

## POWER SCHOTTKY RECTIFIERS

### MAIN PRODUCTS CHARACTERISTICS

$I_{F(av)}$	2 x 17.5 A
$V_{RRM}$	45 V
$T_j(max)$	175 °C
$V_F(max)$	0.60 V

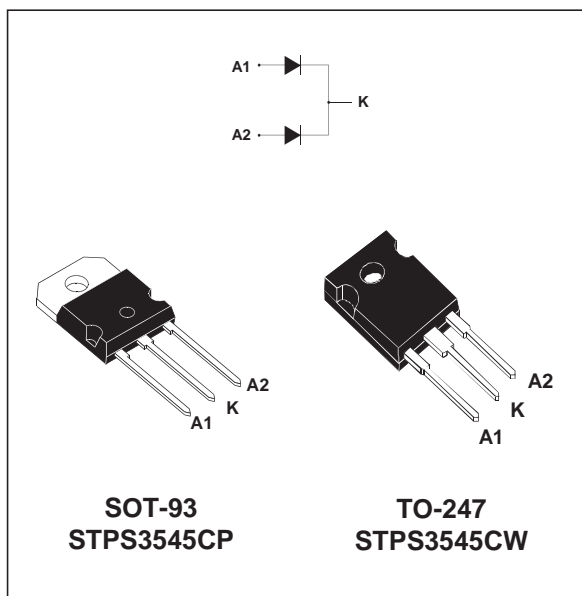
### FEATURES AND BENEFITS

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- EXTREMELY FAST SWITCHING
- LOW THERMAL RESISTANCE
- AVALANCHE CAPABILITY SPECIFIED

### DESCRIPTION

Dual center tap Schottky rectifier suited for switchmode power supply and high frequency DC to DC converters.

Packaged either in SOT-93 or TO-247 this device is intended for use in low voltage, high frequency inverters, 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			30	A
I <sub>F(AV)</sub>	Average forward current	T <sub>c</sub> = 150°C δ = 0.5	Per diode Per device	17.5 35	A
I <sub>FSM</sub>	Surge non repetitive forward current	tp = 10 ms sinusoidal		220	A
I <sub>RRM</sub>	Repetitive Peak reverse current	tp = 2 μs square F = 1kHz		1	A
I <sub>RSM</sub>	Non repetitive peak reverse current	tp = 100 μs square		3	A
P <sub>ARM</sub>	Repetitive peak avalanche power	tp = 1μs Tj = 25°C		6000	W
T <sub>stg</sub>	Storage temperature range			- 65 to + 175	°C
Tj	Maximum operating junction temperature *			175	°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

**THERMAL RESISTANCES**

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode total	1.5 0.8	°C/W
$R_{th(c)}$		Coupling	0.1	

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

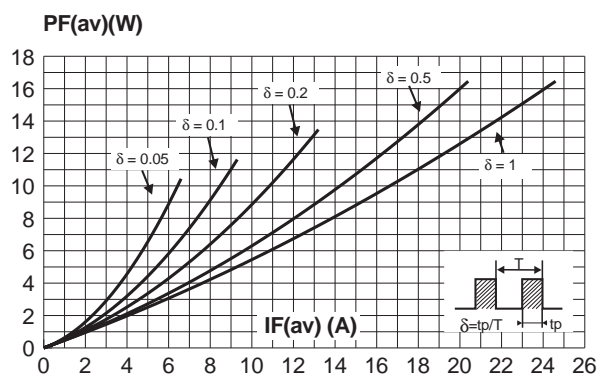
**STATIC ELECTRICAL CHARACTERISTICS (per diode)**

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
$I_R^*$	Reverse leakage current	$T_J = 25^\circ\text{C}$	$V_R = V_{RRM}$			200	$\mu\text{A}$
		$T_J = 125^\circ\text{C}$			11	40	mA
$V_F^*$	Forward voltage drop	$T_J = 125^\circ\text{C}$	$I_F = 17.5 \text{ A}$		0.53	0.60	V
		$T_J = 25^\circ\text{C}$	$I_F = 35 \text{ A}$			0.88	
		$T_J = 125^\circ\text{C}$	$I_F = 35 \text{ A}$		0.69	0.76	

