



STPS40L15CW/CT

LOW DROP OR-ing POWER SCHOTTKY DIODE

MAJOR PRODUCT CHARACTERISTICS

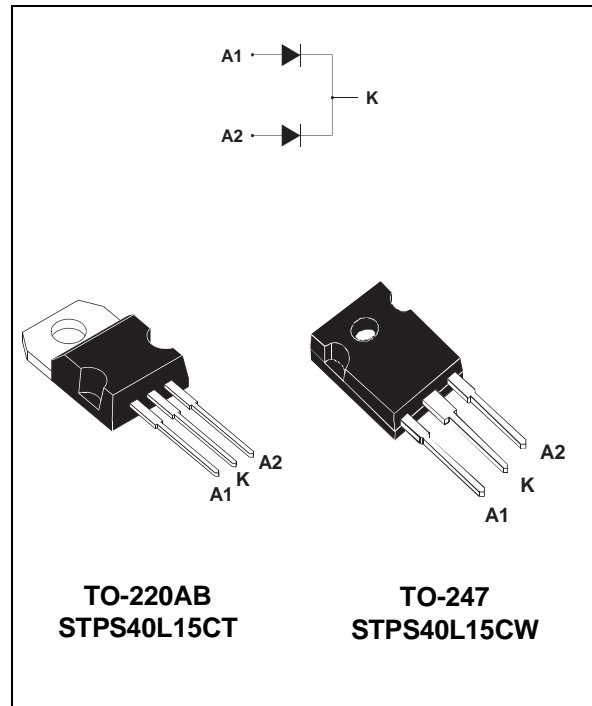
$I_{F(AV)}$	2 x 20 A
V_{RRM}	15 V
$T_j(\text{max})$	150°C
$V_F(\text{max})$	0.33 V

FEATURES AND BENEFITS

- VERY LOW FORWARD VOLTAGE DROP FOR LESS POWER DISSIPATION AND REDUCED HEATSINK SIZE
- REVERSE VOLTAGE SUITED TO OR-ing OF 3V, 5V and 12V RAILS

DESCRIPTION

Dual center tap schottky rectifier packaged in TO-220AB and TO-247, this device is especially intended for use as OR-ing diode in fault tolerant power supply equipments.



ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter		Value	Unit	
V_{RRM}	Repetitive peak reverse voltage		15	V	
$I_{F(RMS)}$	RMS forward current		30	A	
$I_{F(AV)}$	Average forward current	$T_{case} = 140^\circ\text{C}$ $\delta = 1$	Total	40	A
			Per diode	20	
I_{FSM}	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ Sinusoidal	310	A	
I_{RRM}	Peak repetitive reverse current	$t_p = 2 \mu\text{s}$ $F = 1\text{kHz}$	2	A	
I_{RSM}	Non repetitive peak reverse current	$t_p = 100 \mu\text{s}$	3	A	
T_{stg}	Storage temperature range		- 65 to + 150	°C	
T_j	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

STPS40L15CW/CT

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	1.6	$^{\circ}\text{C/W}$
		Total	0.85	
$R_{th(c)}$		Coupling	0.1	$^{\circ}\text{C/W}$

STATIC ELECTRICAL CHARACTERISTICS (Per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$T_J = 25^{\circ}\text{C}$	$V_R = V_{RRM}$			6	mA
		$T_J = 100^{\circ}\text{C}$			200	500	
V_F^*	Forward voltage drop	$T_J = 25^{\circ}\text{C}$	$I_F = 19\text{ A}$			0.41	V
		$T_J = 25^{\circ}\text{C}$	$I_F = 40\text{ A}$			0.52	
		$T_J = 125^{\circ}\text{C}$	$I_F = 19\text{ A}$		0.28	0.33	
		$T_J = 125^{\circ}\text{C}$	$I_F = 40\text{ A}$		0.42	0.50	

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

To evaluate the conduction losses use the following equation :

$$P = 0.18 \times I_{F(AV)} + 0.008 I_{F(RMS)}^2$$

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

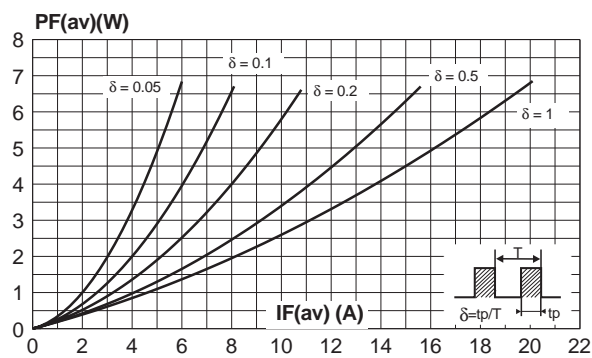


Fig. 2: Average forward current versus ambient temperature ($\delta=1$, per diode).

