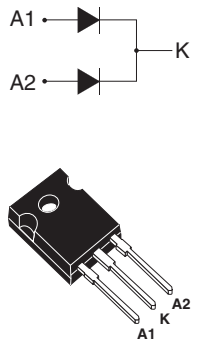
STPS80170C

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

Table 1: Main Product Characteristics

$I_{F(AV)}$	2 x 40 A
V_{RRM}	170 V
T_j	175 °C
V_F(max)	0.74 V



TO-247
STPS80170CW

FEATURES AND BENEFITS

- High junction temperature capability
- Low leakage current
- Good trade off between leakage current and forward voltage drop
- Low thermal resistance
- High frequency operation
- Avalanche specification

DESCRIPTION

Dual center tab Schottky rectifier suited for High Frequency Switched Mode Power Supplies. Packaged in TO-247, this device is intended for use to enhance the reliability of the application.

Table 2: Order Code

Part Number	Marking
STPS80170CW	STPS80170CW

Table 3: Absolute Ratings (limiting values, per diode)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			170	V
$I_{F(RMS)}$	RMS forward current			80	A
$I_{F(AV)}$	Average forward current	T_c = 150 °C δ = 0.5	Per diode Per device	40 80	A
I_{FSM}	Surge non repetitive forward current	t_p = 10 ms sinusoidal		500	A
P_{ARM}	Repetitive peak avalanche power	t_p = 1 µs T_j = 25 °C		38200	W
T_{stg}	Storage temperature range			-65 to + 175	°C
T_j	Maximum operating junction temperature *			175	°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

Table 4: Thermal Parameters

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode Total	0.7 0.5	°C/W
$R_{th(c)}$		Coupling	0.3	

When the diodes 1 and 2 are used simultaneously:

Δ Tj(diode 1) = P(diode 1) x $R_{th(j-c)}$(Per diode) + P(diode 2) x $R_{th(c)}$

Table 5: Static Electrical Characteristics (per diode)

Symbol	Parameter	Tests conditions		Min.	Typ	Max.	Unit
I_R *	Reverse leakage current	T_j = 25 °C	$V_R = V_{RRM}$			80	µA
		T_j = 125 °C			20	80	mA
V_F **	Forward voltage drop	T_j = 25 °C	I_F = 40 A		0.80	0.84	V
		T_j = 125 °C			0.68	0.74	
		T_j = 25 °C	I_F = 80 A		0.90	0.96	
		T_j = 125 °C			0.80	0.86	

Pulse test: * tp = 5 ms, δ < 2%

** tp = 380 µs, δ < 2%

To evaluate the conduction losses use the following equation: P = 0.62 x $I_{F(AV)}$ + 0.003 $I_F^2{}_{(RMS)}$