



STPS30L60CW/CT/CG/CR

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

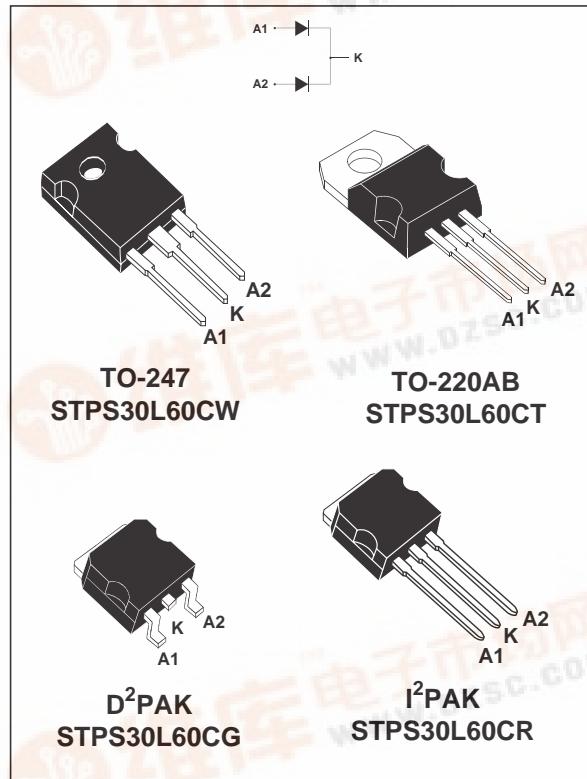
$I_{F(AV)}$	2 x 15 A
V_{RRM}	60 V
$T_j(\text{max})$	150°C
$V_F(\text{max})$	0.56 V

FEATURES AND BENEFITS

- 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-220, D²PAK, I²PAK and TO-247 this device is intended for use in high frequency inverters.



ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			60	V
$I_{F(RMS)}$	RMS forward current			30	A
$I_{F(AV)}$	Average forward current	$T_c = 130^\circ\text{C}$	Per diode $\delta = 0.5$	15 30	A
I_{FSM}	Surge non repetitive forward current	$tp = 10 \text{ ms}$	Sinusoidal	230	A
I_{IRR}	Repetitive peak reverse current	$tp=2 \mu\text{s}$	square $F=1\text{kHz}$	2	A
P_{ARM}	Repetitive peak avalanche power	$tp = 1\mu\text{s}$	$T_j = 25^\circ\text{C}$	7800	W
T_{stg}	Storage temperature range				-65 to +175 °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 Total	1.5 0.8	°C/W
$R_{th(c)}$		Coupling	0.1	°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	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			480	µA
		$T_j = 125^\circ\text{C}$			77	130	mA
V_F^*	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 15 \text{ A}$			0.6	V
		$T_j = 125^\circ\text{C}$	$I_F = 15 \text{ A}$		0.5	0.56	
		$T_j = 25^\circ\text{C}$	$I_F = 30 \text{ A}$			0.75	
		$T_j = 125^\circ\text{C}$	$I_F = 30 \text{ A}$		0.65	0.7	

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

To evaluate the maximum conduction losses use the following equation :
 $P = 0.42 \times I_{F(AV)} + 0.009 I_{F}^2(\text{RMS})$

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

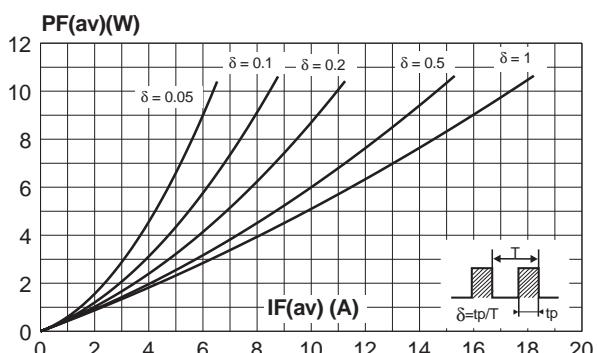


Fig. 2: Average forward current versus ambient temperature ($\delta = 0.5$, per diode).

