STPS4045CP/CW

POWER SCHOTTKY RECTIFIERS

MAJOR PRODUCTS CHARACTERISTICS

$I_{F(av)}$	2 x 20 A
V_{RRM}	45 V
V_F	0.63 V

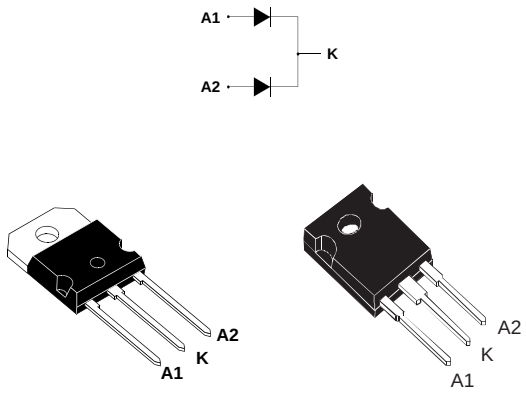
FEATURES AND BENEFITS

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- NON ISOLATED VERSION

DESCRIPTION

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

Packaged in SOT-93 or TO-247 this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.



SOT-93
STPS4045CP

TO-247
STPS4045CW

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			45	V
$I_{F(RMS)}$	RMS forward current		Per diode	35	A
$I_{F(AV)}$	Average forward current	Tc = 125°C δ = 0.5	Per diode Per device	20 40	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal	Per diode	220	A
I_{RRM}	Peak repetitive reverse current	tp = 2 µs F = 1kHz	Per diode	1	A
Tstg Tj	Storage temperature range Maximum junction temperature			- 65 to + 150 150	°C
dV/dt	Critical rate of rise of reverse voltage			10000	V/µs

THERMAL RESISTANCE

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	°C/W

When the diodes 1 and 2 are used simultaneously :
ΔT_J(diode 1) = P(diode1) x R_{th}(Per diode) + P(diode 2) x $R_{th(c)}$

STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	Tj = 25°C	$V_R = V_{RRM}$			200	µA
		Tj = 125°C				40	mA
V_F **	Forward voltage drop	Tj = 125°C	I_F = 15 A			0.57	V
		Tj = 125°C	I_F = 20 A			0.63	
		Tj = 125°C	I_F = 30 A			0.72	
		Tj = 125°C	I_F = 40 A			0.83	
		Tj = 25°C	I_F = 30 A			0.84	

Pulse test : * tp = 5 ms, δ < 2 %

** tp = 380 µs, δ < 2%

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

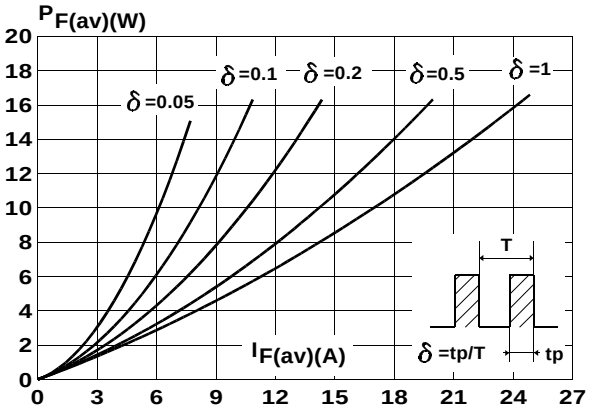


Fig. 2: Average current versus ambient temperature (per diode).

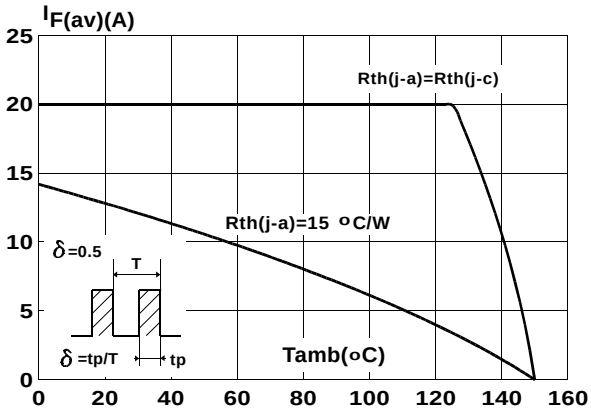


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values) (per diode).

