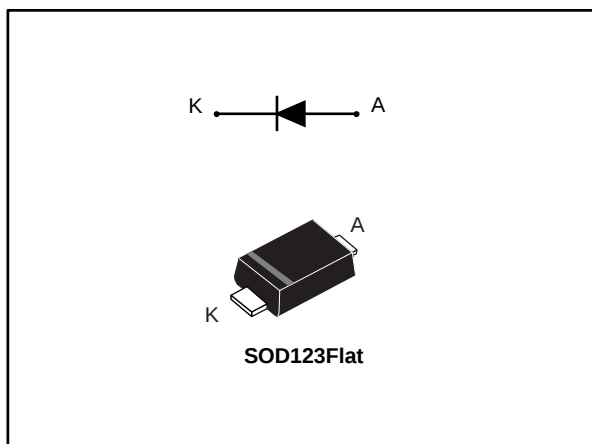


Power Schottky rectifier

Datasheet - production data



Description

Single chip Schottky rectifiers suited to surface mounting and especially intended for use in high frequency converters, free-wheeling and reverse polarity protection..

Table 1: Device summary

Symbol	Value
$I_{F(AV)}$	2 A
V_{RRM}	100 V
V_F (typ.)	0.60 V
T_j (max.)	175 °C

Features

- High junction temperature capability
- Low leakage current
- Negligible switching losses
- Avalanche capability specified
- ECOPACK®2 compliant component

1 Characteristics

Table 2: Absolute ratings (limiting values at 25 °C, unless otherwise specified)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		100	V
$I_{F(AV)}$	Average forward current	$T_L = 140\text{ °C}$ / $\delta = 0.5$, square wave	2	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10\text{ ms}$ sinusoidal	50	A
P_{ARM}	Repetitive peak avalanche power	$t_p = 10\text{ }\mu\text{s}$, $T_j = 125\text{ °C}$	105	W
T_{stg}	Storage temperature range		-65 to +175	°C
T_j	Maximum operating junction temperature ⁽¹⁾		-40 to +175	

Notes:

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

Table 3: Thermal parameters

Symbol	Parameter	Max. value	Unit
$R_{th(j-l)}$	Junction to lead	20	°C/W

Table 4: Static electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
$I_R^{(1)}$	Reverse leakage current	$T_j = 25\text{ °C}$	$V_R = V_{RRM}$	-		1	μA
		$T_j = 125\text{ °C}$		-	0.2	0.5	mA
$V_F^{(2)}$	Forward voltage drop	$T_j = 25\text{ °C}$	$I_F = 2\text{ A}$	-		0.86	V
		$T_j = 125\text{ °C}$		-	0.65	0.70	
		$T_j = 25\text{ °C}$	$I_F = 4\text{ A}$	-		0.96	
		$T_j = 125\text{ °C}$		-	0.75	0.83	

Notes:

⁽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:

$$P = 0.57 \times I_{F(AV)} + 0.065 \times I_F^2(RMS)$$

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 in a power diode)

1.1 Characteristics (curves)

Figure 1: Average forward power dissipation versus average forward current

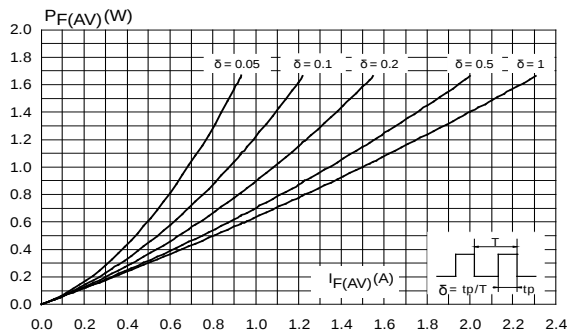


Figure 2: Average forward current versus ambient temperature ($\delta = 0.5$)

