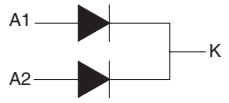
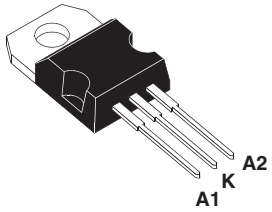
STPS20170CT

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 10 A
V_{RRM}	170 V
T_j	175°C
V_F (max)	0.75 V





TO-220AB
STPS20150CT

FEATURES AND BENEFITS

- HIGH JUNCTION TEMPERATURE CAPABILITY
- GOOD TRADE OFF BETWEEN LEAKAGE CURRENT AND FORWARD VOLTAGE DROP
- LOW LEAKAGE CURRENT
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

Dual center tap schottky rectifier designed for high frequency Switched Mode Power Supplies.

ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			170	V
$I_{F(RMS)}$	RMS forward current			30	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	Tc = 155°C	Per diode	10	A
			Per device	20	
I_{FSM}	Surge non repetitive forward current	tp = 10 ms sinusoidal		180	A
P_{ARM}	Repetitive peak avalanche power	tp = 1µs Tj = 25°C		6700	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

* Thermal runaway condition for a diode on its own heatsink $\delta P_{tot}/\delta T_j < 1/(R_{th(j-a)})$

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 :
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	$V_R = V_{RRM}$			15	µA
		Tj = 125°C				15	mA
V_F **	Forward voltage drop	Tj = 25°C	I_F = 10 A			0.90	V
		Tj = 125°C	I_F = 10 A		0.69	0.75	
		Tj = 25°C	I_F = 20 A			0.99	
		Tj = 125°C	I_F = 20 A		0.79	0.86	

Pulse test : * tp = 5 ms, $\delta < 2\%$
** tp = 380 µs, $\delta < 2\%$

To evaluate the conduction losses use the following equation:
$P = 0.64 \times I_{F(AV)} + 0.011\ I_{F^2(RMS)}$

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

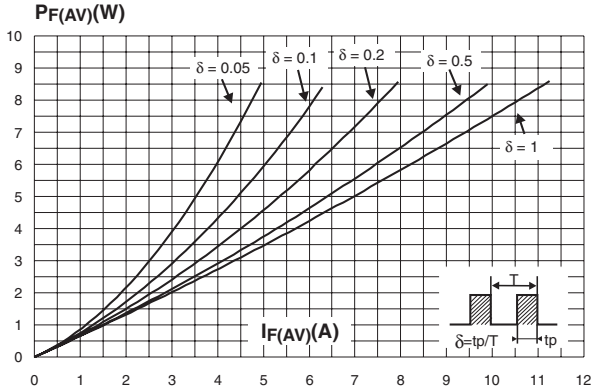


Fig. 2: Average forward current versus ambient temperature (δ = 0.5, per diode).

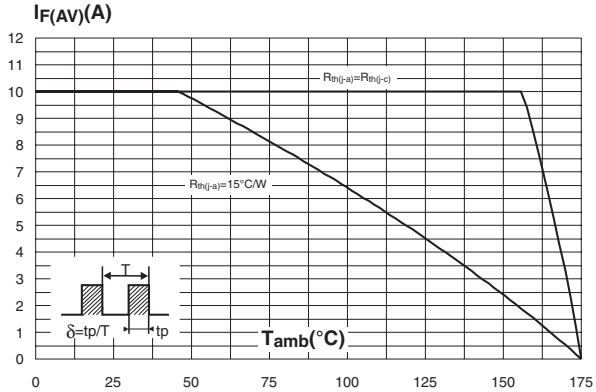


Fig. 3: Normalized avalanche power derating versus pulse duration.

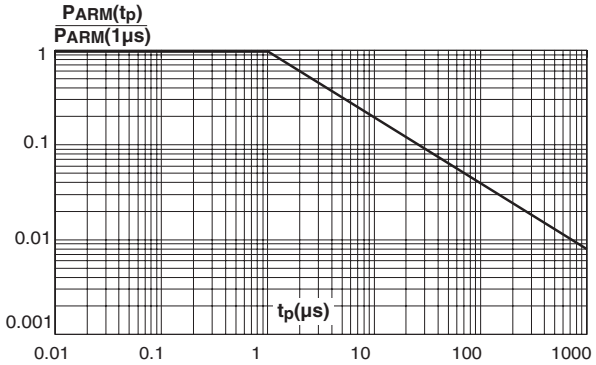


Fig. 4: Normalized avalanche power derating versus junction temperature.

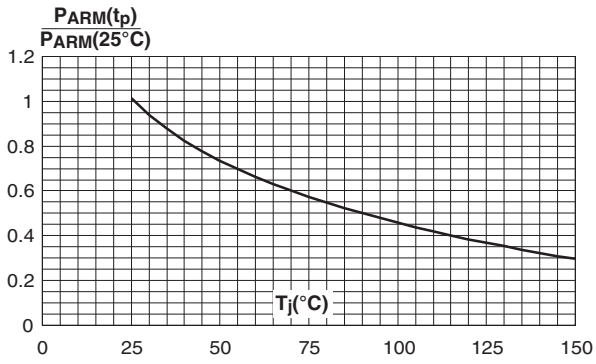


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values, per diode).

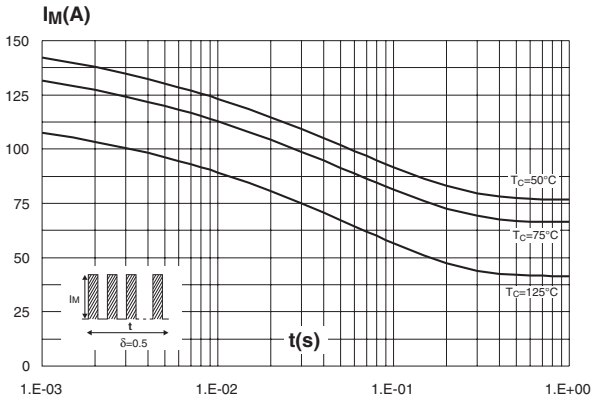


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.