

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

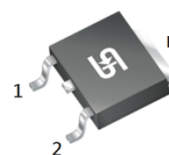
APPLICATIONS

- 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:

- Pulse test with $PW = 0.3\text{ms}$
- Pulse test with $PW = 30\text{ms}$

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

Notes:

- "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

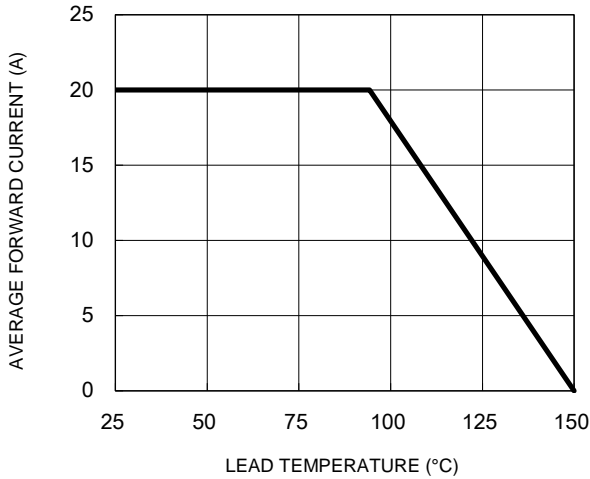


Fig.2 Typical Junction Capacitance

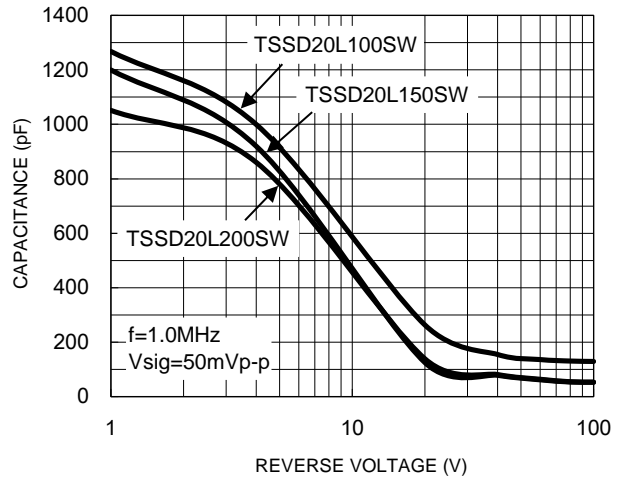


Fig.3 Typical Reverse Characteristics

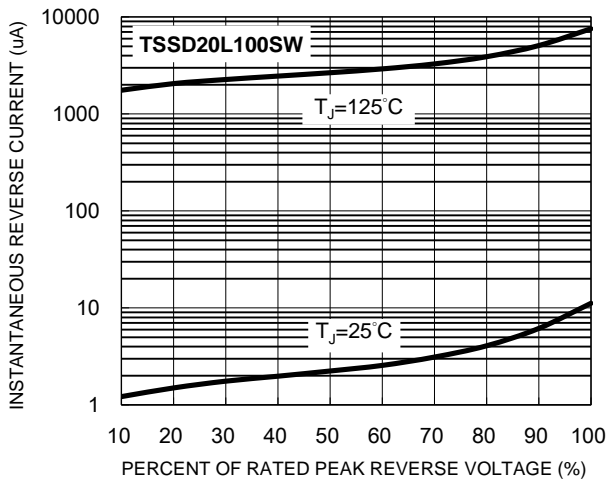


Fig.4 Typical Forward Characteristics

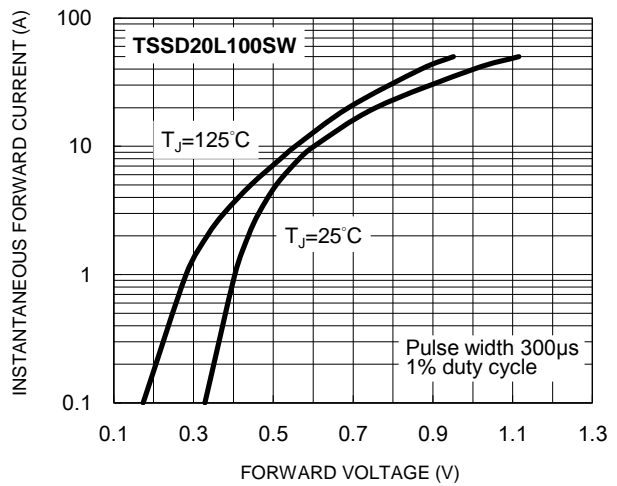