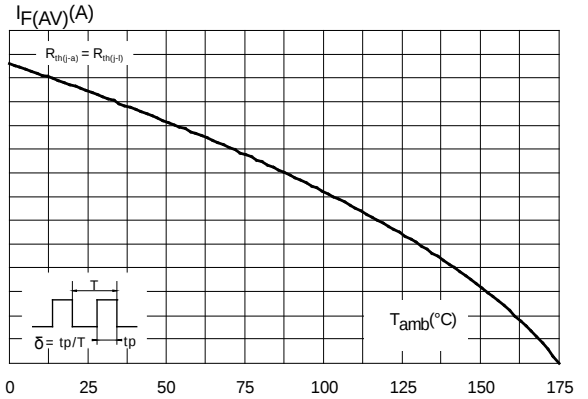


Figure 3: Normalized avalanche power derating versus pulse duration ($T_J = 125^\circ\text{C}$)

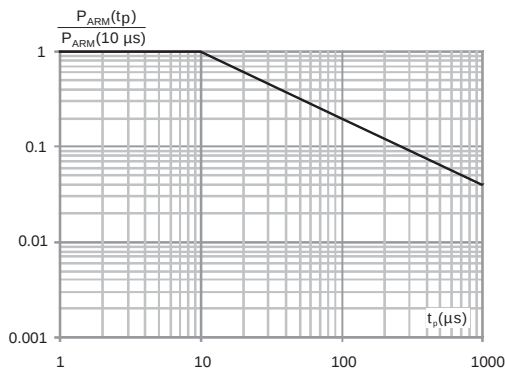


Figure 4: Relative variation of thermal impedance junction to lead versus pulse duration

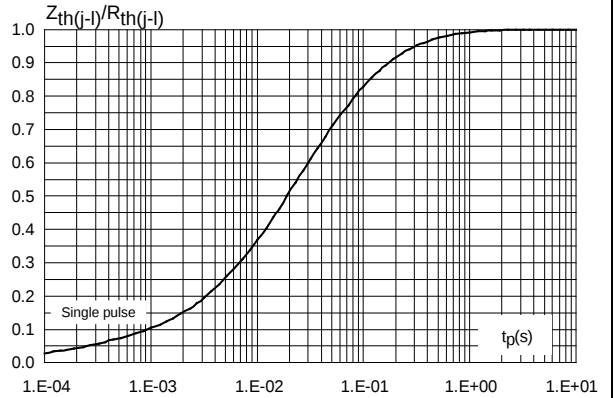


Figure 5: Reverse leakage current versus reverse voltage applied (typical values)

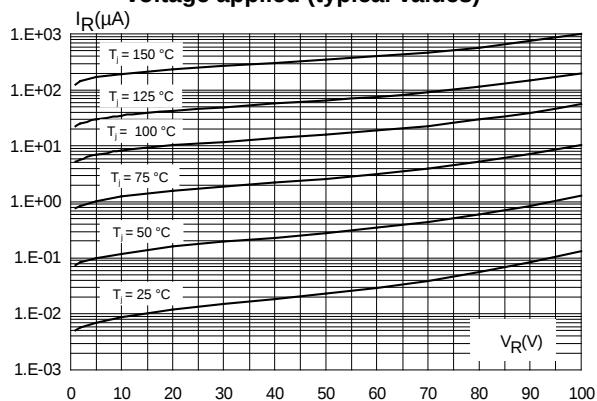


Figure 6: Junction capacitance versus reverse voltage applied (typical values)

