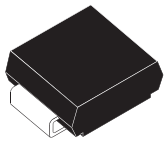
STPS1L60/A

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	1 A
V_{RRM}	60 V
Tj (max)	150°C
V_F (max)	0.56 V

DO-41
STPS1L60



SMA
STPS1L60A

FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP
- 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-41 and SMA, this device is intended for use in low voltage, high frequency inverters and small battery chargers.

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 = 130°C δ = 0.5	SMA	1	A
		T_L = 120°C δ = 0.5	DO-41		
I_{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal		40	A
P_{ARM}	Repetitive peak avalanche power	tp = 1µs Tj = 25°C		1200	W
T_{stg}	Storage temperature range			- 65 to + 150	°C
T_j	Maximum 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
$R_{th(j-a)}$	Junction to ambient	Lead length = 10 mm	DO-41	100	°C/W
			SMA	120	
$R_{th(j-l)}$	Junction to leads	Lead length = 10 mm	DO-41	45	
			SMA	30	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	T_j = 25°C	V_R = 60V			50	µA
		T_j = 100°C			1.5	5	mA
V_F *	Forward voltage drop	T_j = 25°C	I_F = 1 A			0.57	V
		T_j = 100°C				0.56	
		T_j = 125°C			0.5	0.54	
		T_j = 25°C	I_F = 2 A			0.75	
		T_j = 100°C				0.68	
		T_j = 125°C			0.6	0.66	

Pulse test : * tp = 380 µs, δ < 2%

To evaluate the maximum conduction losses use the following equation:
$P = 0.44 \times I_{F(AV)} + 0.12 \times I_{F}{}^{2}{}_{(RMS)}$

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

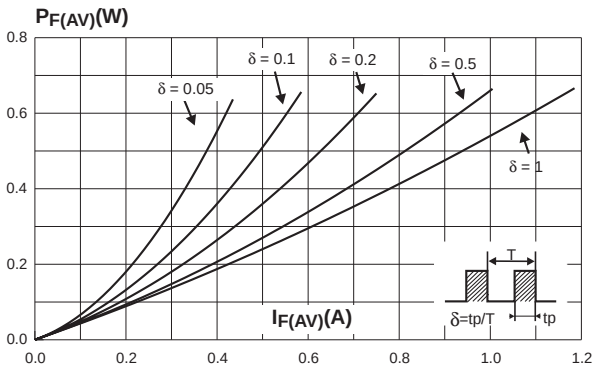


Fig. 2: Average forward current versus ambient temperature (δ = 0.5).

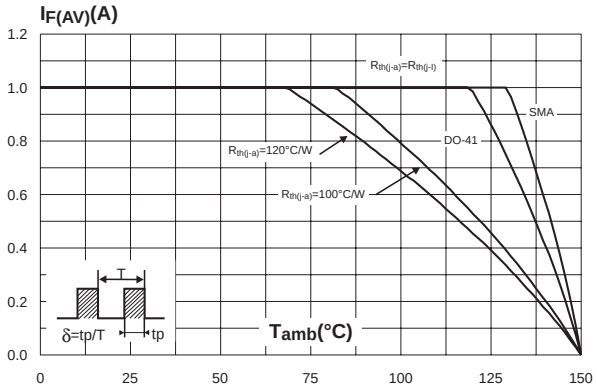


Fig. 3: Normalized avalanche power derating versus pulse duration.

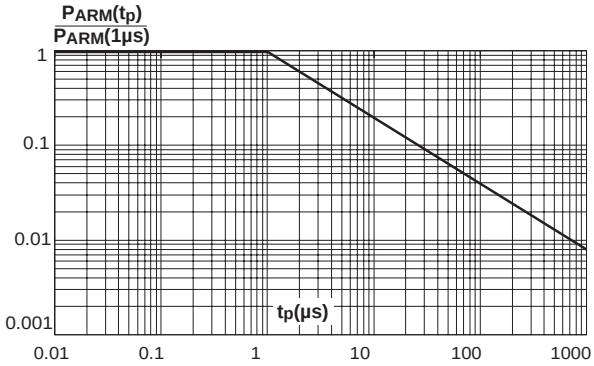


Fig. 4: Normalized avalanche power derating versus junction temperature.

