

20A, 100V - 200V Trench Schottky Rectifier

FEATURES

- Patented Trench Schottky technology
- Excellent high temperature stability
- Low forward voltage
- Low power loss/ high efficiency
- High forward surge capability
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

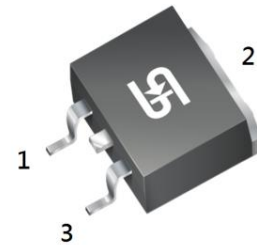
APPLICATIONS

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

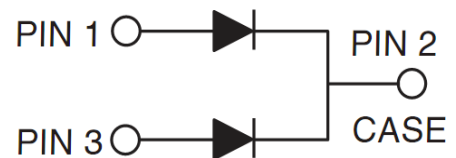
MECHANICAL DATA

- Case: TO-263AB (D²PAK)
- 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: 1.60g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I_F	2 x 10	A
V_{RRM}	100 - 200	V
I_{FSM}	100	A
$T_{J\ MAX}$	150	°C
Package	TO-263AB (D ² PAK)	
Configuration	Dual dies	



TO-263AB (D²PAK)



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

PARAMETER	SYMBOL	TSD20H 100CW	TSD20H 120CW	TSD20H 150CW	TSD20H 200CW	UNIT
Marking code on the device		TSD20H 100CW	TSD20H 120CW	TSD20H 150CW	TSD20H 200CW	
Repetitive peak reverse voltage	V_{RRM}	100	120	150	200	V
Reverse voltage, total rms value	$V_{R(RMS)}$	70	84	105	140	V
Forward current	per device	20				A
	per diode	10				A
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load	I_{FSM}	100				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	$R_{\theta JL}$	3.8	°C/W
Junction-to-case thermal resistance	$R_{\theta JC}$	2.8	°C/W

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage per diode ⁽¹⁾	TSD20H100CW	$I_F = 5\text{A}, T_J = 25^\circ\text{C}$	V_F	0.57	-	V
		$I_F = 10\text{A}, T_J = 25^\circ\text{C}$		0.67	0.79	V
		$I_F = 5\text{A}, T_J = 125^\circ\text{C}$		0.50	-	V
		$I_F = 10\text{A}, T_J = 125^\circ\text{C}$		0.59	0.68	V
	TSD20H120CW	$I_F = 5\text{A}, T_J = 25^\circ\text{C}$		0.62	-	V
		$I_F = 10\text{A}, T_J = 25^\circ\text{C}$		0.78	0.87	V
		$I_F = 5\text{A}, T_J = 125^\circ\text{C}$		0.53	-	V
		$I_F = 10\text{A}, T_J = 125^\circ\text{C}$		0.63	0.72	V
	TSD20H150CW	$I_F = 5\text{A}, T_J = 25^\circ\text{C}$		0.72	-	V
		$I_F = 10\text{A}, T_J = 25^\circ\text{C}$		0.81	0.90	V
		$I_F = 5\text{A}, T_J = 125^\circ\text{C}$		0.58	-	V
		$I_F = 10\text{A}, T_J = 125^\circ\text{C}$		0.66	0.75	V
	TSD20H200CW	$I_F = 5\text{A}, T_J = 25^\circ\text{C}$		0.77	-	V
		$I_F = 10\text{A}, T_J = 25^\circ\text{C}$		0.83	0.93	V
		$I_F = 5\text{A}, T_J = 125^\circ\text{C}$		0.62	-	V
		$I_F = 10\text{A}, T_J = 125^\circ\text{C}$		0.68	0.78	V
Reverse current @ rated V_R per diode ⁽²⁾	TSD20H100CW	$T_J = 25^\circ\text{C}$	I_R	-	200	μA
	TSD20H120CW	$T_J = 125^\circ\text{C}$		8	25	mA
	TSD20H150CW	$T_J = 25^\circ\text{C}$		-	100	μA
	TSD20H200CW	$T_J = 125^\circ\text{C}$		3	15	mA

Notes:

