



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

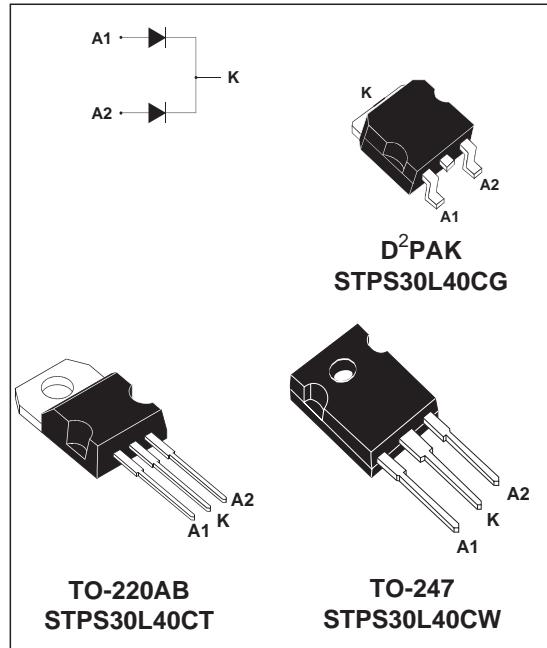
FEATURES AND BENEFITS

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

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	$T_c = 135^\circ C$ $\delta = 0.5$	Per diode Per device	15 30	A
I_{FSM}	Surge non repetitive forward current	$tp = 10 \text{ ms Sinusoidal}$		220	A
I_{RRM}	Repetitive peak reverse current	$tp = 2 \mu s$ square $F=1\text{kHz}$		1	A
I_{RSR}	Non repetitive peak reverse current	$tp = 100 \mu s$ square		3	A
P_{ARM}	Repetitive peak avalanche power	$tp = 1\mu s$ $T_j = 25^\circ C$		6000	W
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/ μ s

* : $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th}(j-a)}$ thermal runaway condition for a diode on its own heatsink

STPS30L40CG/CT/CW

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode Total	1.60 0.85 °C/W
$R_{th(c)}$		Coupling	0.10 °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 : * $t_p = 380 \mu\text{s}$, $\delta < 2\%$

To evaluate the conduction losses use the following equation :
 $P = 0.330 \times I_{F(AV)} + 0.011 I_{F}^2(\text{RMS})$

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

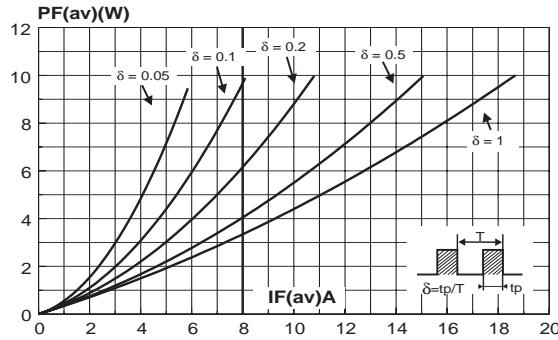


Fig. 2: Average current versus ambient temperature ($\delta=0.5$) (per diode).

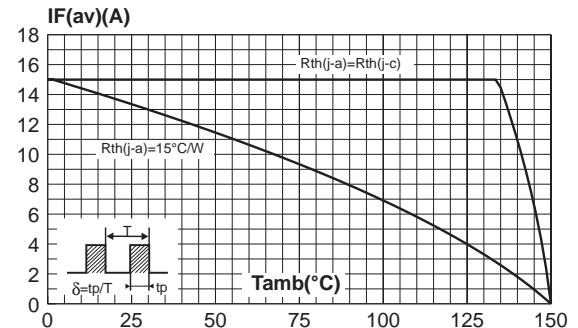


Fig. 3: Normalized avalanche power derating versus pulse duration.