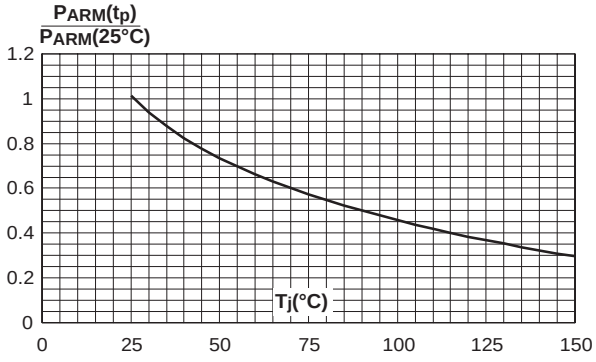


Fig. 5-1: Non repetitive surge peak forward current versus overload duration (maximum values) (DO-41).

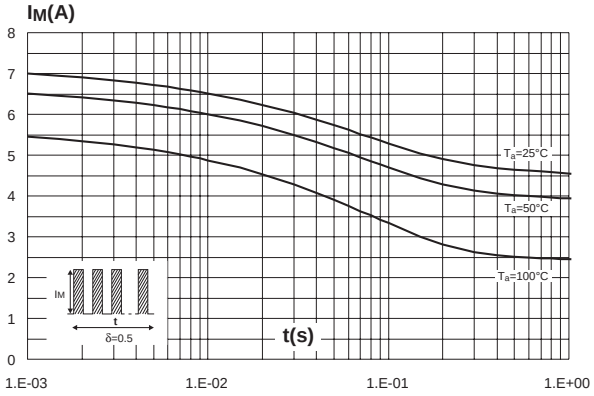


Fig. 5-2: Non repetitive surge peak forward current versus overload duration (maximum values) (SMA).

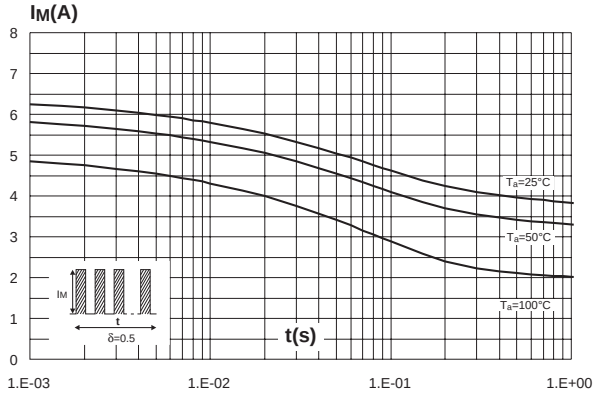


Fig. 6-1: Relative variation of thermal impedance junction to ambient versus pulse duration (DO-41).

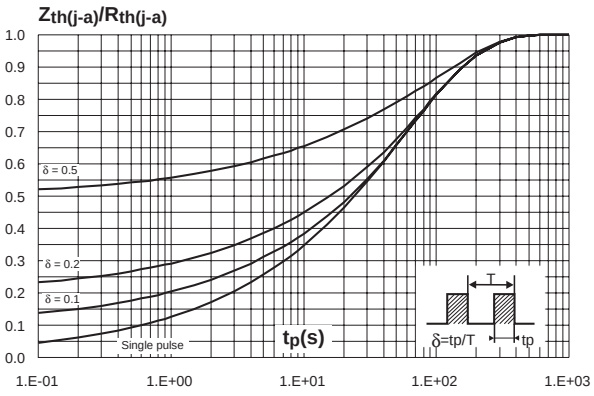


Fig. 6-2: Relative variation of thermal impedance junction to ambient versus pulse duration (SMA).

