Jameco Part Number 2035645

STPS30L30CT/CG/CR

LOW DROP POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 15 A
V_{RRM}	30 V
Tj (max)	150 °C
V_F (max)	0.37 V

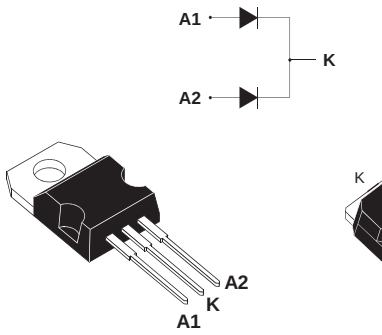
FEATURES AND BENEFITS

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

DESCRIPTION

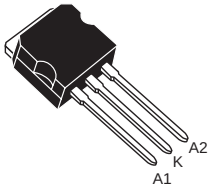
Dual center tap Schottky rectifiers suited for Switch Mode Power Supply and high frequency DC to DC converters.

Packaged in TO-220AB, D^2PAK and I²PAK, these devices are intended for use in low voltage, high frequency inverters, free-wheeling and polarity protection applications.



TO-220AB
STPS30L30CT

D^2PAK
STPS30L30CG



I^2PAK
STPS30L30CR

ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			30	V
$I_{F(RMS)}$	RMS forward current			30	A
$I_{F(AV)}$	Average forward current	Tc = 140°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 F = 1kHz square		1	A
I_{RSM}	Non repetitive peak reverse current	tp = 100µs square		3	A
P_{ARM}	Repetitive peak avalanche power	tp = 1µs Tj = 25°C		5300	W
T_{stg}	Storage temperature range			- 65 to + 150	°C
Tj	Maximum operating junction temperature *			150	°C
dV/dt	Critical rate of rise reverse voltage			10000	V/µs

THERMAL RESISTANCE

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 :
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	$V_R = V_{RRM}$			1.5	mA
		Tj = 125°C			170	350	mA
V_F *	Forward voltage drop	Tj = 25°C	I_F = 15 A			0.46	V
		Tj = 125°C	I_F = 15 A		0.33	0.37	
		Tj = 25°C	I_F = 30 A			0.57	
		Tj = 125°C	I_F = 30 A		0.43	0.5	

Pulse test : * tp = 380 µs, δ < 2%

To evaluate the conduction losses use the following equation :
$P = 0.24x\ I_{F(AV)} + 0.009\ I_F{}^2{}_{(RMS)}$

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

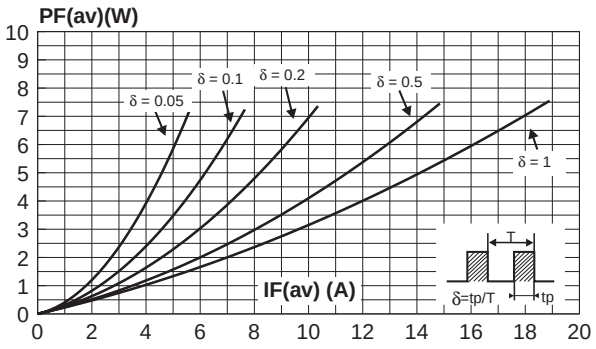


Fig. 2: Average current versus ambient temperature (δ=0.5) (per diode).

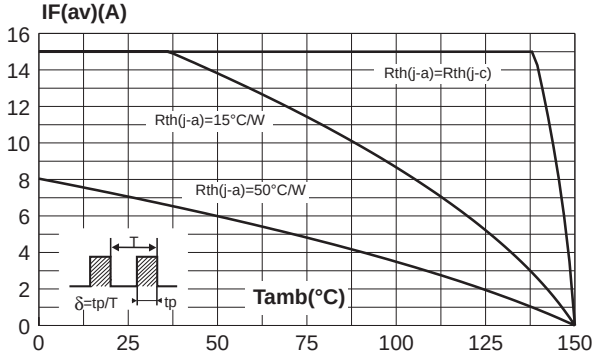


Fig. 3: Normalized avalanche power derating versus pulse duration.