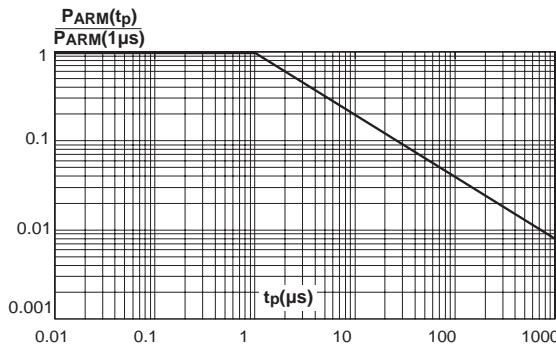


Fig. 4: Normalized avalanche power derating versus junction temperature.

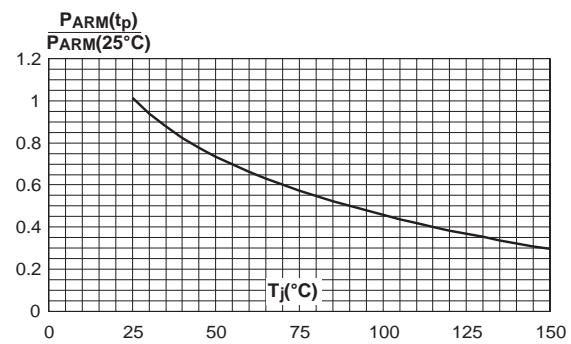


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values) (per diode).

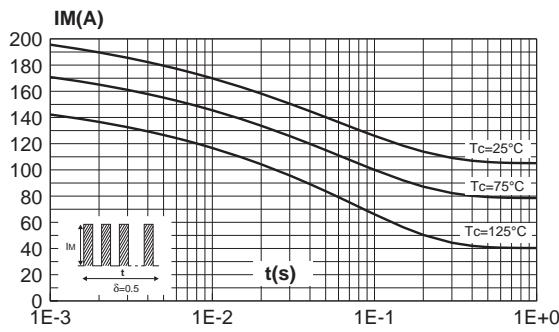


Fig. 6: Relative variation of thermal transient impedance junction to case versus pulse duration.

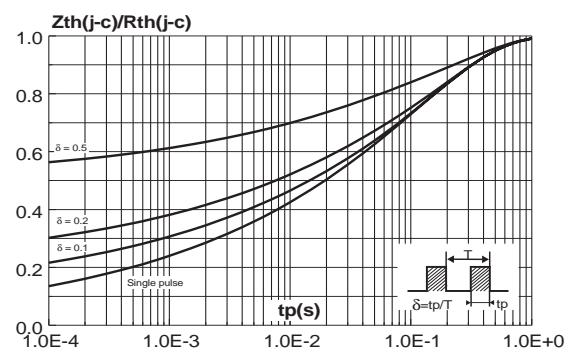


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values) (per diode).

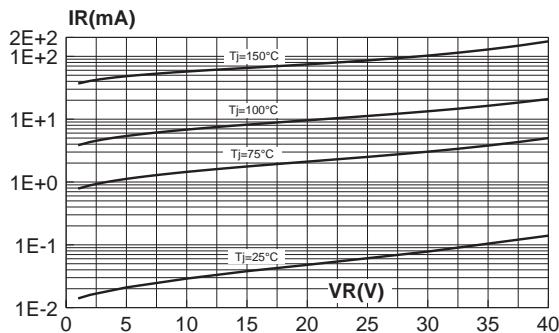
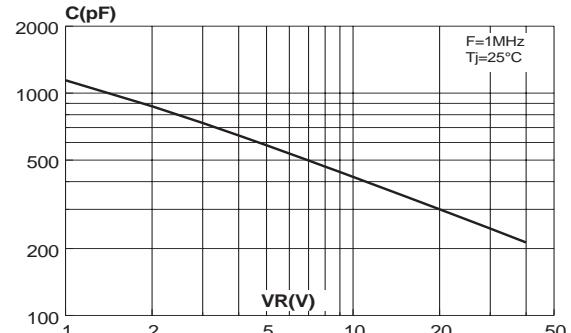


Fig. 8: Junction capacitance versus reverse voltage applied (typical values) (per diode).



