

20A, 100V - 200V Trench Schottky Surface Mount Rectifier

FEATURES

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

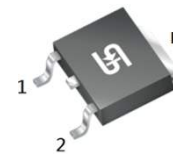
APPLICATIONS

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

MECHANICAL DATA

- Case: TO-252 (D-PAK)
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A whisker test
- Polarity: As marked
- Weight: 0.400g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I_F	20	A
V_{RRM}	100 - 200	V
I_{FSM}	200	A
T_{JMAX}	150	°C
Package	TO-252 (D-PAK)	
Configuration	Single die	



TO-252 (D-PAK)



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	TSSD20L 100SW	TSSD20L 150SW	TSSD20L 200SW	UNIT
Marking code on the device		20L100SW	20L150SW	20L200SW	
Repetitive peak reverse voltage	V_{RRM}	100	150	200	V
Reverse voltage, total rms value	$V_{R(RMS)}$	70	105	140	V
Forward current	I_F	20			A
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load	I_{FSM}	200			A
Critical rate of rise of off-state voltage	dv/dt	10,000			V/ μs
Junction temperature	T_J	- 55 to +150			°C
Storage temperature	T_{STG}	- 55 to +150			°C

THERMAL PERFORMANCE			
PARAMETER	SYMBOL	TYP	UNIT
Junction-to-lead thermal resistance	$R_{\theta JL}$	17	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	58	°C/W
Junction-to-case thermal resistance	$R_{\theta JC}$	18	°C/W

Thermal Performance Note: Units mounted on PCB (16mm x 16mm Cu pad test board)

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage ⁽¹⁾	TSSD20L100SW	$I_F = 10\text{A}, T_J = 25^\circ\text{C}$	V_F	0.60	-	V
		$I_F = 20\text{A}, T_J = 25^\circ\text{C}$		0.75	0.87	V
		$I_F = 10\text{A}, T_J = 125^\circ\text{C}$		0.55	-	V
		$I_F = 20\text{A}, T_J = 125^\circ\text{C}$		0.68	0.79	V
	TSSD20L150SW	$I_F = 10\text{A}, T_J = 25^\circ\text{C}$		0.80	-	V
		$I_F = 20\text{A}, T_J = 25^\circ\text{C}$		0.89	1.05	V
		$I_F = 10\text{A}, T_J = 125^\circ\text{C}$		0.67	-	V
		$I_F = 20\text{A}, T_J = 125^\circ\text{C}$		0.78	0.90	V
	TSSD20L200SW	$I_F = 10\text{A}, T_J = 25^\circ\text{C}$		0.81	-	V
		$I_F = 20\text{A}, T_J = 25^\circ\text{C}$		0.90	1.10	V
		$I_F = 10\text{A}, T_J = 125^\circ\text{C}$		0.67	-	V
		$I_F = 20\text{A}, T_J = 125^\circ\text{C}$		0.78	0.91	V
Reverse current @ rated V_R ⁽²⁾	TSSD20L100SW	$T_J = 25^\circ\text{C}$	I_R	-	50	μA
		$T_J = 125^\circ\text{C}$		-	20	mA
	TSSD20L150SW	$T_J = 25^\circ\text{C}$		-	20	μA
	TSSD20L200SW	$T_J = 125^\circ\text{C}$		-	1	mA
Junction capacitance	TSSD20L100SW	1MHz, $V_R = 4.0\text{V}$	C_J	1000	-	pF
	TSSD20L150SW			920	-	pF
	TSSD20L200SW			880	-	pF

Notes:

1. Pulse test with PW = 0.3ms
2. Pulse test with PW = 30ms

ORDERING INFORMATION		
ORDERING CODE⁽¹⁾	PACKAGE	PACKING
TSSD20LxSW	TO-252 (D-PAK)	2,500 / Tape & Reel

Notes:

1. "x" defines voltage from 100V(TSSD20L100SW) to 200V(TSSD20L200SW)