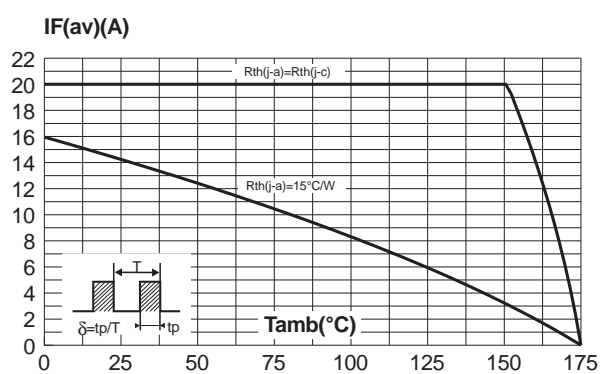
Pulse test : \*  $t_p = 380 \mu\text{s}$ ,  $\delta < 2\%$

To evaluate the conduction losses use the following equation :  
 $P = 0.44 \times I_{F(AV)} + 0.0091 I_{F(RMS)}^2$

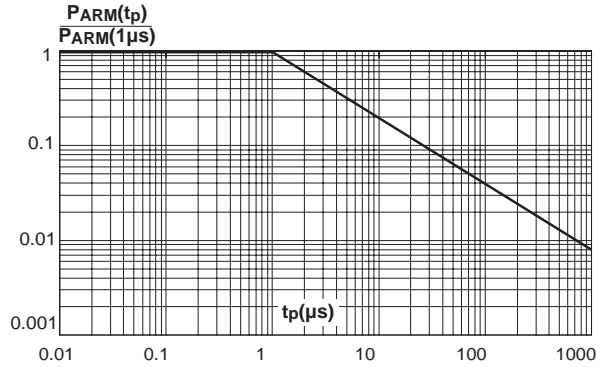
**Fig. 1:** Average forward power dissipation versus average forward current (per diode).



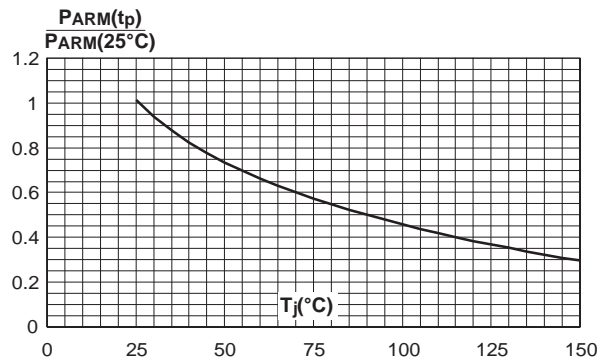
**Fig. 2:** Average current versus ambient temperature (per diode).



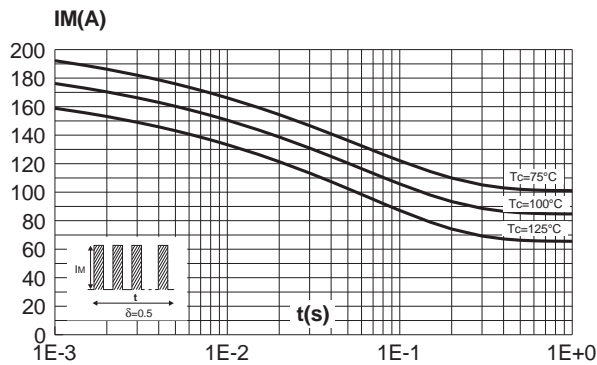
**Fig. 3:** Normalized avalanche power derating versus pulse duration.



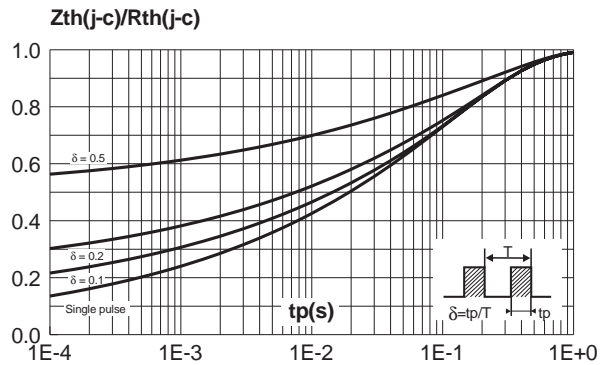
**Fig. 4:** Normalized avalanche power derating versus junction temperature.



