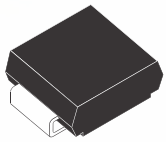
STPS2150/A

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 A
V_{RRM}	150 V
Tj (max)	175°C
V_F (max)	0.67 V

DO-15
STPS2150



SMA
STPS2150A

FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP FOR HIGHER EFFICIENCY AND EXTENDED BATTERY LIFE
- LOW THERMAL RESISTANCE
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

150V Power Schottky rectifier are suited for switch Mode Power Supplies on up to 24V rails and high frequency converters.

Packaged in SMA or Axial, this device is intended for use in consumer & computer applications like TV, STB, PC and DVD where low drop forward voltage in required to reduce power dissipation.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			150	V
$I_{F(RMS)}$	RMS forward current			15	A
$I_{F(AV)}$	Average forward current	T_L = 145°C δ = 0.5	SMA	2	A
		T_L = 130°C δ = 0.5	DO-15		
I_{FSM}	Surge non repetitive forward current	Half wave, single phase, 50Hz	SMA	75	A
			DO-15	150	
P_{ARM}	Repetitive peak avalanche power	tp = 1µs Tj = 25°C		2400	W
T_{stg}	Storage temperature range			- 65 to + 150	°C
T_j	Maximum junction temperature *			175	°C
dV/dt	Critical rate of rise of reverse voltage (rated V_R, T_j = 25°C)			10000	V/µs

* : $\frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$ thermal runaway condition for a diode on its own heatsink

THERMAL RESISTANCES

Symbol	Parameter			Value	Unit
$R_{th(j-l)}$	Junction to leads	Lead length = 10 mm	DO-15	30	°C/W
			SMA	20	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	T_j = 25°C	V_R = 150V		0.5	1.5	µA
		T_j = 125°C			0.5	1.5	mA
V_F *	Forward voltage drop	T_j = 25°C	I_F = 2 A		0.78	0.82	V
		T_j = 125°C			0.62	0.67	
		T_j = 25°C	I_F = 4 A		0.86	0.89	
		T_j = 125°C			0.70	0.75	

Pulse test : * tp = 380 µs, δ < 2%

To evaluate the maximum conduction losses use the following equation:

$P = 0.59 \times I_{F(AV)} + 0.04 \times I_F{}^2{}_{(RMS)}$

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

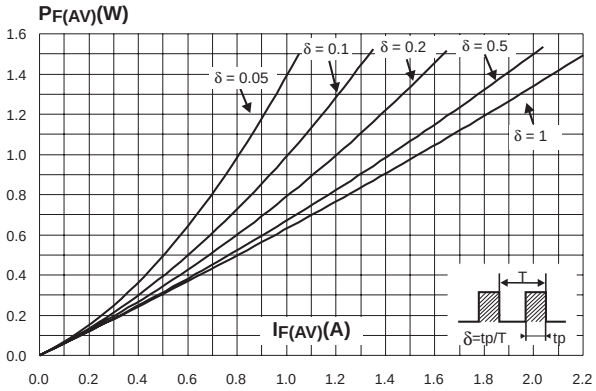


Fig. 2: Average forward current versus ambient temperature (δ = 0.5).

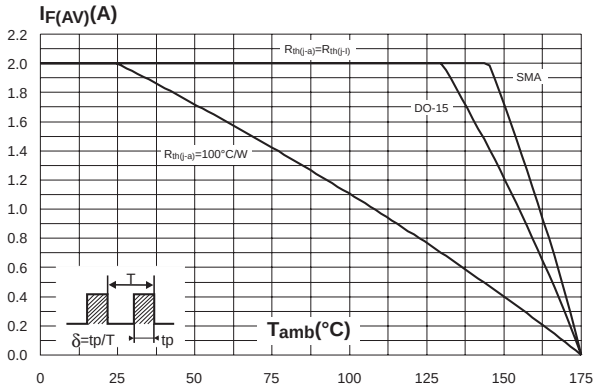


Fig. 3: Normalized avalanche power derating versus pulse duration.

