



STPS30L40CG/CT/CW

LOW DROP POWER SCHOTTKY RECTIFIER

MAIN PRODUCTS CHARACTERISTICS

$I_F(AV)$	2 x 15 A
V_{RRM}	40 V
$T_j(max)$	150 °C
$V_F(max)$	0.50 V

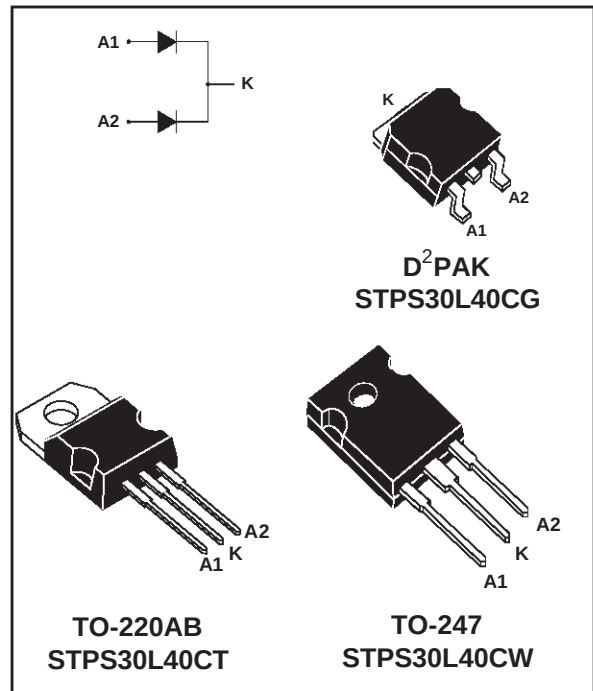
FEATURES AND BENEFITS

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP
- LOW THERMAL RESISTANCE
- AVALANCHE RATED

DESCRIPTION

Dual center tap schottky rectifiers suited for Switched Mode Power Supplies and high frequency DC to DC converters.

Packaged in TO-247, TO-220AB and D²PAK these devices are 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			40	V
I _{F(RMS)}	RMS forward current			30	A
I _{F(AV)}	Average forward current	T _c = 135°C δ = 0.5	Per diode Per device	15 30	A
I _{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal		220	A
I _{RRM}	Repetitive peak reverse current	tp=2 μs square F=1kHz		1	A
I _{RSM}	Non repetitive peak reverse current	tp = 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

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	1.60	$^{\circ}\text{C/W}$
		Total	0.85	
$R_{th(c)}$		Coupling	0.10	$^{\circ}\text{C/W}$

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_R^*	Reverse leakage current	$T_j = 25^{\circ}\text{C}$	$V_R = V_{RRM}$			360	μA
		$T_j = 100^{\circ}\text{C}$			20	50	mA
V_F^*	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 15\text{ A}$			0.55	V
		$T_j = 125^{\circ}\text{C}$	$I_F = 15\text{ A}$		0.42	0.50	
		$T_j = 25^{\circ}\text{C}$	$I_F = 30\text{ A}$			0.74	
		$T_j = 125^{\circ}\text{C}$	$I_F = 30\text{ A}$		0.59	0.67	

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

To evaluate the conduction losses use the following equation :

$$P = 0.330 \times I_{F(AV)} + 0.011 I_{F(RMS)}^2$$

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

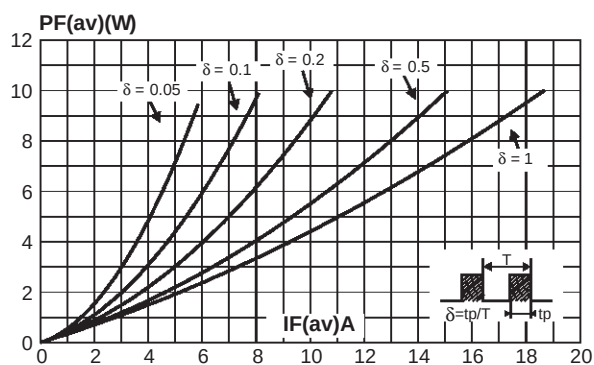


Fig. 2: Average current versus ambient temperature ($\delta=0.5$) (per diode).

