

LOW DROP POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

I_{F(AV)}	2 A
V_{RRM}	30 V
T_j (max)	150 °C
V_F (max)	0.375 V

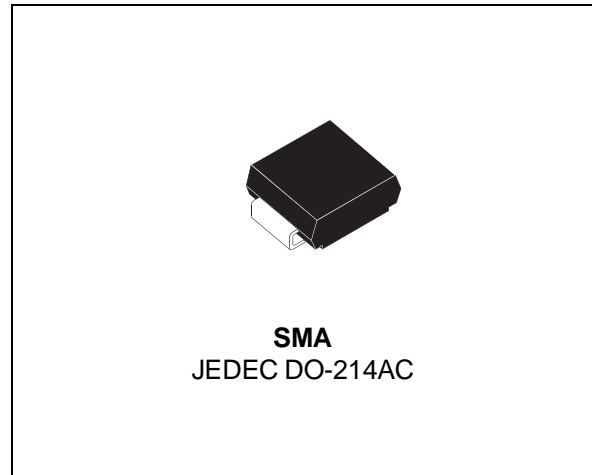
FEATURES AND BENEFITS

- LOW COST DEVICE WITH LOW DROP FORWARD VOLTAGE FOR LESS POWER DISSIPATION.
- OPTIMIZED CONDUCTION/REVERSE LOSSES TRADE-OFF WHICH LEADS TO THE HIGHEST YIELD IN THE APPLICATIONS.
- HIGH POWER SURFACE MOUNT MINIATURE PACKAGE.

DESCRIPTION

Single Schottky rectifier suited to Switched Mode Power Supplies and high frequency DC to DC converters, freewheel diode and integrated circuit latch up protection.

Packaged in SMA, this device is especially intended for use in parallel with MOSFETs in synchronous rectification.



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter	Value	Unit	
V _{RRM}	Repetitive peak reverse voltage	30	V	
I _{F(RMS)}	RMS forward current	10	A	
I _{F(AV)}	Average forward current	T _L = 120°C δ = 0.5	2	A
I _{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal	75	A
I _{RRM}	Repetitive peak reverse current	tp = 2 μs F = 1kHz square	1	A
I _{RSM}	Non repetitive peak reverse current	tp = 100 μs square	1	A
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	10000	V/μs	

* : $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th(j-a)}}$ thermal runaway condition for a diode on its own heatsink

STPS2L30A

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-l)}$	Junction to lead	30	$^{\circ}\text{C}/\text{W}$

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameters	Tests Conditions		Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$T_j = 25^{\circ}\text{C}$	$V_R = V_{RRM}$			200	μA
		$T_j = 100^{\circ}\text{C}$			6	15	mA
V_F^*	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 2\text{ A}$			0.45	V
		$T_j = 125^{\circ}\text{C}$			0.325	0.375	
		$T_j = 25^{\circ}\text{C}$	$I_F = 4\text{ A}$			0.53	
		$T_j = 125^{\circ}\text{C}$			0.43	0.51	

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

To evaluate the conduction losses use the following equation :

$$P = 0.24 \times I_{F(AV)} + 0.068 I_{F(RMS)}^2$$

Fig. 1: Average forward power dissipation versus average forward current.

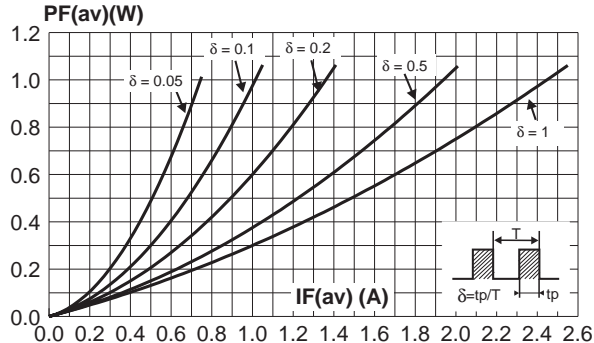


Fig. 2: Average forward current versus ambient temperature ($\delta=0.5$).

