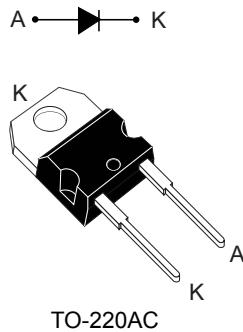


60 V power Schottky rectifier



Features

- Low forward voltage drop
- Negligible switching losses
- Low thermal resistance
- Avalanche capability specified
- ECOPACK®2 compliant

Applications

- Switching diode
- SMPS
- DC/DC converter
- Lighting

Description

This Schottky rectifier is designed for switched mode power supplies (SMPS) and high frequency DC to DC converters.

Packaged in TO-220AC, the **STPS10L60** is optimized for use in DC/DC converters.

Product status link	
STPS10L60	
Product summary	
Symbol	Value
$I_{F(AV)}$	10 A
V_{RRM}	60 V
T_j (max.)	150 °C
V_F (typ.)	0.48 V

1 Characteristics

Table 1. Absolute ratings (limiting values, at 25 °C unless otherwise specified)

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	$T_c = 135 \text{ }^\circ\text{C}, \delta = 0.5$	10	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10 \text{ ms sinusoidal}$	220	A
P_{ARM}	Repetitive peak avalanche power	$t_p = 10 \mu\text{s}, T_j = 125 \text{ }^\circ\text{C}$	417	W
T_{stg}	Storage temperature range		-65 to +175	$^\circ\text{C}$
T_j	Maximum operating junction temperature ⁽¹⁾		150	$^\circ\text{C}$

1. $(dP_{tot}/dT_j) < (1/R_{th(j-a)})$ condition to avoid thermal runaway for a diode on its own heatsink.

Table 2. Thermal resistance parameters

Symbol	Parameter	Max. value	Unit
$R_{th(j-c)}$	Junction to case	1.6	$^\circ\text{C/W}$

Table 3. Static electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
$I_R^{(1)}$	Reverse leakage current	$T_j = 25 \text{ }^\circ\text{C}$	$V_R = V_{RRM}$	-		350	μA
		$T_j = 125 \text{ }^\circ\text{C}$		-	65	95	mA
$V_F^{(2)}$	Forward voltage drop	$T_j = 25 \text{ }^\circ\text{C}$	$I_F = 10 \text{ A}$	-		0.60	V
		$T_j = 125 \text{ }^\circ\text{C}$		-	0.48	0.56	
		$T_j = 25 \text{ }^\circ\text{C}$	$I_F = 20 \text{ A}$	-		0.74	
		$T_j = 125 \text{ }^\circ\text{C}$		-	0.62	0.70	

1. $t_p = 5 \text{ ms}, \delta < 2\%$

2. $t_p = 380 \mu\text{s}, \delta < 2\%$

To evaluate the conduction losses, use the following equation:

$$P = 0.42 \times I_{F(AV)} + 0.014 \times I_{F(RMS)}^2$$

For more information, please refer to the following application notes related to the power losses :

- AN604: Calculation of conduction losses in a power rectifier
- AN4021: Calculation of reverse losses on a power diode

1.1 Characteristics (curves)

Figure 1. Average forward power dissipation versus average forward current

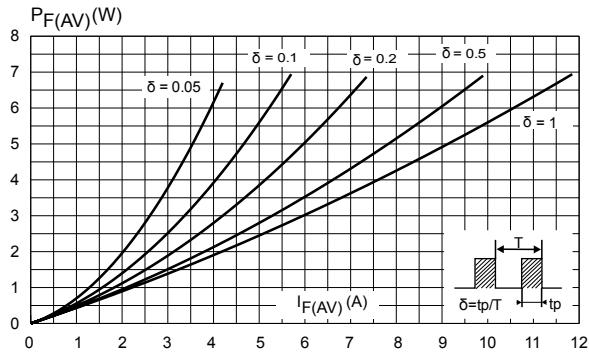


Figure 2. Average forward current versus ambient temperature ($\delta = 0.5$)

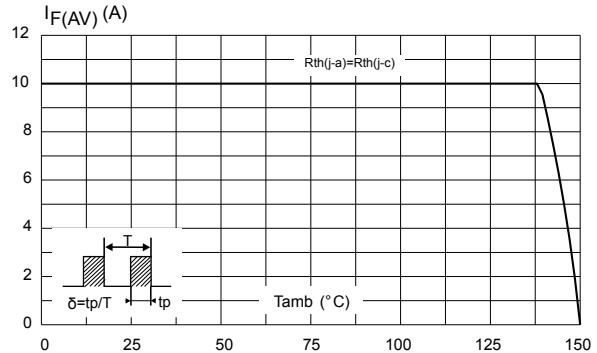


Figure 3. Normalized avalanche power derating versus pulse duration ($T_j = 125$ °C)

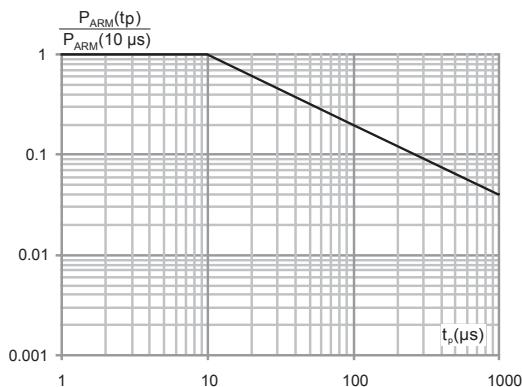


Figure 4. Relative variation of thermal impedance junction to case versus pulse duration