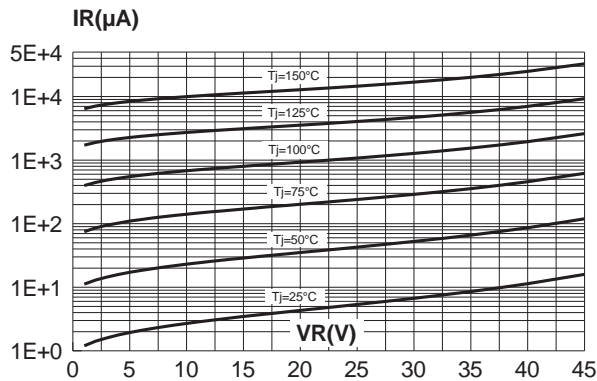
**Fig. 5:** Non repetitive surge peak forward current versus overload duration (maximum values) (per diode).



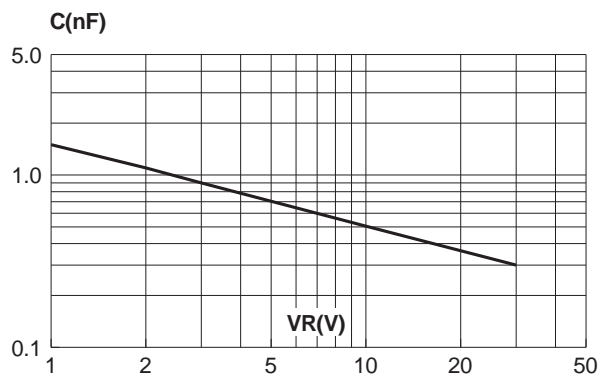
**Fig. 6:** Relative variation of thermal transient impedance junction to case versus pulse duration.



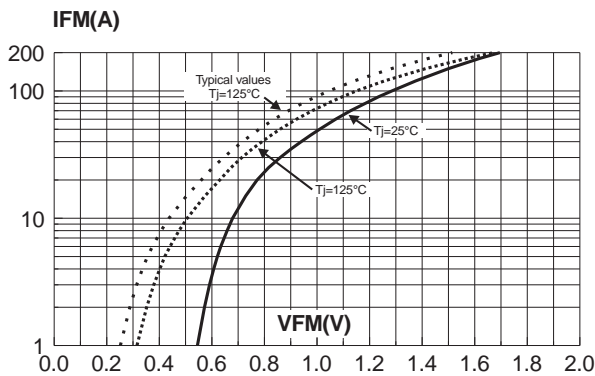
**Fig. 7:** Reverse leakage current versus reverse voltage applied (typical values) (per diode).



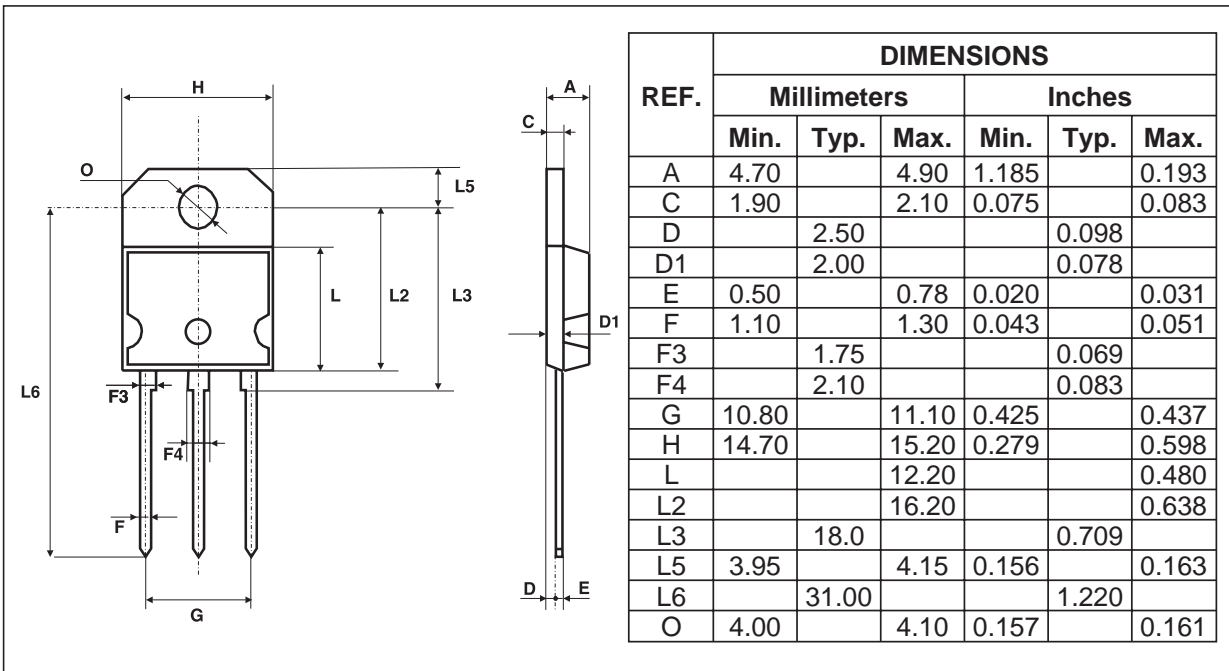
**Fig. 8:** Junction capacitance versus reverse voltage applied (typical values) (per diode).