Fig.5 Typical Reverse Characteristics

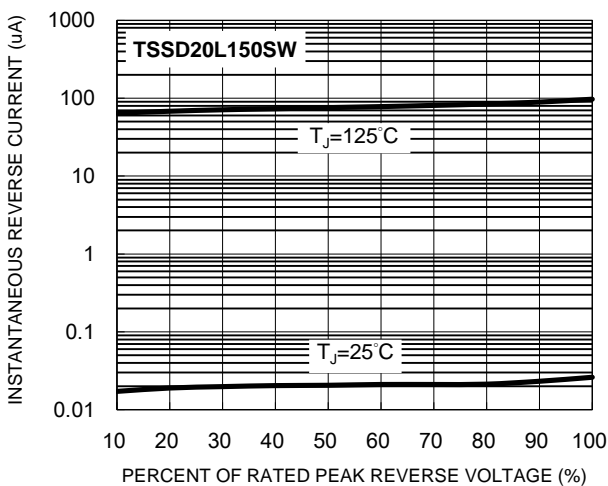
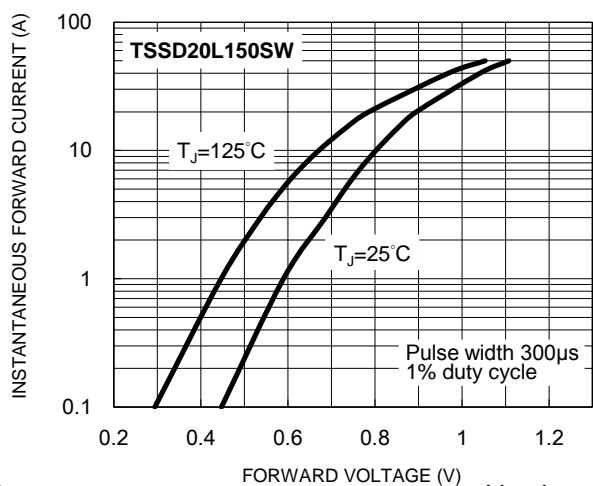


Fig.6 Typical Forward Characteristics



CHARACTERISTICS CURVES

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

Fig.7 Typical Reverse Characteristics

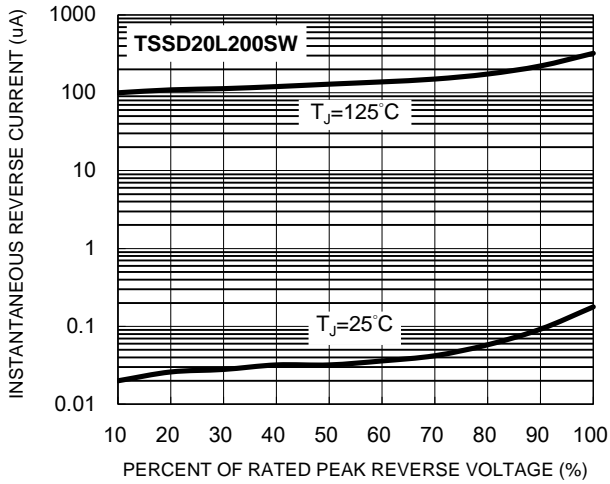
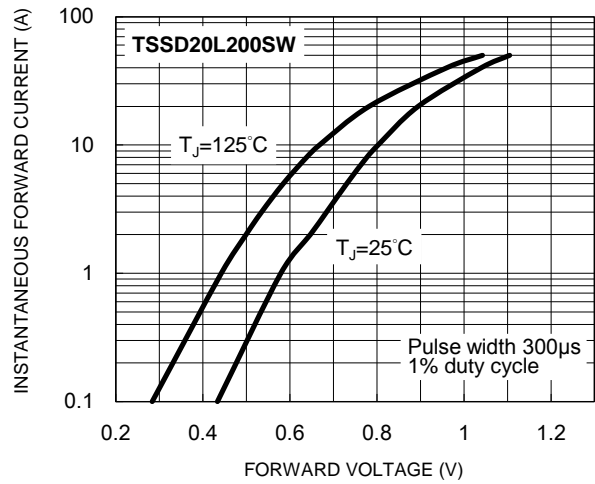
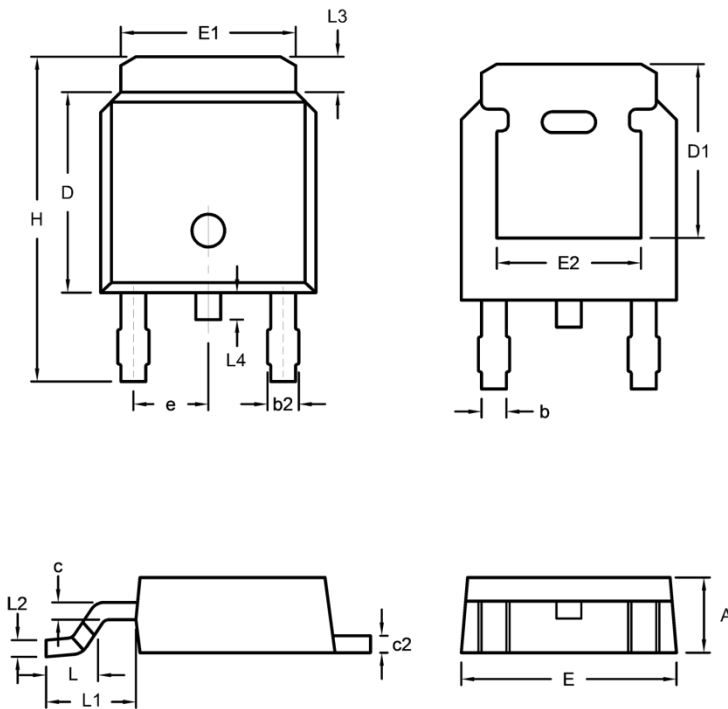


Fig.8 Typical Forward Characteristics



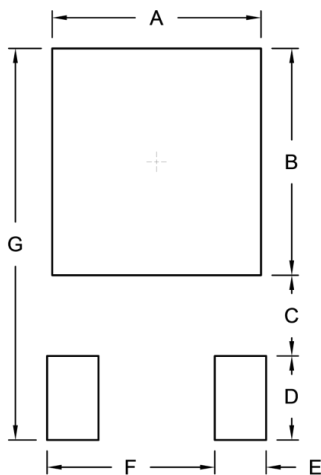
PACKAGE OUTLINE DIMENSIONS

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

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