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

ORDERING INFORMATION

ORDERING CODE⁽¹⁾	PACKAGE	PACKING
TSD20HxCW C0G	TO-263AB (D ² PAK)	50 / Tube
TSD20HxCW MNG	TO-263AB (D ² PAK)	800 / 13" reel

Notes:

1. "x" defines voltage from 100V(TSD20H100CW) to 200V(TSD20H200CW)

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

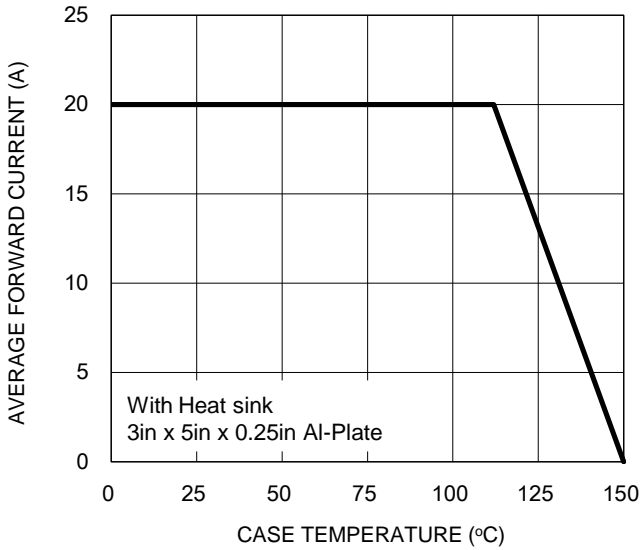


Fig.2 Typical Junction Capacitance

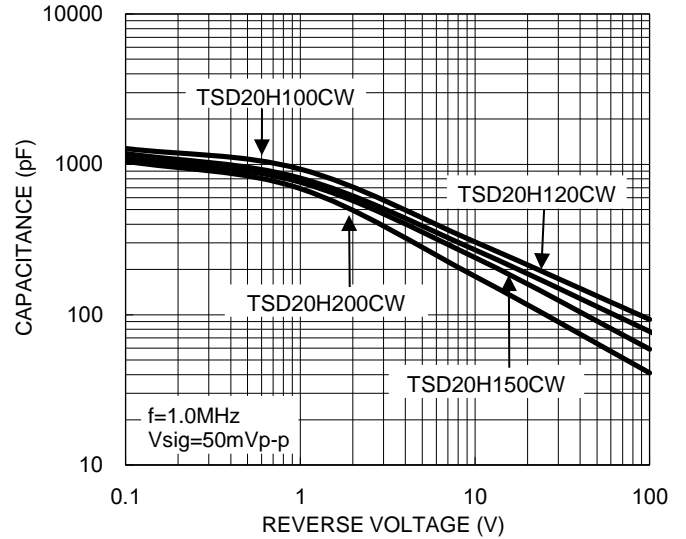


Fig.3 Typical Reverse Characteristics

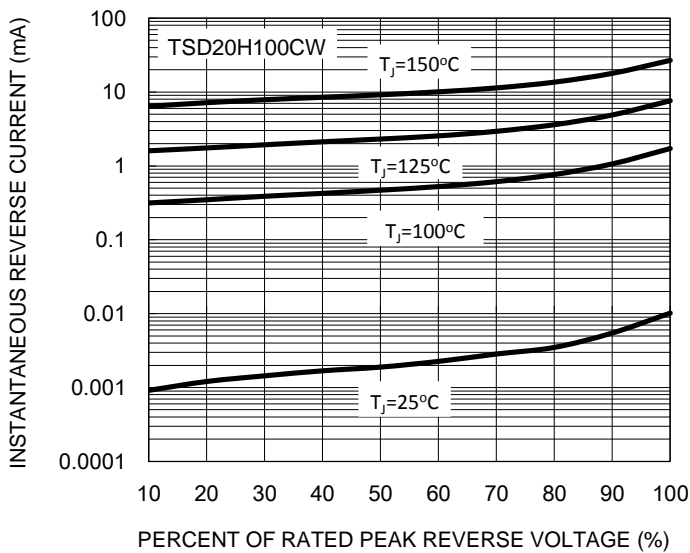
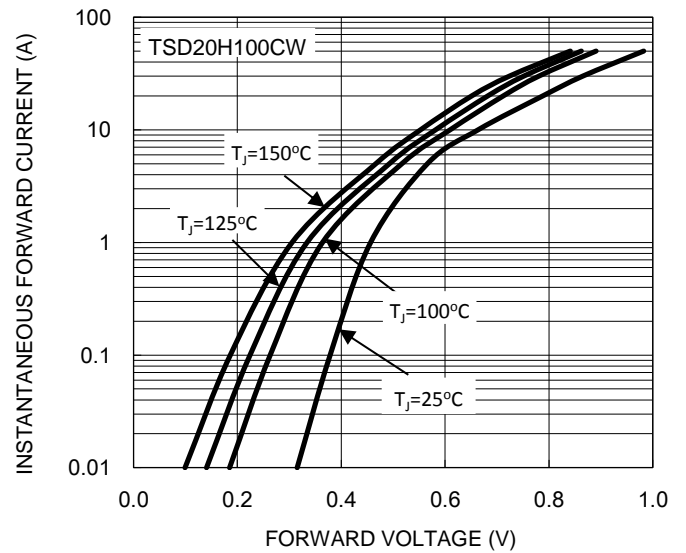


