

LOW DROP POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

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

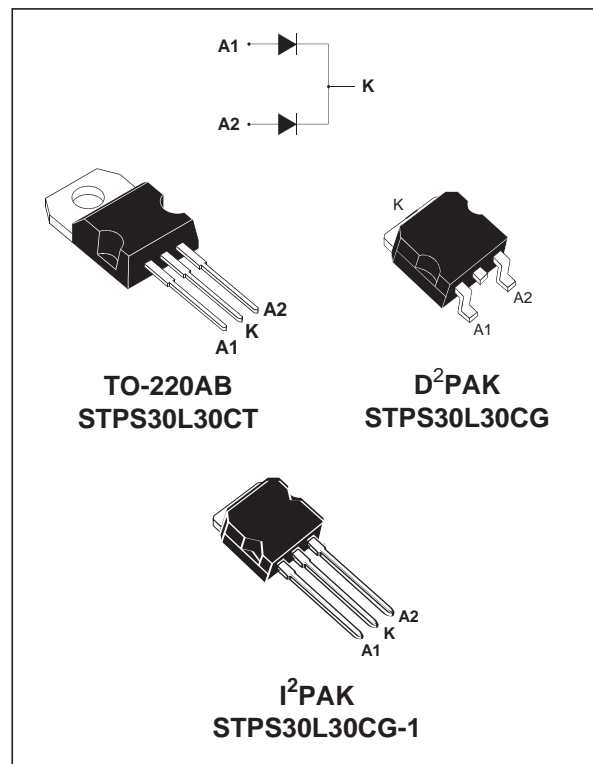
FEATURES AND BENEFITS

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

DESCRIPTION

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

Packaged in 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		30	V
$I_{F(RMS)}$	RMS forward current		30	A
$I_{F(AV)}$	Average forward current	$T_c = 140^\circ\text{C}$ $\delta = 0.5$	Per diode 15 Per device 30	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ Sinusoidal	220	A
I_{RRM}	Peak repetitive reverse current	$t_p = 2 \mu\text{s}$ $F = 1 \text{ kHz}$ square	1	A
I_{RSM}	Non repetitive peak reverse current	$t_p = 100 \mu\text{s}$ 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 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

STPS30L30CT/CG/CG-1

THERMAL RESISTANCE

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	1.5	°C/W
		Total	0.8	
$R_{th(c)}$		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	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			1.5	mA
		$T_j = 125^\circ\text{C}$			170	350	mA
V_F^*	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 15\text{ A}$			0.46	V
		$T_j = 125^\circ\text{C}$	$I_F = 15\text{ A}$		0.33	0.37	
		$T_j = 25^\circ\text{C}$	$I_F = 30\text{ A}$			0.57	
		$T_j = 125^\circ\text{C}$	$I_F = 30\text{ A}$		0.43	0.5	

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

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

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

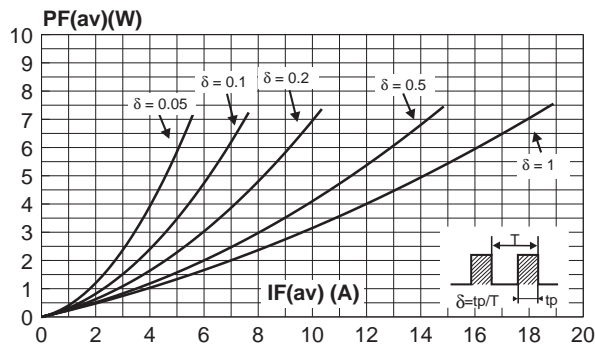


Fig. 2: Average current versus ambient temperature ($\delta=0.5$) (per diode).