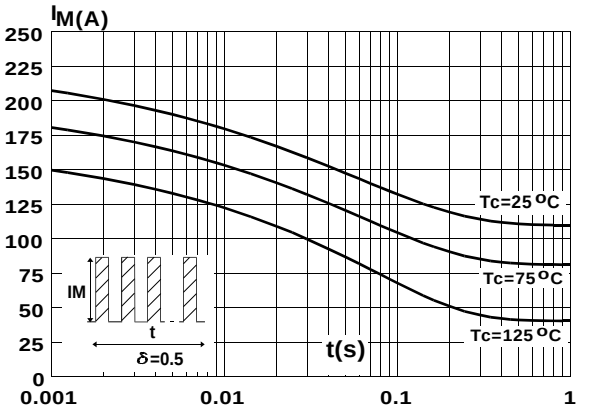


Fig. 4: Relative variation of thermal transient impedance junction to case versus pulse duration.

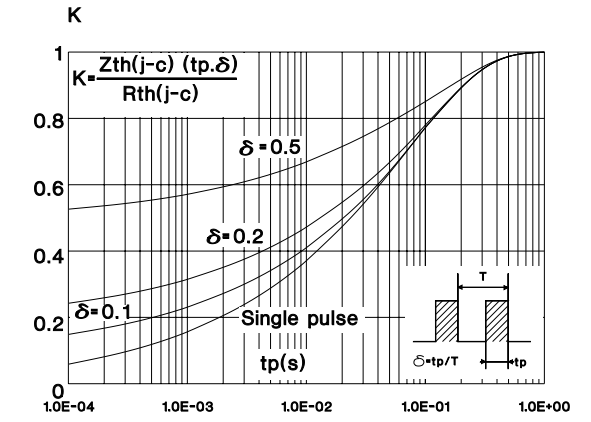


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values) (per diode).

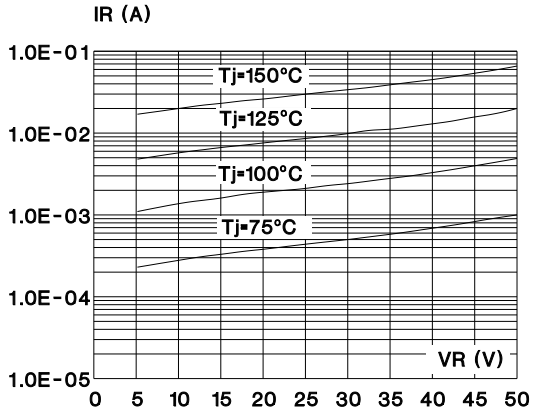


Fig. 6: Junction capacitance versus reverse voltage applied (typical values) (per diode).

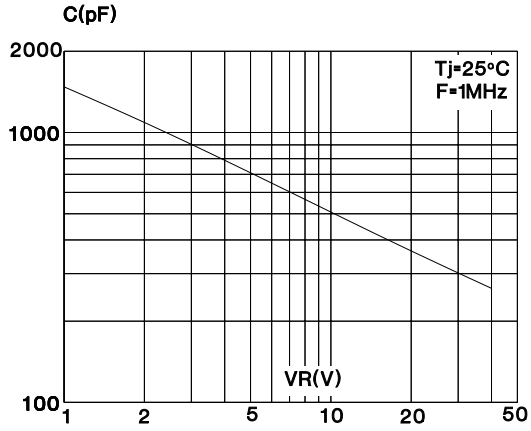
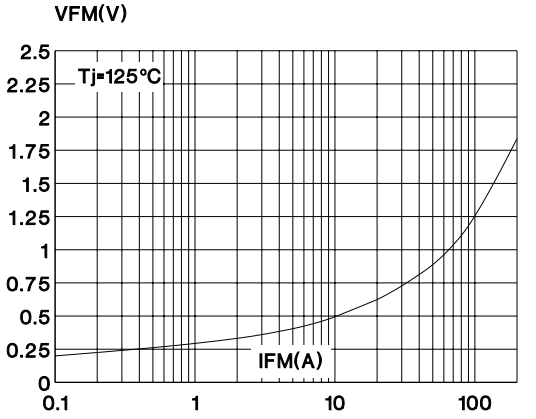
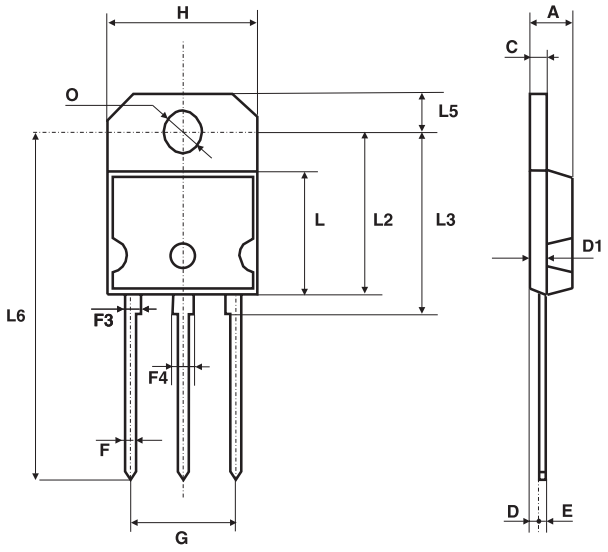


