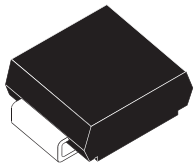
STPS3150/U

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	3 A
V_{RRM}	150 V
Tj (max)	175°C
V_F (max)	0.66 V

DO-201AD
STPS3150



SMB
STPS3150U

FEATURES AND BENEFITS

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

DESCRIPTION

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

Packaged in SMB and 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 = 130°C δ = 0.5	SMB	3	A
		T_L = 140°C δ = 0.5	DO-201AD		
I_{FSM}	Surge non repetitive forward current	Half wave, single phase, 50Hz	SMB	100	A
			DO-201AD	150	
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-1201AD	20	°C/W
			SMB	15	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	T_j = 25°C	V_R = 150V		0.4	2.0	µA
		T_j = 125°C			0.6	2.0	mA
V_F *	Forward voltage drop	T_j = 25°C	I_F = 3 A		0.78	0.82	V
		T_j = 125°C			0.63	0.67	
		T_j = 25°C	I_F = 6 A		0.85	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:

$P = 0.59 \times I_{F(AV)} + 0.023 \times I_F{}^2{}_{(RMS)}$

Fig. 1: Conduction losses versus average current.

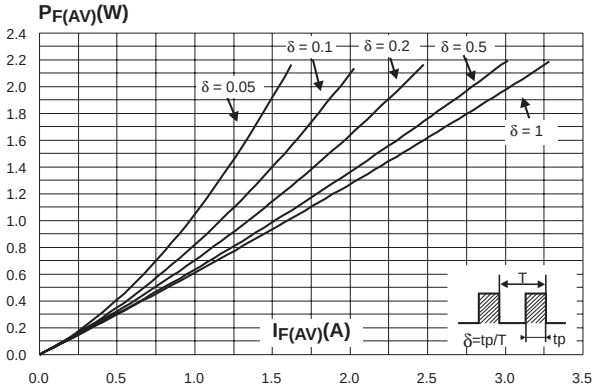


Fig. 2: Average forward current versus ambient temperature (δ = 0.5).

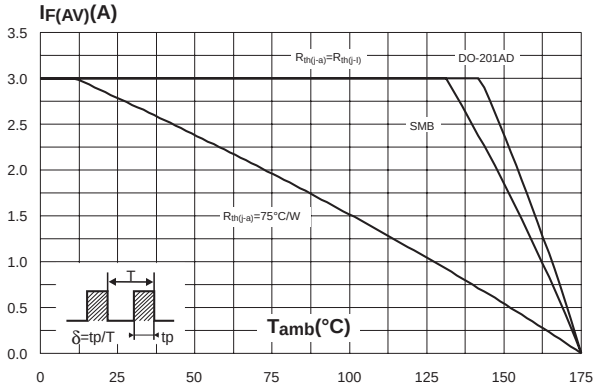


Fig. 3-1: Non repetitive surge peak forward current versus overload duration (maximum values) (SMB).

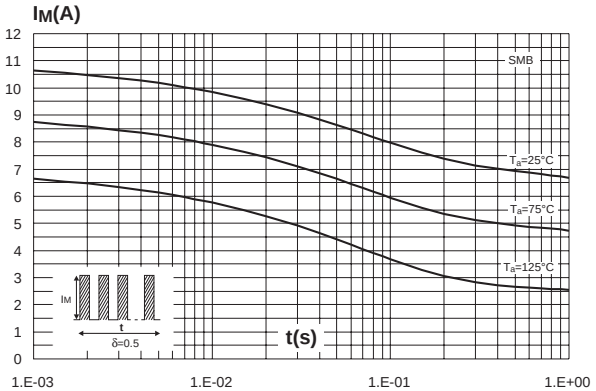


Fig. 3-2: Non repetitive surge peak forward current versus overload duration (maximum values) (DO-201AD).

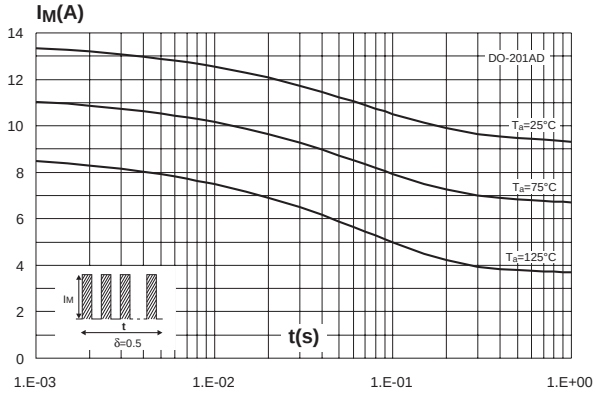


Fig. 4-1: Relative variation of thermal impedance junction to ambient versus pulse duration (SMB).

