20A, 45V - 60V Trench Schottky 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
- Compliant to RoHS directive 2011/65/EU and In accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

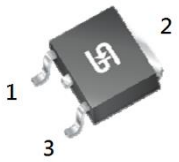
KEY PARAMETERS		
PARAMETER	**VALUE**	**UNIT**
$I_{F(AV)}$	20	A
V_{RRM}	45 - 60	V
I_{FSM}	200	A
$T_{J\ MAX}$	150	°C
Package	TO-252 (D-PAK)	
Configuration	Single Die	

APPLICATIONS

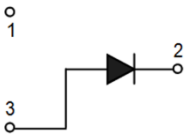
- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- On-board DC/DC converter

MECHANICAL DATA

- Case: TO-252 (D-PAK)
- Molding compound: UL flammability classification rating 94V-0
- Packing code with suffix "G" means green compound (halogen-free)
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A whisker test
- Polarity: As marked
- Weight: 0.4 g (approximately)



TO-252 (D-PAK)



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)				
PARAMETER	**SYMBOL**	**TSSD20L45SW**	**TSSD20L60SW**	**UNIT**
Marking code on the device		20L45SW	20L60SW	
Repetitive peak reverse voltage	V_{RRM}	45	60	V
Forward current	$I_{F(AV)}$	20		A
Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode	I_{FSM}	200		A
Junction temperature	T_J	-55 to +150		°C
Storage temperature	T_{STG}	-55 to +150		°C

THERMAL PERFORMANCE

PARAMETER	SYMBOL	LIMIT	UNIT
Junction-to-lead thermal resistance	$R_{\Theta JL}$	15	°C/W
Junction-to-ambient thermal resistance	$R_{\Theta JA}$	44	°C/W
Junction-to-case thermal resistance	$R_{\Theta JC}$	16	°C/W

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

ELECTRICAL SPECIFICATIONS (T_A = 25°C unless otherwise noted)

PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage per diode (1)	TSSD20L45SW	I_F = 10A, T_J = 25°C	V_F	0.47	-	V
		I_F = 20A, T_J = 25°C		0.55	0.65	V
		I_F = 10A, T_J = 125°C		0.39	-	V
		I_F = 20A, T_J = 125°C		0.50	0.58	V
	TSSD20L60SW	I_F = 10A, T_J = 25°C		0.48	-	V
		I_F = 20A, T_J = 25°C		0.57	0.66	V
		I_F = 10A, T_J = 125°C		0.40	-	V
		I_F = 20A, T_J = 125°C		0.54	0.65	V
Reverse current @ rated V_R per diode (2)	TSSD20L45SW	T_J = 25°C	I_R	-	100	μA
		T_J = 125°C		-	50	mA
	TSSD20L60SW	T_J = 25°C		-	100	μA
		T_J = 125°C		-	50	mA
Junction capacitance	TSSD20L45SW	1 MHz, V_R=4.0V	C_J	2600	-	pF
	TSSD20L60SW			2500	-	pF

Notes:

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

ORDERING INFORMATION

PART NO.	PACKING CODE	PACKING CODE SUFFIX	PACKAGE	PACKING
TSSD20LxxSW (Note 1, 2)	RO	G	TO-252 (D-PAK)	2.5KPCS / 13"Reel

Notes:

1. "xx" defines voltage from 45V (TSSD20L45SW) to 60V (TSSD20L60SW)
2. Whole series with green compound (halogen-free)

EXAMPLE

EXAMPLE P/N	PART NO.	PACKING CODE	PACKING CODE SUFFIX	DESCRIPTION
TSSD20L45SW ROG	TSSD20L45SW	RO	G	Green compound

CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.1 Forward Current Derating Curve

