



# STPS60L45CW

## LOW DROP POWER SCHOTTKY RECTIFIER

### MAJOR PRODUCTS CHARACTERISTICS

<b>I<sub>F(AV)</sub></b>	<b>2 x 30 A</b>
<b>T<sub>j</sub> (max)</b>	<b>150°C</b>
<b>V<sub>RRM</sub></b>	<b>45 V</b>
<b>V<sub>F(max)</sub></b>	<b>0.50 V</b>

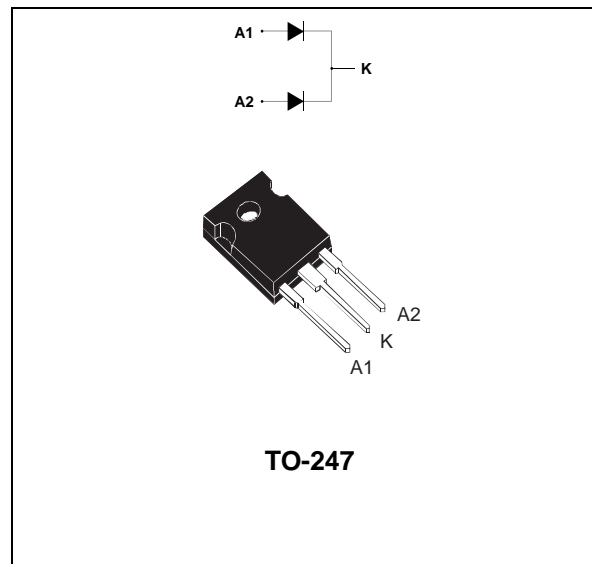
### FEATURES AND BENEFITS

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- EXTREMELY FAST SWITCHING
- LOW FORWARD VOLTAGE DROP
- LOW THERMAL RESISTANCE

### DESCRIPTION

Dual center tap schottky barrier rectifier suited for switchmode power supply for MERCEDES processors and high frequency DC to DC converters.

Packaged in TO-247, this device is intended for use in low voltage, high frequency converters, free wheeling and polarity protection applications.



### ABSOLUTE RATINGS (limiting values per diode)

Symbol	Parameter		Value	Unit
V <sub>RRM</sub>	Repetitive peak reverse voltage		45	V
I <sub>F(RMS)</sub>	RMS forward current		50	A
I <sub>F(AV)</sub>	Average forward current	T <sub>c</sub> = 135°C δ = 0.5	Per diode 30 Per device 60	A
I <sub>FSM</sub>	Surge non repetitive forward current	tp = 10 ms Sinusoidal	600	A
I <sub>R(RM)</sub>	Peak repetitive reverse current	tp = 2 μs square F=1kHz	2	A
I <sub>R(SM)</sub>	Non repetitive peak reverse current	tp = 100 μs square	4	A
T <sub>stg</sub>	Storage temperature range		- 65 to + 150	°C
T <sub>j</sub>	Maximum operating junction temperature (*)		150	°C
dV/dt	Critical rate of rise of reverse voltage		10000	V/μs

\* :  $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th(j-a)}}$  thermal runaway condition for a diode on its own heatsink

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## THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
R <sub>th(j-c)</sub>	Junction to case	Per diode	0.75	°C/W
		Total	0.42	
R <sub>th(c)</sub>	Coupling		0.1	°C/W

When the diodes 1 and 2 are used simultaneously :  
 $\Delta T_j(\text{diode 1}) = P(\text{diode 1}) \times R_{th(j-c)}(\text{Per diode}) + P(\text{diode 2}) \times R_{th(c)}$

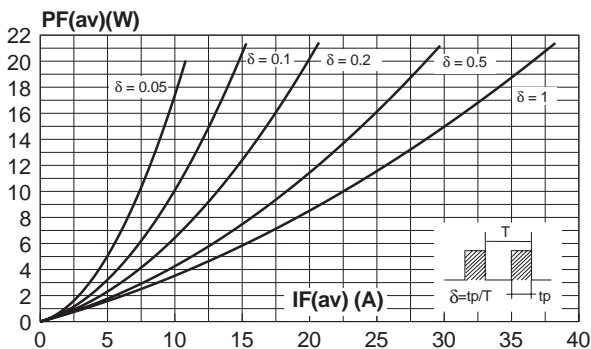
## STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I <sub>R</sub> *	Reverse leakage current	T <sub>j</sub> = 25°C	V <sub>R</sub> = 45 V			1.5	mA
		T <sub>j</sub> = 125°C			175	350	
V <sub>F</sub> *	Forward voltage drop	T <sub>j</sub> = 25°C	I <sub>F</sub> = 30 A			0.55	V
		T <sub>j</sub> = 125°C	I <sub>F</sub> = 30 A		0.44	0.5	
		T <sub>j</sub> = 25°C	I <sub>F</sub> = 60 A			0.73	
		T <sub>j</sub> = 125°C	I <sub>F</sub> = 60 A		0.64	0.72	