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

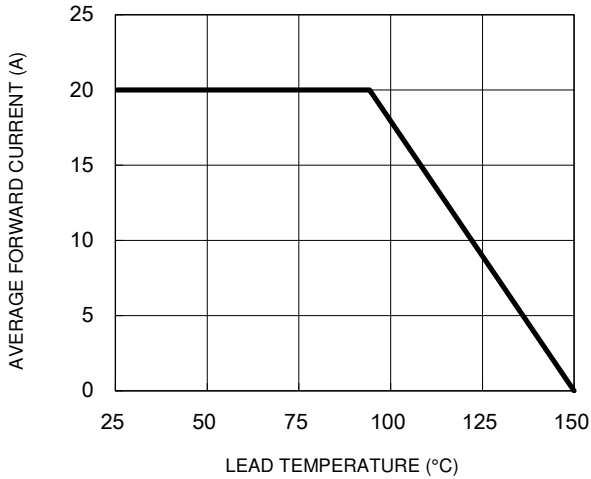


Fig.2 Typical Junction Capacitance

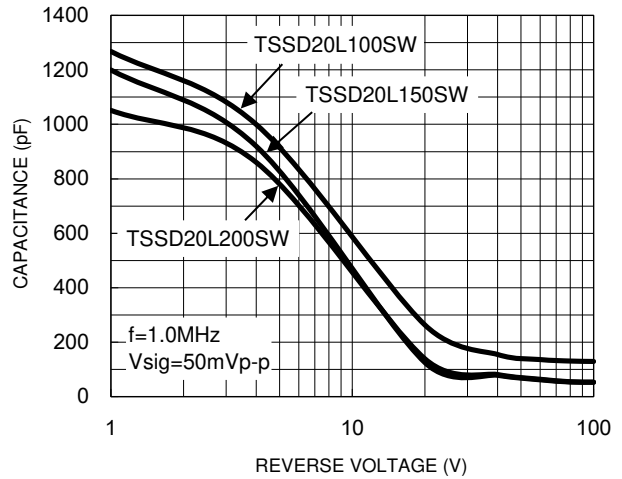


Fig.3 Typical Reverse Characteristics