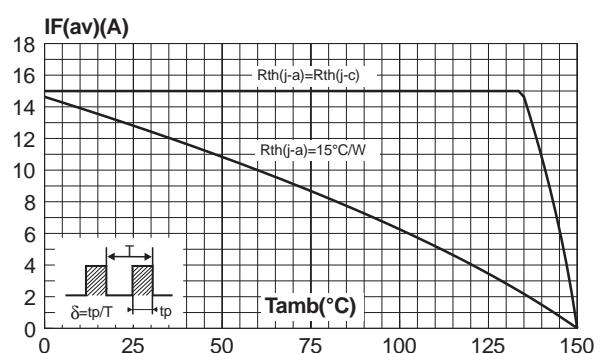


Fig. 3: Normalized avalanche power derating versus pulse duration.

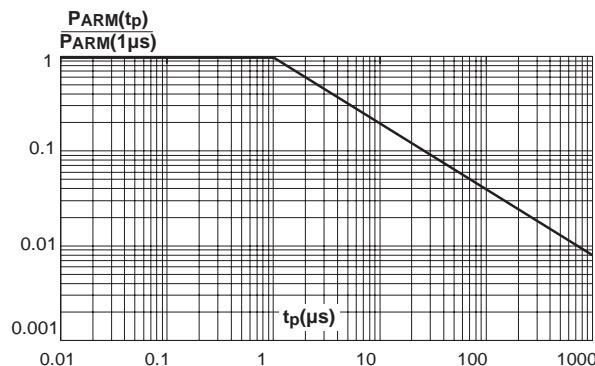


Fig. 4: Normalized avalanche power derating versus junction temperature.

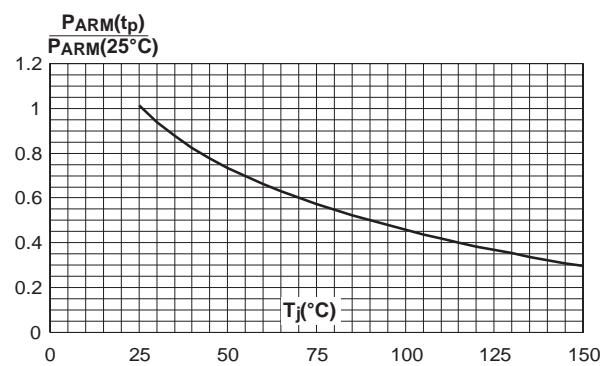


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values, per diode).

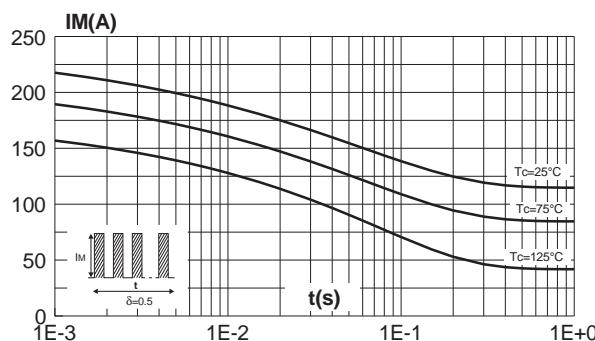


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

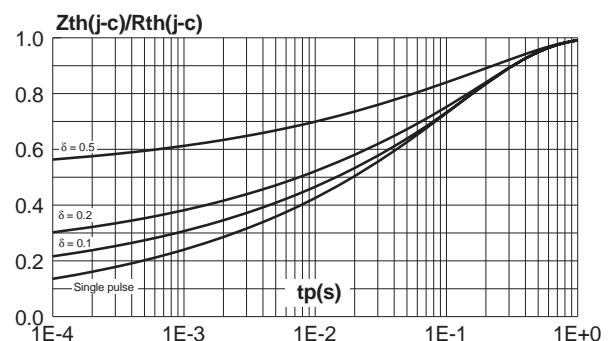


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values, per diode).