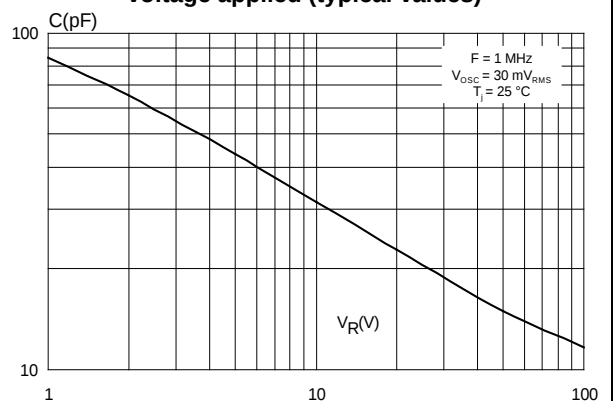
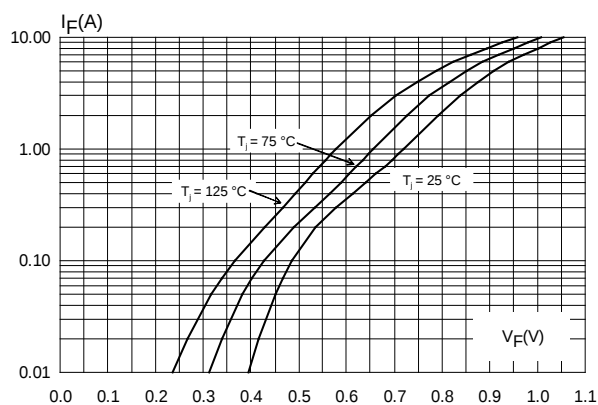
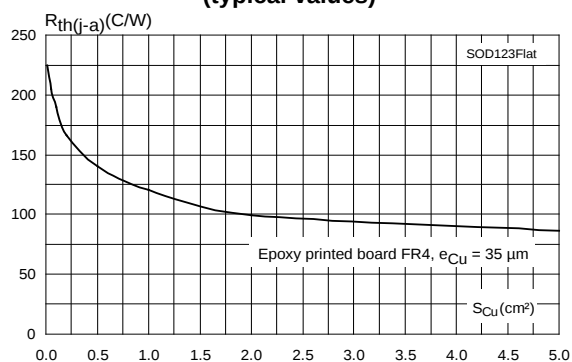


Figure 7: Forward voltage drop versus forward current (typical values)**Figure 8: Thermal resistance junction to ambient versus copper surface under each lead (typical values)**

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. ECOPACK® is an ST trademark.

- Epoxy meets UL94, V0
- Cooling method: by conduction (C)

