

# 10A, 100V - 120V Low $V_F$ Trench Schottky Surface Mount Rectifier

## FEATURES

- Patented Trench Schottky technology
- Excellent high temperature stability
- Low forward voltage
- Low power loss / high efficiency
- High forward surge capability
- Ideal for automated placement
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

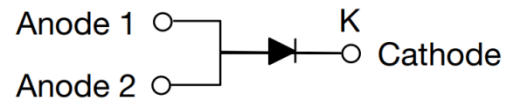
## APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- DC to DC converters

## MECHANICAL DATA

- Case: TO-277A (SMPC)
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: Indicated by cathode band
- Weight: 0.095g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	10	A
$V_{RRM}$	100 - 120	V
$I_{FSM}$	140	A
$T_{JMAX}$	150	°C
Package	TO-277A (SMPC)	
Configuration	Single die	


**TO-277A (SMPC)**


ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	TSP10U100S	TSP10U120S	UNIT
Marking code on the device		10U100	10U120	
Repetitive peak reverse voltage	$V_{RRM}$	100	120	V
Reverse voltage, total rms value	$V_{R(RMS)}$	70	84	V
Forward current	$I_F$	10		A
Surge peak forward current, 8.3ms single half sine wave superimposed on rated load	$I_{FSM}$	140		A
Junction temperature	$T_J$	-55 to +150		°C
Storage temperature	$T_{STG}$	-55 to +150		°C

<b>THERMAL PERFORMANCE</b>			
<b>PARAMETER</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>UNIT</b>
Junction-to-lead thermal resistance	$R_{\theta JL}$	11	°C/W

<b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted)						
<b>PARAMETER</b>		<b>CONDITIONS</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>MAX</b>	<b>UNIT</b>
Forward voltage <sup>(1)</sup>	TSP10U100S	$I_F = 5\text{A}, T_J = 25^\circ\text{C}$	$V_F$	0.51	-	V
	TSP10U120S			0.56	-	V
	TSP10U100S	$I_F = 10\text{A}, T_J = 25^\circ\text{C}$		0.60	0.68	V
	TSP10U120S			0.68	0.78	V
	TSP10U100S	$I_F = 5\text{A}, T_J = 125^\circ\text{C}$		0.42	-	V
	TSP10U120S			0.49	-	V
	TSP10U100S	$I_F = 10\text{A}, T_J = 125^\circ\text{C}$		0.52	0.60	V
	TSP10U120S			0.57	0.67	V
Reverse current @ rated $V_R$ <sup>(2)</sup>		$T_J = 25^\circ\text{C}$	$I_R$	-	150	$\mu\text{A}$
		$T_J = 125^\circ\text{C}$		-	30	mA

**Notes:**

1. Pulse test with  $PW = 0.3\text{ms}$
2. Pulse test with  $PW = 30\text{ms}$

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE<sup>(1)</sup></b>	<b>PACKAGE</b>	<b>PACKING</b>
TSP10UxS	TO-277A (SMPC)	6,000 / Tape & Reel

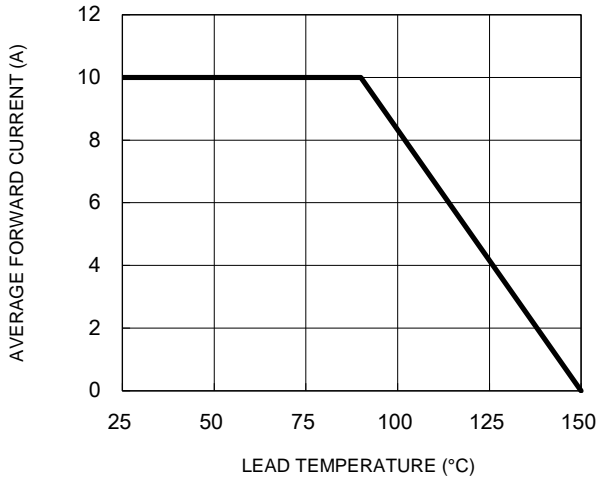
**Notes:**

1. "x" defines voltage from 100V(TSP10U100S) to 120V(TSP10U120S)

