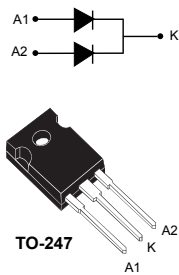



## Automotive 100 V low drop power Schottky rectifier



### Features

- AEC-Q101 qualified 
- PPAP capable
- Negligible switching losses
- High junction temperature capability
- Low leakage current
- Good trade-off between leakage current and forward voltage drop
- Avalanche capability specified
- Low thermal resistance

### Application

- DC/DC converters
- Freewheeling diodes
- Electrical vehicles (EV) and hybrid electrical vehicles

### Description

The **STPS61H100-Y** is a dual center tap Schottky rectifier designed for high frequency switched mode power supplies such as on board DC/DC converters for automotive applications.

Product status link	
<a href="#">STPS61H100-Y</a>	
Product summary	
$I_{F(AV)}$	2 x 30 A
$V_{RRM}$	100 V
$T_{j(max.)}$	175 °C
$V_{F(typ.)}$	0.63 V

# 1 Characteristics

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

Symbol	Parameter		Value	Unit
$V_{RRM}$	Repetitive peak reverse voltage	$T_j = -40$ to $+175$ °C	100	V
$I_{F(RMS)}$	Forward rms current		80	A
$I_{F(AV)}$	Average forward current, $\delta = 0.5$ square wave	Per diode, $T_c = 160$ °C	30	A
		Per device, $T_c = 160$ °C	60	
$I_{FSM}$	Surge non repetitive forward current	$t_p = 10$ ms sinusoidal	450	A
$P_{ARM}$	Repetitive peak avalanche power	$t_p = 10$ $\mu$ s, $T_j = 125$ °C	1900	W
$T_{stg}$	Storage temperature range		-65 to +175	°C
$T_j$	Operating junction temperature range <sup>(1)</sup>		-40 to +175	°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		Typ. value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	0.38	°C/W
		Per device	0.19	

**Table 3. Static electrical characteristics (per diode)**

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
$I_R^{(1)}$	Reverse leakage current	$T_j = 25$ °C	$V_R = V_{RRM}$	-	3	16	$\mu$ A
		$T_j = 125$ °C		-	4	16	mA
$V_F^{(2)}$	Forward voltage drop	$T_j = 25$ °C	$I_F = 30$ A	-	0.76	0.81	V
		$T_j = 125$ °C		-	0.63	0.7	
		$T_j = 25$ °C	$I_F = 60$ A	-	0.87	0.93	
		$T_j = 125$ °C		-	0.75	0.83	

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

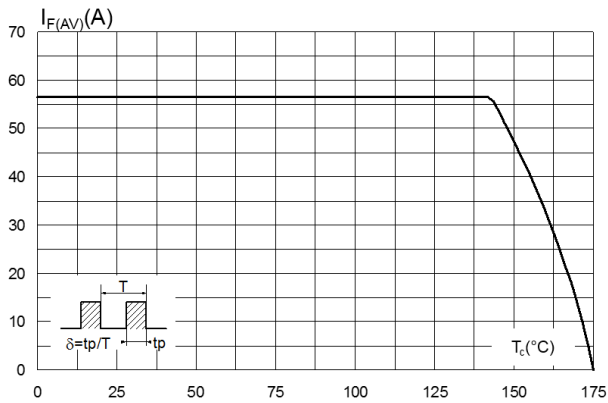
2.  $t_p = 380$   $\mu$ s,  $\delta < 2\%$

To evaluate the conduction losses, use the following equation:

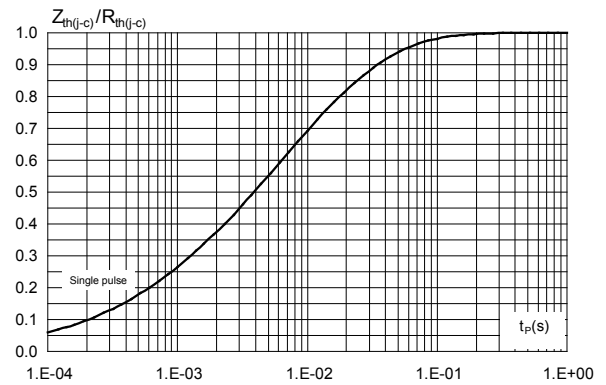
$$P = 0.57 \times I_{F(AV)} + 0.0043 \times I_{F(RMS)}^2$$

