



STPS40L45CT/CW

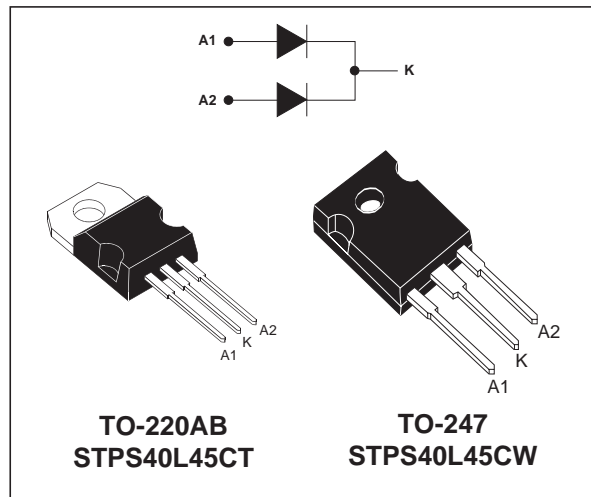
LOW DROP POWER SCHOTTKY RECTIFIER

MAIN PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	2 x 20 A
V_{RRM}	45 V
T_j (max)	150 °C
V_F (max)	0.49 V

FEATURES AND BENEFITS

- LOW FORWARD VOLTAGE DROP MEANING VERY SMALL CONDUCTION LOSSES
- LOW DYNAMIC LOSSES AS A RESULT OF THE SCHOTTKY BARRIER
- AVALANCHE RATED



DESCRIPTION

Dual center tap Schottky barrier rectifier designed for high frequency Switched Mode Power Supplies and DC to DC converters.

Packaged in TO-220AB and 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_{RRM}	Repetitive peak reverse voltage		45	V
$I_{F(RMS)}$	RMS forward current		30	A
$I_{F(AV)}$	Average forward current	$T_c = 130^\circ\text{C}$ $\delta = 0.5$	Per diode: 20 Per device: 40	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10$ ms Sinusoidal	230	A
I_{RRM}	Repetitive peak reverse current	$t_p = 2$ μs square F = 1kHz	2	A
I_{RSM}	Non repetitive peak reverse current	$t_p = 100$ μs square	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

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THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	1.5	$^{\circ}\text{C}/\text{W}$
		Total	0.8	
$R_{th(c)}$		Coupling	0.1	$^{\circ}\text{C}/\text{W}$

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_R^*	Reverse leakage current	$T_j = 25^{\circ}\text{C}$	$V_R = V_{RRM}$			0.8	mA
		$T_j = 100^{\circ}\text{C}$			40	130	mA
V_F^*	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 20\text{ A}$			0.53	V
		$T_j = 125^{\circ}\text{C}$	$I_F = 20\text{ A}$		0.42	0.49	
		$T_j = 25^{\circ}\text{C}$	$I_F = 40\text{ A}$			0.69	
		$T_j = 125^{\circ}\text{C}$	$I_F = 40\text{ A}$		0.6	0.7	

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

To evaluate the conduction losses use the following equation :

$$P = 0.28 \times I_{F(AV)} + 0.0105 I_{F(RMS)}^2$$

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

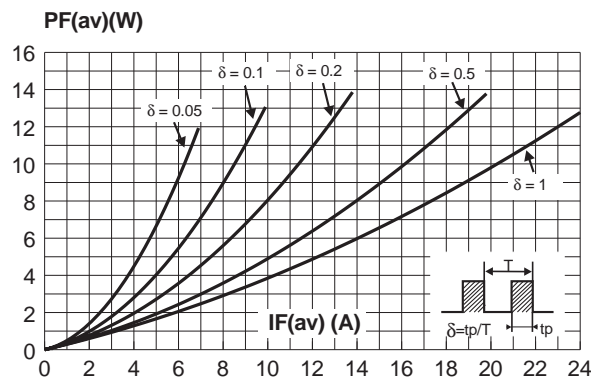


Fig. 2: Average forward current versus ambient temperature ($\delta = 0.5$, per diode)

