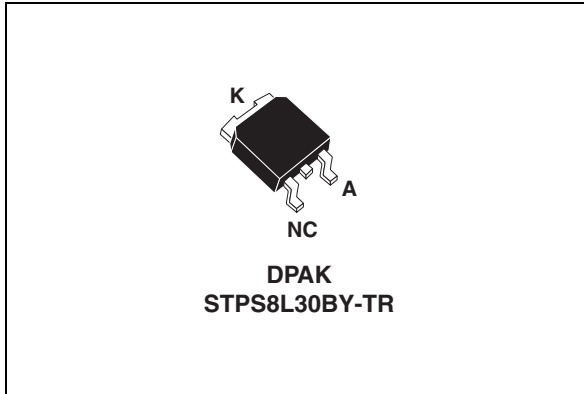


## Automotive low drop power Schottky rectifier

Datasheet – production data


**Table 1. Device summary**

Symbol	Value
$I_{F(AV)}$	8 A
$V_{RRM}$	30 V
$T_j$	150 °C
$V_F (MAX)$	0.40 V

### Features

- Low cost device with low drop forward voltage for less power dissipation and reduced heatsink.
- Optimized conduction/reverse losses trade-off which leads to the highest yield in the application.
- High power surface mount miniature package.
- AEC-Q101 qualified.

### Description

Single Schottky rectifier is suited to switched mode power supplies and high frequency DC to DC converters.

Packaged in DPAK, this device is especially intended for use as a rectifier at the SMPS or DC/DC units polarity protection in automotive applications.

# 1 Characteristics

**Table 2. Absolute ratings (limiting values)**

Symbol	Parameter		Value	Unit
$V_{RRM}$	Repetitive peak reverse voltage		30	V
$I_{F(RMS)}$	Forward rms current		7	A
$I_{F(AV)}$	Average forward current, $\delta = 0.5$	$T_c = 135\text{ }^\circ\text{C}$	8	A
$I_{FSM}$	Surge non repetitive forward current	$t_p = 10\text{ ms}$ sinusoidal	75	A
$I_{RRM}$	Peak repetitive reverse current	$t_p = 2\text{ }\mu\text{s}$ , $F = 1\text{ kHz}$ square	1	A
$I_{RSM}$	Non repetitive peak reverse current	$t_p = 100\text{ }\mu\text{s}$ square	2	A
$T_{stg}$	Storage temperature range		-65 to +150	$^\circ\text{C}$
$T_j$	Operating junction temperature <sup>(1)</sup>		-40 to +150	$^\circ\text{C}$
dV/dt	Critical rate of rise of reverse voltage		10000	V/ $\mu\text{s}$

1.  $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th(j-a)}}$  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	2.5	$^\circ\text{C/W}$

**Table 4. Static electrical characteristics (per diode)**

Symbol	Parameter	Test conditions		Min.	Typ	Max.	Unit
$I_R^{(1)}$	Reverse leakage current	$T_j = 25\text{ }^\circ\text{C}$	$V_R = V_{RRM}$	-	-	1	mA
		$T_j = 100\text{ }^\circ\text{C}$		-	15	40	
$V_F^{(2)}$	Forward voltage drop	$T_j = 25\text{ }^\circ\text{C}$	$I_F = 8\text{ A}$	-	-	0.49	V
		$T_j = 125\text{ }^\circ\text{C}$		-	0.35	0.40	
		$T_j = 25\text{ }^\circ\text{C}$	$I_F = 16\text{ A}$	-	-	0.63	
		$T_j = 125\text{ }^\circ\text{C}$		-	0.448	0.57	

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

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

To evaluate the conduction losses use the following equation:

$$P = 0.23 \times I_{F(AV)} + 0.021 \times I_{F(RMS)}^2$$

Figure 1. Average forward power dissipation vs. average forward current

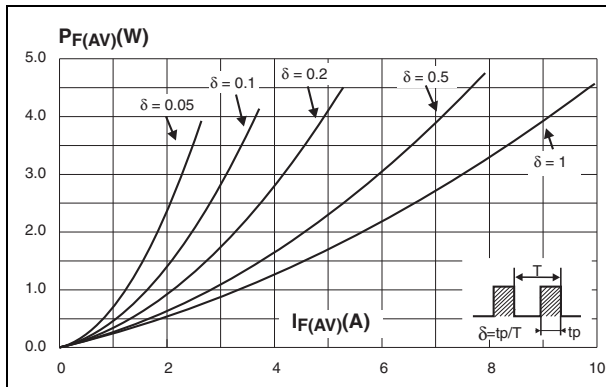


Figure 2. Average forward current versus ambient temperature ( $\delta = 0.5$ )