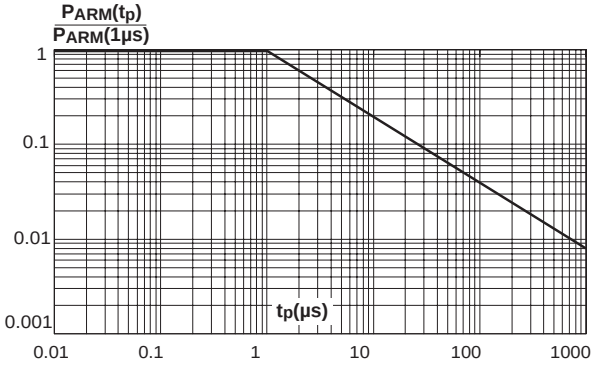


Fig. 4: Normalized avalanche power derating versus junction temperature.

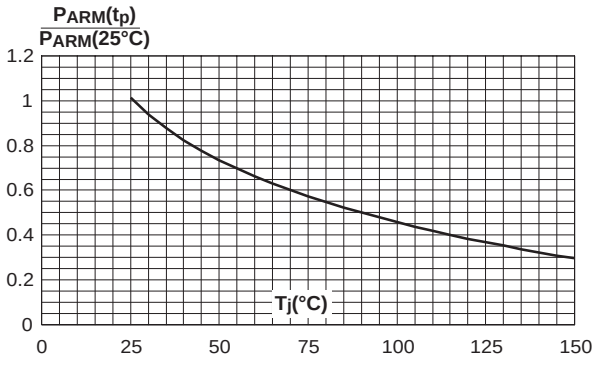


Fig. 4: Non repetitive surge peak forward current versus overload duration (maximum values) (per diode).

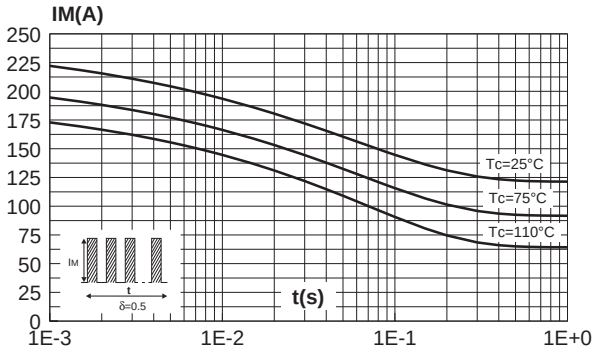


Fig. 5: Relative variation of thermal transient impedance junction to case versus pulse duration.

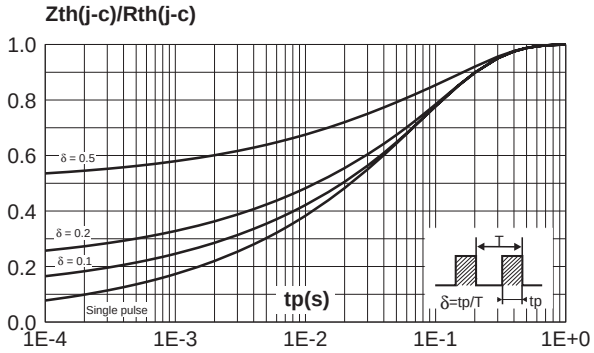


Fig. 6: Reverse leakage current versus reverse voltage applied (typical values) (per diode).

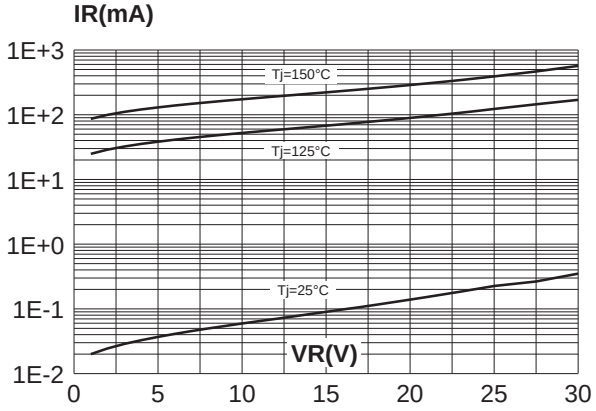


Fig. 7: Junction capacitance versus reverse voltage applied (typical values) (per diode).