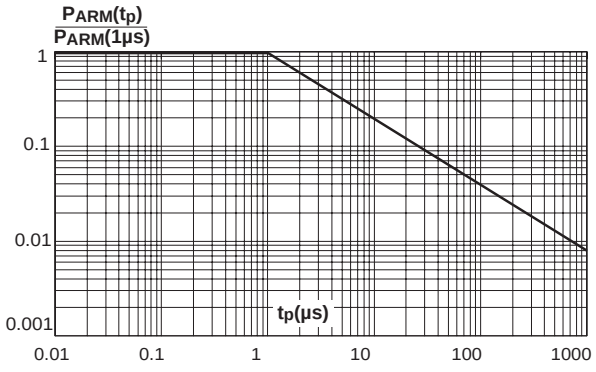


Fig. 4: Normalized avalanche power derating versus junction temperature.

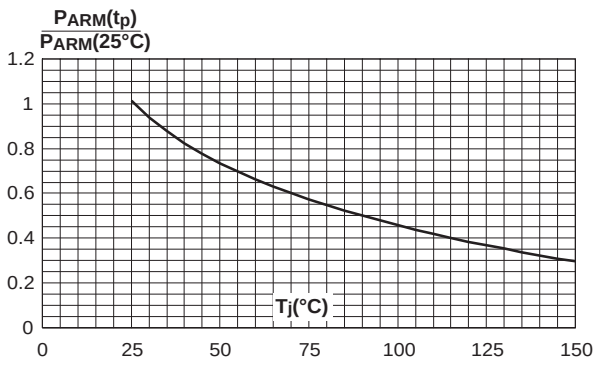


Fig.5-1: Non repetitive surge peak forward current versus overload duration (maximum values) (DO-15).

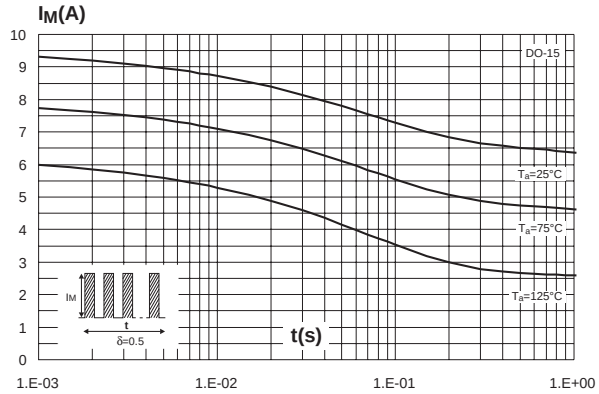


Fig. 5-2: Non repetitive surge peak forward current versus overload duration (maximum values) (SMA).

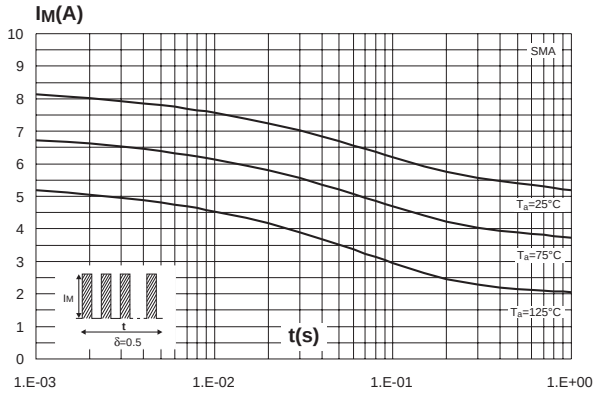


Fig. 6-1: Relative variation of thermal impedance junction to ambient versus pulse duration (DO-15).

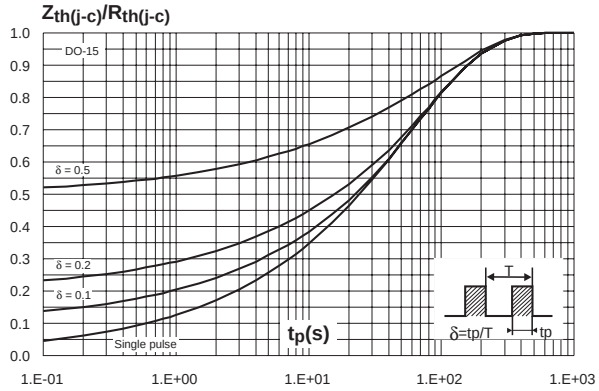


Fig. 6-2: Relative variation of thermal impedance junction to ambient versus pulse duration (SMA).

