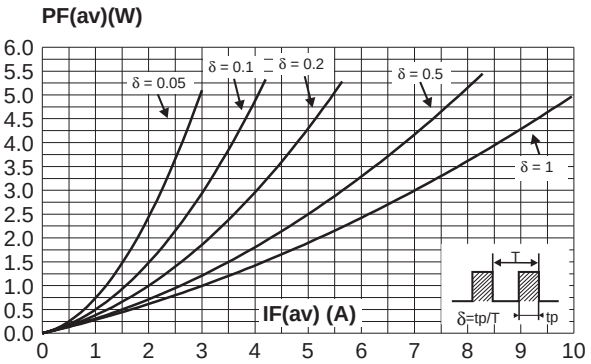


Fig. 2: Average current versus ambient temperature (δ = 0.5) (per diode).