Fig.4 Typical Forward Characteristics



CHARACTERISTICS CURVES

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

Fig.5 Typical Reverse Characteristics

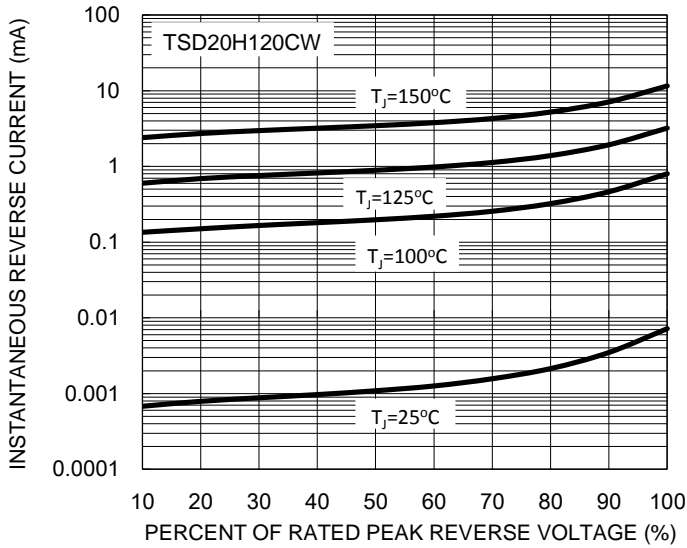


Fig.6 Typical Forward Characteristics

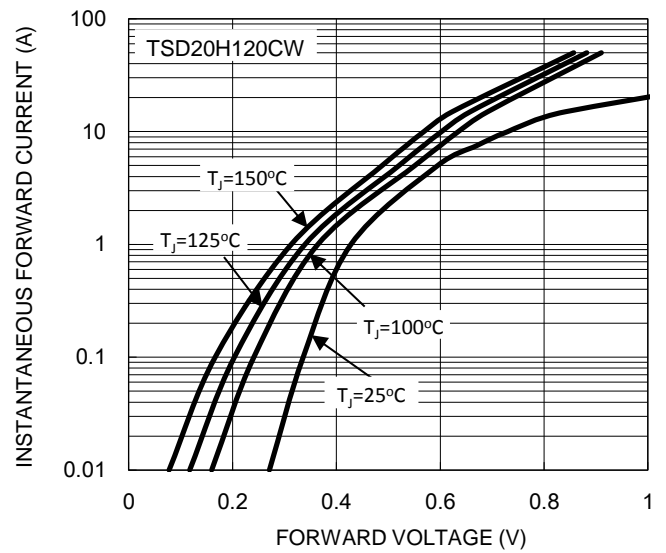


Fig.7 Typical Reverse Characteristics

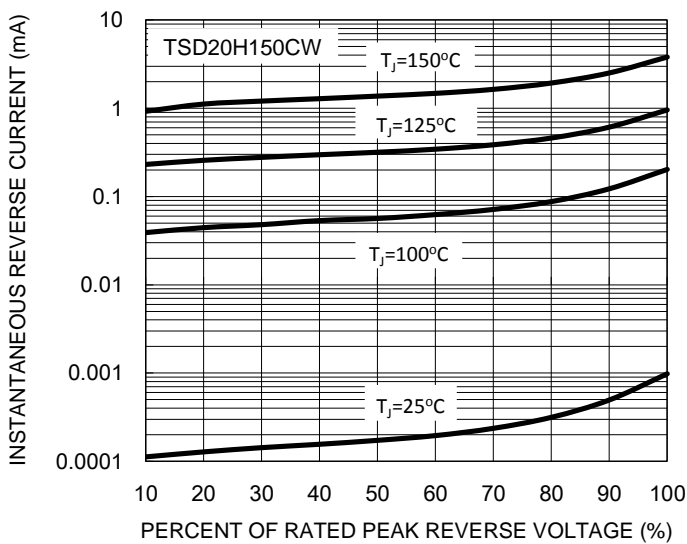
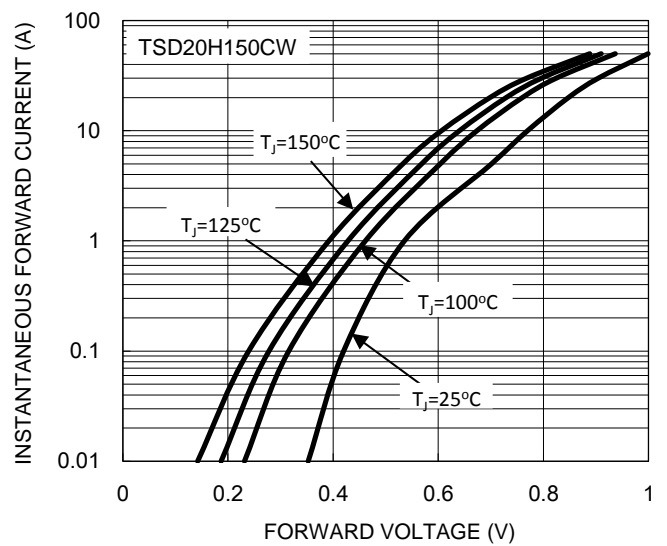


