STPS3L60/Q/U

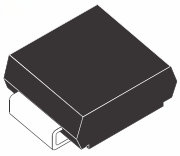
POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	3 A
V_{RRM}	60 V
Tj (max)	150°C
V_F (max)	0.61 V

DO-201AD
STPS3L60

DO-15
STPS3L60Q



SMB
STPS3L60U

FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- LOW THERMAL RESISTANCE
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

Axial and Surface Mount Power Schottky rectifier suited for Switch Mode Power Supplies and high frequency DC to DC converters. Packaged in DO-201AD, DO-15 and SMB, this device is intended for use in low voltage, high frequency inverters and small battery chargers.

For applications where there are space constraints, e.g Telecom battery charger.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		60	V
$I_{F(RMS)}$	RMS forward current		10	A
$I_{F(AV)}$	Average forward current	T_L = 105°C δ = 0.5 (DO-201AD, SMB)	3	A
		T_L = 75°C δ = 0.5 (DO-15)		
I_{FSM}	Surge non repetitive forward current	t_p = 10 ms Sinusoidal	100	A
P_{ARM}	Repetitive peak avalanche power	tp = 1µs Tj = 25°C	2000	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		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-201AD	20	°C/W
			SMB	20	
			DO-15	35	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	T_j = 25°C	$V_R = V_{RRM}$			150	µA
		T_j = 100°C			4	15	mA
		T_j = 125°C			14	30	
V_F *	Forward voltage drop	T_j = 25°C	I_F = 3 A			0.62	V
		T_j = 100°C			0.53	0.61	
		T_j = 125°C			0.51	0.59	
		T_j = 25°C	I_F = 6 A			0.79	
		T_j = 100°C			0.62	0.71	
		T_j = 125°C			0.6	0.69	

Pulse test : * tp = 380 µs, δ < 2%

To evaluate the maximum conduction losses use the following equation:
$P = 0.44 \times I_{F(AV)} + 0.05 \times I_F{}^2{}_{(RMS)}$

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

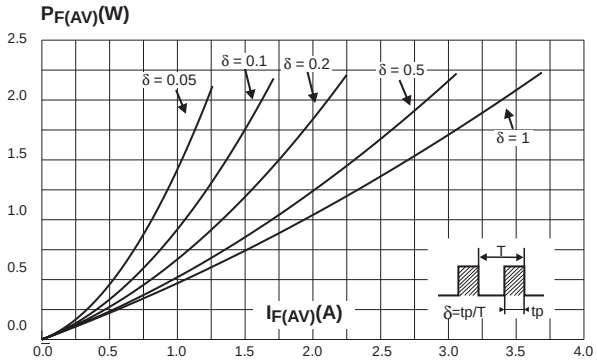


Fig. 2-1: Average forward current versus ambient temperature (δ = 0.5) (DO-201AD, SMB).

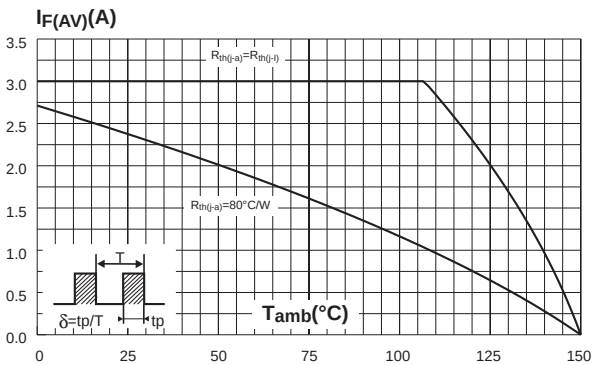


Fig. 2-2: Average forward current versus ambient temperature (δ = 0.5) (DO-15).

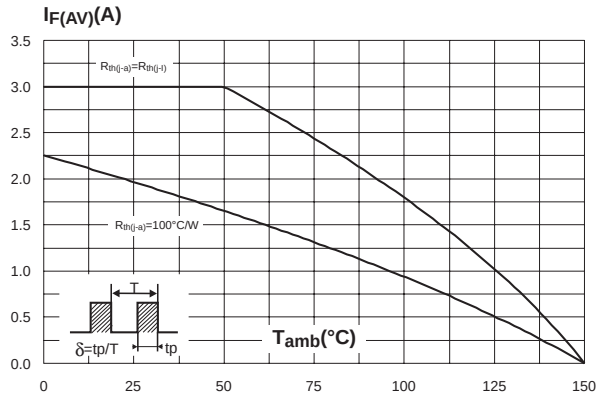


Fig. 3: Normalized avalanche power derating versus pulse duration.

