STPS30L40CG/CT/CW

LOW DROP POWER SCHOTTKY RECTIFIER

MAJOR PRODUCTS CHARACTERISTICS

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

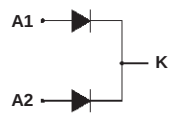
FEATURES AND BENEFITS

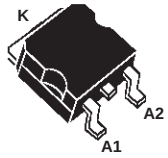
- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP
- LOW THERMAL RESISTANCE
- AVALANCHE RATED

DESCRIPTION

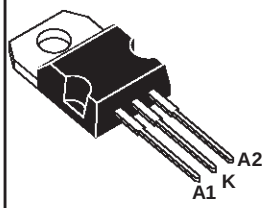
Dual center tap schottky rectifiers suited for switchmode power supply and high frequency DC to DC converters.

Packaged in TO-247, TO-220AB and D^2PAK these devices are intended for use in low voltage, high frequency inverters, free-wheeling and polarity protection applications.

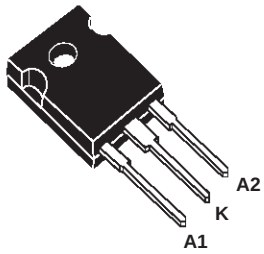




D^2PAK
STPS30L40CG



TO-220AB
STPS30L40CT



TO-247
STPS30L40CW

ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			40	V
V_{RRSM}	Repetitive peak surge reverse voltage	tp = 0.5ms δ = 0.025		45	V
$I_{F(RMS)}$	RMS forward current			30	A
$I_{F(AV)}$	Average forward current	Tc = 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}	Peak repetitive 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
Tj	Maximum operating junction temperature *			150	°C
dV/dt	Critical rate of rise of reverse voltage			10000	V/µs

* : $\frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$ 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 Total	1.60 0.85	°C/W
$R_{th\ (c)}$		Coupling	0.10	°C/W

When the diodes 1 and 2 are used simultaneously :
Δ Tj(diode 1) = P(diode1) x $R_{th(j-c)}$(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	$V_R = V_{RRM}$			360	µA
		Tj = 100°C			20	50	mA
V_F *	Forward voltage drop	Tj = 25°C	I_F = 15 A			0.55	V
		Tj = 125°C	I_F = 15 A		0.42	0.50	
		Tj = 25°C	I_F = 30 A			0.74	
		Tj = 125°C	I_F = 30 A		0.59	0.67	

Pulse test : * tp = 380 µs, δ < 2%

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

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

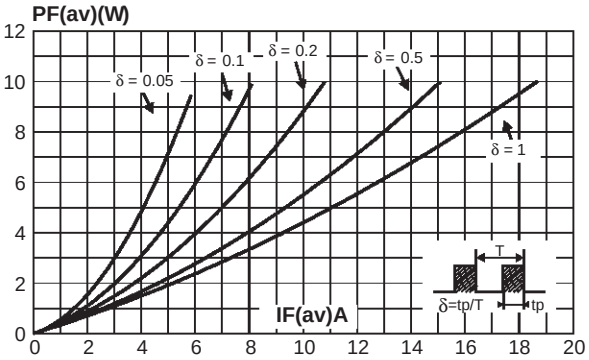


Fig. 2: Average current versus ambient temperature (δ=0.5) (per diode).

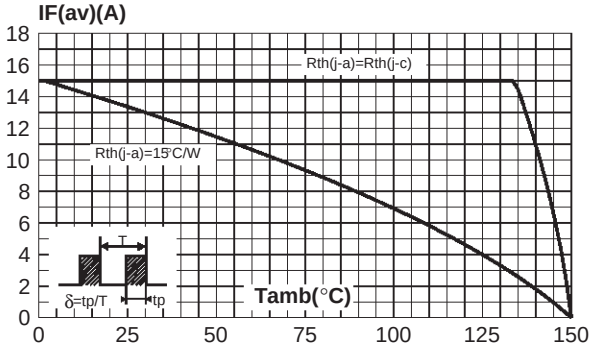


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values) (per diode).

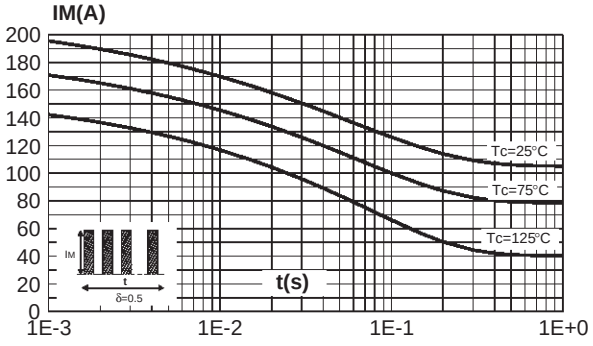


Fig. 4: Relative variation of thermal transient impedance junction to case versus pulse duration.