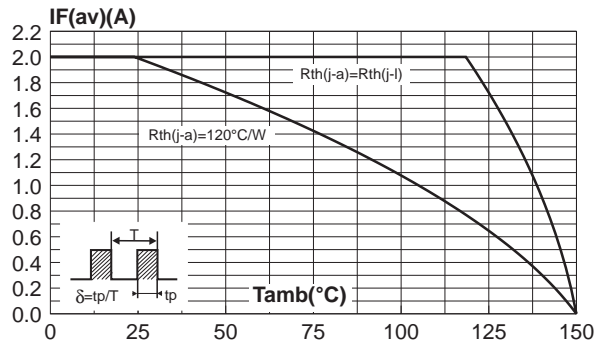


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values).

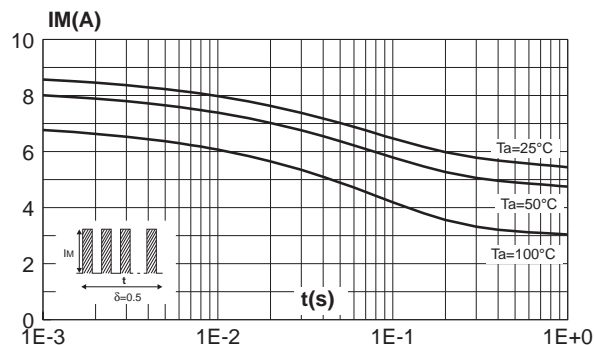


Fig. 4: Relative variation of thermal impedance junction to ambient versus pulse duration.

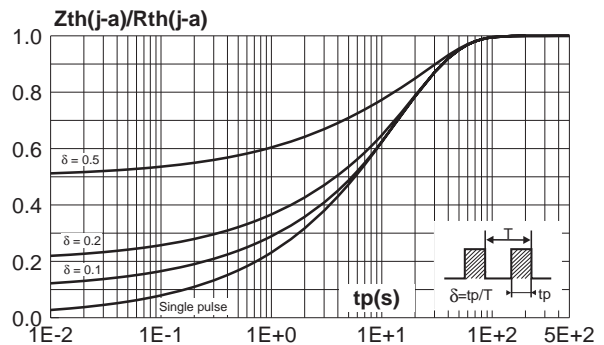


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values).

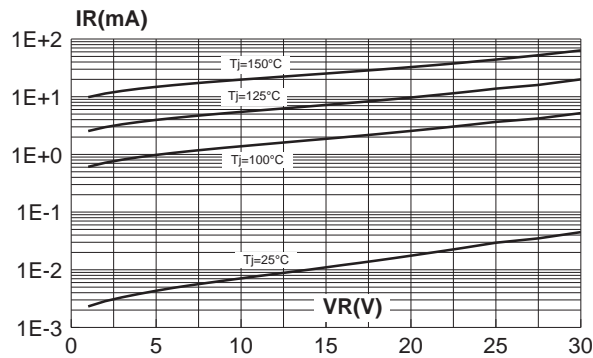


Fig. 6: Junction capacitance versus reverse voltage applied (typical values).

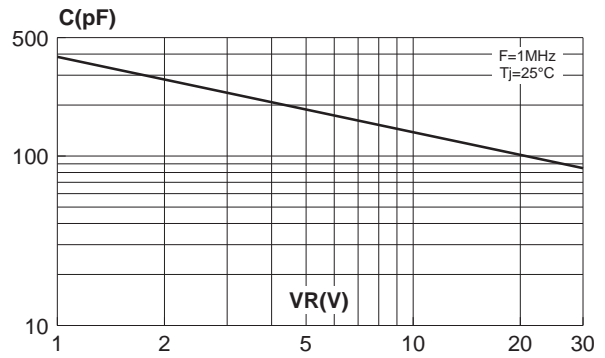


Fig. 7-1: Forward voltage drop versus forward current (maximum values, high level).