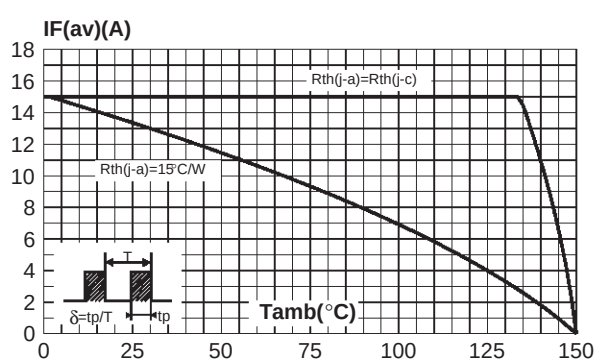


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values) (per diode).

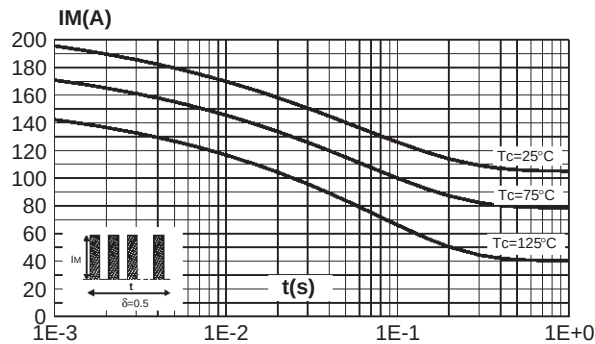


Fig. 4: Relative variation of thermal transient impedance junction to case versus pulse duration.

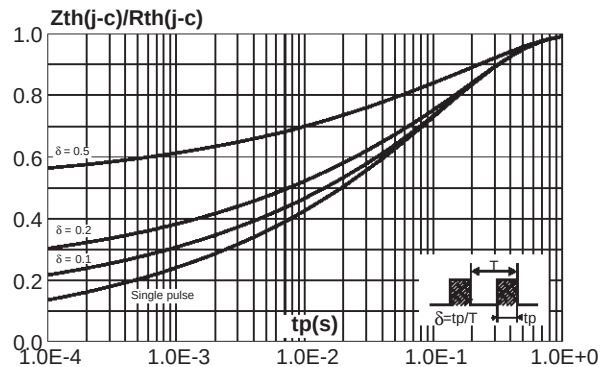


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values) (per diode).

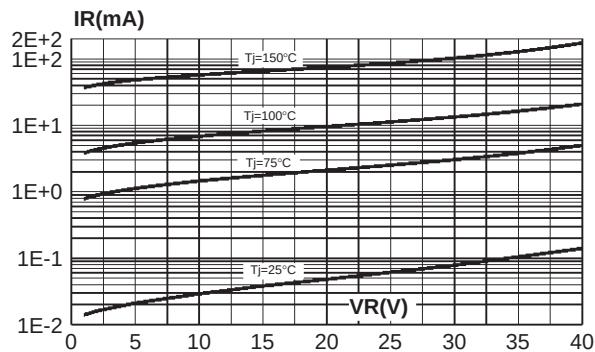


Fig. 6: Junction capacitance versus reverse voltage applied (typical values) (per diode).

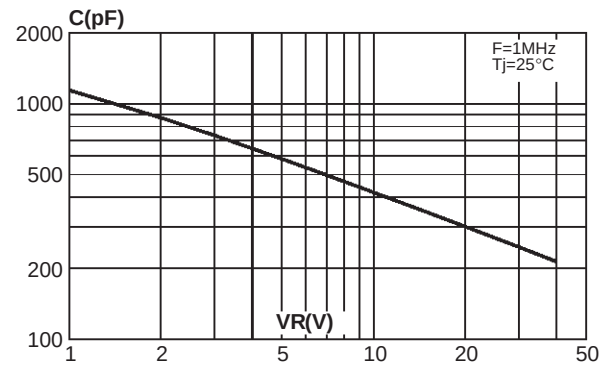


Fig. 7: Forward voltage drop versus forward current (maximum values) (per diode).