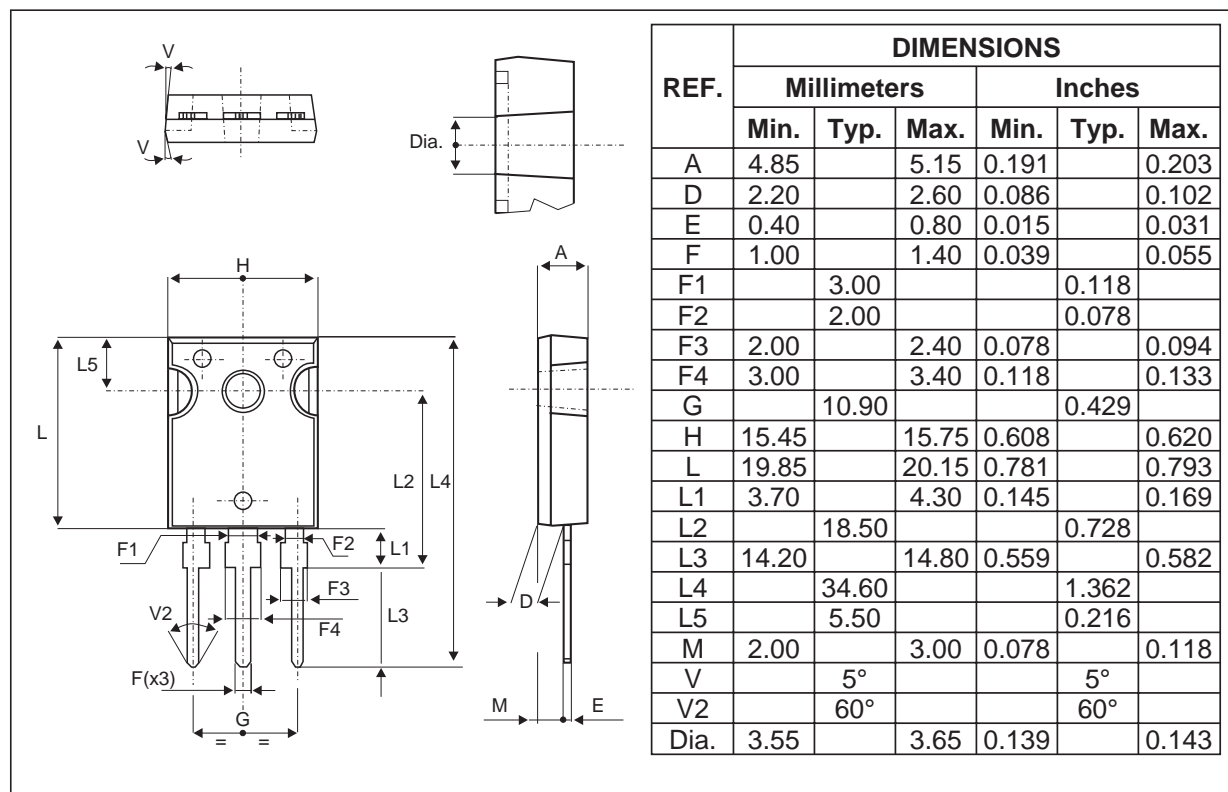


**Fig. 9:** Forward voltage drop versus forward current (maximum values) (per diode).



**PACKAGE MECHANICAL DATA**  
SOT-93



**PACKAGE MECHANICAL DATA**  
**TO-247**


Type	Marking	Package	Weight	Base qty	Delivery mode
STPS3545CP	STPS3545CP	SOT-93	3.97 g.	30	Tube
STPS3545CW	STPS3545CW	TO-247	4.46 g.	30	Tube

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

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