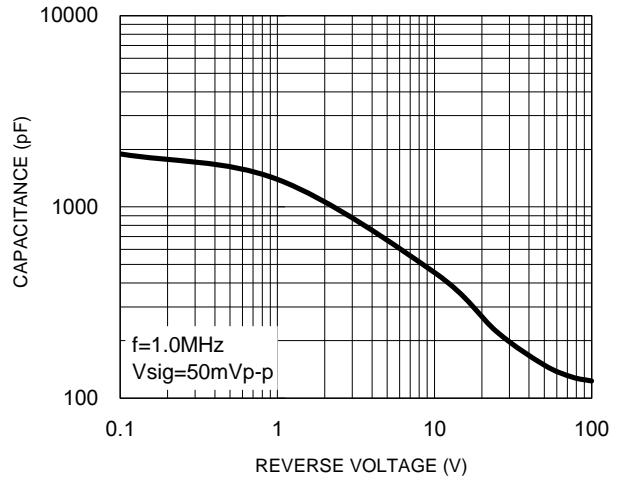
**CHARACTERISTICS CURVES**

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

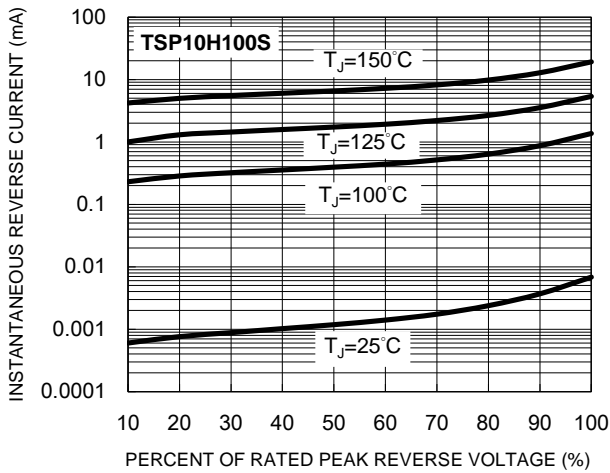
**Fig.1 Forward Current Derating Curve**



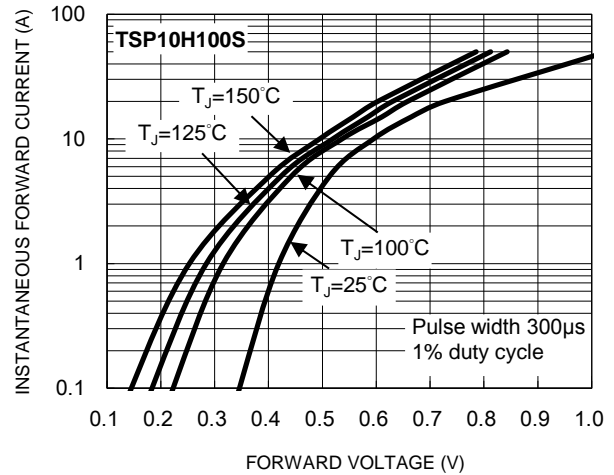
**Fig.2 Typical Junction Capacitance**



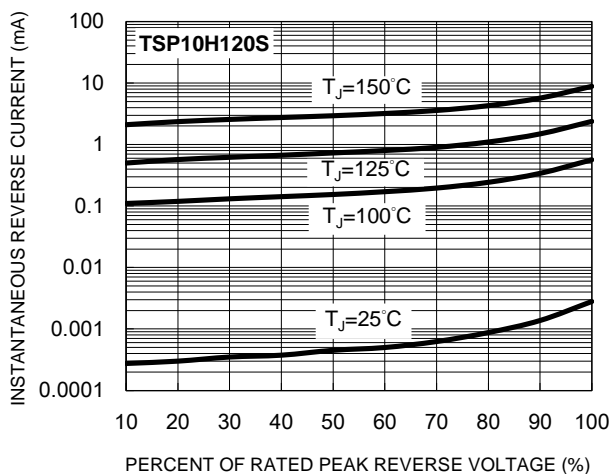
**Fig.3 Typical Reverse Characteristics**



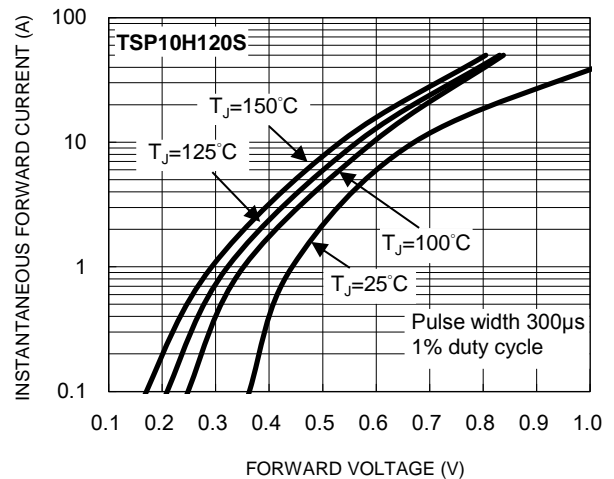
**Fig.4 Typical Forward Characteristics**