Fig. 7: Forward voltage drop versus forward current (maximum values) (per diode).



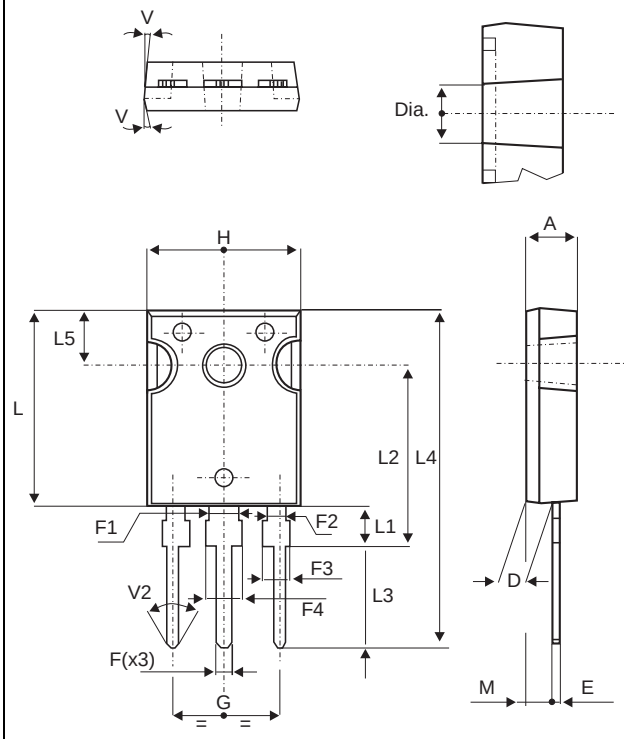
PACKAGE MECHANICAL DATA
SOT-93



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.70		4.90	1.185		0.193
C	1.90		2.10	0.075		0.083
D		2.50			0.098	
D1		2.00			0.078	
E	0.50		0.78	0.020		0.031
F	1.10		1.30	0.043		0.051
F3		1.75			0.069	
F4		2.10			0.083	
G	10.80		11.10	0.425		0.437
H	14.70		15.20	0.279		0.598
L			12.20			0.480
L2			16.20			0.638
L3		18.0			0.709	
L5	3.95		4.15	0.156		0.163
L6		31.00			1.220	
O	4.00		4.10	0.157		0.161

- **Marking** : Type number
- Cooling method : C
- Weight : 5.3 g
- Recommended torque value : 0.8m.N
- Maximum torque value : 1.0m.N

PACKAGE MECHANICAL DATA
TO-247



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.85		5.15	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			0.118	
F2		2.00			0.078	
F3	2.00		2.40	0.078		0.094
F4	3.00		3.40	0.118		0.133
G		10.90			0.429	
H	15.45		15.75	0.608		0.620
L	19.85		20.15	0.781		0.793
L1	3.70		4.30	0.145		0.169
L2		18.50			0.728	
L3	14.20		14.80	0.559		0.582
L4		34.60			1.362	
L5		5.50			0.216	
M	2.00		3.00	0.078		0.118
V		5°			5°	
V2		60°			60°	
Dia.	3.55		3.65	0.139		0.143

- **Marking** : Type number
- Cooling method : C
- Weight : 4.4 g
- Recommended torque value : 0.8m.N
- Maximum torque value : 1.0m.N

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsIbility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied.
STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics

© 1998 STMicroelectronics - Printed in Italy - All rights reserved.

STMicroelectronics GROUP OF COMPANIES
Australia - Brazil - Canada - China - France - Germany - Italy - Japan - Korea - Malaysia - Malta - Mexico - Morocco - The Netherlands Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.