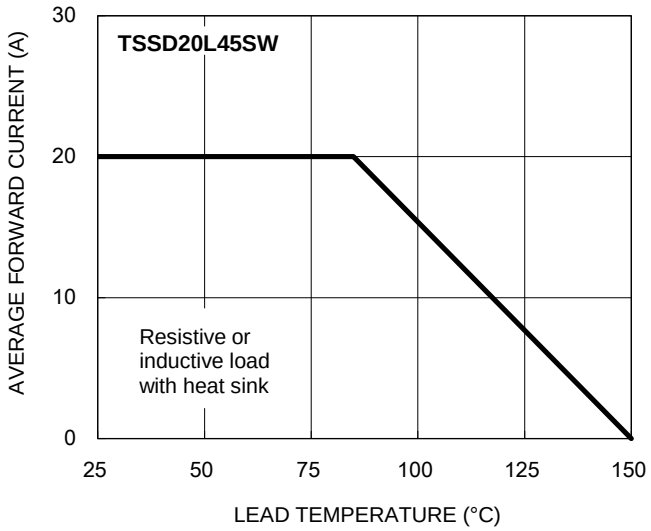


Fig.2 Typical Junction Capacitance

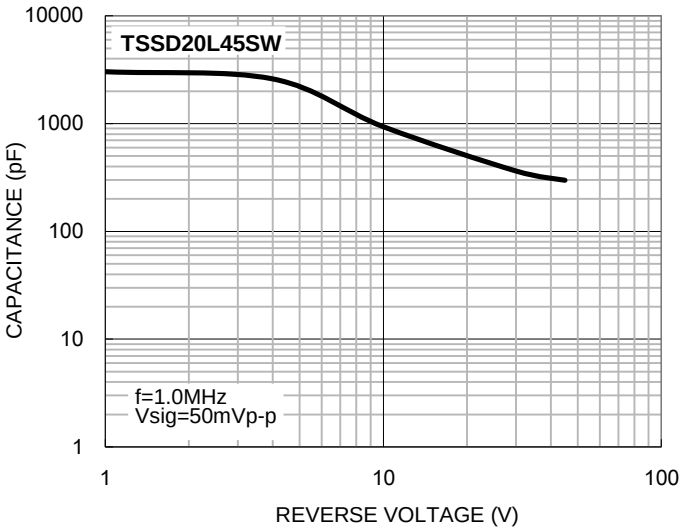


Fig.3 Typical Reverse Characteristics

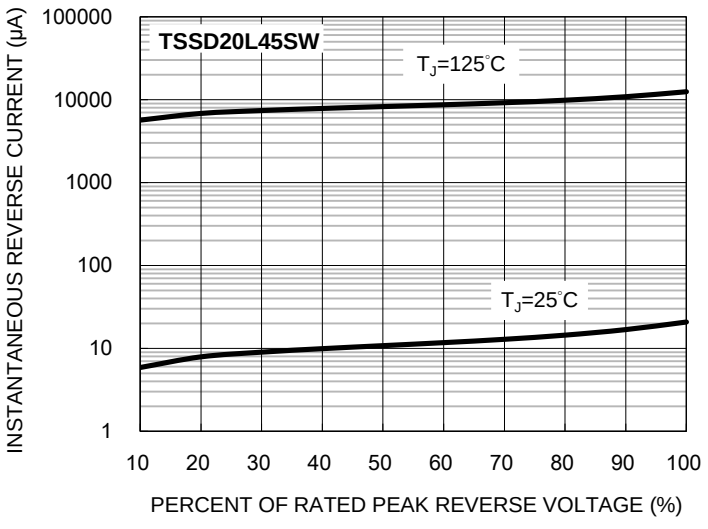
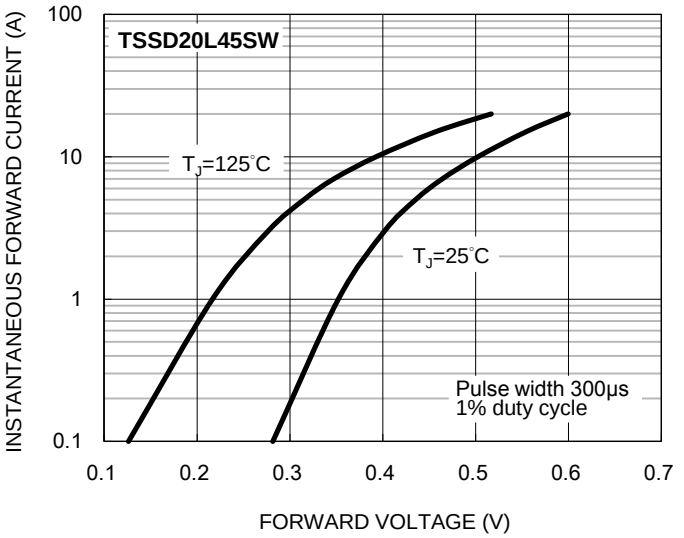