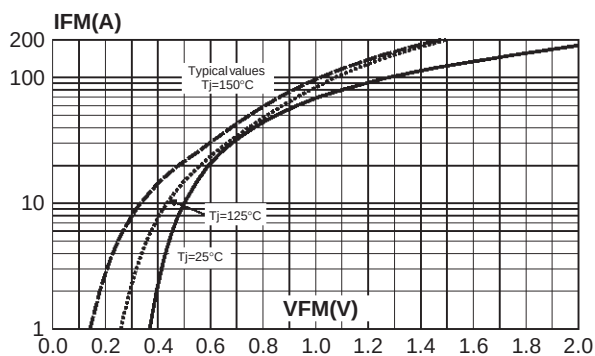
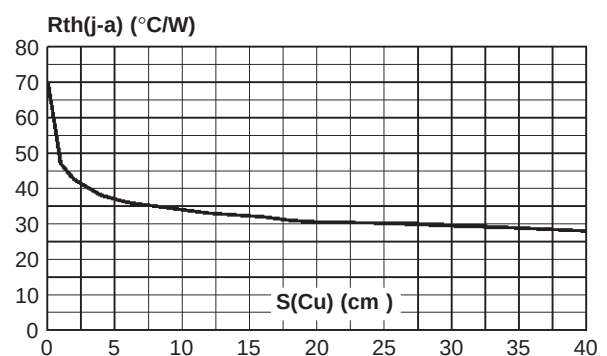
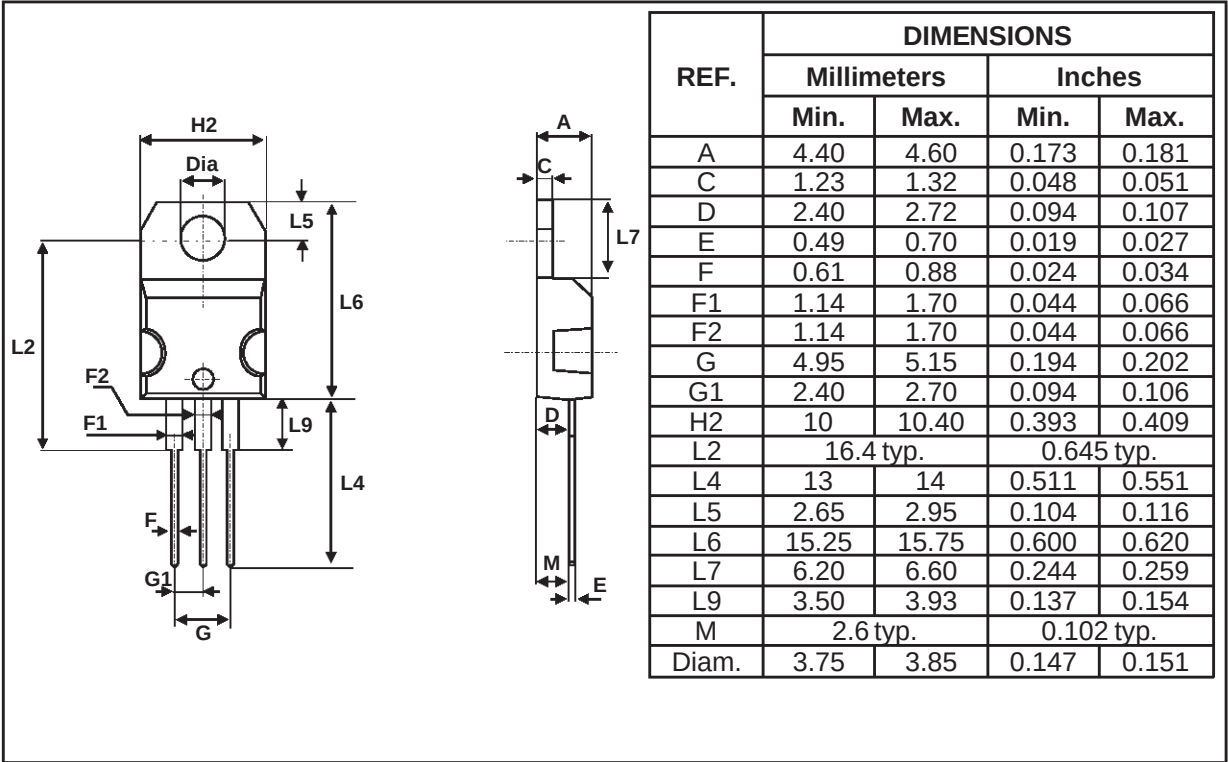


Fig. 8: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35μm) (STPS30L40CGonly).