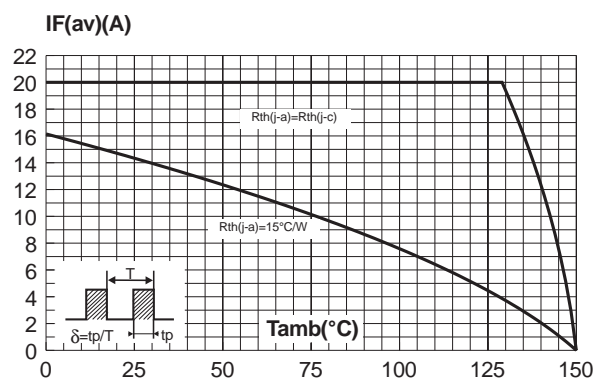


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values, per diode).

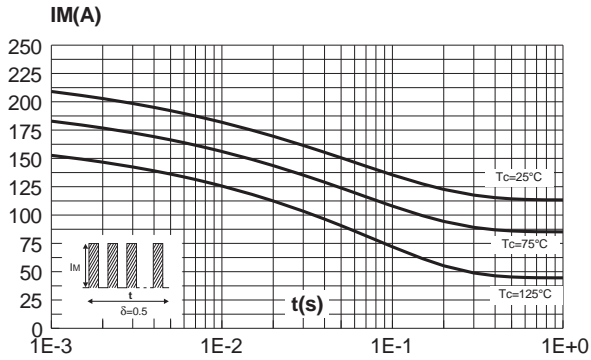


Fig. 4: Relative variation of thermal impedance junction to case versus pulse duration.

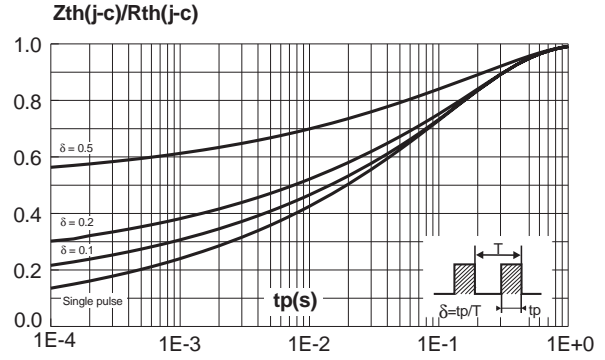


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values, per diode).

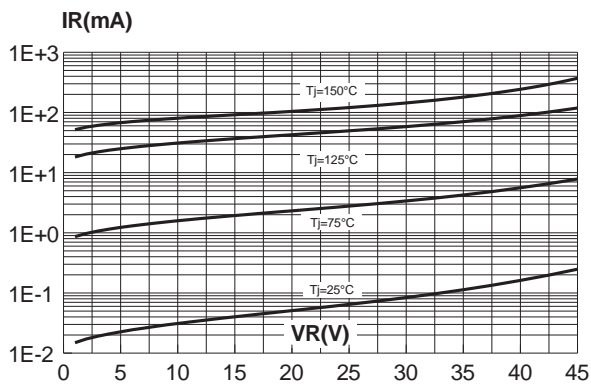


Fig. 6: Junction capacitance versus reverse voltage applied (typical values, per diode).