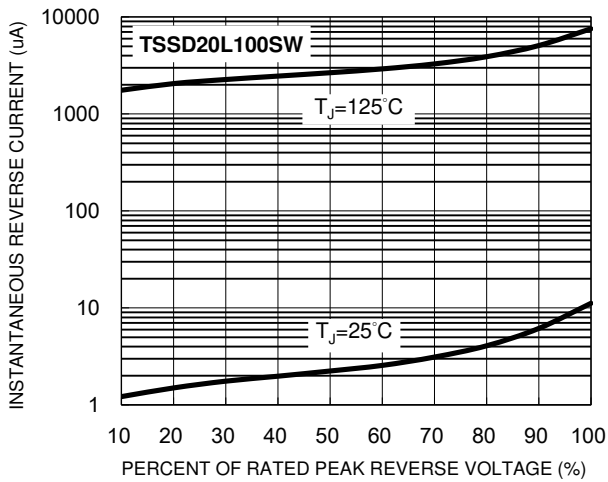


Fig.4 Typical Forward Characteristics

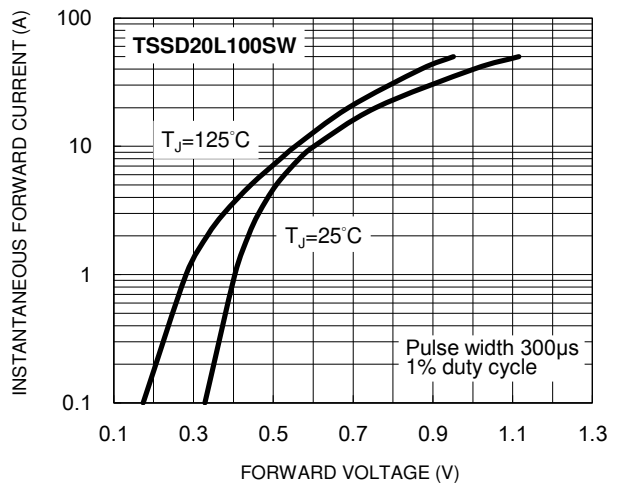


Fig.5 Typical Reverse Characteristics

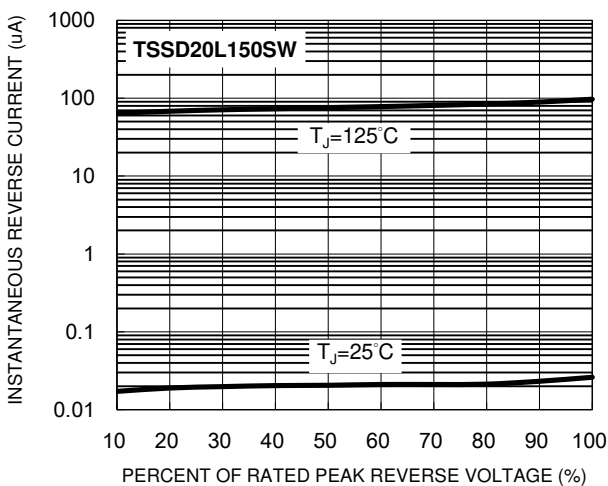
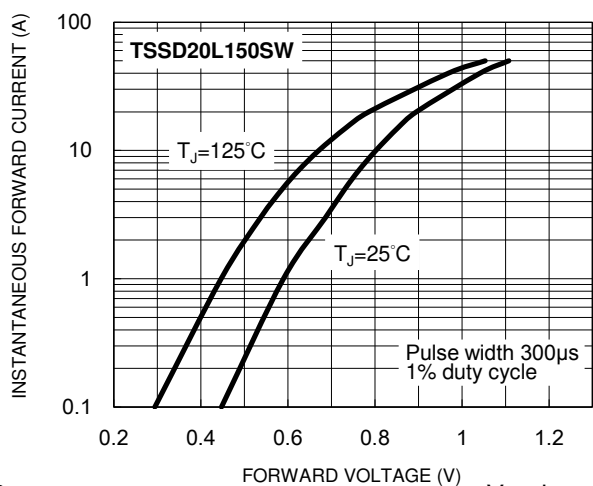