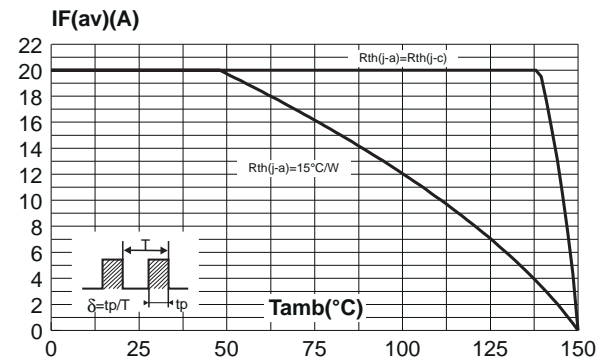


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values per diode).

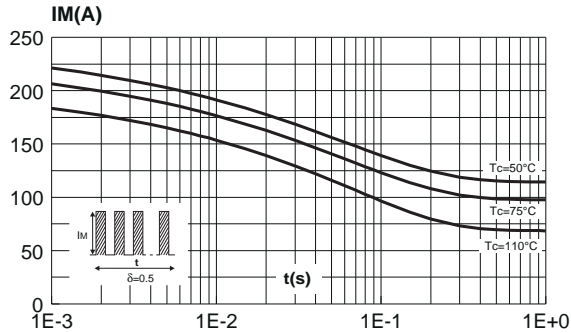


Fig. 4: Relative variation of thermal impedance junction to case versus pulse duration (per diode).

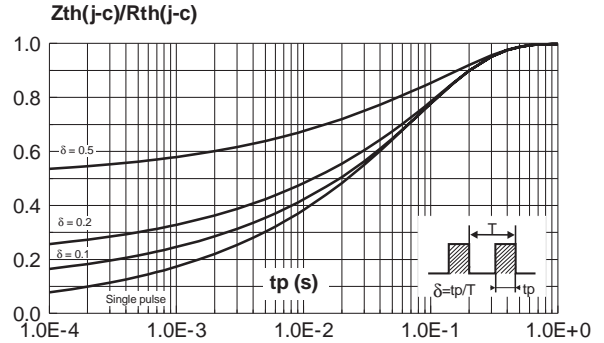


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values per diode).

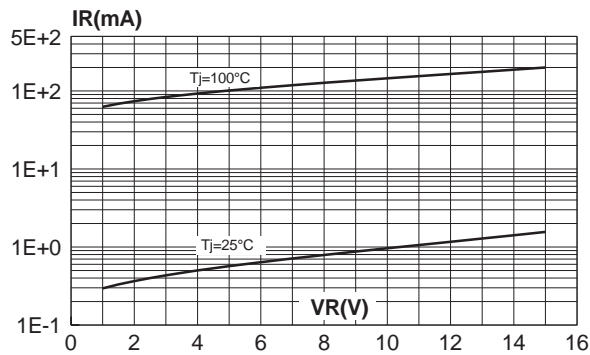


Fig. 6: Junction capacitance versus reverse voltage applied (typical values per diode).

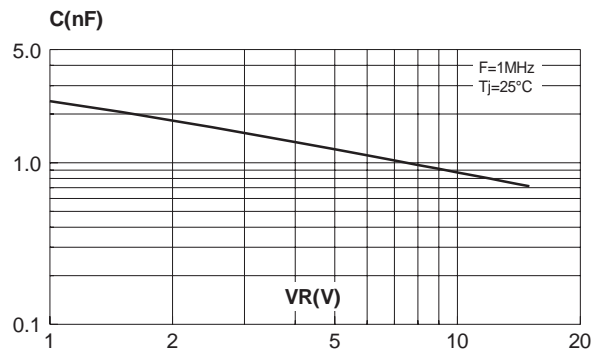


Fig. 7: Forward voltage drop versus forward current (typical values per diode).

