

LOW DROP POWER SCHOTTKY RECTIFIER

MAJOR PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	2 x 30 A
V_{RRM}	30 V
$T_j (max)$	150°C
$V_F (max)$	0.45 V

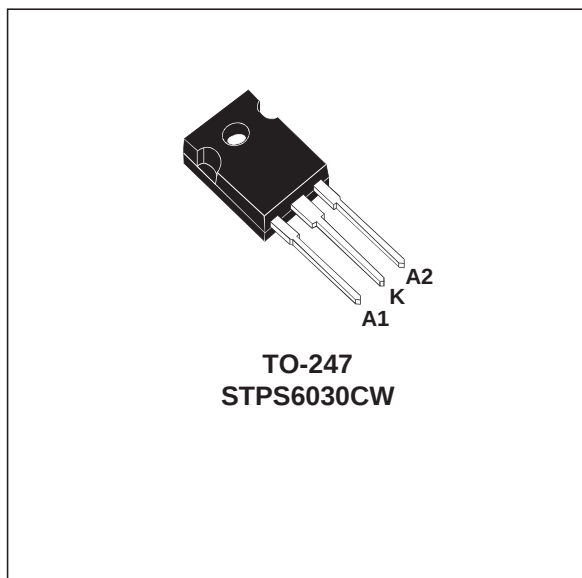
FEATURES AND BENEFITS

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

DESCRIPTION

Dual Schottky rectifier suited for switch Mode Power Supply and high frequency DC to DC converters.

Packaged in TO-247, this device is 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			45	A
$I_{F(AV)}$	Average forward current	$T_c = 130^\circ\text{C}$ $\delta = 0.5$	Per diode Per device	30 60	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10 \text{ ms}$	Sinusoidal	300	A
I_{RRM}	Peak repetitive reverse current	$t_p = 2 \mu\text{s}$	square F=1kHz	2	A
P_{ARM}	Repetitive peak avalanche power	$t_p = 1 \mu\text{s}$	$T_j = 25^\circ\text{C}$	7700	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 (rated V_R , $T_j = 25^\circ\text{C}$)			10000	V/ μs

* : $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th}(j-a)}$ 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	0.9	°C/W
		Total	0.6	
$R_{th(c)}$		Coupling	0.3	°C/W

STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$		0.7	1.5	mA
		$T_j = 125^\circ\text{C}$			200	400	
V_F^*	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 30\text{ A}$		0.46	0.52	V
		$T_j = 125^\circ\text{C}$	$I_F = 30\text{ A}$		0.39	0.45	
		$T_j = 25^\circ\text{C}$	$I_F = 60\text{ A}$		0.58	0.65	
		$T_j = 125^\circ\text{C}$	$I_F = 60\text{ A}$		0.56	0.63	

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

To evaluate the conduction losses use the following equation :

$$P = 0.27 \times I_{F(AV)} + 0.006 I_F^2(RMS)$$

Fig. 1: Conduction losses versus average current.

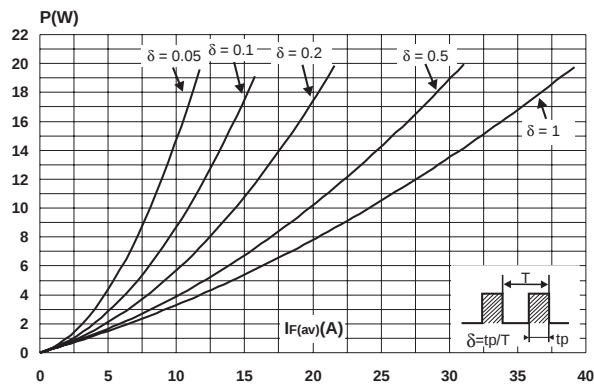


Fig. 3: Normalized avalanche power derating versus pulse duration.

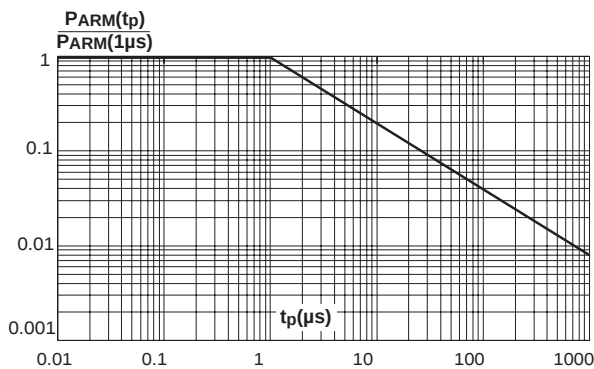


Fig. 2: Average forward current versus ambient temperature ($\delta = 0.5$).

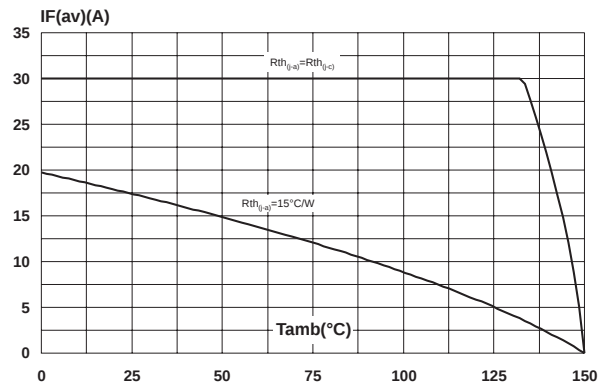


Fig. 4: Normalized avalanche power derating versus junction temperature.