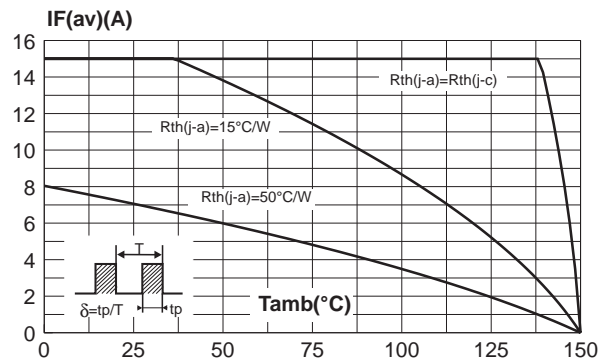


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values) (per diode).

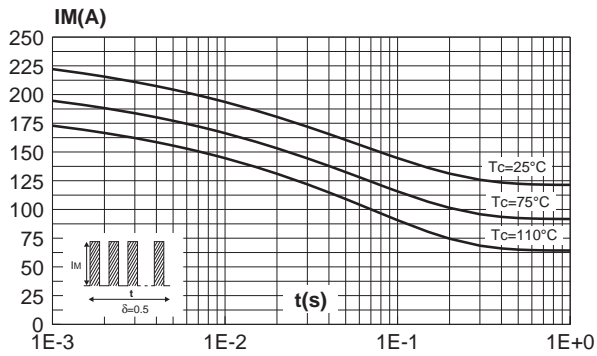


Fig. 4: Relative variation of thermal transient impedance junction to case versus pulse duration.

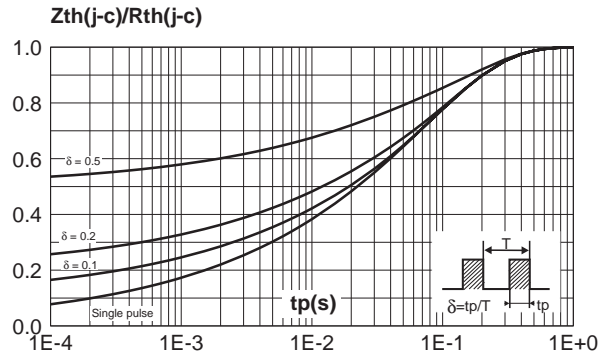


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values) (per diode).

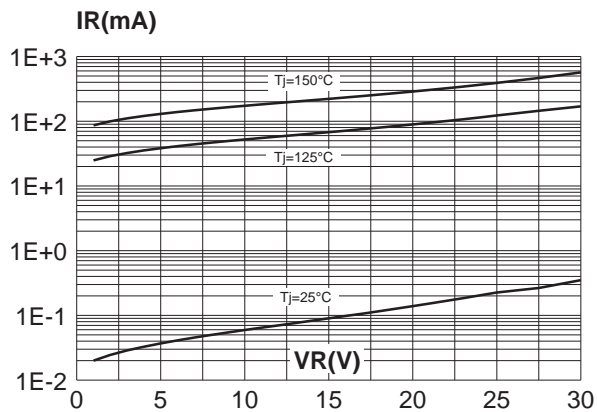


Fig. 6: Junction capacitance versus reverse voltage applied (typical values) (per diode).

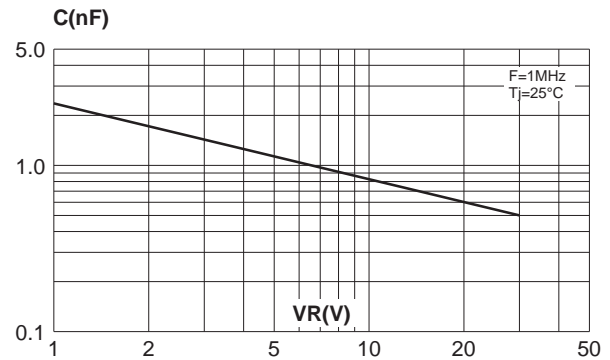


Fig. 7: Forward voltage drop versus forward current (maximum values - per diode).