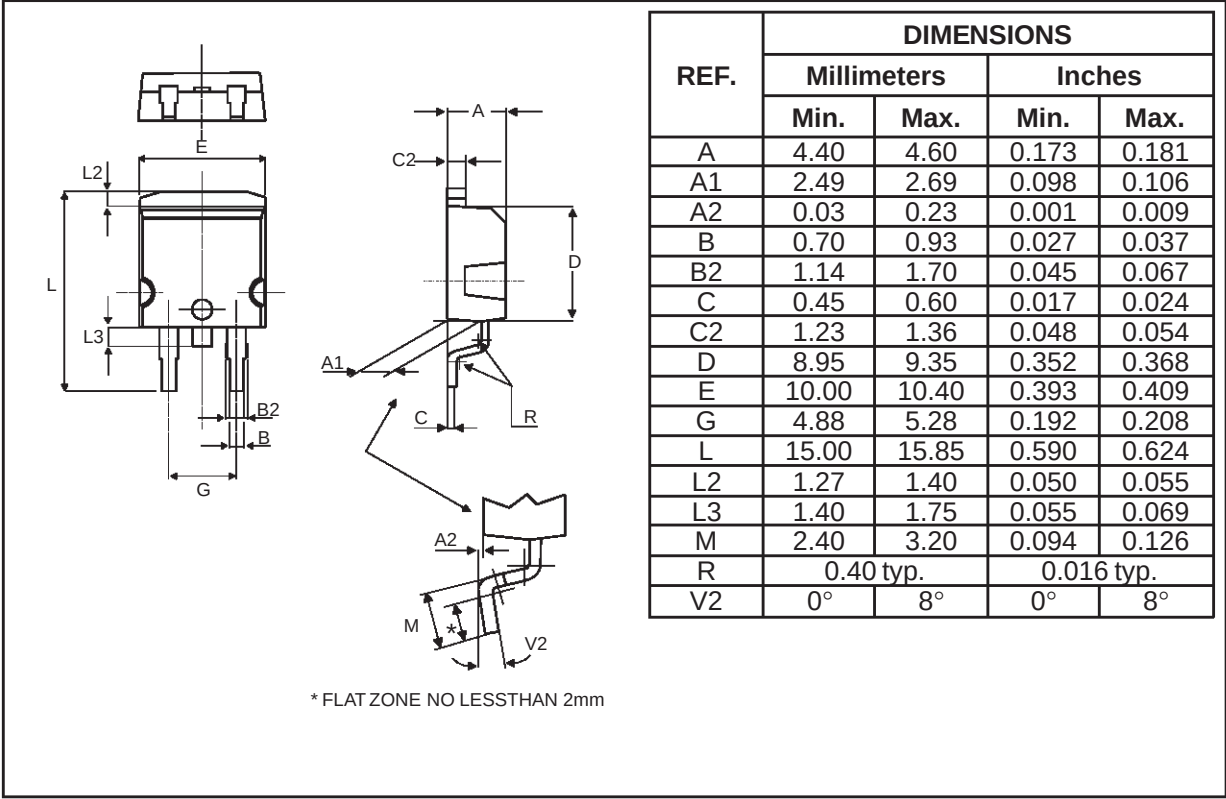


PACKAGE MECHANICAL DATA
TO-220AB



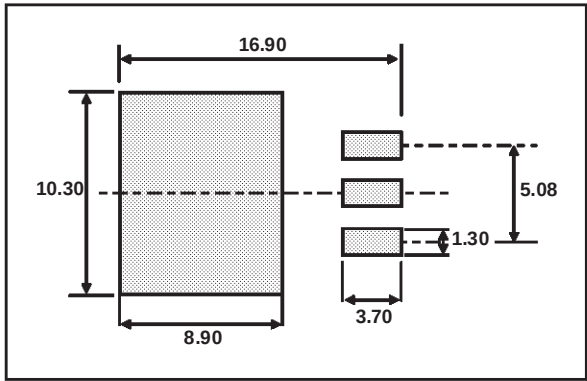
- Cooling method : C
- Recommended torque value : 0.55 m.N
- Maximum torque value : 0.70 m.N