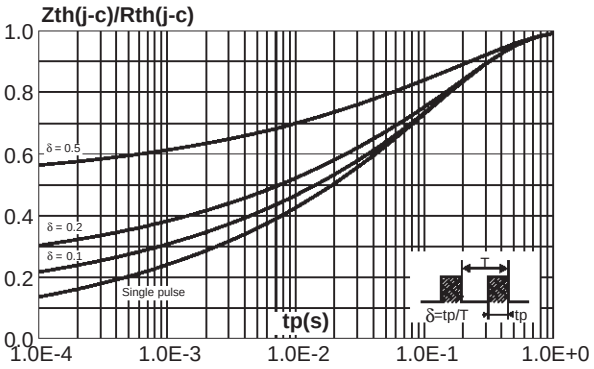


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values) (per diode).

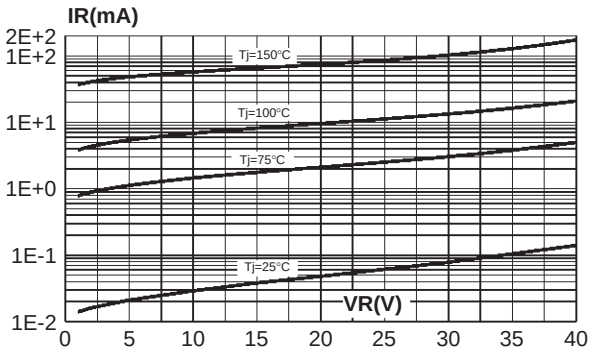


Fig. 6: Junction capacitance versus reverse voltage applied (typical values) (per diode).

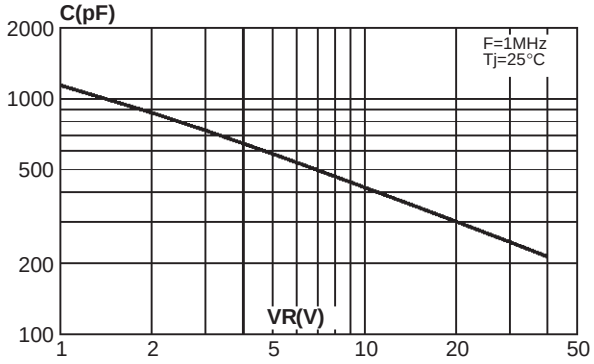


Fig. 7: Forward voltage drop versus forward current (maximum values) (per diode).

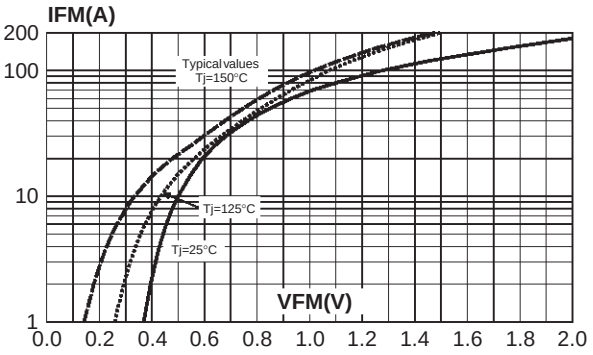
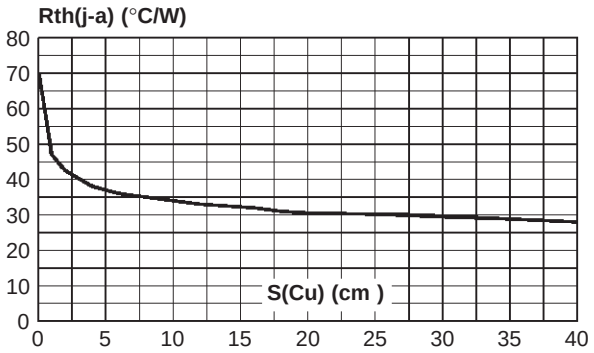
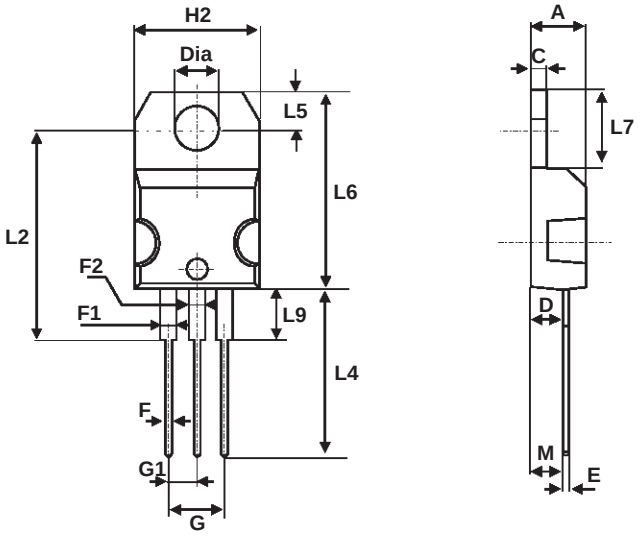


Fig. 8: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35µm) (STPS30L40CG only).