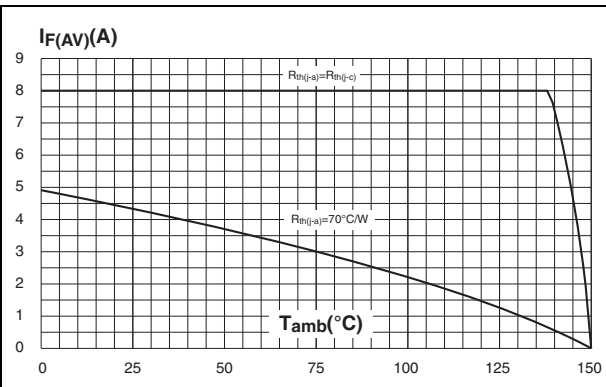


Figure 3. Non repetitive surge peak forward current versus overload duration (maximum values)

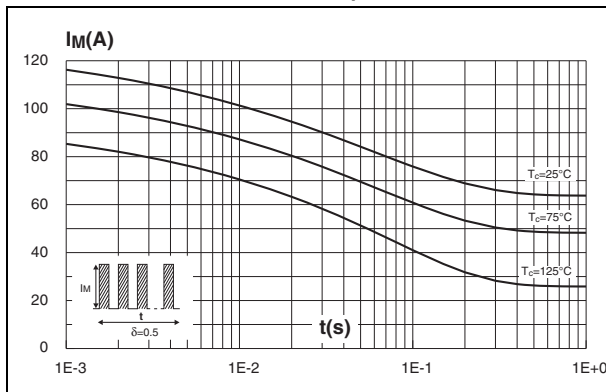


Figure 4. Relative variation of thermal impedance junction to ambient versus pulse duration

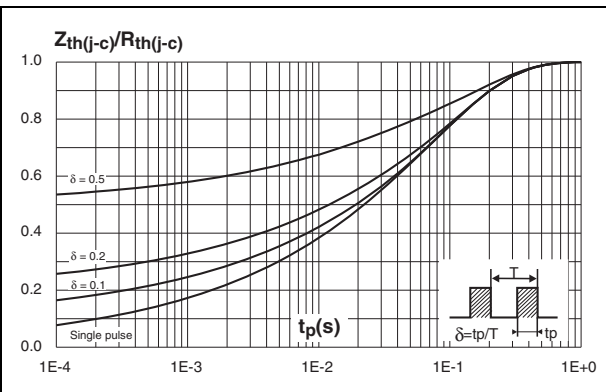


Figure 5. Reverse leakage current vs. reverse voltage applied (typical values)

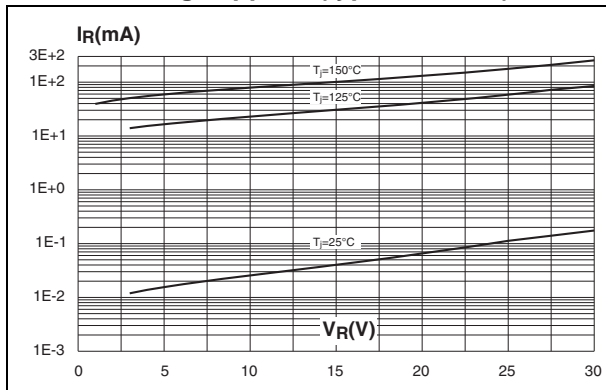


Figure 6. Junction capacitance vs. reverse voltage applied (typical values)