**Fig.5 Typical Reverse Characteristics**



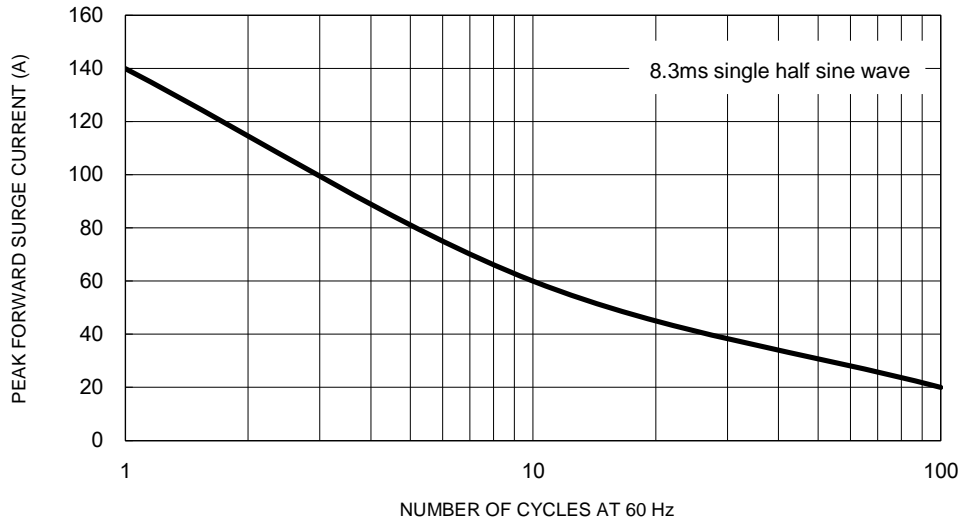
**Fig.6 Typical Forward Characteristics**



**CHARACTERISTICS CURVES**

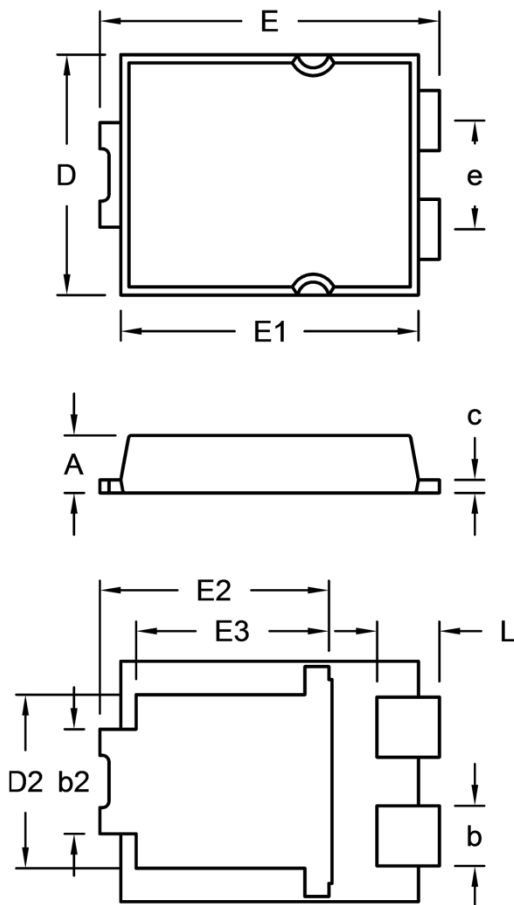
( $T_A = 25^\circ\text{C}$  unless otherwise noted)

**Fig.7 Maximum Non-Repetitive Forward Surge Current**



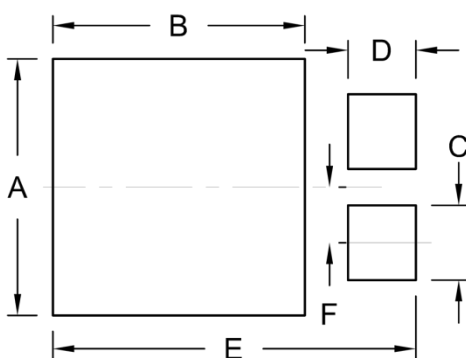
**PACKAGE OUTLINE DIMENSIONS**

TO-277A (SMPC)



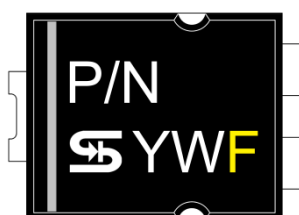
DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	1.000	1.200	0.039	0.047
b	1.000	1.300	0.039	0.051
b2	1.850	2.150	0.073	0.085
c	0.175	0.325	0.007	0.013
D	4.550	4.650	0.179	0.183
D2	3.170	3.470	0.125	0.137
E	6.350	6.650	0.250	0.262
E1	5.650	5.750	0.222	0.226
E2	4.235	4.535	0.167	0.179
E3	3.540	3.840	0.139	0.151
e	1.930	2.230	0.076	0.088
L	1.043	1.343	0.041	0.053

**SUGGESTED PAD LAYOUT**



Symbol	Unit (mm)	Unit (inch)
A	4.80	0.189
B	4.72	0.186
C	1.40	0.055
D	1.27	0.050
E	6.80	0.268
F	1.04	0.041

**MARKING DIAGRAM**



P/N = Marking Code  
 YW = Date Code  
 F = Factory Code

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