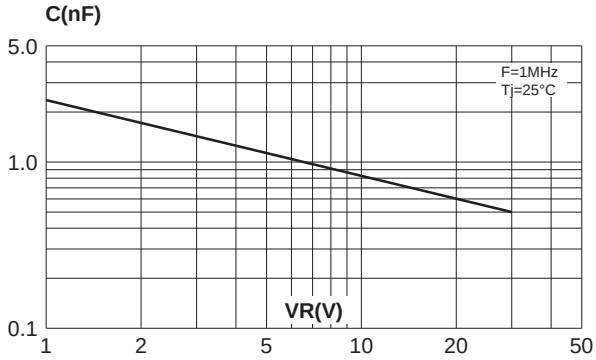


Fig. 8: Forward voltage drop versus forward current (maximum values - per diode).

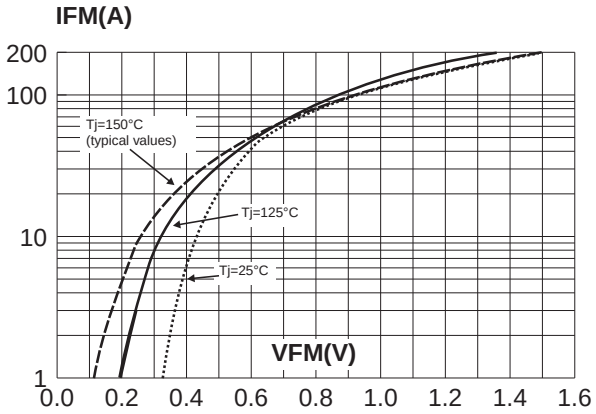
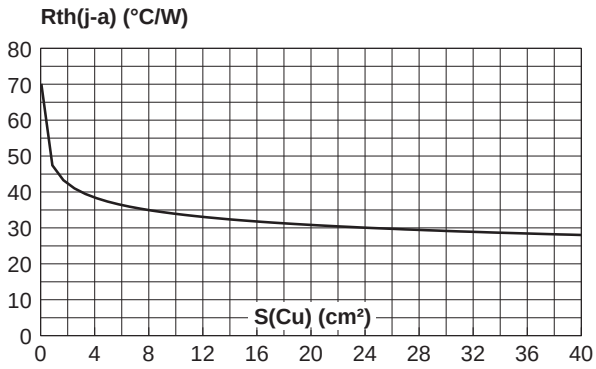
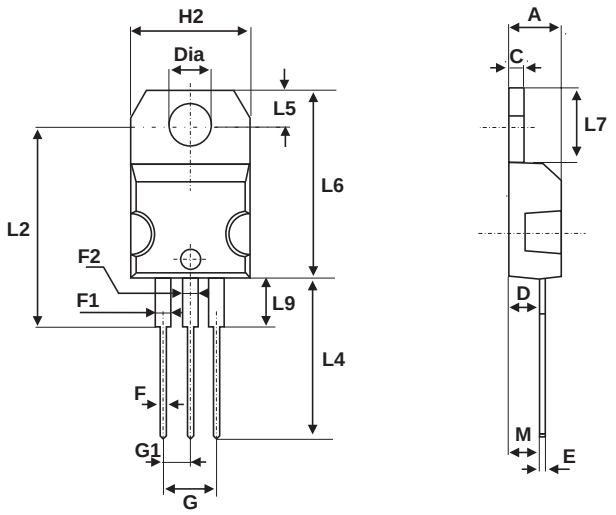


Fig. 9: Thermal resistance junction to ambient versus copper surface under tab (epoxy printed circuit board FR4, e(Cu) = 35 µm) (STPS30L30CG).