PACKAGE MECHANICAL DATA

TO-220AB

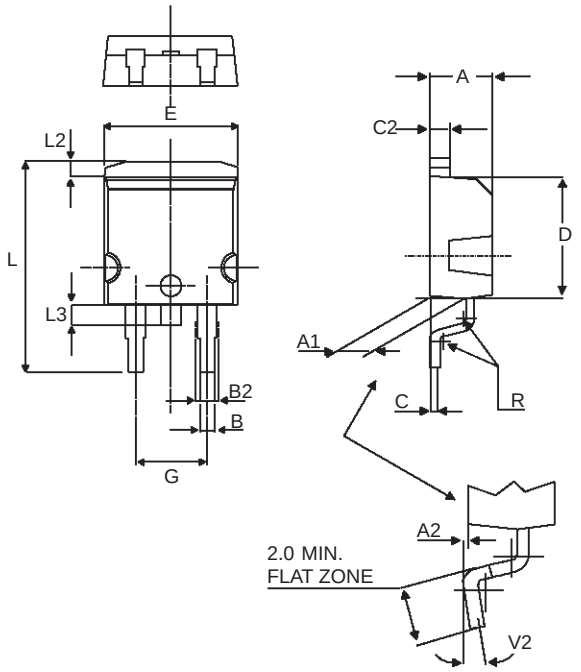


REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
C	1.23	1.32	0.048	0.051
D	2.40	2.72	0.094	0.107
E	0.49	0.70	0.019	0.027
F	0.61	0.88	0.024	0.034
F1	1.14	1.70	0.044	0.066
F2	1.14	1.70	0.044	0.066
G	4.95	5.15	0.194	0.202
G1	2.40	2.70	0.094	0.106
H2	10	10.40	0.393	0.409
L2	16.4 typ.		0.645 typ.	
L4	13	14	0.511	0.551
L5	2.65	2.95	0.104	0.116
L6	15.25	15.75	0.600	0.620
L7	6.20	6.60	0.244	0.259
L9	3.50	3.93	0.137	0.154
M	2.6 typ.		0.102 typ.	
Diam.	3.75	3.85	0.147	0.151

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

PACKAGE MECHANICAL DATA

D^2PAK

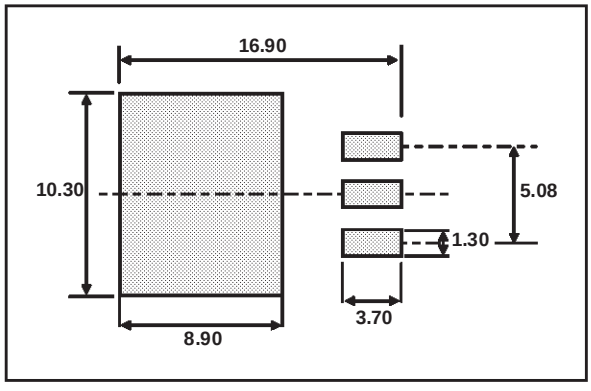


REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.30		4.60	0.169		0.181
A1	2.49		2.69	0.098		0.106
A2	0.03		0.23	0.001		0.009
B	0.70		0.93	0.027		0.037
B2	1.25	1.40		0.049	0.055	
C	0.45		0.60	0.017		0.024
C2	1.21		1.36	0.047		0.054
D	8.95		9.35	0.352		0.368
E	10.00		10.28	0.393		0.405
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
R		0.40			0.016	
V2	0°		8°	0°		8°

■ Cooling method : by conduction (method C)

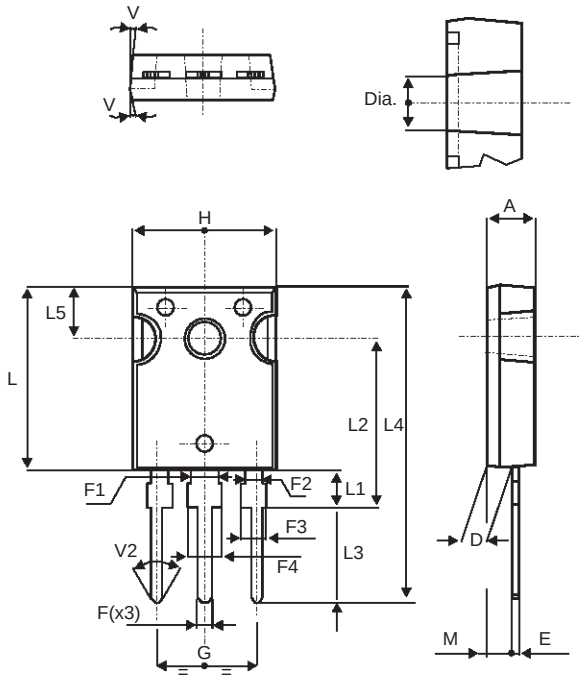
FOOT PRINT (in millimeters)

D^2PAK



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

- Epoxy meets UL94,V0