Fig.6 Typical Forward Characteristics



CHARACTERISTICS CURVES

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

Fig.7 Typical Reverse Characteristics

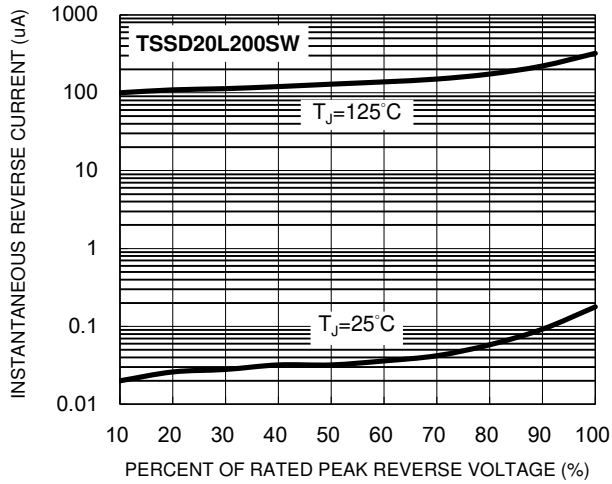
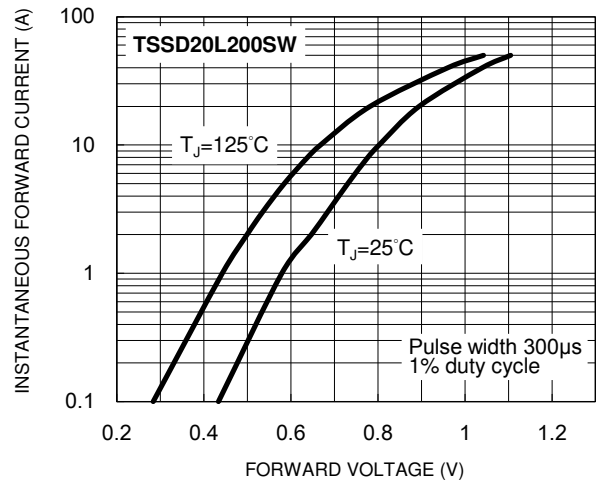
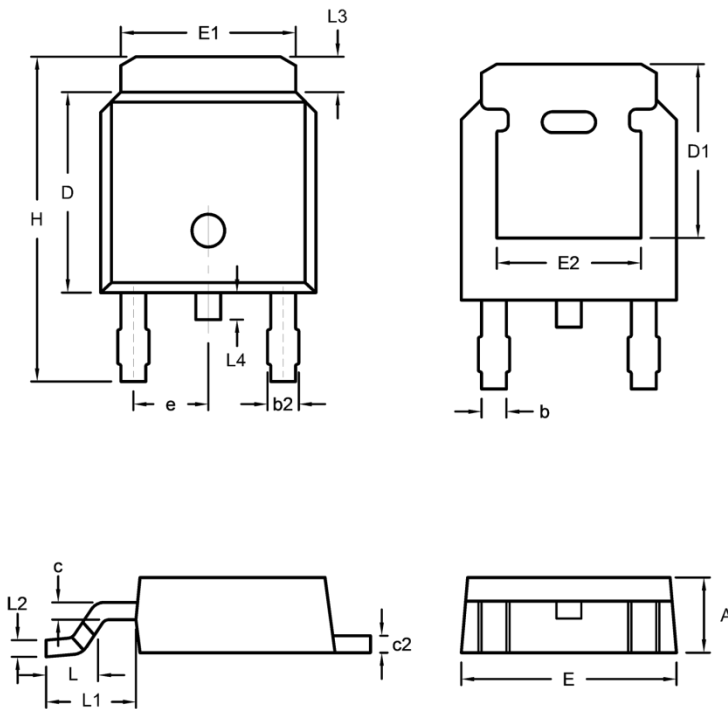


Fig.8 Typical Forward Characteristics



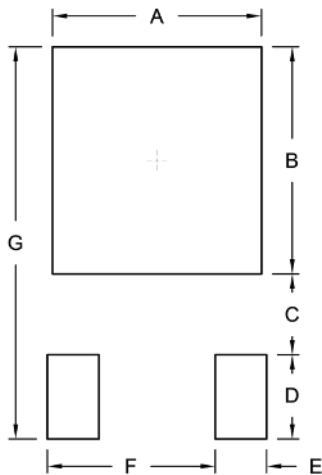
PACKAGE OUTLINE DIMENSIONS

TO-252 (D-PAK)



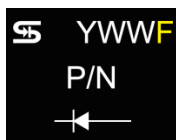
DIM	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	2.20	2.38	0.087	0.094
b	0.64	0.88	0.025	0.035
b2	0.77	1.14	0.030	0.045
c	0.45	0.60	0.018	0.024
c2	0.45	0.58	0.018	0.023
D	6.00	6.22	0.236	0.245
D1	5.30	-	0.209	-
E	6.41	6.73	0.252	0.265
E1	5.21	5.47	0.205	0.215
E2	4.40	-	0.173	-
e	2.286 (REF)		0.090	
H	9.40	10.40	0.370	0.409
L	1.40	1.77	0.055	0.070
L1	2.743 (REF)		0.107	
L2	0.508 (REF)		0.020	
L3	0.89	1.27	0.035	0.050
L4	0.64	1.01	0.025	0.040

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	5.69	0.224
B	6.18	0.243
C	2.20	0.087
D	2.29	0.090
E	1.40	0.055
F	4.57	0.180
G	10.67	0.420

MARKING DIAGRAM



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

Notice

Specifications of the products displayed herein are subject to change without notice. TSC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Purchasers are solely responsible for the choice, selection, and use of TSC products and TSC assumes no liability for application assistance or the design of Purchasers' products.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in TSC's terms and conditions of sale for such products, TSC assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TSC products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify TSC for any damages resulting from such improper use or sale.