STPS30H60C

Power Schottky rectifier

Features

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

Description

Dual centre tab Schottky rectifier suited for high frequency switch mode power supply.

Packaged in TO-220FPAB, TO-220AB, TO-247, I^2PAK, and D^2PAK, this device is intended to be used in notebook and LCD adaptors and desktop SMPS. In these applications the STPS30H60C provides a good margin between the remaining voltages applied on the diode and the voltage capability of the diode.

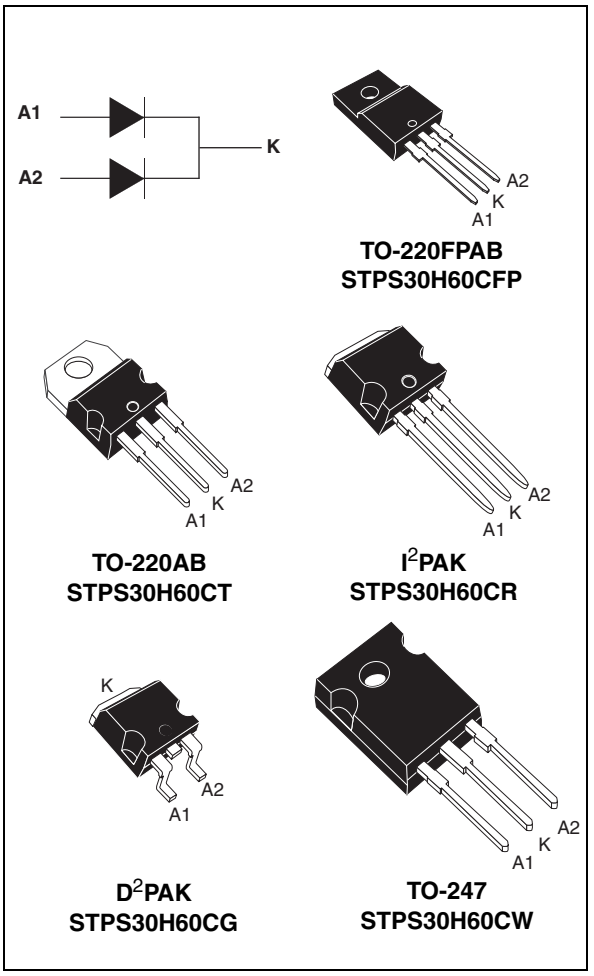


Table 1. Device summary

Symbol	Value
$I_{F(AV)}$	2 X 15 A
V_{RRM}	60 V
T_j	175 °C
$V_{F\ (typ)}$	0.535 V

1 Characteristics

Table 2. Absolute ratings (limiting values per diode)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			60	V
$I_{F(RMS)}$	Forward rms current			30	A
$I_{F(AV)}$	Average forward current, $\delta = 0.5$	TO-220AB $T_c = 155$ °C	Per diode	15	A
			Total package	30	
		TO-220FPAB $T_c = 125$ °C	Per diode	15	A
		TO-220FPAB $T_c = 90$ °C	Total package	30	
I_{FSM}	Surge non repetitive forward current	$t_p = 10$ ms sinusoidal		230	A
P_{ARM}	Releative peak avalanche power	$T_j = 25$ °C	$t_p = 1$ µs	10 200	W
T_{stg}	Storage temperature range			-65 to + 175	°C
T_j	Maximum operating junction temperature(1)			175	°C

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

Table 3. Thermal parameters

Symbol	Parameter			Value	Unit
$R_{th(j-c)}$	Junction to case	TO-220AB, I^2PAK, D^2PAK, TO-247	Per diode	1.5	°C/W
			Total	0.8	
		TO-220FPAB	Per diode	4.7	
			Total	3.95	
$R_{th(c)}$	Coupling	TO-220AB, I^2PAK, D^2PAK, TO-247		0.1	
		TO-220FPAB		3.2	

Table 4. Static electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
I_R(1)	Reverse leakage current	$T_j = 25$ °C	$V_R = V_{RRM}$			60	µA
		$T_j = 125$ °C			8	25	mA
V_F(2)	Forward voltage drop	$T_j = 25$ °C	$I_F = 7.5$ A			550	mV
		$T_j = 125$ °C			435	470	
		$T_j = 25$ °C	$I_F = 15$ A			660	
		$T_j = 125$ °C			535	570	
		$T_j = 25$ °C	$I_F = 30$ A			820	
		$T_j = 125$ °C			635	690	

1. Pulse test: $t_p = 5$ ms, $\delta < 2\%$
2. Pulse test: $t_p = 380$ µs, $\delta < 2\%$

To evaluate the conduction losses use the following equation: $P = 0.45 \times I_{F(AV)} + 0.008 \times I_F^2{}_{(RMS)}$

Figure 1. Conduction losses versus average forward current

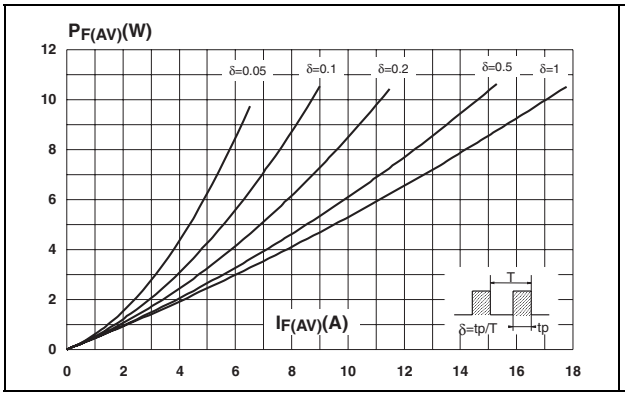


Figure 2. Average forward current versus ambient temperature (δ = 0.5, per diode)