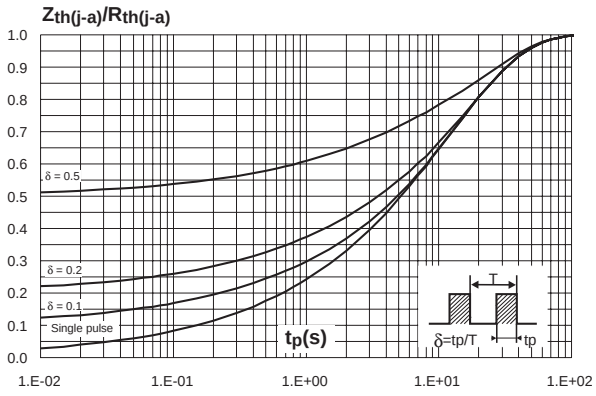


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

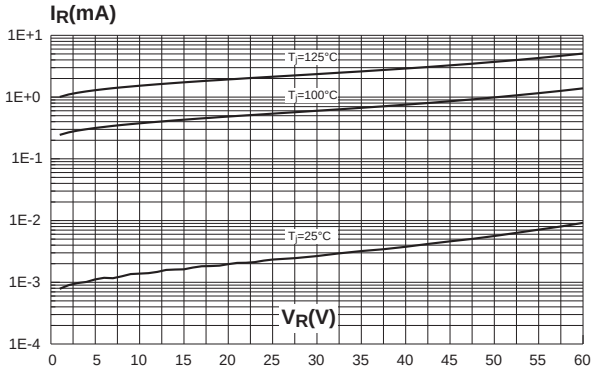


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

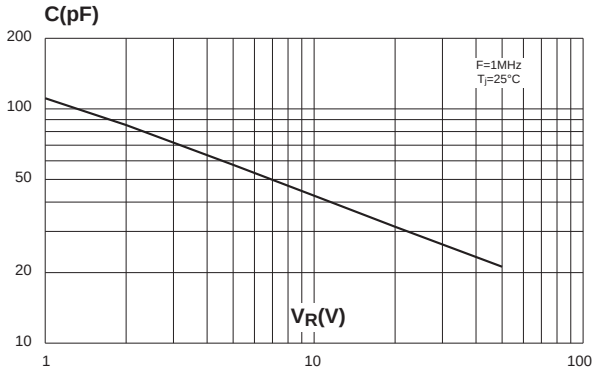


Fig. 9-1: Forward voltage drop versus forward current (low level, maximum values) (DO-41).

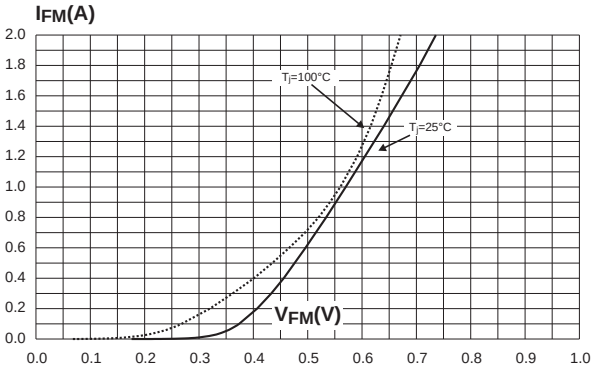


Fig. 9-2: Forward voltage drop versus forward current (high level, maximum values) (SMA).

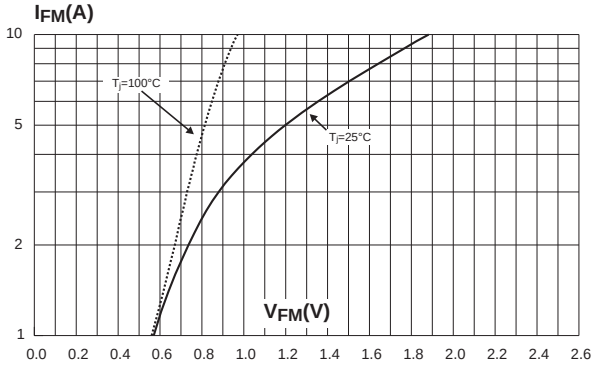


Fig. 10: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, Cu: 35µm) (SMA).