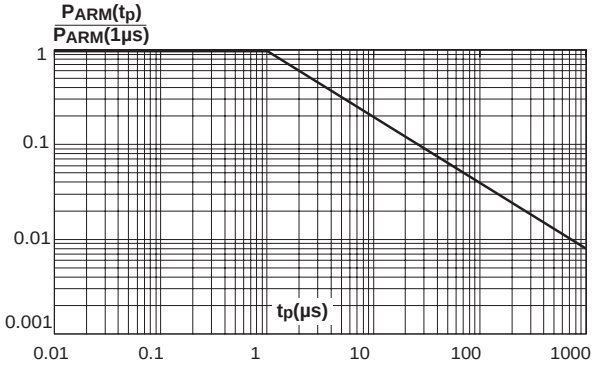


Fig. 4: Normalized avalanche power derating versus junction temperature.

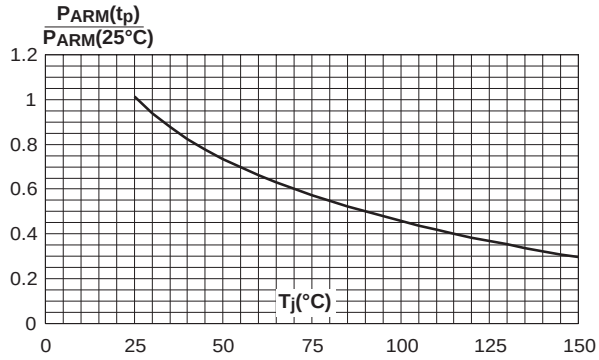


Fig. 5-1: Non repetitive surge peak forward current versus overload duration (maximum values) (DO-201AD, SMB).

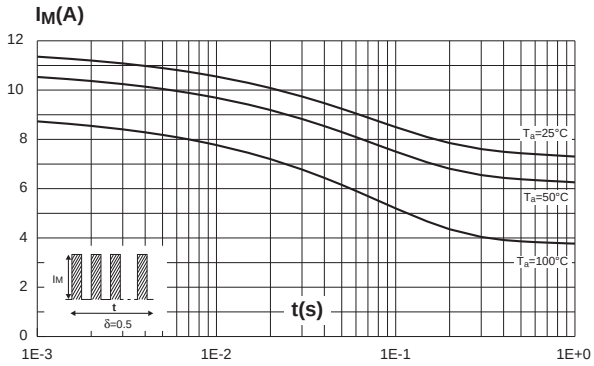


Fig. 5-2: Non repetitive surge peak forward current versus overload duration (maximum values) (DO-15).

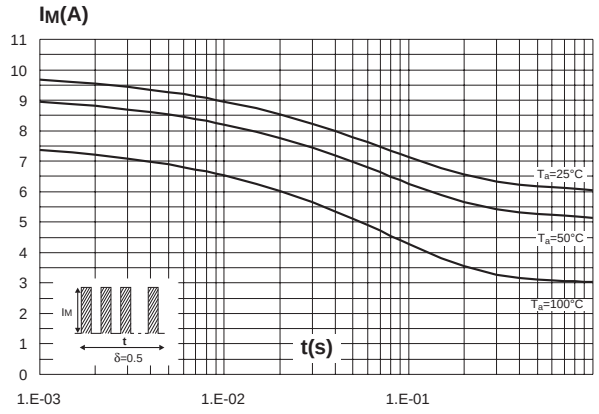


Fig. 6-1: Relative variation of thermal impedance junction to ambient versus pulse duration (DO-201AD, SMB).

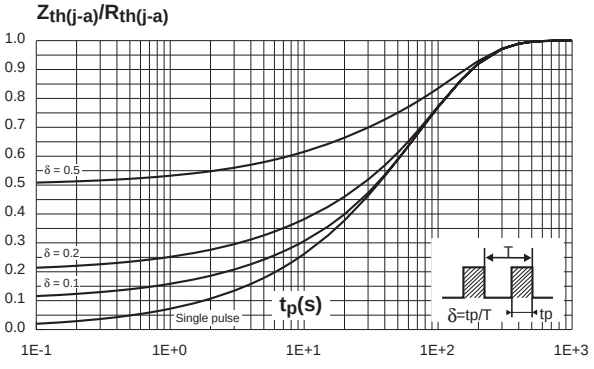


Fig. 6-2: Relative variation of thermal impedance junction to ambient versus pulse duration (DO-15).