PACKAGE MECHANICAL DATA
D²PAK



■ Cooling method : by conduction (method C)

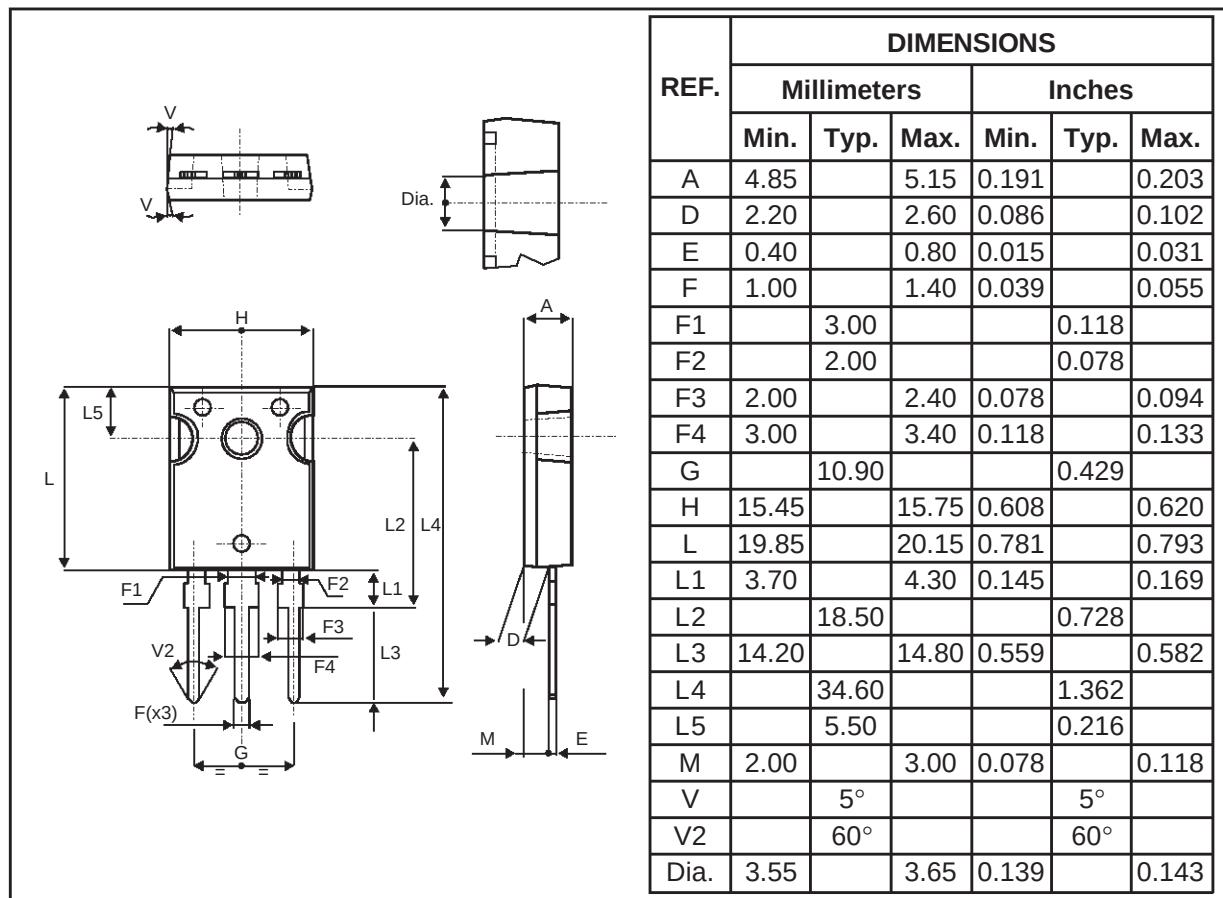
FOOT PRINT (in millimeters)
D²PAK



STPS30L40CG/CT/CW

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
STPS30L40CT	STPS30L40CT	TO-220AB	2g	50	Tube
STPS30L40CG	STPS30L40CG	D ² PAK	1.8g	50	Tube
STPS30L40CG-TR	STPS30L40CG	D ² PAK	1.8g	500	Tape & reel
STPS30L40CW	STPS30L40CW	TO-247	4.4g	30	Tube

- Epoxy meets UL94,V0

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