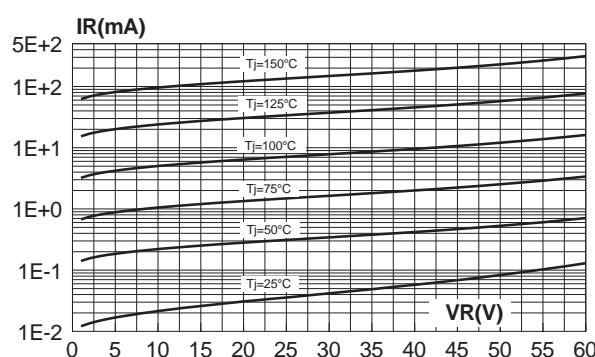
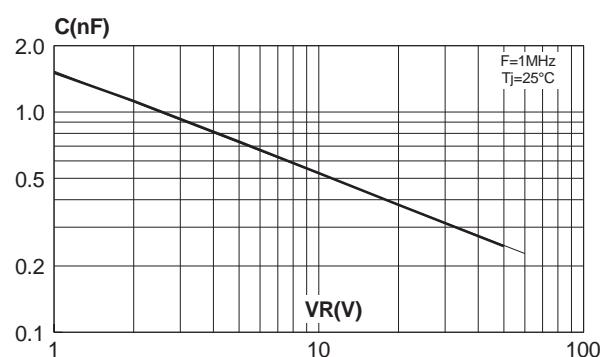


Fig. 8: Junction capacitance versus reverse voltage applied (typical values, per diode).



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

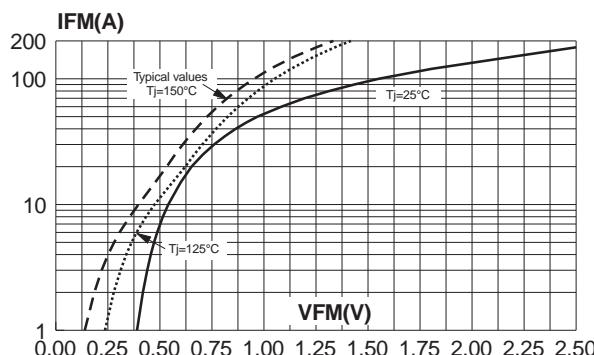
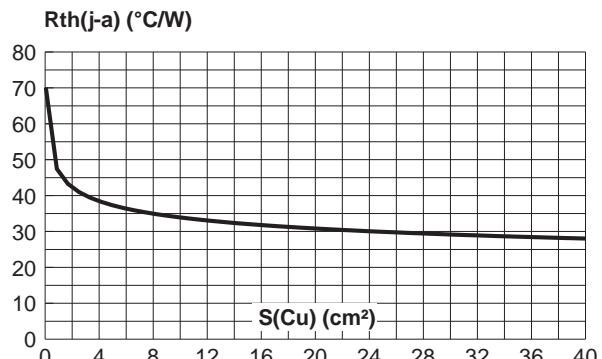


Fig. 10: Thermal resistance junction to ambient versus copper surface under tab for D²PAK (Epoxy printed circuit board FR4, copper thickness: 35µm)