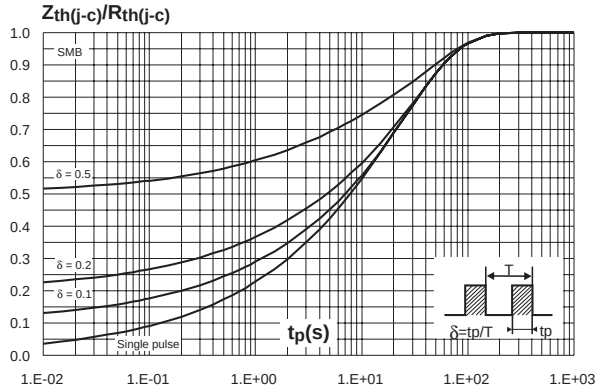


Fig. 4-2: Relative variation of thermal impedance junction to ambient versus pulse duration (DO-201AD).

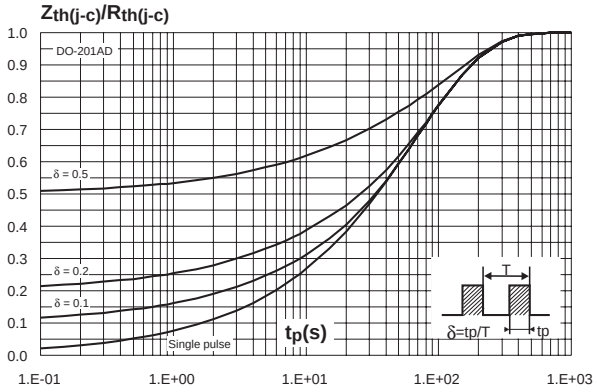


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values).

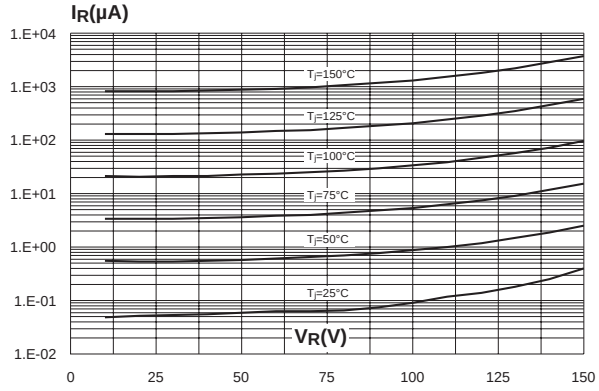


Fig. 6: Junction capacitance versus reverse voltage applied (typical values).

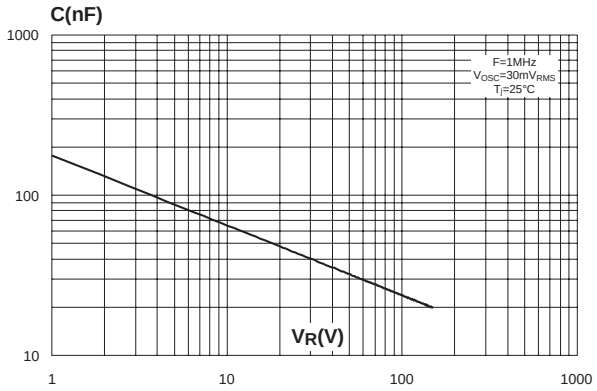


Fig. 7: Forward voltage drop versus forward current.

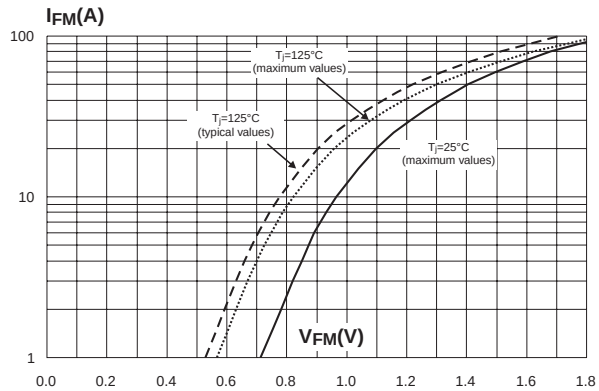


Fig. 8: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, Cu: 35µm) (SMB).