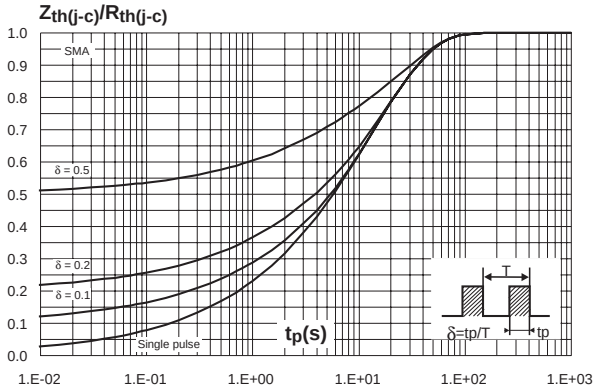


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

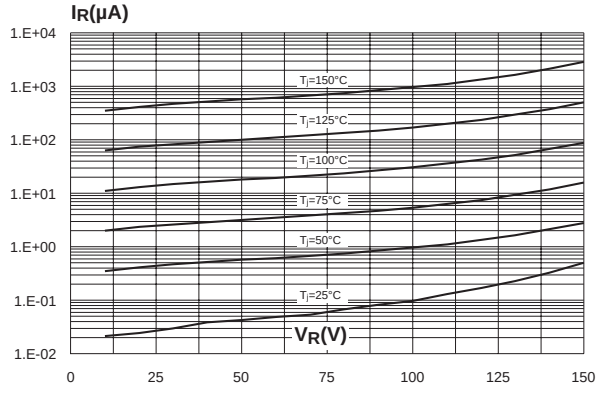


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

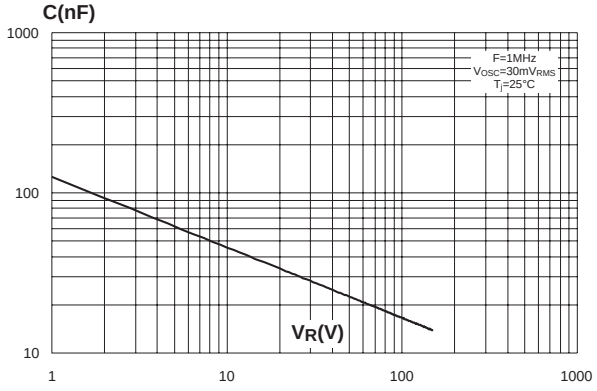


Fig. 9-1: Forward voltage drop versus forward current (low level).

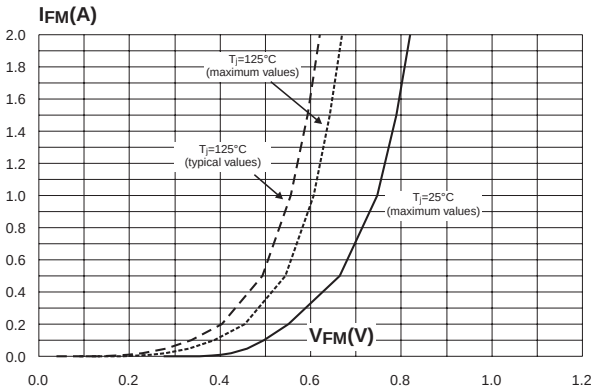


Fig. 9-2: Forward voltage drop versus forward current (high level).

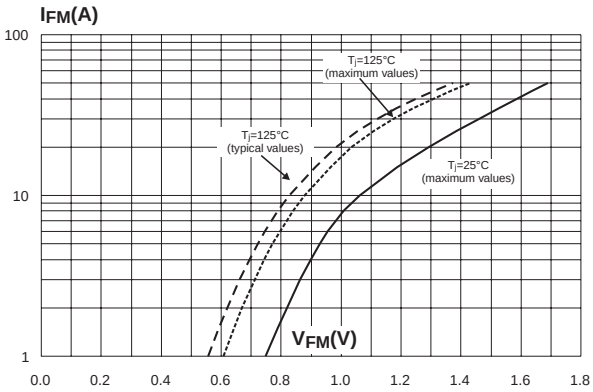


Fig. 10: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, Cu: 35µm) (SMA).

