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STPS60SM200C

Power Schottky rectifier

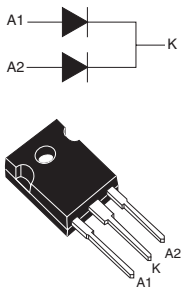
Features

- High reverse voltage (200 V)
- Low forward voltage drop
- High frequency operation

Description

The STPS60SM200C is a dual Schottky rectifier suited for high frequency switched-mode power supply.

Housed in TO-247, this device is especially suited for use in telecom base station SMPS, providing these applications with a good efficiency at both low and high load.



TO-247
STPS60SM200CW

Table 1. Device summary

Symbol	Value
$I_{F(AV)}$	2 x 30 A
V_{RRM}	200 V
T_j (max)	175 °C
V_F(typ)	640 mV

1 Characteristics

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

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			200	V
$I_{F(RMS)}$	Forward current rms			50	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	Per diode, $\delta = 0.5$	T_c = 155 °C	30	A
		per device, $\delta = 0.5$	T_c = 150 °C	60	
I_{FSM}	Surge non repetitive forward current	t_p = 10 ms sinusoidal, T_c = 25 °C		500	A
T_{stg}	Storage temperature range			-65 to + 175	°C
T_j	Maximum operating junction temperature (1)			-40 to + 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 resistance

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	0.7	°C/W
		Total	0.5	
$R_{th(c)}$	Coupling		0.3	

When the two diodes 1 and 2 are used simultaneously:
ΔT_j(diode 1) = P(diode 1) x $R_{th(j-c)}$(Per diode) + P(diode 2) x $R_{th(c)}$

Table 4. Static electrical characteristics (per diode)

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
I_R (1)	Reverse leakage current	T_j = 25 °C	$V_R = V_{RRM}$			0.05	mA
		T_j = 125 °C			6	13	
V_F (2)	Forward voltage drop	T_j = 25 °C	I_F = 7.5 A		0.67	0.70	V
		T_j = 125 °C			0.51	0.55	
		T_j = 25 °C	I_F = 15 A		0.73	0.77	
		T_j = 125 °C			0.57	0.61	
		T_j = 25 °C	I_F = 30 A		0.79	0.83	
		T_j = 125 °C			0.64	0.69	

1. Pulse test: t_p = 5 ms, δ < 2%
2. Pulse test: t_p = 380 µs, δ < 2%

To evaluate the conduction losses use the following equation:

$P = 0.58 \times I_{F(AV)} + 0.0037 \times I_F{}^2{}_{(RMS)}$

Figure 1. Average forward power dissipation versus average forward current (per diode)

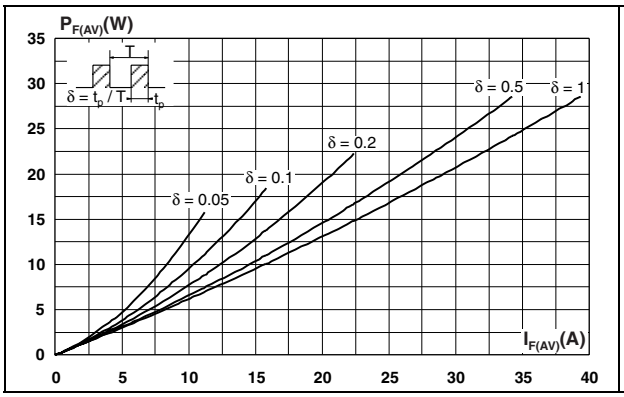


Figure 2. Average forward current versus ambient temperature (δ = 0.5)

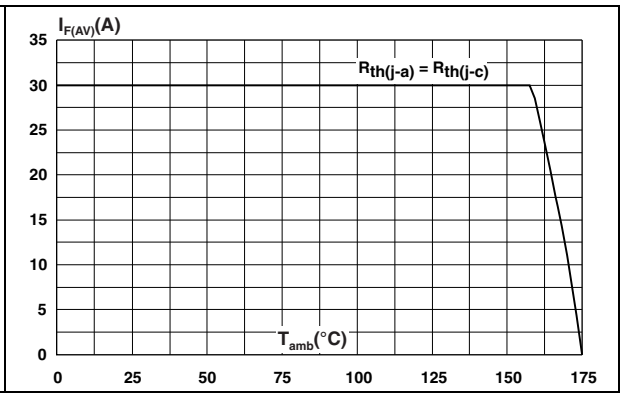


Figure 3. Non repetitive surge peak forward current versus overload duration (maximum values, per diode)