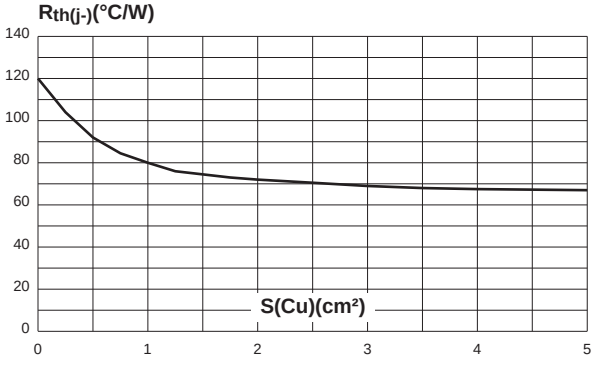
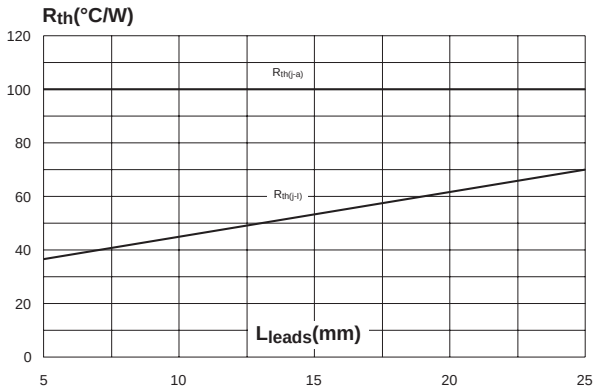
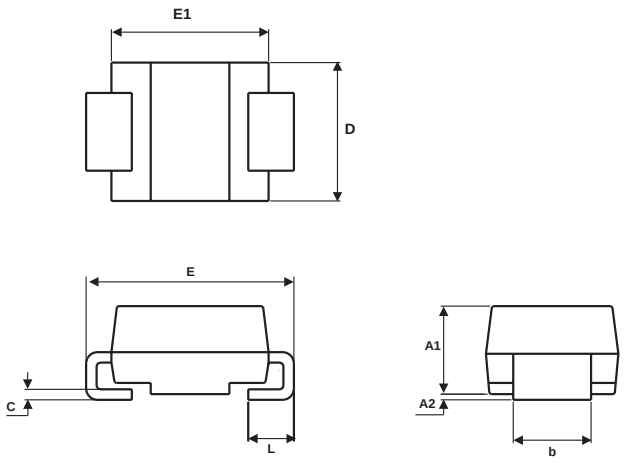


Fig. 11: Thermal resistance versus lead length (DO-41).

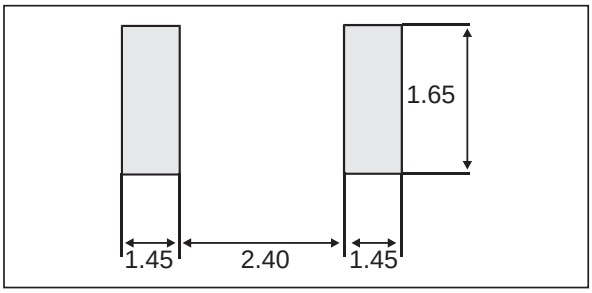


PACKAGE MECHANICAL DATA
SMA (JEDEC DO-214AC)



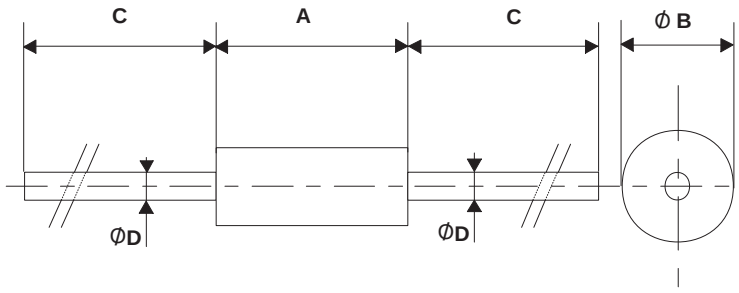
REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.70	0.075	0.106
A2	0.05	0.20	0.002	0.008
b	1.25	1.65	0.049	0.065
c	0.15	0.41	0.006	0.016
E	4.80	5.60	0.189	0.220
E1	3.95	4.60	0.156	0.181
D	2.25	2.95	0.089	0.116

FOOT PRINT DIMENSIONS (in millimeters)



PACKAGE MECHANICAL DATA

DO-41 plastic



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.07	5.20	0.160	0.205
B	2.04	2.71	0.080	0.107
C	28		1.102	

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS1L60	Partnumber cathode ring	DO-41	0.34g	2000	Ammopack
STPS1L60RL	Partnumber cathode ring	DO-41	0.34g	5000	Tape & Reel
STPS1L60A	GB6	SMA	0.068 g	5000	Tape & Reel

- EPOXY MEETS UL94,V0