PACKAGE MECHANICAL DATA

TO-220AB

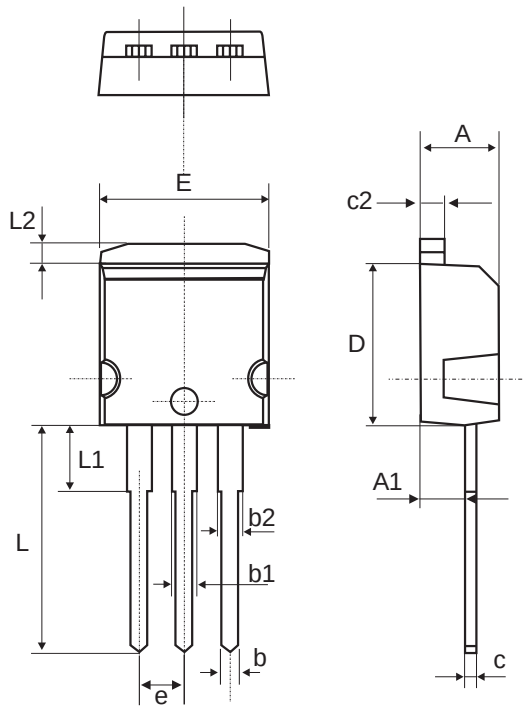


REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
C	1.23	1.32	0.048	0.051
D	2.40	2.72	0.094	0.107
E	0.49	0.70	0.019	0.027
F	0.61	0.88	0.024	0.034
F1	1.14	1.70	0.044	0.066
F2	1.14	1.70	0.044	0.066
G	4.95	5.15	0.194	0.202
G1	2.40	2.70	0.094	0.106
H2	10	10.40	0.393	0.409
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

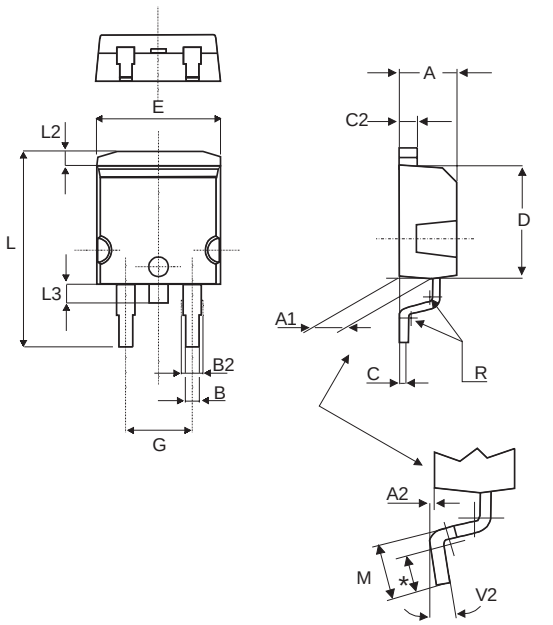
I^2PAK



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

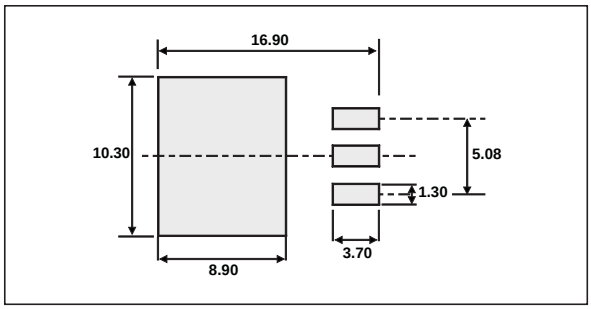
D^2PAK



* 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°	0°	8°

FOOT PRINT (in millimeters)



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS30L30CT	STPS30L30CT	TO-220AB	2g	50	Tube
STPS30L30CG	STPS30L30CG	D^2PAK	1.8g	50	Tube
STPS30L30CG-TR	STPS30L30CG	D^2PAK	1.8g	1000	Tape & reel
STPS30L30CR	STPS30L30CR	I^2PAK	1.49g	50	Tube

- Epoxy meets UL94,V0