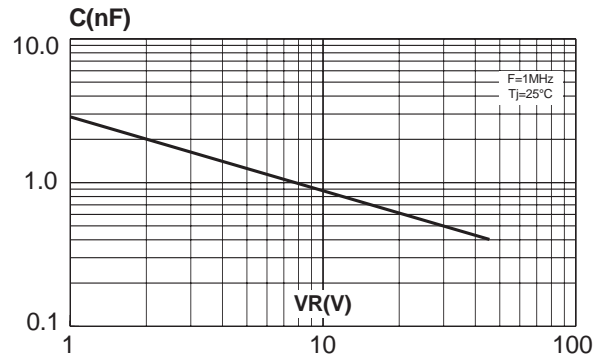
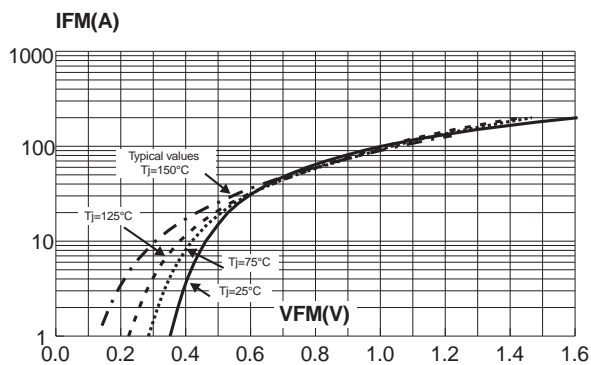
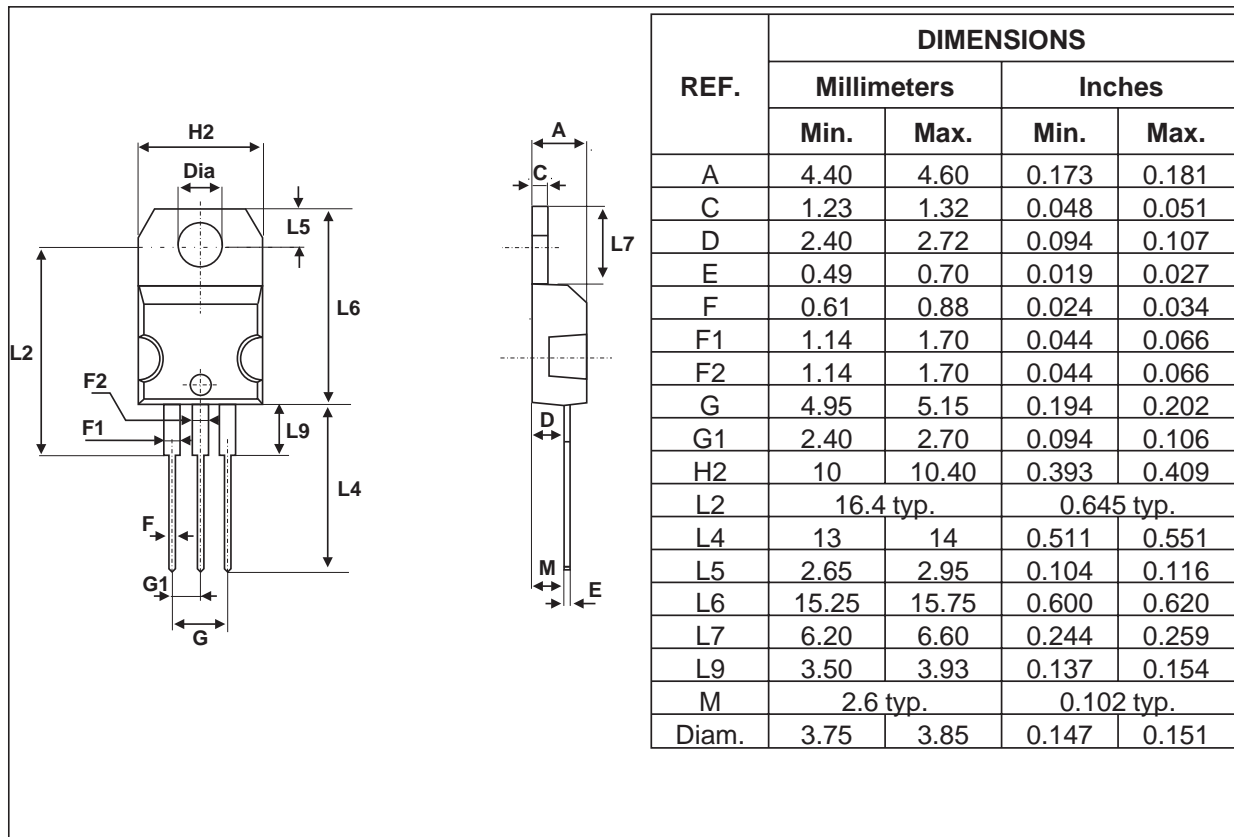


Fig. 7: Forward voltage drop versus forward current (maximum values, per diode).