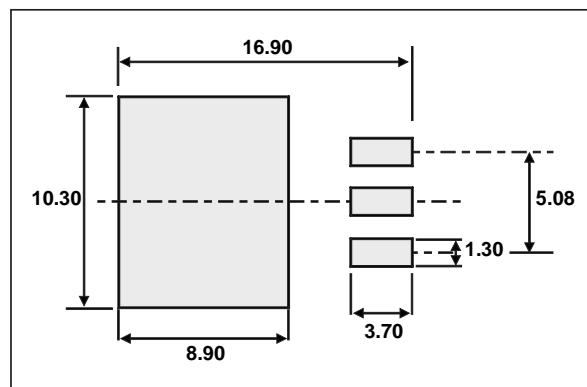
PACKAGE MECHANICAL DATA

D²PAK

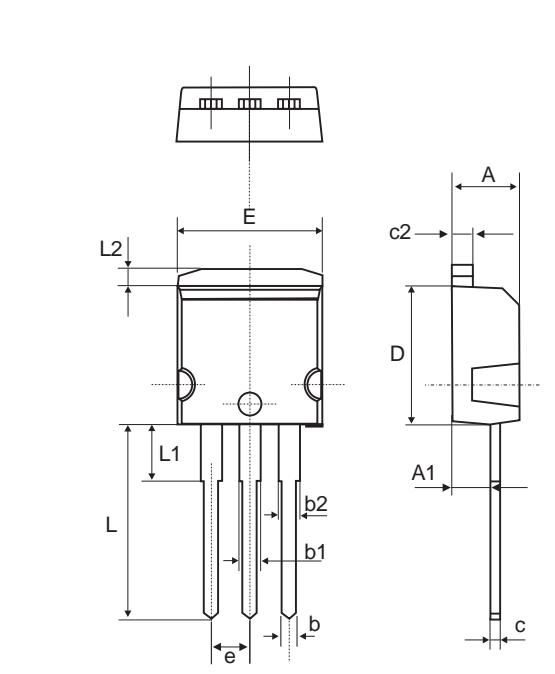
* FLAT ZONE NO LESS THAN 2mm

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°	

FOOTPRINT



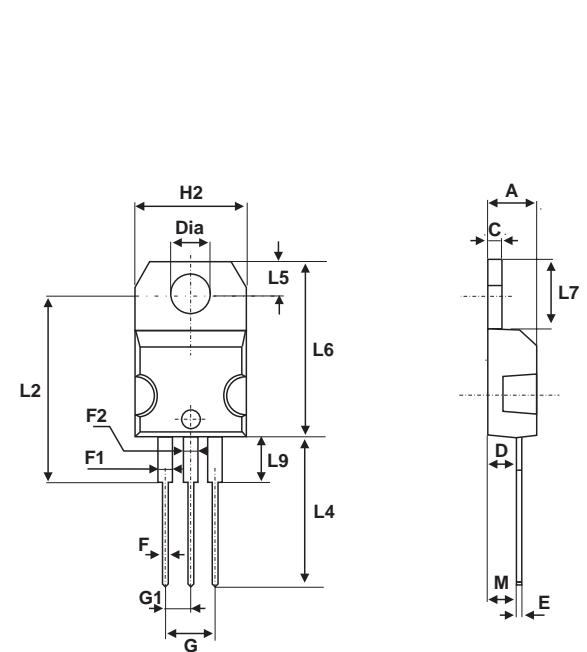
PACKAGE MECHANICAL DATA

I²PAK


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
b	0.70	0.93	0.028	0.037
b1	1.14	1.17	0.044	0.046
b2	1.14	1.17	0.044	0.046
c	0.45	0.60	0.018	0.024
c2	1.23	1.36	0.048	0.054
D	8.95	9.35	0.352	0.368
e	2.40	2.70	0.094	0.106
E	10.0	10.4	0.394	0.409
L	13.1	13.6	0.516	0.535
L1	3.48	3.78	0.137	0.149
L2	1.27	1.40	0.050	0.055

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

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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
STPS30L60CW	STPS30L60CW	TO-247	4.4g	50	Tube
STPS30L60CT	STPS30L60CT	TO-220AB	2.3g	50	Tube
STPS30L60CG	STPS30L60CG	D ² PAK	1.5g	50	Tube
STPS30L60CR	STPS30L60CR	I ² PAK	1.49 g	50	Tube

- EPOXY MEETS UL94,V0

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