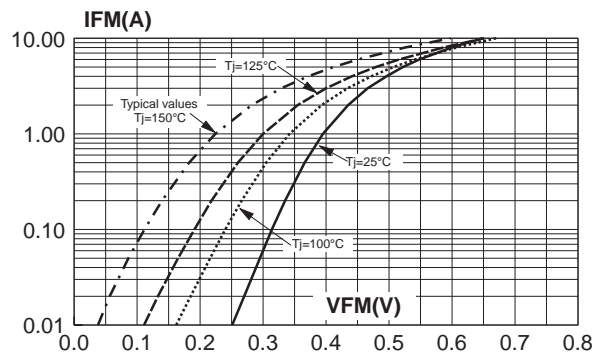


Fig. 7-2: Forward voltage drop versus forward current (typical values, low level).

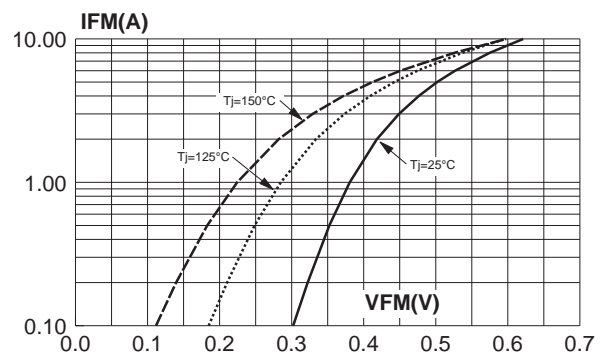


Fig. 7-3: Forward voltage drop versus forward current (maximum values, low level).

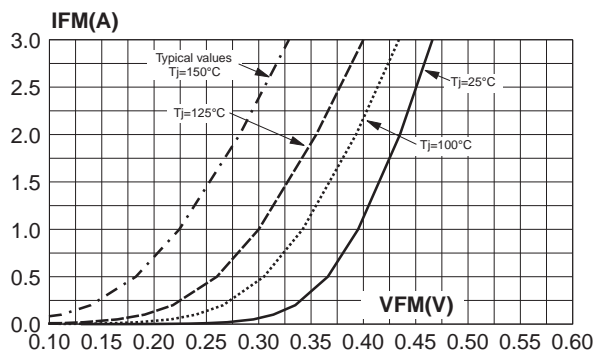
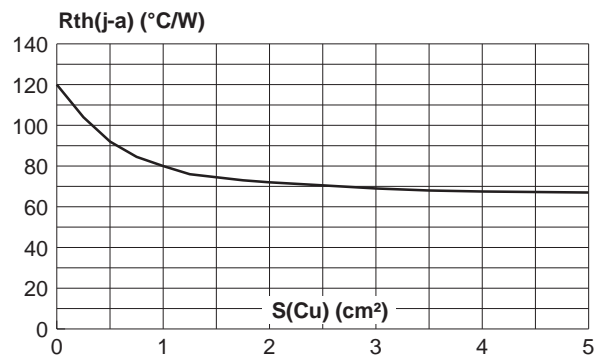


Fig. 8: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness: ...)



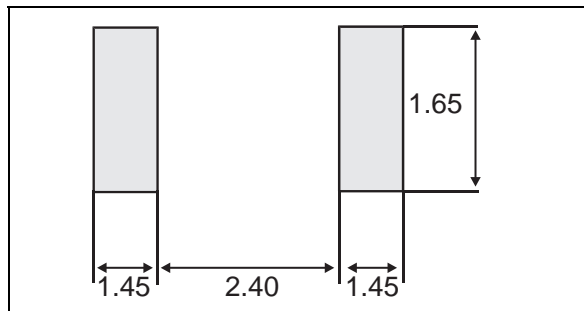
STPS2L30A

PACKAGE MECHANICAL DATA

SMA

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.70	0.075	0.106
A2	0.05	0.20	0.002	0.008
b	1.25	1.65	0.049	0.065
c	0.15	0.41	0.006	0.016
E	4.80	5.60	0.189	0.220
E1	3.95	4.60	0.156	0.181
D	2.25	2.95	0.089	0.116
L	0.75	1.60	0.030	0.063

FOOT PRINT DIMENSIONS (in millimeters)



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS2L30A	G30	SMA	0.068g	5000	Tape & reel

- Band indicates cathode
- Epoxy meets UL94,V0

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