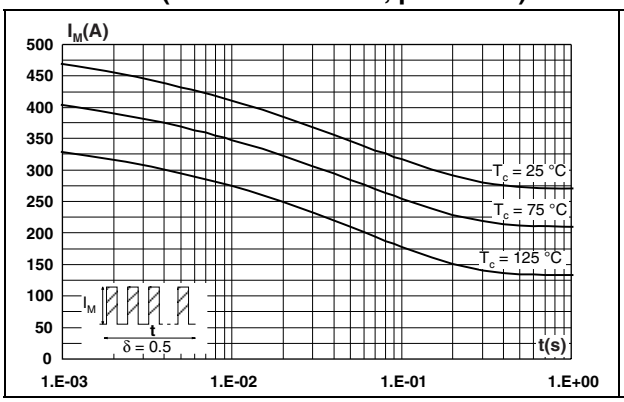


Figure 4. Relative variation of thermal impedance junction to case versus pulse duration

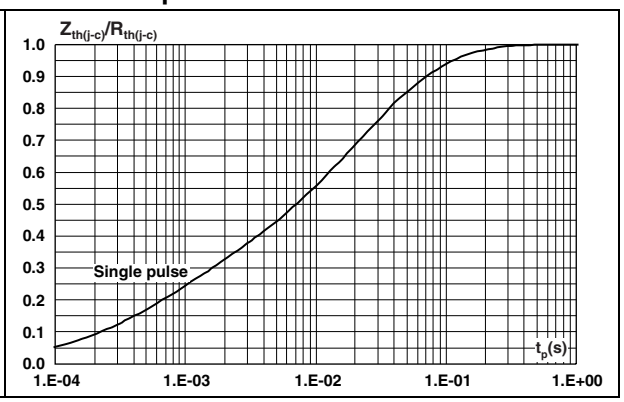


Figure 5. Reverse leakage current versus reverse voltage applied (typical values, per diode)

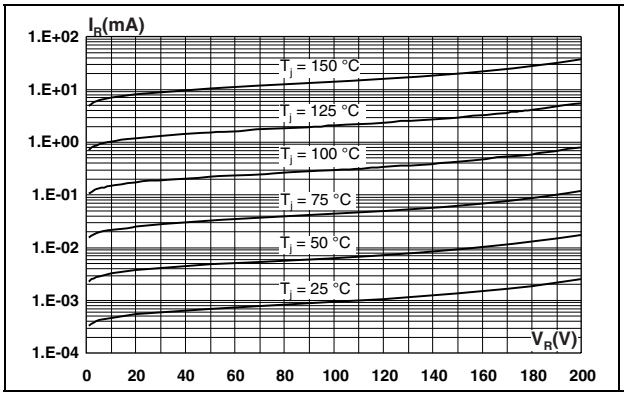


Figure 6. Junction capacitance versus reverse voltage applied (typical values, per diode)

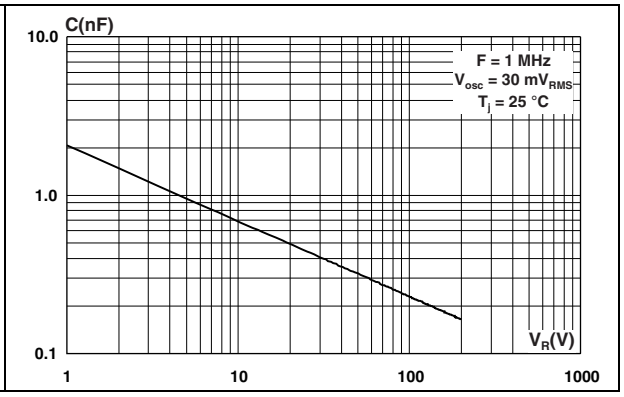


Figure 7. Forward voltage drop versus forward current (per diode, low level)