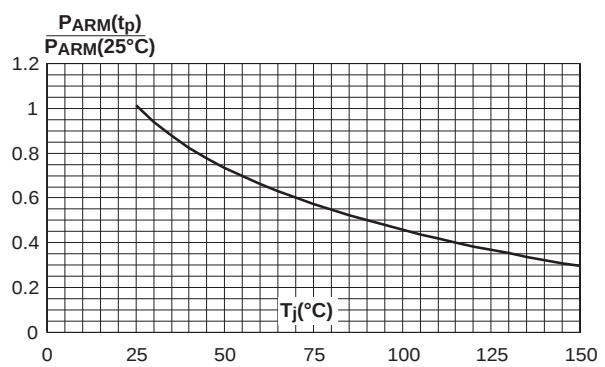


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values).

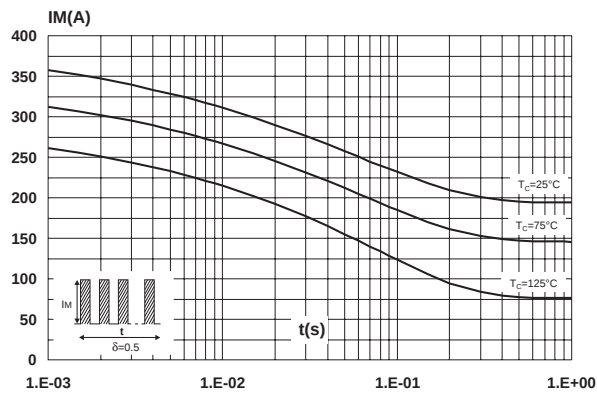


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

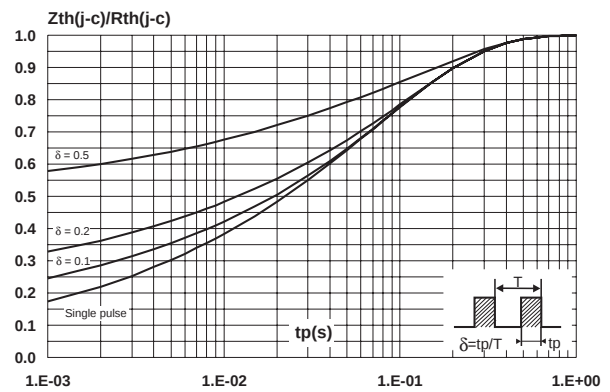


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

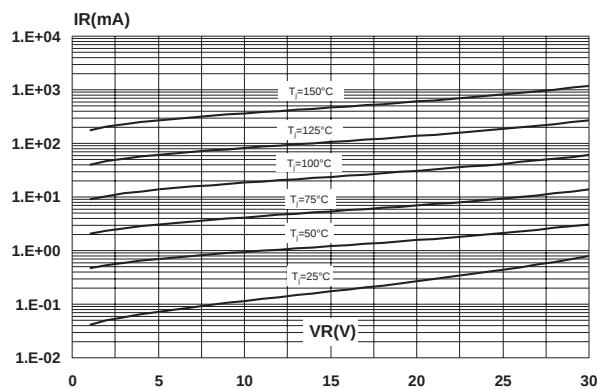


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

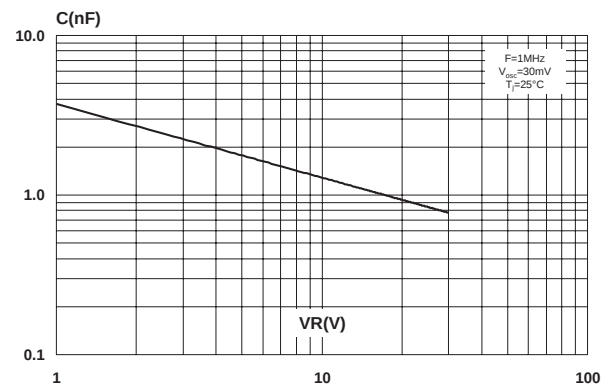
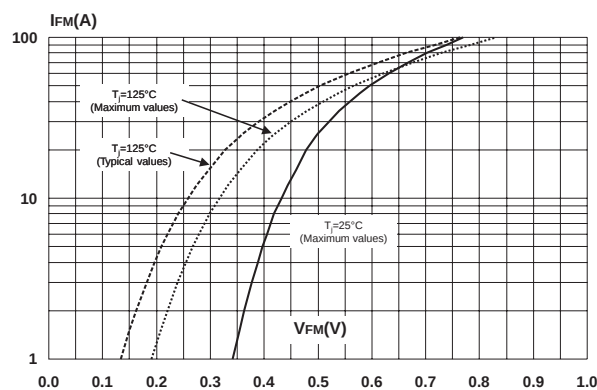


Fig. 9: Forward voltage drop versus forward current.



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

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS6030CW	STPS6030CW	TO-247	4.4 g	30	Tube

■ EPOXY MEETS UL94,V0

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