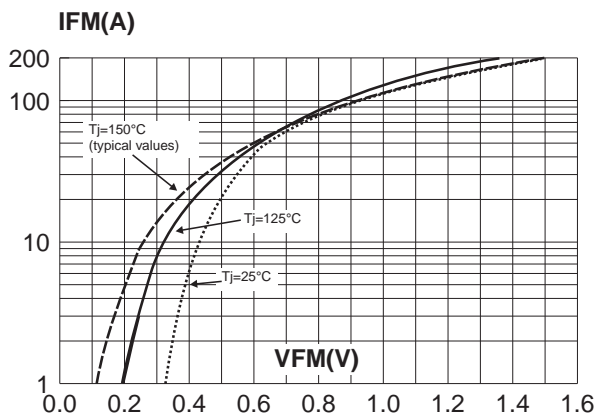
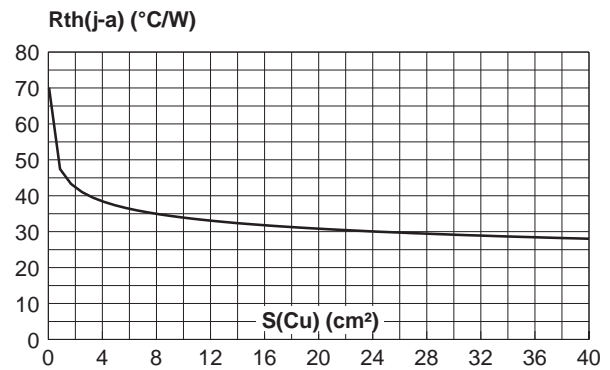
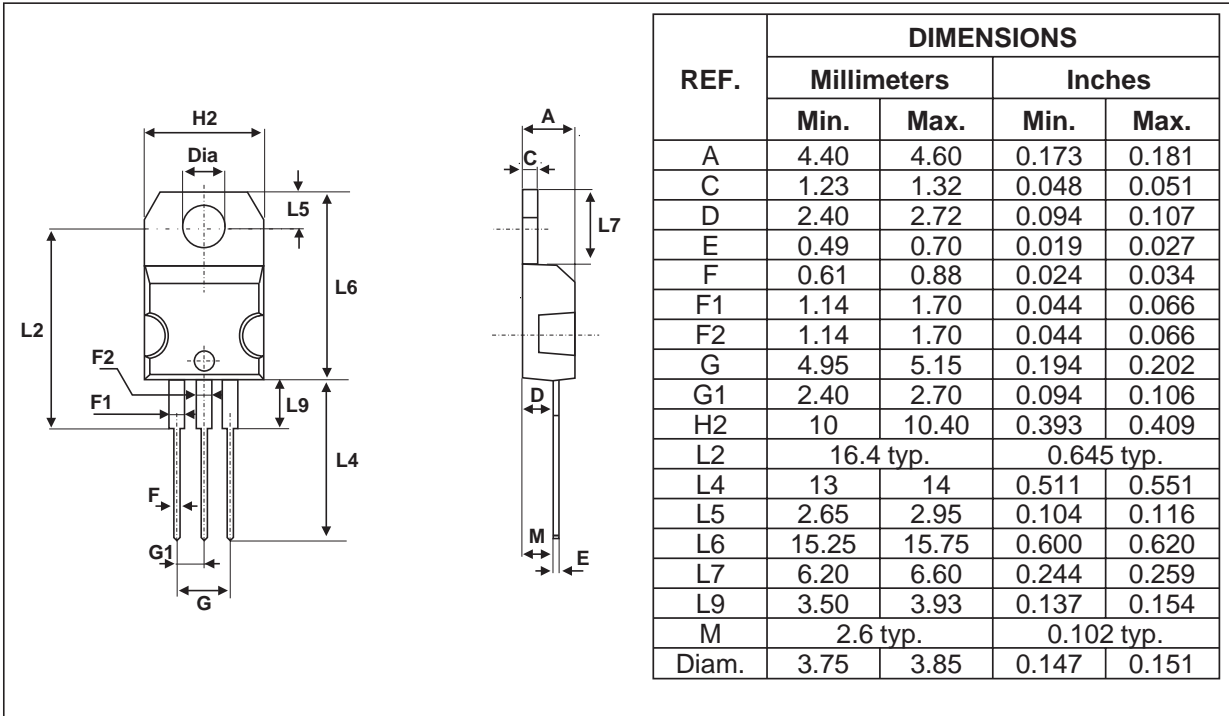


Fig. 8: Thermal resistance junction to ambient versus copper surface under tab (epoxy printed circuit board FR4, e(Cu) = 35 μm) (STPS30L30CG).