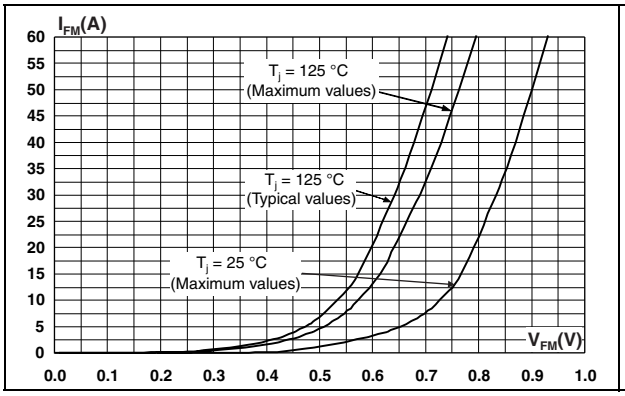
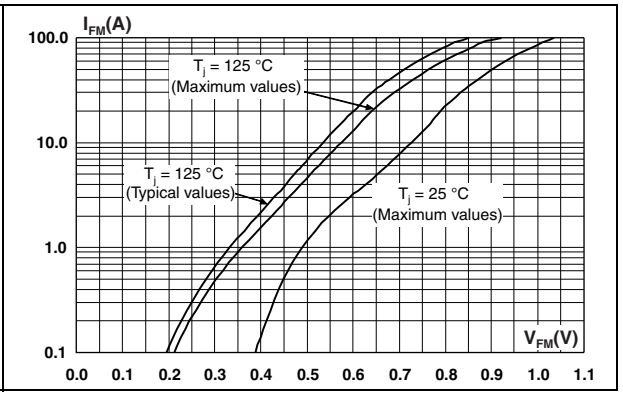


Figure 8. Forward voltage drop versus forward current (per diode, high level)



2 Package information

- Epoxy meets UL94, V0
- Cooling method: by conduction (C)
- Recommended torque value: 0.55 to 1.0 N·m

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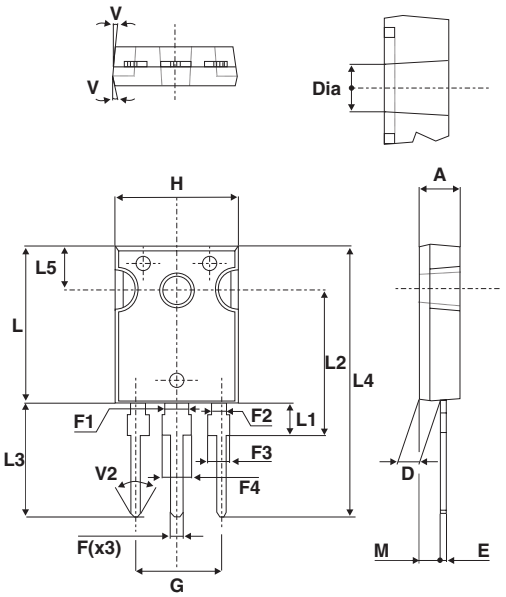
Table 5. TO-247 dimensions



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.85	5.16	0.191	0.203
D	2.20	2.60	0.086	0.102
E	0.40	0.80	0.015	0.031
F	1.00	1.40	0.039	0.055
F1	3.00 typ.		0.118 typ.	
F2	2.00 typ.		0.079 typ.	
F3	1.90	2.40	0.075	0.094
F4	3.00	3.40	0.118	0.134
G	10.90 typ.		0.429 typ.	
H	15.45	16.03	0.608	0.631
L	19.85	21.09	0.781	0.830
L1	3.70	4.30	0.146	0.169
L2	18.30	19.13	0.720	0.753
L3	14.20	20.30	0.559	0.799
L4	34.05	41.38	1.341	1.629
L5	5.35	6.30	0.211	0.248
M	2.00	3.00	0.079	0.118
V	5° typ.		5° typ.	
V2	60° typ.		60° typ.	
Dia.	3.55	3.65	0.140	0.144

3 Ordering information

Table 6. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
STPS60SM200CW	STPS60SM200CW	TO-247	4.45 g	30	Tube

4 Revision history

Table 7. Document revision history

Date	Revision	Changes
17-May-2011	1	First issue.

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