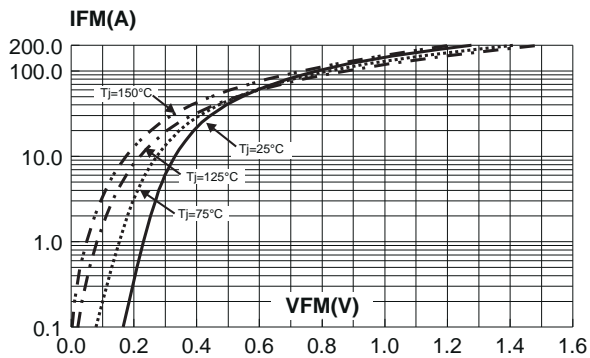
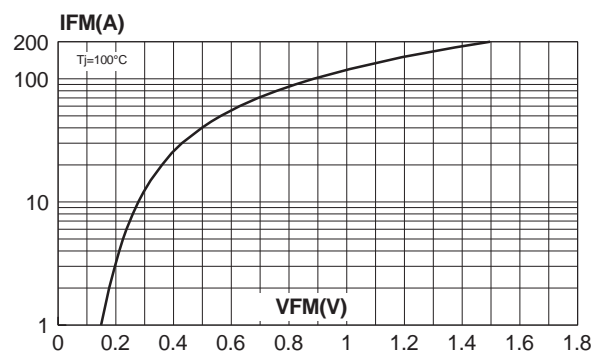
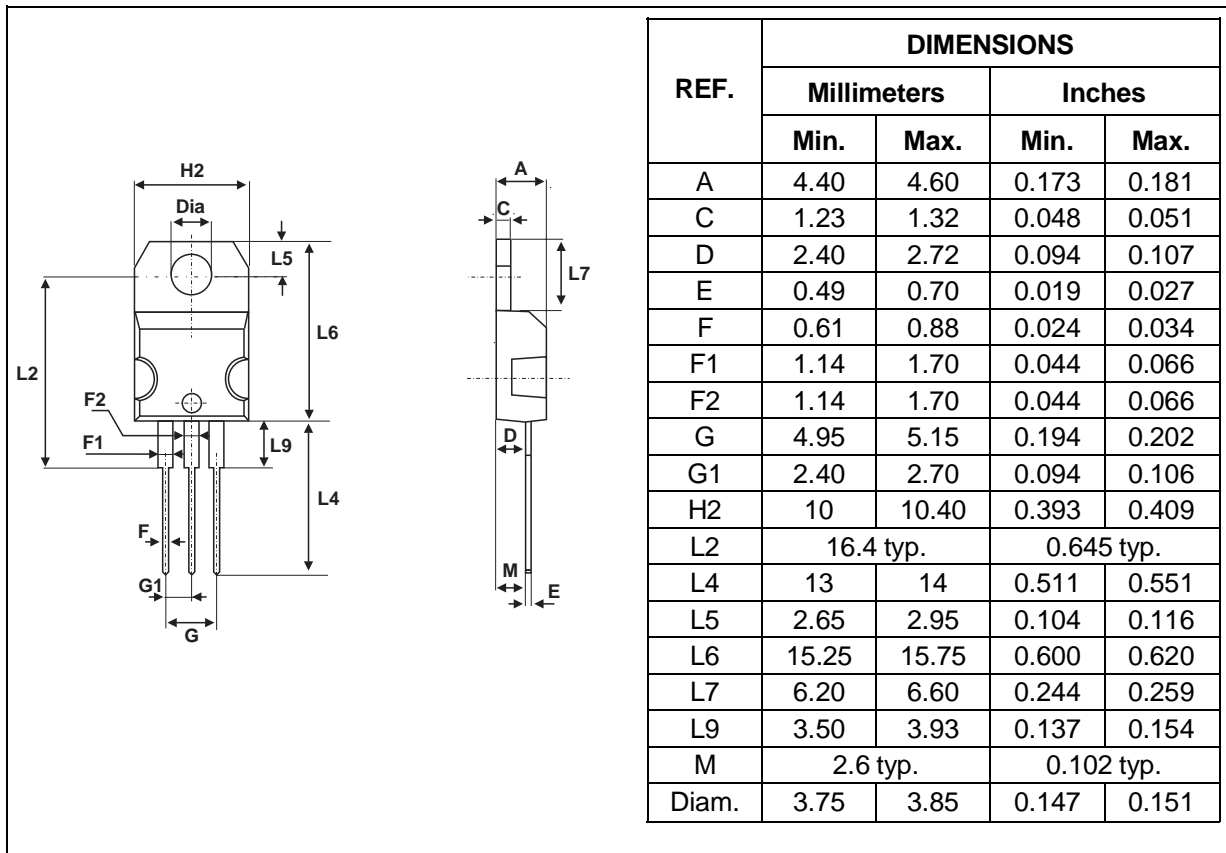


Fig. 8: Forward voltage drop versus forward current (typical maximum per diode).