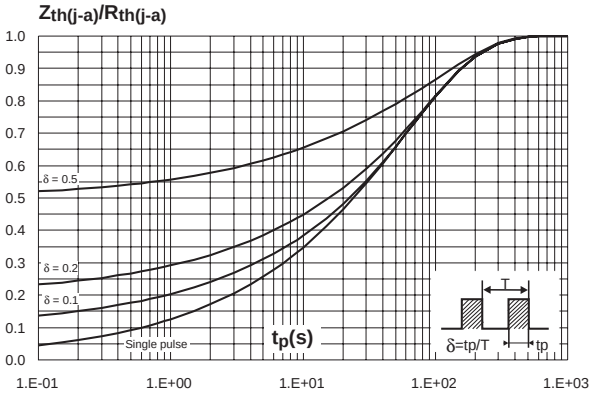


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

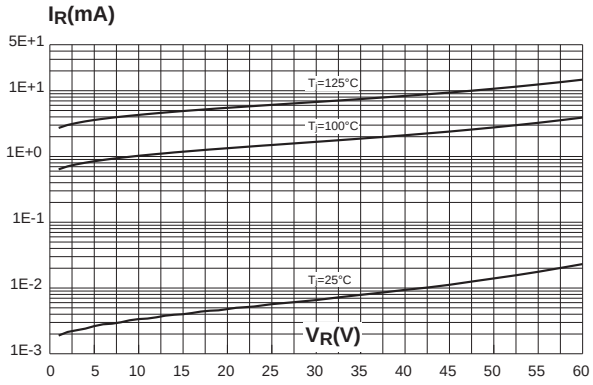


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

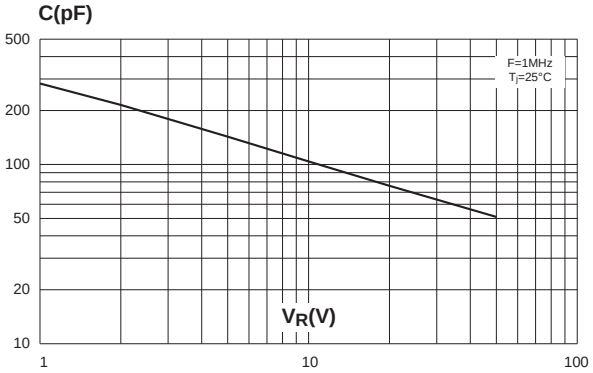


Fig. 9-1: Forward voltage drop versus forward current (high level, maximum values).

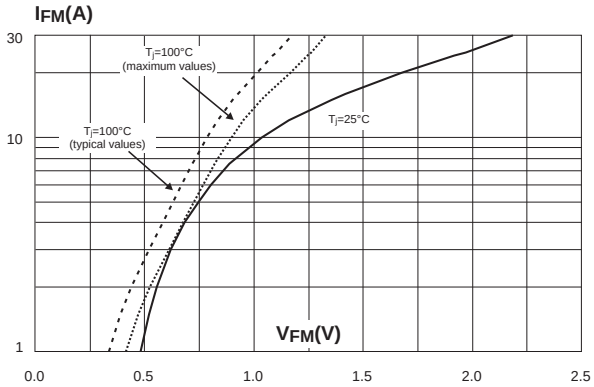


Fig. 9-2: Forward voltage drop versus forward current (low level, maximum values).