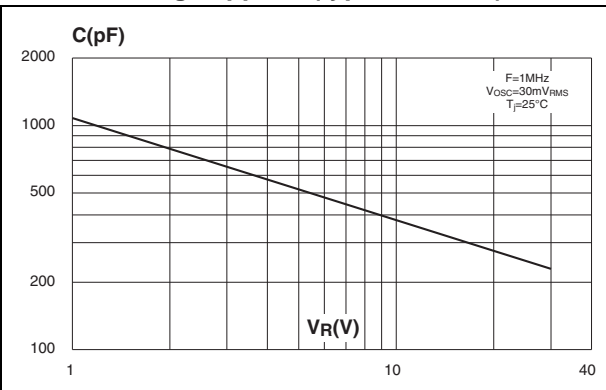


Figure 7. Forward voltage drop vs. forward current

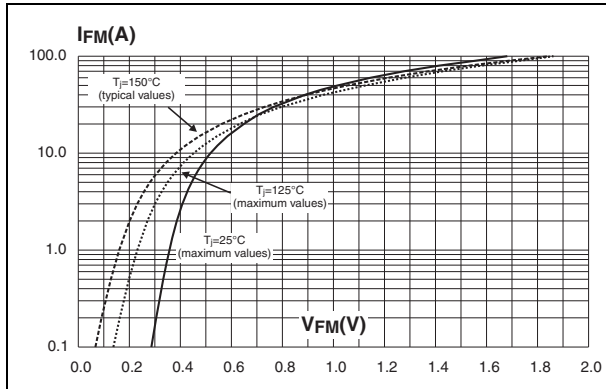
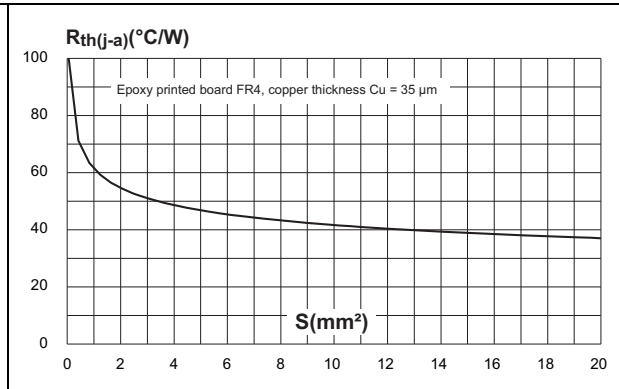