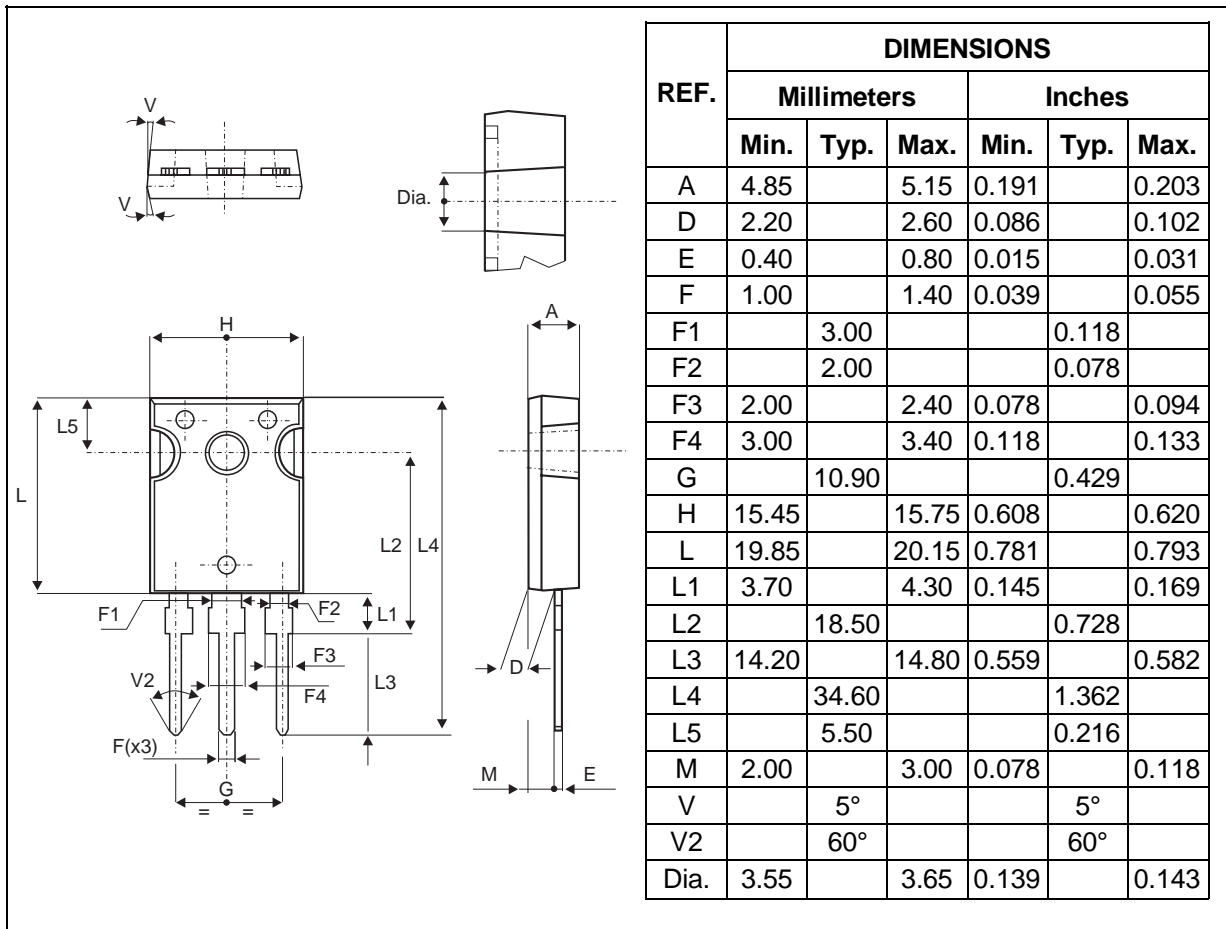
STPS40L15CW/CT

PACKAGE MECHANICAL DATA TO-220AB



- Cooling method: C
- Recommended torque value: 0.55 m.N
- Maximum torque value: 0.70 m.N

PACKAGE MECHANICAL DATA
TO-247



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

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS40L15CW	STPS40L15CW	TO-247	4.4 g.	30	Tube
STPS40L15CT	STPS40L15CT	TO-220AB	2g	50	Tube

- Epoxy meets UL94,V0

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

© 1999 STMicroelectronics - Printed in Italy - All rights reserved.

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - China - Finland - France - Germany - Hong Kong - India - Italy - Japan - Malaysia
Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - U.S.A.

<http://www.st.com>