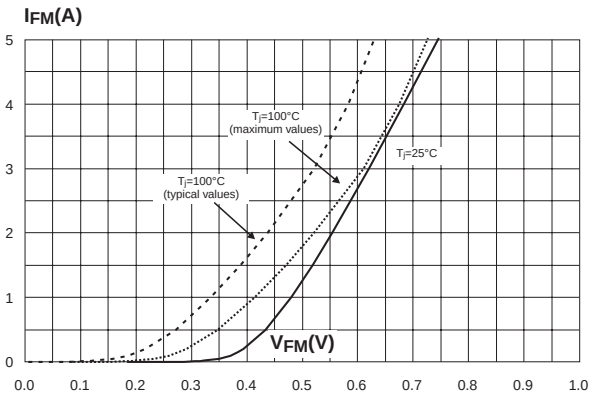
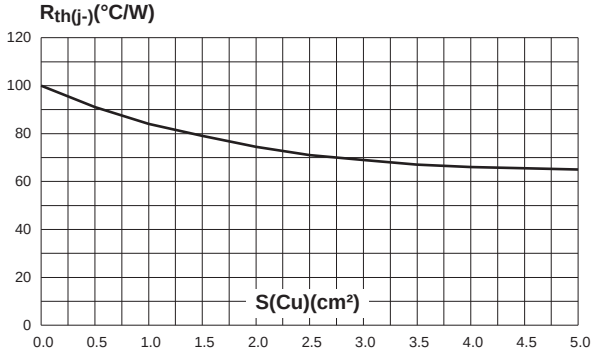
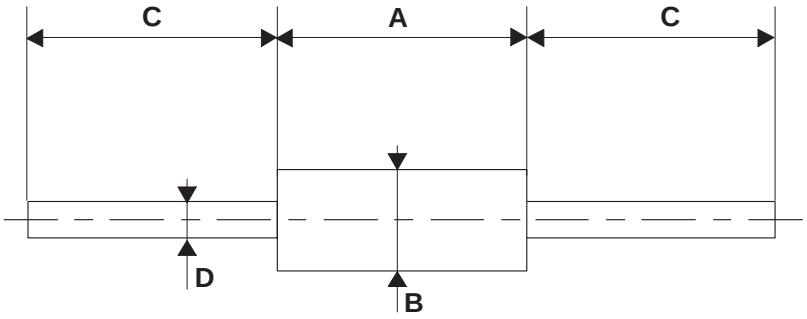


Fig. 10: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, Cu: 35µm) (SMB).

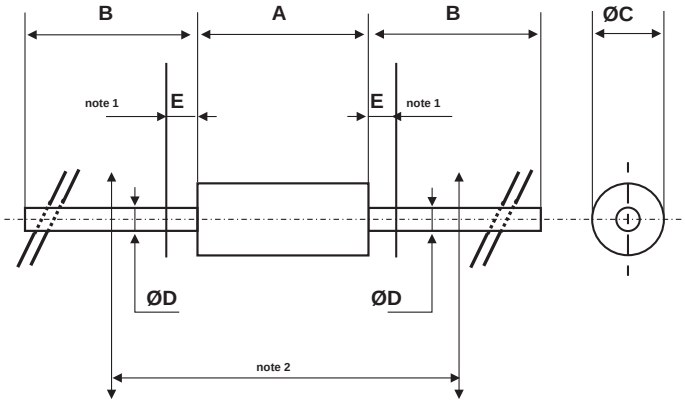


PACKAGE MECHANICAL DATA
DO-15 plastic



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

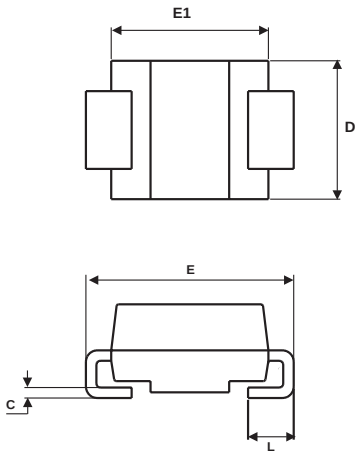
PACKAGE MECHANICAL DATA
DO-201AD plastic



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 axial length within which the device may be placed with its leads bent at right angles 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	

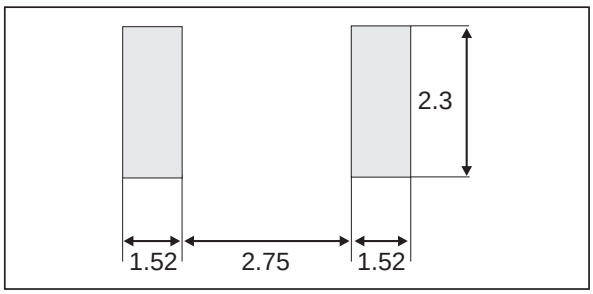
PACKAGE MECHANICAL DATA

SMB (JEDEC DO-214AA)



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
L	0.75	1.60	0.030	0.063

FOOT PRINT DIMENSIONS (in millimeters)



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS3L60	STPS3L60	DO-201AD	1.12g	600	Ammopack
STPS3L60RL	STPS3L60	DO-201AD	1.12g	1900	Tape & Reel
STPS3L60Q	STPS3L60	DO-15	0.4 g	1000	Ammopack
STPS3L60QRL	STPS3L60	DO-15	0.4 g	6000	Tape & Reel
STPS3L60U	G36	SMB	0.107 g	2500	Tape & Reel

- White band indicates cathode
- Epoxy meets UL94,V0