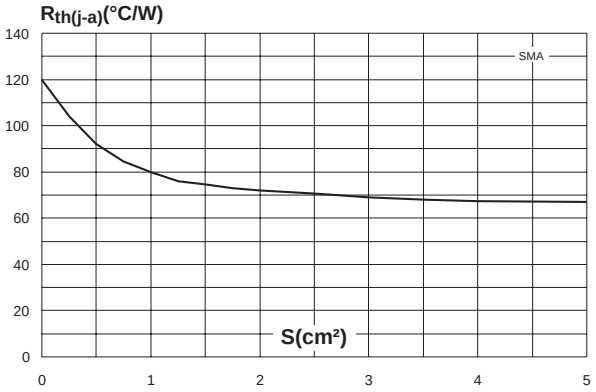
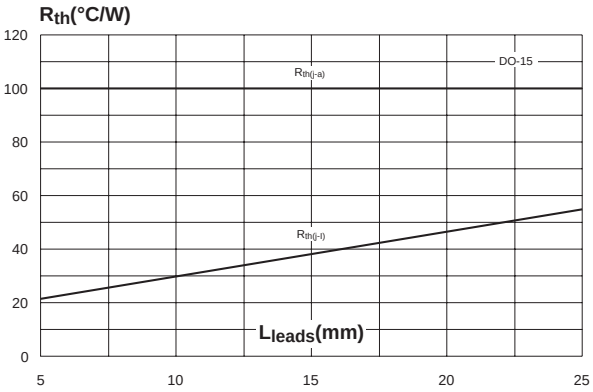
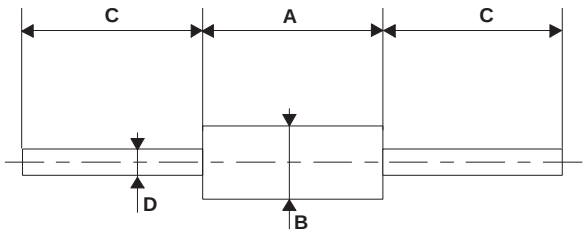


Fig. 11: Thermal resistance versus lead length (DO-15).



PACKAGE MECHANICAL DATA

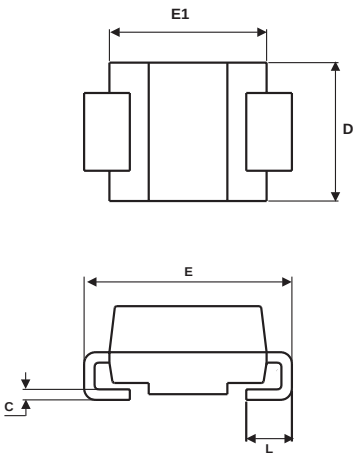
DO-15 plastic



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	6.05	6.75	0.238	0.266
B	2.95	3.53	0.116	0.139
C	26	31	1.024	1.220
D	0.71	0.88	0.028	0.035

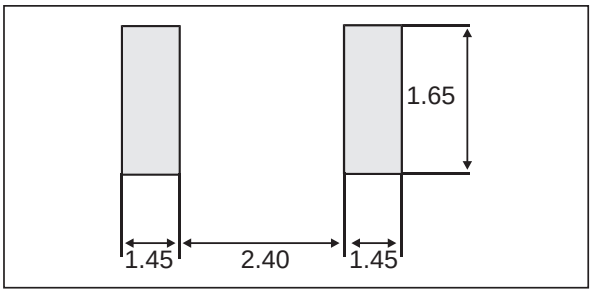
PACKAGE MECHANICAL DATA

SMA (JEDEC DO-214AC)



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
STPS2150	STPS2150	DO-15	0.4 g	2000	Ammopack
STPS2150RL	STPS2150	DO-15	0.4 g	5000	Tape & Reel
STPS2150A	2150	SMA	0.068 g	5000	Tape & Reel

- Epoxy meets UL94,V0