Figure 8. Thermal resistance junction to ambient versus copper surface under tab



## 2 Package information

- Epoxy meets UL94,V0
- Lead-free packages

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

Figure 9. DPAK dimension definitions

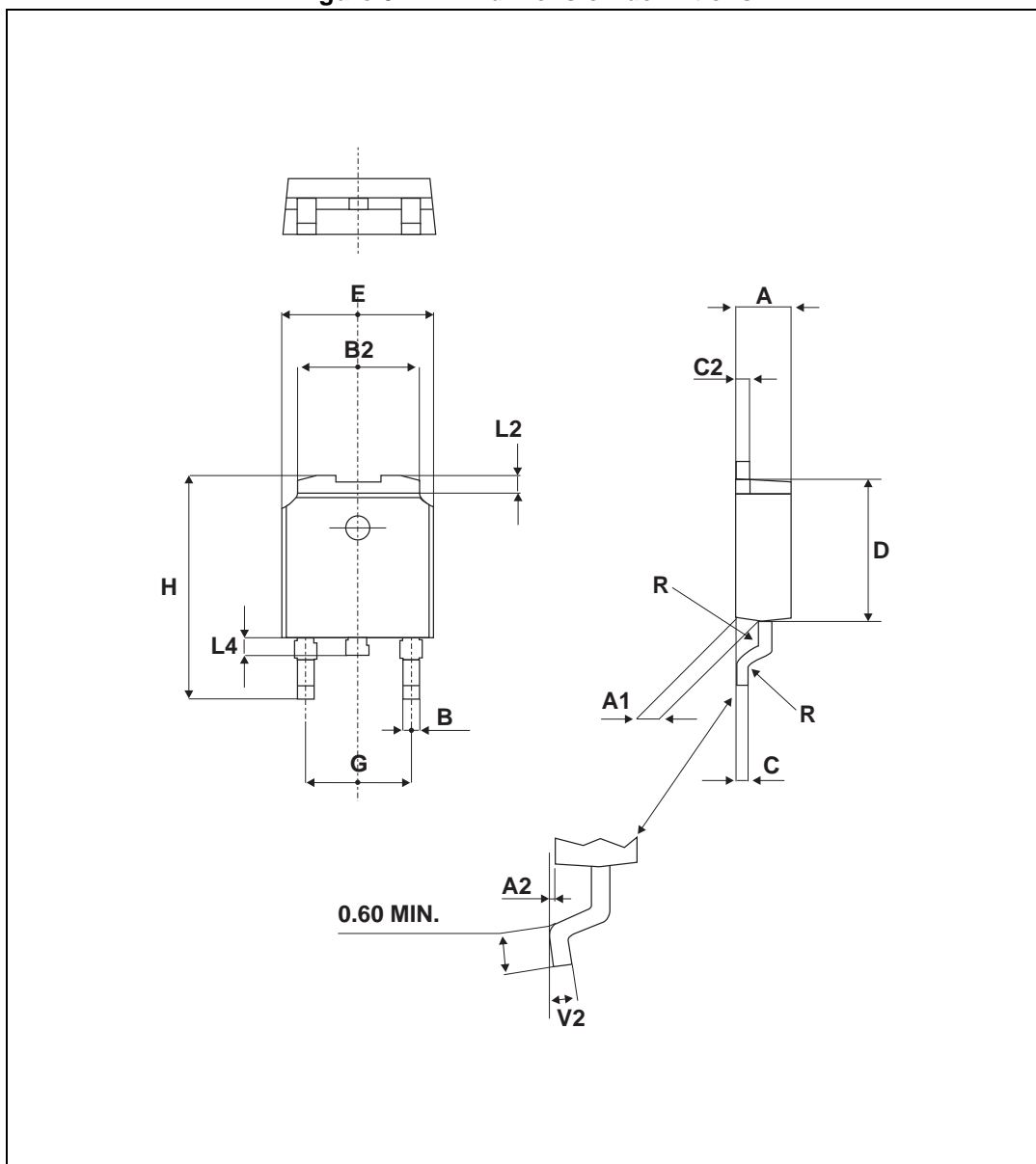
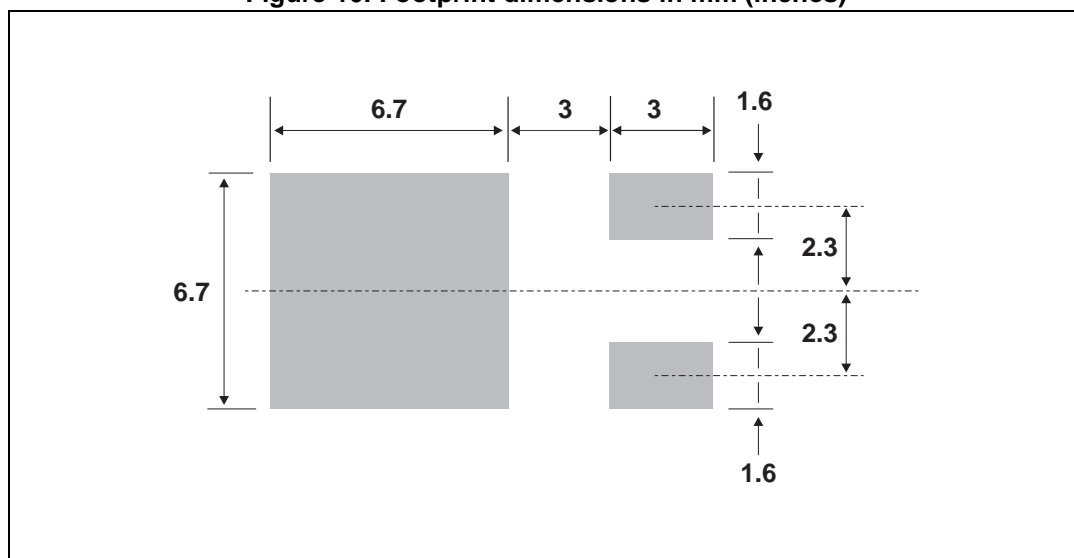


Table 5. DPAK dimension values

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.20		2.40	0.086		0.094
A1	0.90		1.10	0.035		0.043
A2	0.03		0.23	0.001		0.009
B	0.64		0.90	0.025		0.035
B2	5.20		5.40	0.204		0.212
C	0.45		0.60	0.017		0.023
C2	0.48		0.60	0.018		0.023
D	6.00		6.20	0.236		0.244
E	6.40		6.60	0.251		0.259
G	4.40		4.60	0.173		0.181
H	9.35		10.10	0.368		0.397
L2		0.80 typ.			0.031 typ.	
L4	0.60		1.00	0.023		0.039
V2	0°		8°	0°		8°

Figure 10. Footprint dimensions in mm (inches)



### 3 Ordering information

**Table 6. Ordering information**

Order code	Marking	Package	Weight	Base qty	Delivery mode
STPS8L30BY-TR	LS30Y	DPAK	0.3 g	2500	Tape and reel

### 4 Revision history

**Table 7. Revision history**

Date	Revision	Changes
11-Jul-2013	1	First issue

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