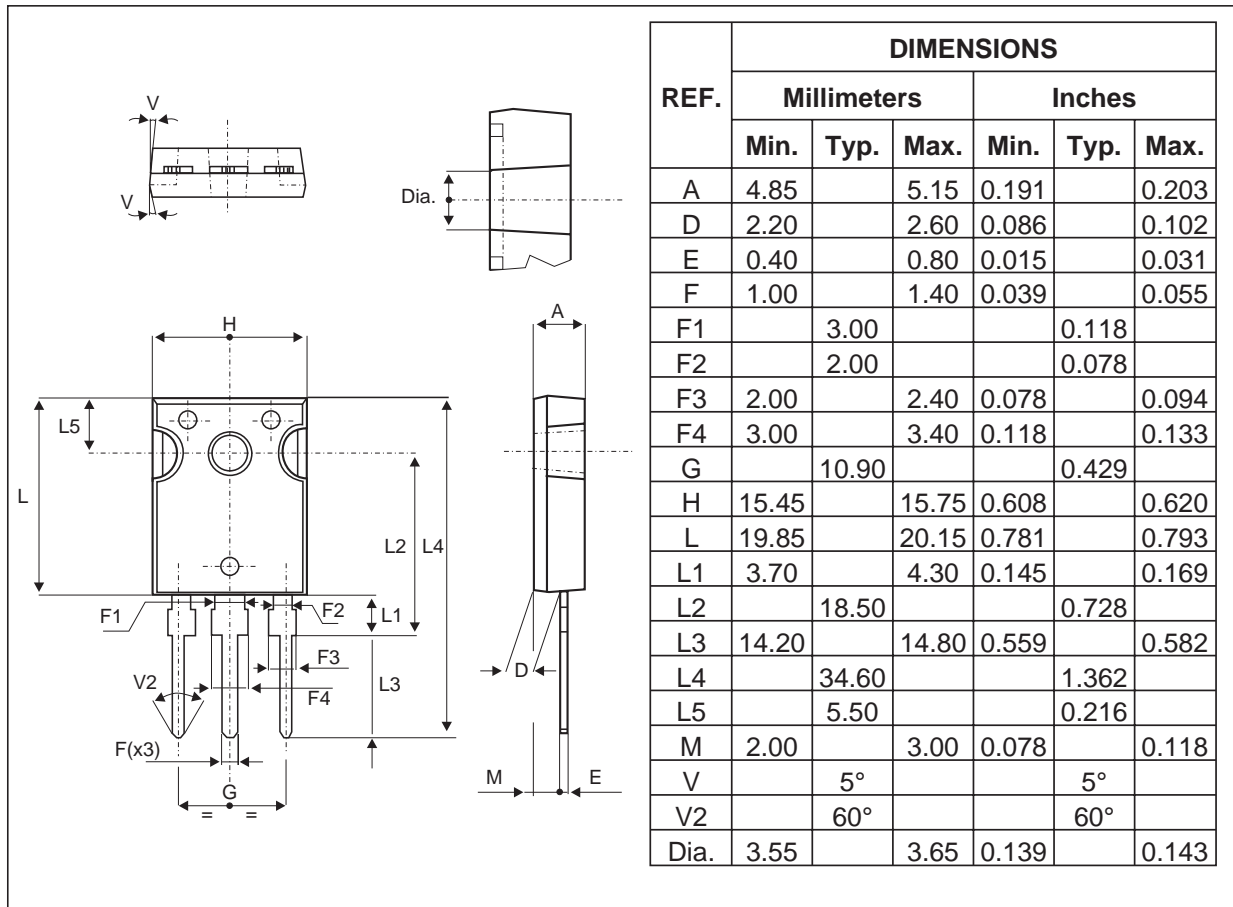
STPS40L45CT/CW

PACKAGE MECHANICAL DATA TO-220AB



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

PACKAGE MECHANICAL DATA
TO-247



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

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS40L45CT	STPS40L45CT	TO-220AB	2g	50	Tube
STPS40L45CW	STPS40L45CW	TO-247	4.4g	30	Tube

- Epoxy meets UL94,V0

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