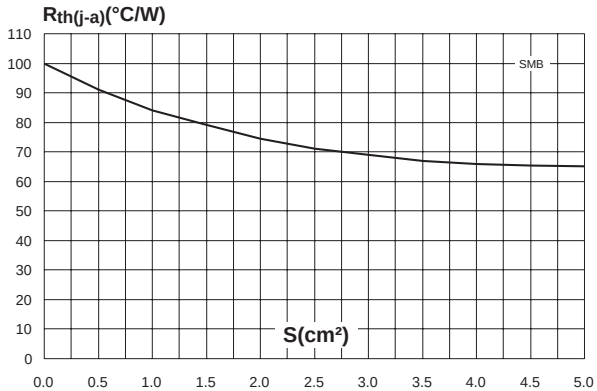
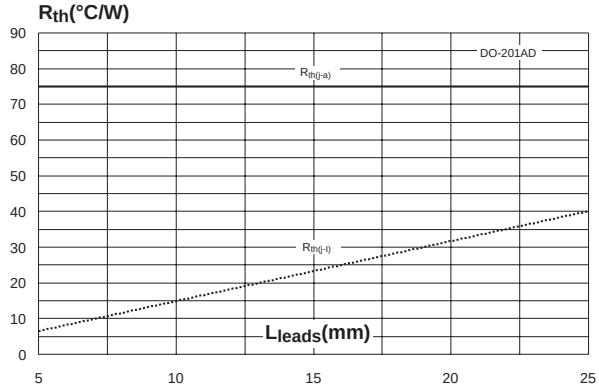
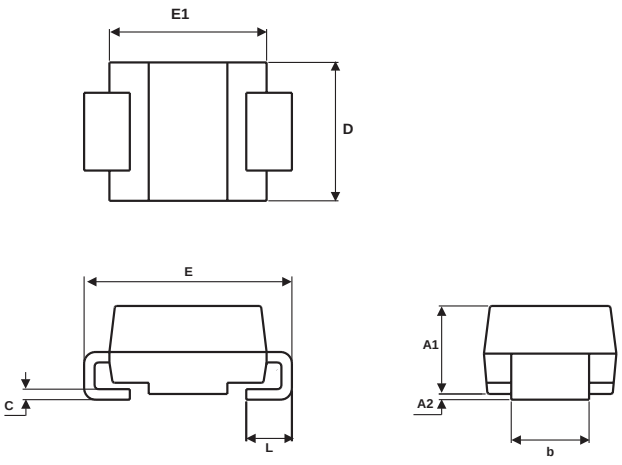


Fig. 9: Thermal resistance versus lead length (DO-201AD).



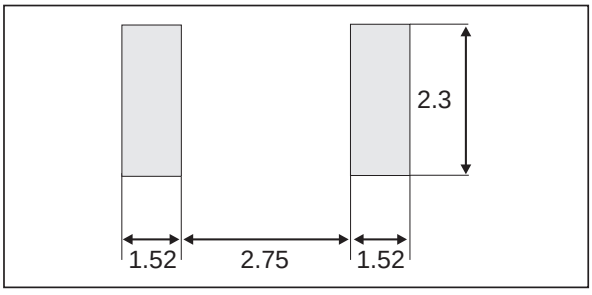
PACKAGE MECHANICAL DATA

SMB



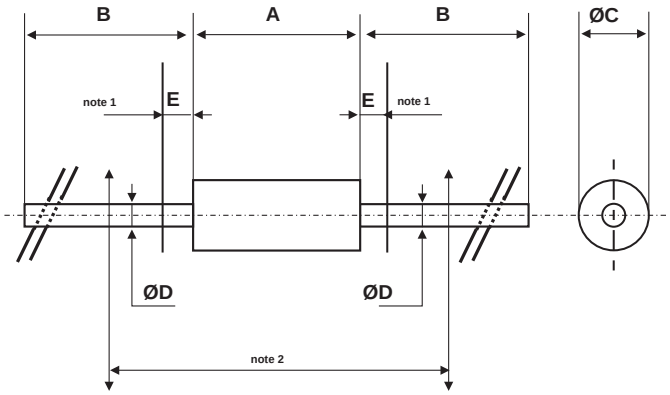
REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.45	0.075	0.096
A2	0.05	0.20	0.002	0.008
b	1.95	2.20	0.077	0.087
c	0.15	0.41	0.006	0.016
E	5.10	5.60	0.201	0.220
E1	4.05	4.60	0.159	0.181
D	3.30	3.95	0.130	0.156

FOOT PRINT DIMENSIONS (in millimeters)



PACKAGE MECHANICAL DATA

DO-201AD plastic



REF.	DIMENSIONS				NOTES
	Millimeters		Inches		
	Min.	Max.	Min.	Max.	
A		9.50		0.374	1 - The lead diameter ∅ D is not controlled over zone E 2 - The minimum length which must stay straight between the right angles after bending is 0.59"(15 mm)
B	25.40		1.000		
C		5.30		0.209	
D		1.30		0.051	
E		1.25		0.049	

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS3150	STPS3150	DO-201AD	1.12 g	600	Ammopack
STPS3150RL	STPS3150	DO-201AD	1.12 g	1900	Tape & Reel
STPS3150U	G315	SMB	0.107 g	2500	Tape & Reel

- Epoxy meets UL94,V0