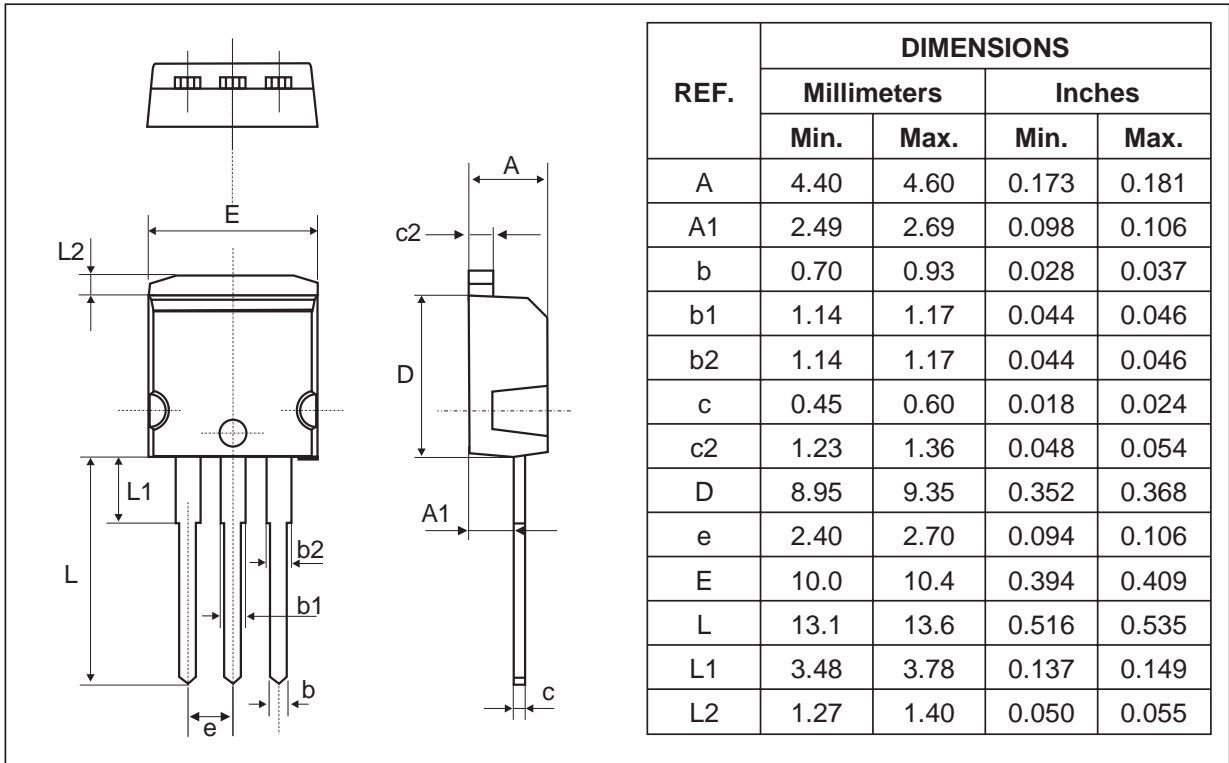
STPS30L30CT/CG/CG-1

PACKAGE MECHANICAL DATA
TO-220AB

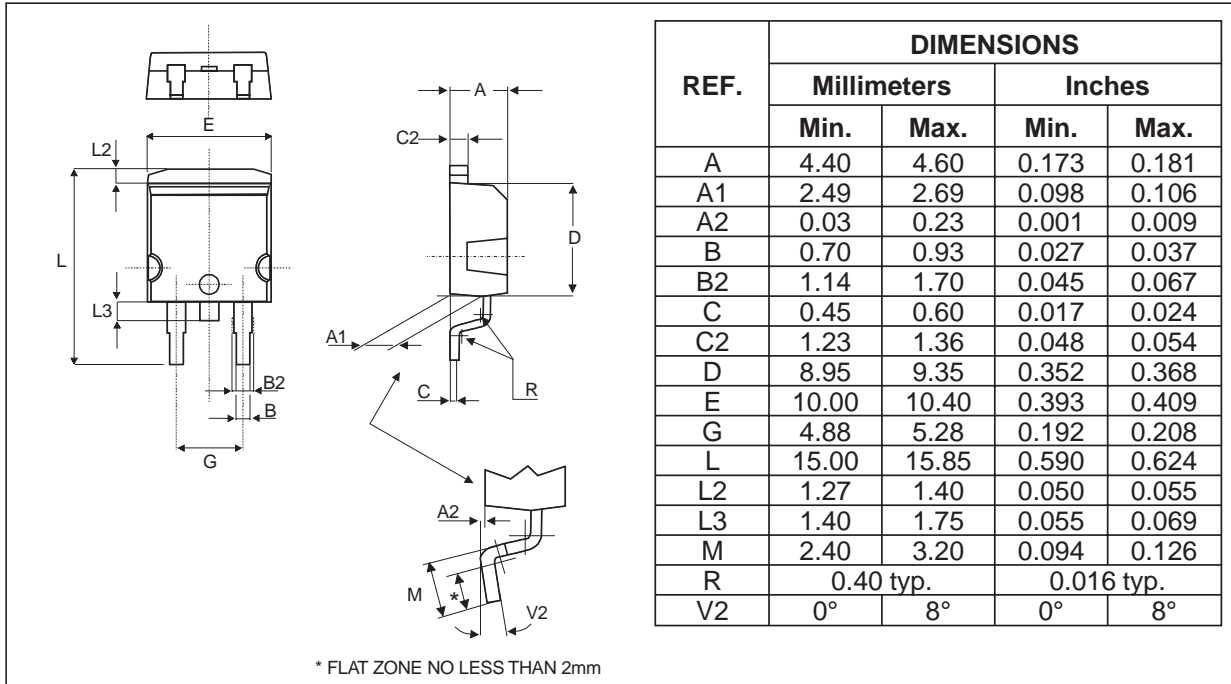


- Cooling method: C
- Recommended torque value: 0.55 m.N
- Maximum torque value: 0.70 m.N

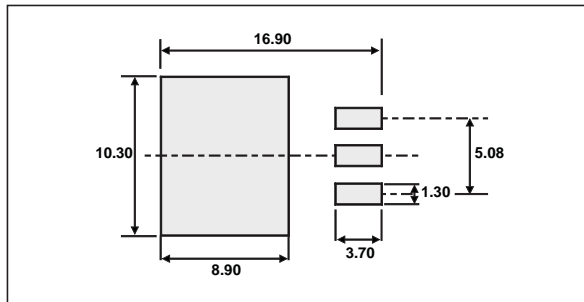
PACKAGE MECHANICAL DATA
I²PAK



PACKAGE MECHANICAL DATA
D²PAK



FOOT PRINT (in millimeters)



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS30L30CT	STPS30L30CT	TO-220AB	2g	50	Tube
STPS30L30CG	STPS30L30CG	D ² PAK	1.8g	50	Tube
STPS30L30CG-TR	STPS30L30CG	D ² PAK	1.8g	1000	Tape & reel
STPS30L30CG-1	STPS30L30CG-1	I ² PAK	1.49g	50	Tube

- Epoxy meets UL94,V0

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