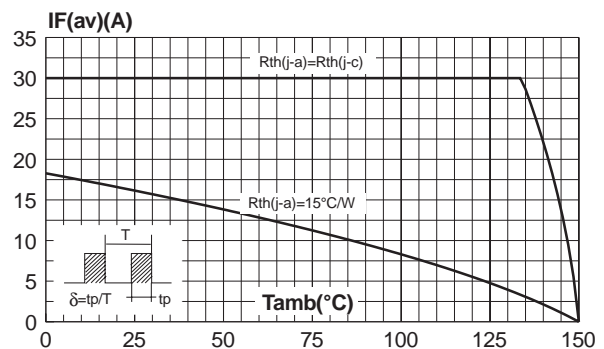
Pulse test : \* t<sub>p</sub> = 380 μs, δ < 2%

To evaluate the conduction losses use the following equation :  
 $P = 0.28 \times I_{F(AV)} + 0.0073 I_{F(RMS)}^2$

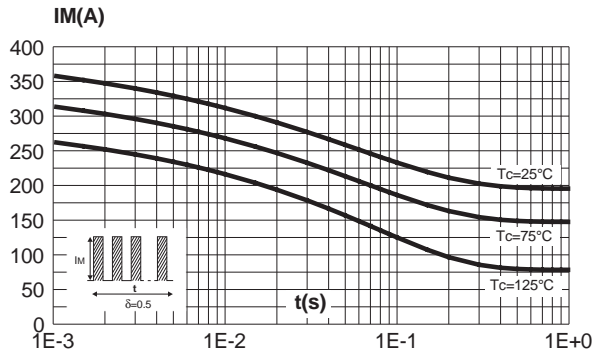
**Fig. 1:** Average forward power dissipation versus average forward current (per diode).



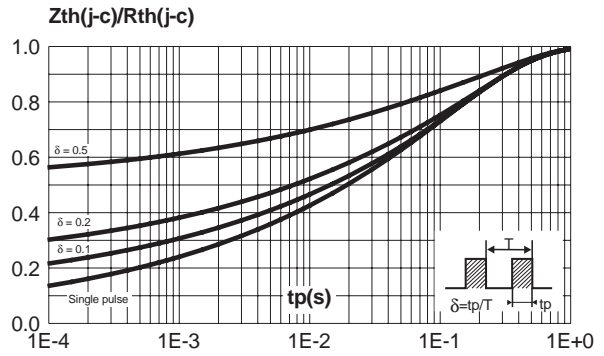
**Fig. 2:** Average current versus ambient temperature (δ=0.5 per diode).



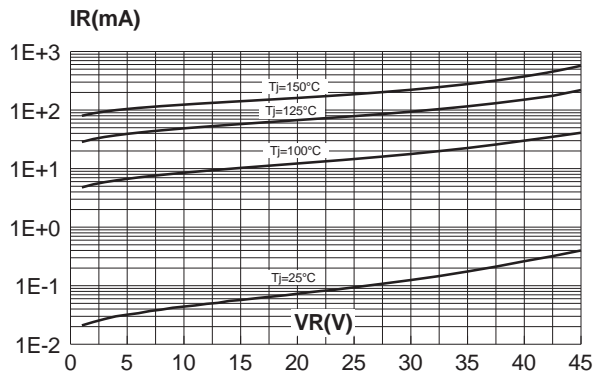
**Fig. 3:** Non repetitive surge peak forward current versus overload duration (maximum values, per diode).



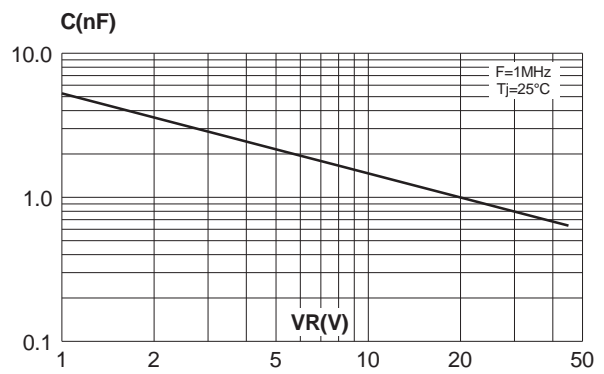
**Fig. 4:** Relative variation of thermal transient impedance junction to case versus pulse duration.