2.1 SOD123Flat package information

Figure 9: SOD123Flat package outline

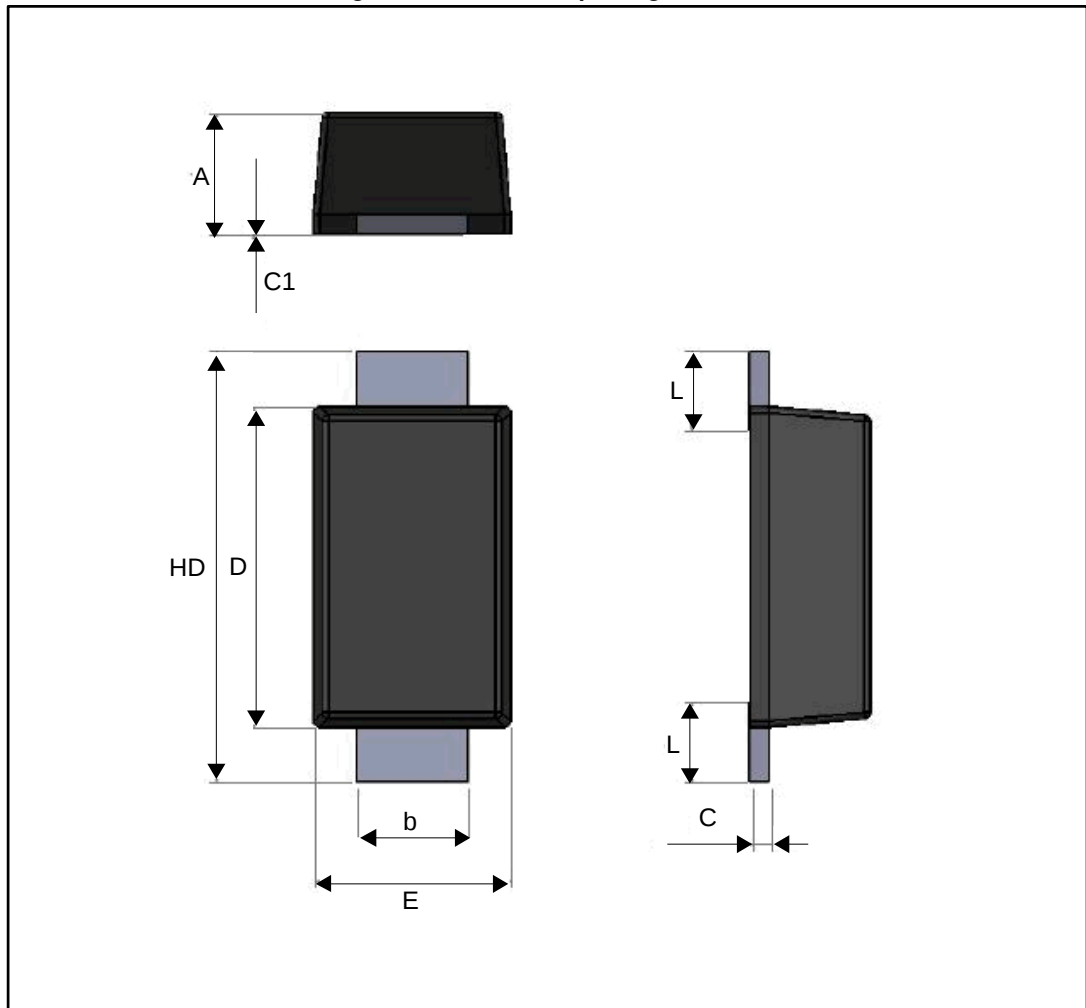
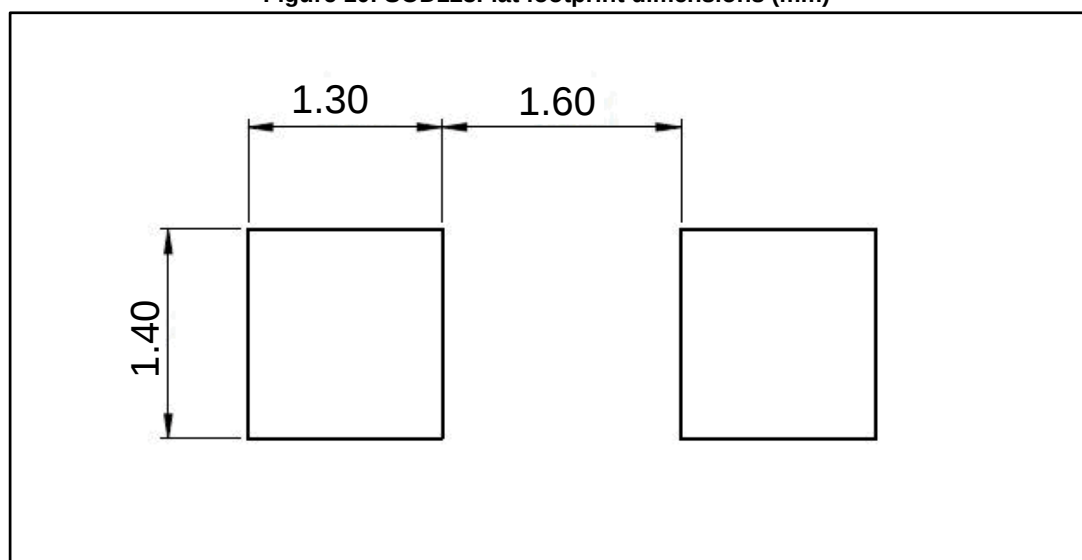


Table 5: SOD123Flat package mechanical data

Ref.	Dimensions		
	Millimeters		
	Min.	Typ.	Max.
A	0.86	0.98	1.10
b	0.80	0.90	1.00
c	0.08	0.15	0.25
c1	0.00		0.10
D	2.50	2.60	2.70
E	1.50	1.60	1.80
HD	3.30	3.50	3.70
L	0.45	0.65	0.85

Figure 10: SOD123Flat footprint dimensions (mm)



3 Ordering information

Table 6: Ordering information

Order code	Marking	Package	Weight	Base qty.	Delivery mode
STPS2H100ZF	2H1	SOD123Flat	12.5 mg	3000	Tape and reel

4 Revision history

Table 7: Document revision history

Date	Revision	Changes
19-Aug-2016	1	Initial release.

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