## 1.1 Characteristics (curves)

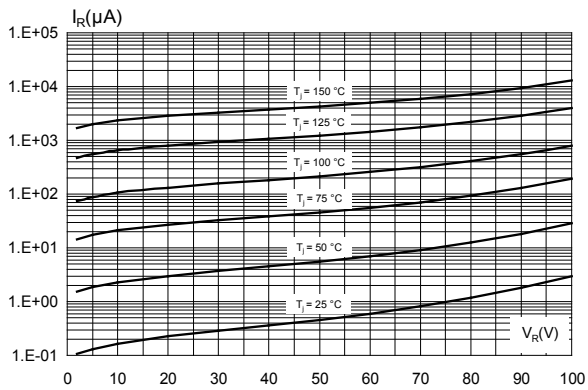
**Figure 1. Average forward current versus case temperature ( $\delta = 0.5$ , per diode)**



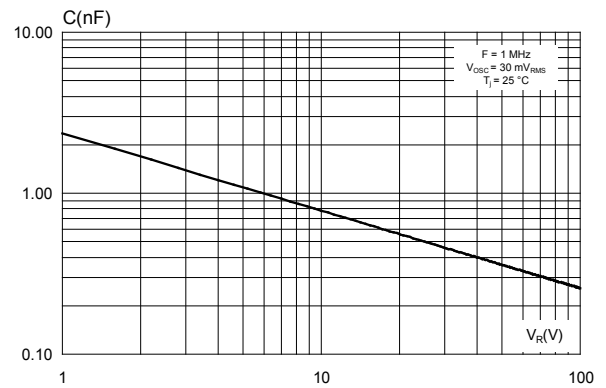
**Figure 2. Relative variation of thermal impedance junction to case versus pulse duration**



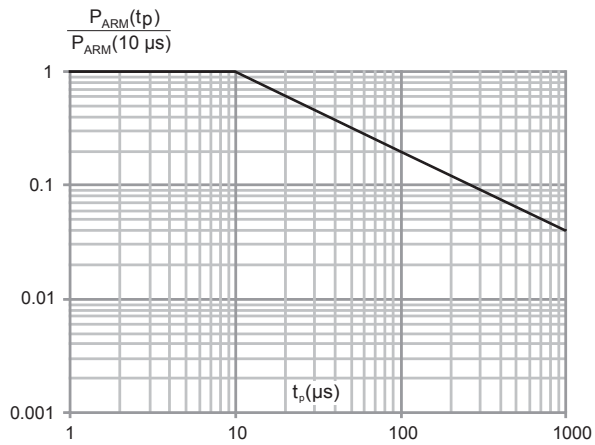
**Figure 3. Reverse leakage current versus reverse voltage applied (typical values, per diode)**



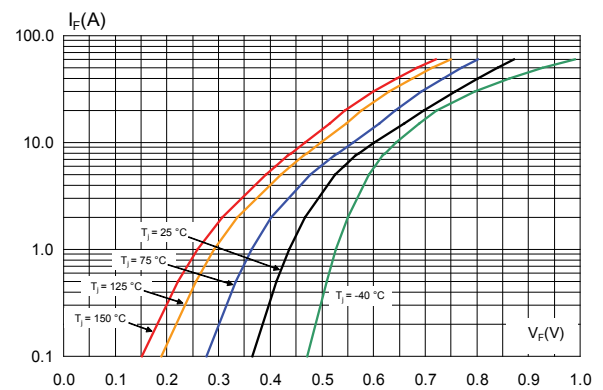
**Figure 4. Junction capacitance versus reverse voltage applied (typical values, per diode)**