STPS30L40CG/CT/CW

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

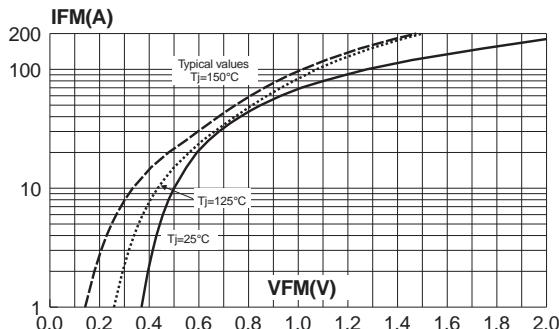
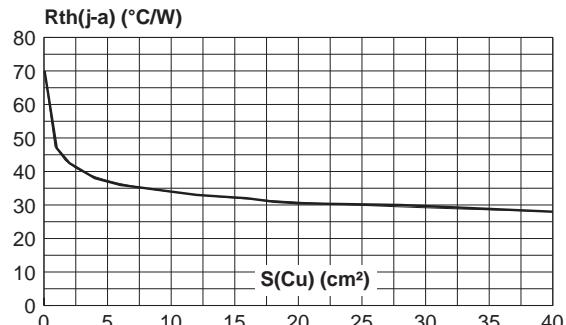
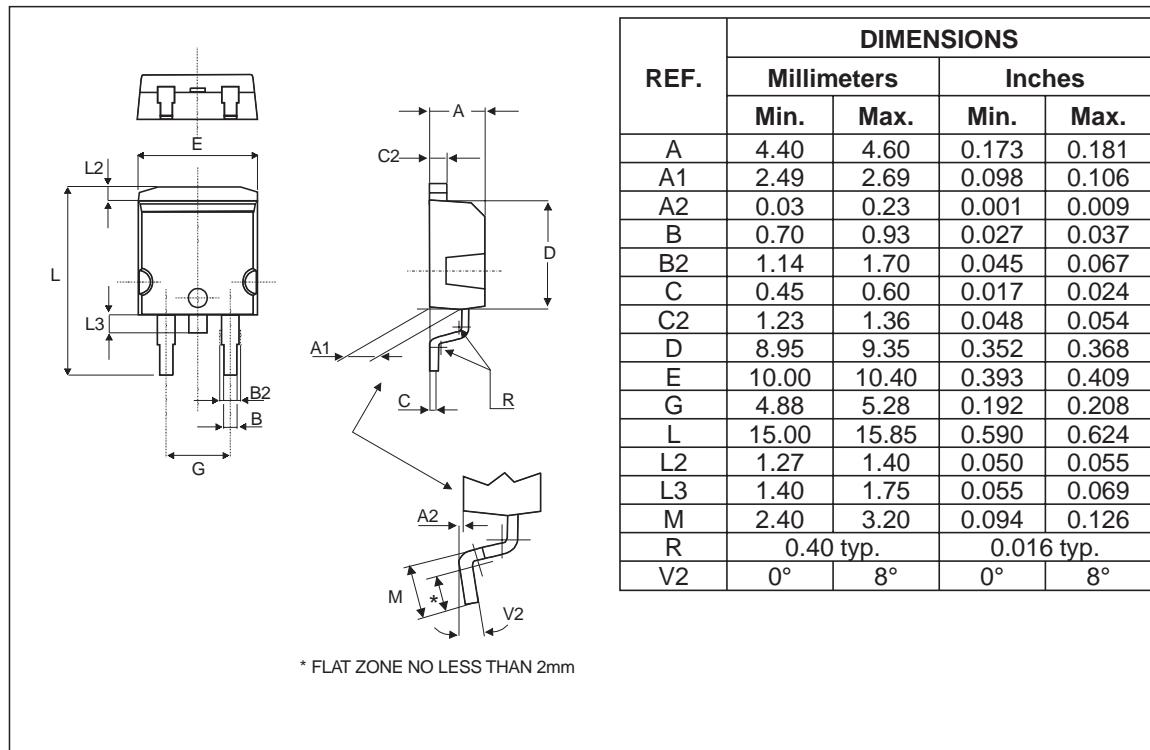


Fig. 10: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35µm) (STPS30L40CG only).