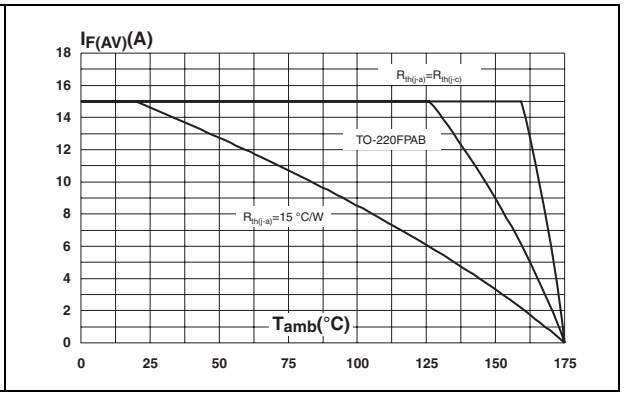


Figure 3. Normalized avalanche power derating versus pulse duration

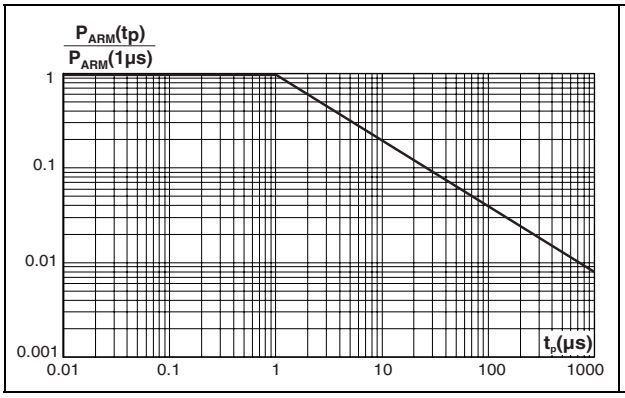


Figure 4. Normalized avalanche power derating versus junction temperature

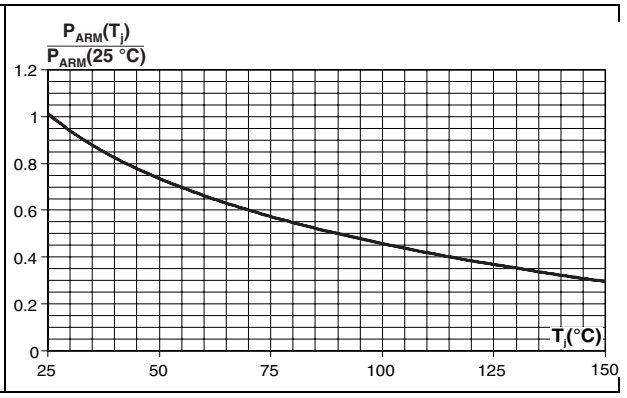


Figure 5. Non repetitive surge peak forward current versus overload duration (maximum values, per diode)

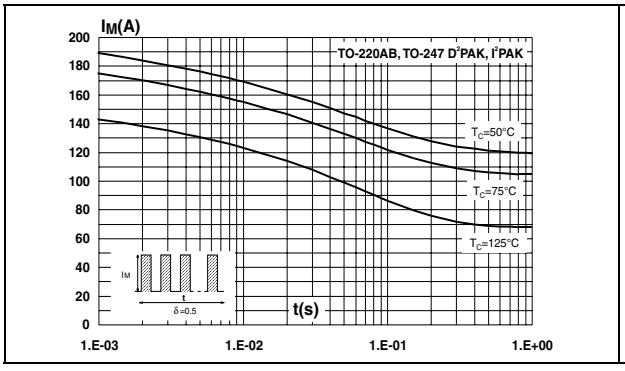
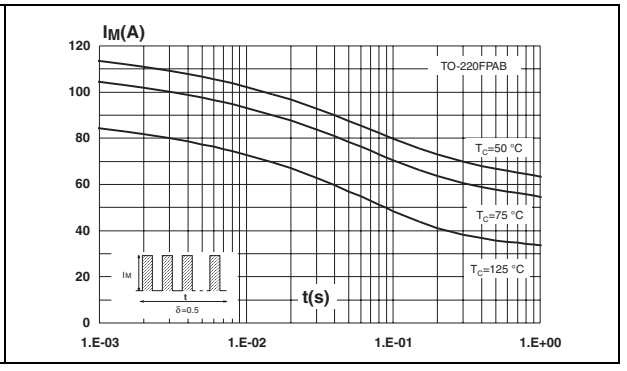


Figure 6. Non repetitive surge peak forward current versus overload duration (maximum values, per diode)



3 Ordering information

Table 10. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
STPS30H60CT	STPS30H60CT	TO-220AB	2.23 g	50	Tube
STPS30H60CR	STPS30H60CR	I^2PAK	1.49 g	50	Tube
STPS30H60CG	STPS30H60CG	D^2PAK	1.48 g	50	Tube
STPS30H60CG-TR	STPS30H60CG-TR	D^2PAK	1.48 g	1000	Tape and reel
STPS30H60CW	STPS30H60W	TO-247	4.46 g	30	Tube
STPS30H60CFP	STPS30H60CFP	TO-220FPAB	2.00 g	50	Tube