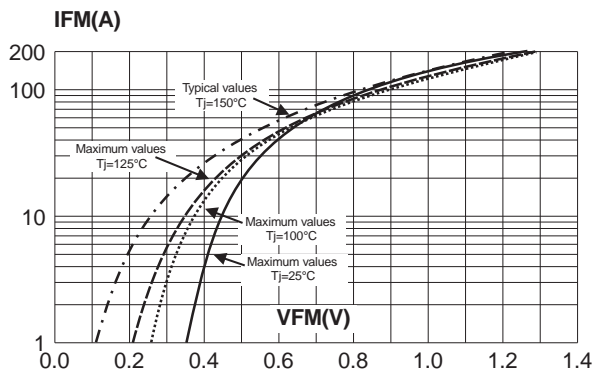
**Fig. 5:** Reverse leakage current versus reverse voltage applied (typical values, per diode).



**Fig. 6:** Junction capacitance versus reverse voltage applied (typical values, per diode).

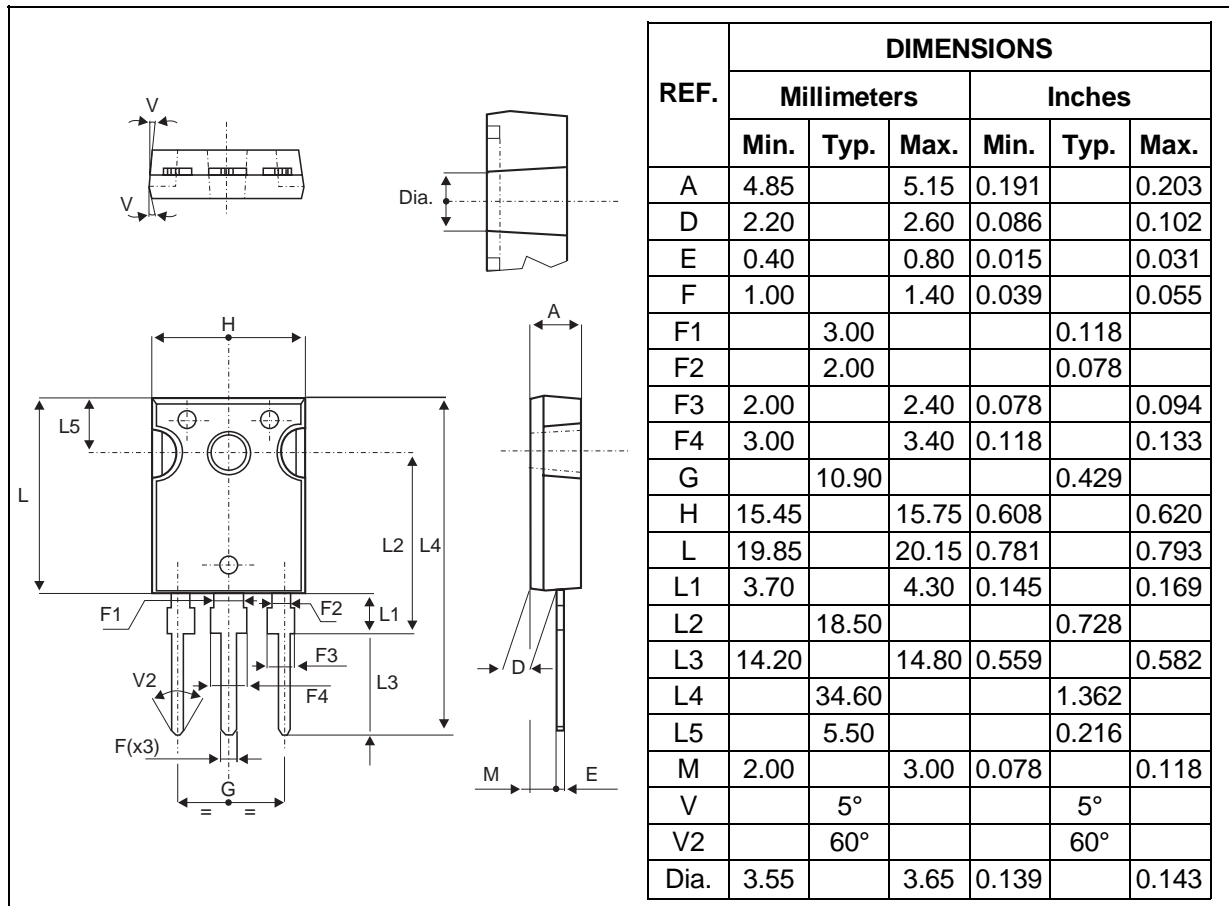


**Fig. 7:** Forward voltage drop versus forward current (per diode).



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## PACKAGE MECHANICAL DATA TO-247



- Cooling method : C
- Recommended torque value : 0.8m.N
- Maximum torque value : 1.0m.N

Type	Marking	Package	Weight	Base qty	Delivery mode
STPS60L45CW	STPS60L45CW	TO-247	4.36 g	30	Tube

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