Fig.4 Typical Forward Characteristics



CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.5 Forward Current Derating Curve

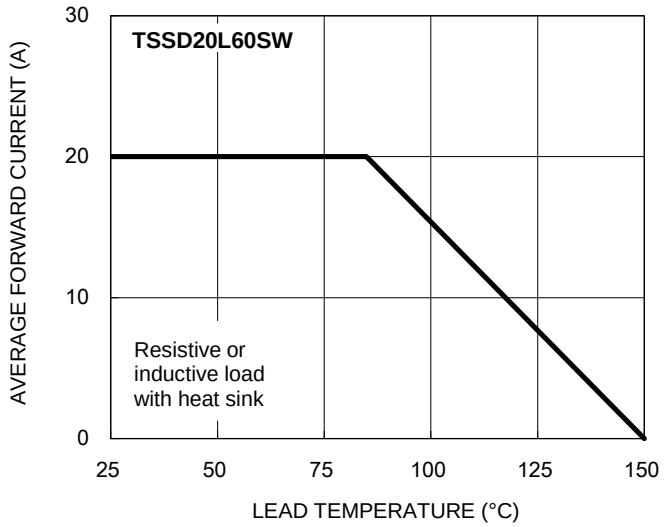


Fig.6 Typical Junction Capacitance

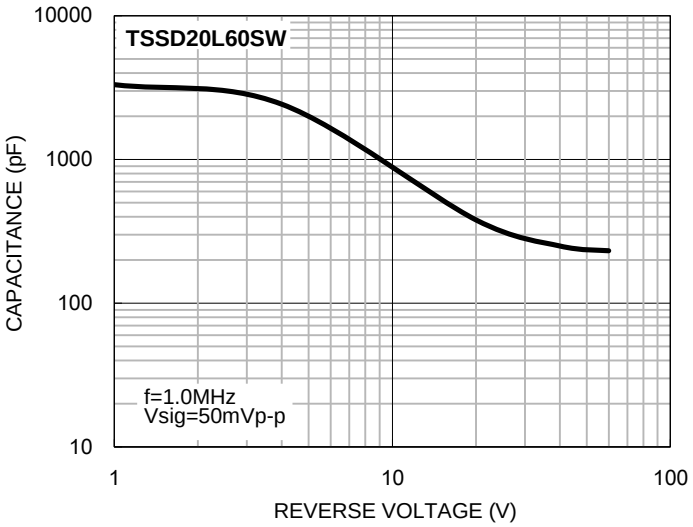


Fig.7 Typical Reverse Characteristics

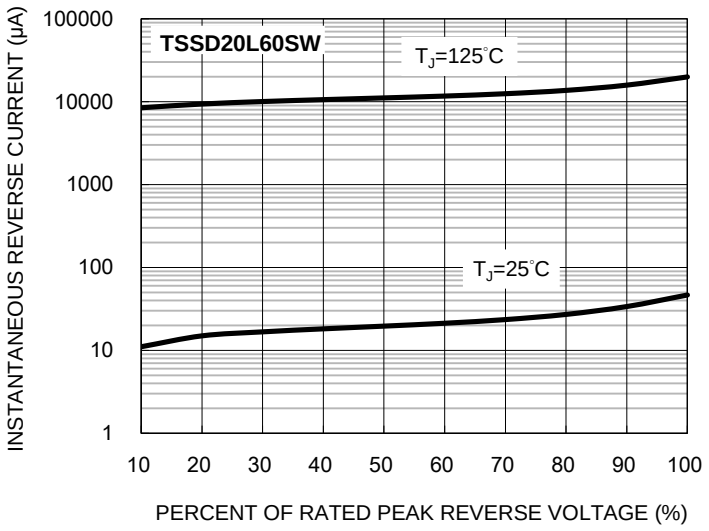
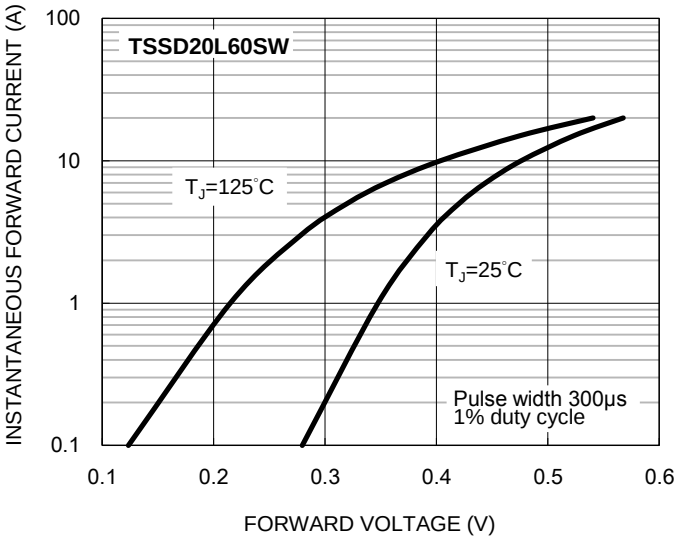
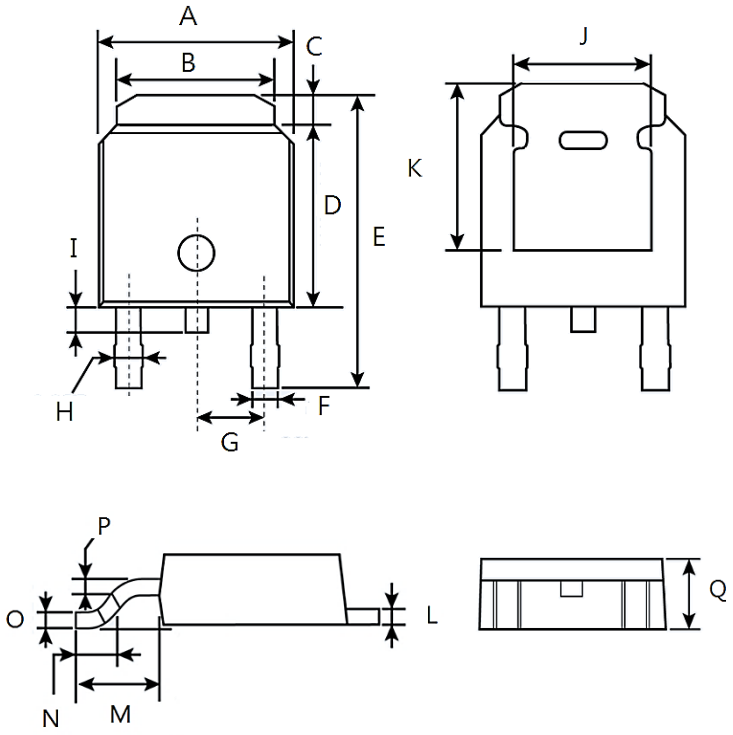


Fig.8 Typical Forward Characteristics



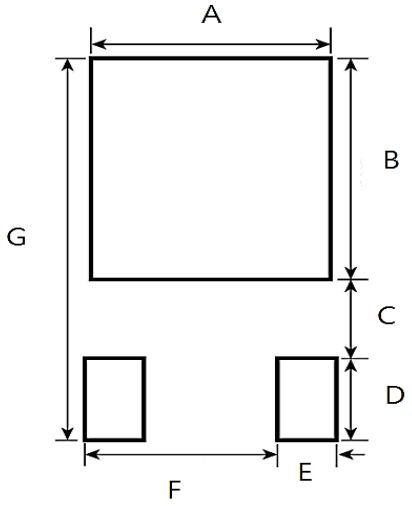
PACKAGE OUTLINE DIMENSIONS

TO-252 (D-PAK)



DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	6.41	6.73	0.252	0.265
B	5.21	5.47	0.205	0.215
C	0.89	1.27	0.035	0.050
D	6.00	6.22	0.236	0.245
E	9.40	10.40	0.370	0.409
F	0.64	0.88	0.025	0.035
G	2.286(REF)		0.090	
H	0.77	1.14	0.030	0.045
I	0.64	1.01	0.025	0.040
J	4.40	-	0.173	-
K	5.30	-	0.209	-
L	0.45	0.58	0.018	0.023
M	2.743(REF)		0.107	
N	1.40	1.77	0.055	0.070
O	0.508(REF)		0.020	
P	0.45	0.60	0.018	0.024
Q	2.20	2.38	0.087	0.094

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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