PACKAGE MECHANICAL DATA TO-220AB

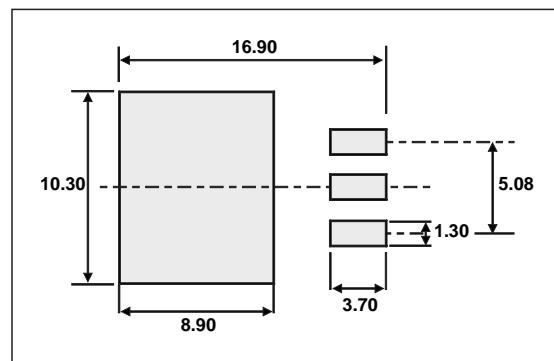
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PACKAGE MECHANICAL DATA
D²PAK


The technical drawing illustrates the physical dimensions of the STPS30L40CG/CT/CW package. It includes two views: a front view showing height L, lead spacing E, lead thickness G, and lead height L2; and a side view showing width A, height D, lead thickness C2, lead height A1, lead angle A2, lead width M, lead height V2, and lead thickness R. A note at the bottom specifies a flat zone requirement of no less than 2mm.

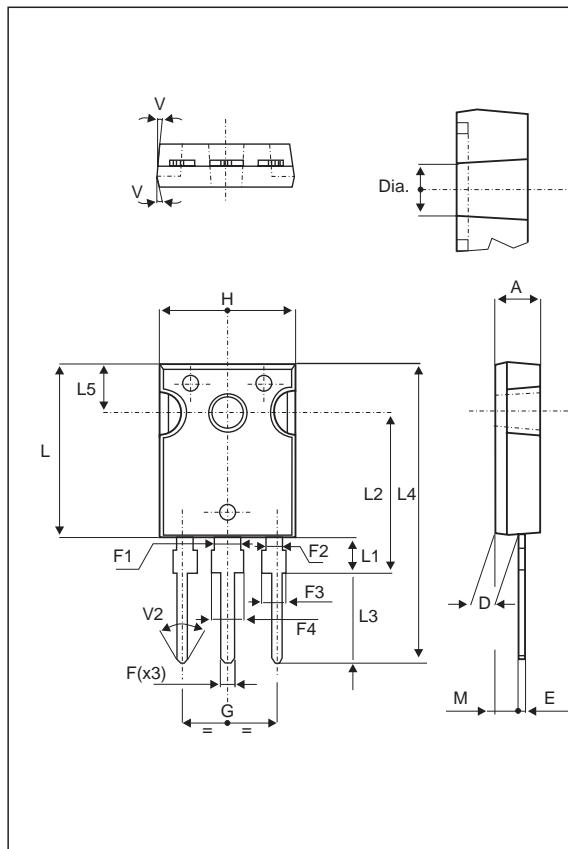
REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
A1	2.49	2.69	0.098	0.106
A2	0.03	0.23	0.001	0.009
B	0.70	0.93	0.027	0.037
B2	1.14	1.70	0.045	0.067
C	0.45	0.60	0.017	0.024
C2	1.23	1.36	0.048	0.054
D	8.95	9.35	0.352	0.368
E	10.00	10.40	0.393	0.409
G	4.88	5.28	0.192	0.208
L	15.00	15.85	0.590	0.624
L2	1.27	1.40	0.050	0.055
L3	1.40	1.75	0.055	0.069
M	2.40	3.20	0.094	0.126
R	0.40 typ.		0.016 typ.	
V2	0°	8°	0°	8°

- COOLING METHOD : BY CONDUCTION
(METHOD C)

FOOT PRINT (in millimeters)
D²PAK


STPS30L40CG/CT/CW

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

- 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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