**Figure 5. Normalized avalanche power derating versus pulse duration ( $T_j = 125\text{ °C}$ )**



**Figure 6. Forward voltage drop versus forward current (typical values, per diode)**



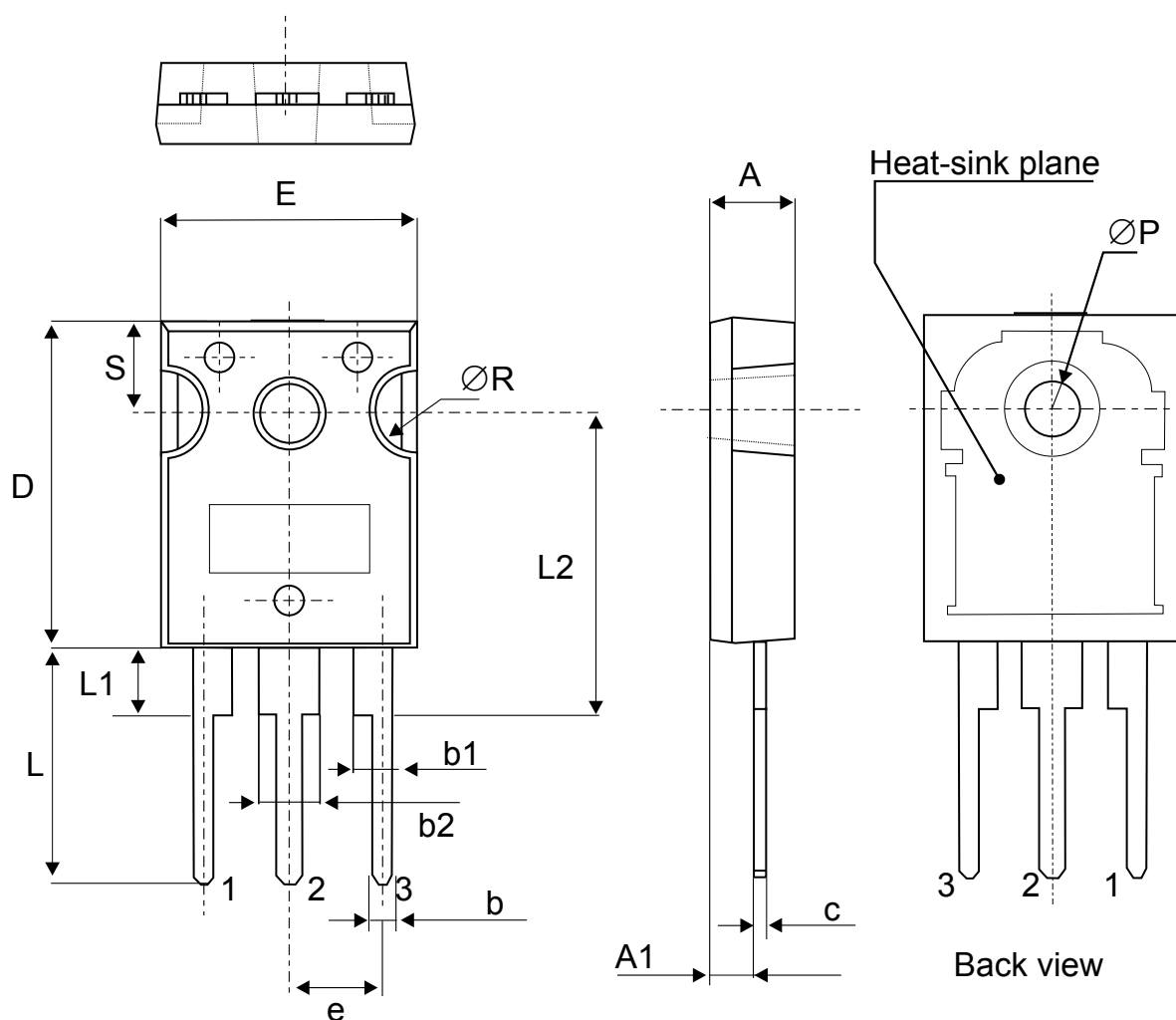
## 2 Package information

In order to meet environmental requirements, ST offers these devices in different grades of **ECOPACK** packages, depending on their level of environmental compliance. ECOPACK specifications, grade definitions and product status are available at: [www.st.com](http://www.st.com). ECOPACK is an ST trademark.

### 2.1 TO-247 package information

- Epoxy meets UL94, V0
- Cooling method: by conduction (C)
- Recommended torque value: 0.8 N·m
- Maximum torque value: 1.0 N·m

**Figure 7. TO-247 package outline**



**Table 4. TO-247 package mechanical data**

Ref.	Dimensions					
	Millimeters			Inches (for reference only)		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.85		5.15	0.191		0.203
A1	2.20		2.60	0.086		0.102
b	1.00		1.40	0.039		0.055
b1	2.00		2.40	0.078		0.094
b2	3.00		3.40	0.118		0.133
c	0.40		0.80	0.015		0.031
D	19.85		20.15	0.781		0.793
E	15.45		15.75	0.608		0.620
e	5.30	5.45	5.60	0.209	0.215	0.220
L	14.20		14.80	0.559		0.582
L1	3.70		4.30	0.145		0.169
L2		18.50			0.728	
ØP	3.55		3.65	0.139		0.143
ØR	4.50		5.50	0.177		0.217
S	5.30	5.50	5.70	0.209	0.216	0.224

### 3 Ordering information

**Table 5. Ordering information**

Order code	Marking	Package	Weight	Base qty.	Delivery mode
STPS61H100CWY	STPS61H100CWY	TO-247	4.4 g	30	Tube

## Revision history

**Table 6. Document revision history**

Date	Version	Changes
11-Jul-2019	1	Initial release.



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