Fig.8 Typical Forward Characteristics



CHARACTERISTICS CURVES

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

Fig.9 Typical Reverse Characteristics

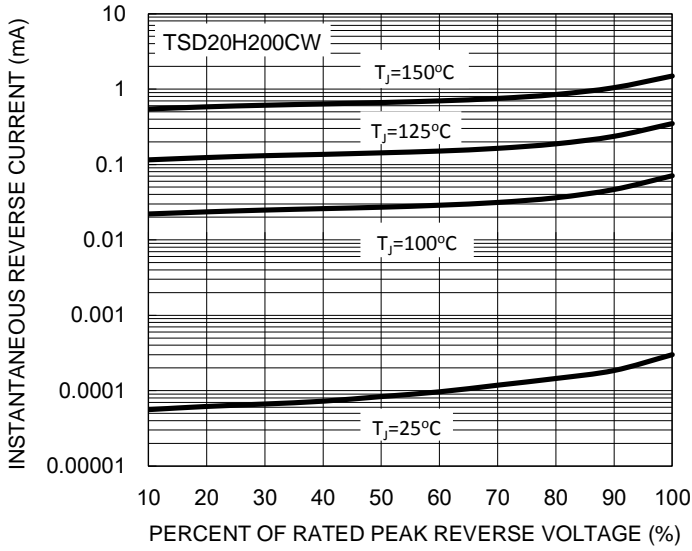
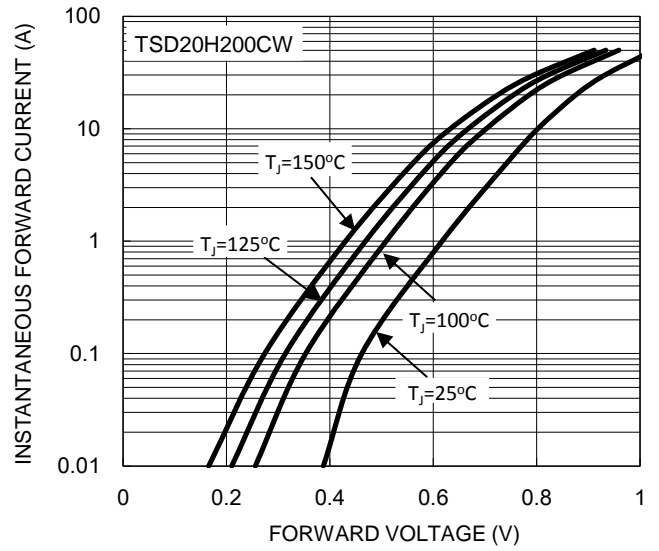
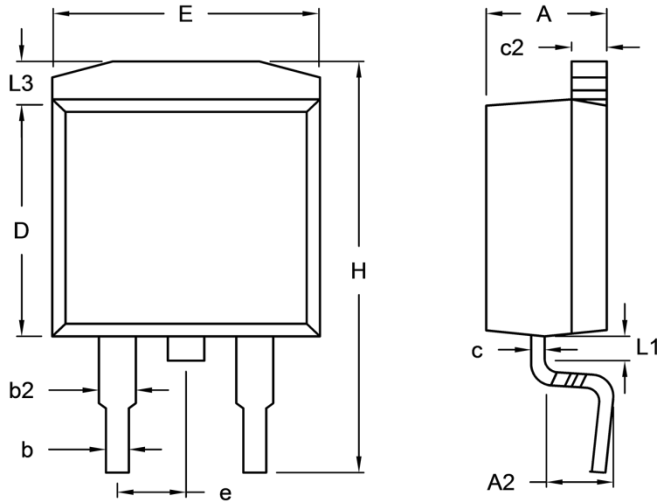


Fig.10 Typical Forward Characteristics



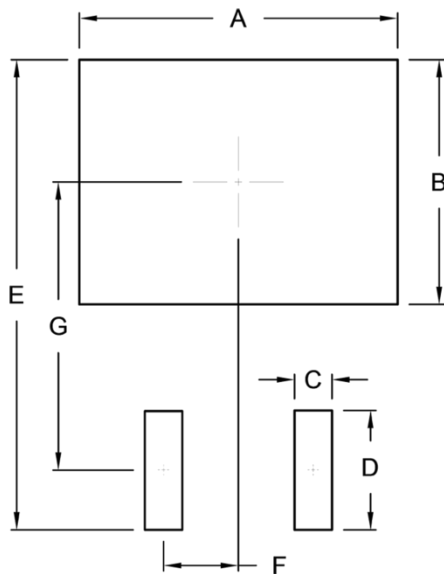
PACKAGE OUTLINE DIMENSIONS

TO-263AB (D²PAK)



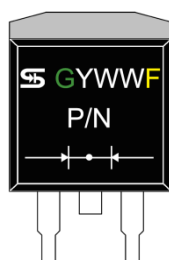
DIM	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	4.390	4.790	0.173	0.189
A2	2.540 (TYP)		0.100 (TYP)	
b	0.675	0.975	0.027	0.038
b2	1.150	1.550	0.045	0.061
c	0.400	0.600	0.016	0.024
c2	1.150	1.450	0.045	0.057
D	8.250	9.250	0.325	0.364
E	9.600	10.050	0.378	0.396
e	2.540 (TYP)		0.100 (TYP)	
H	14.920	15.520	0.587	0.611
L1	0.900 (TYP)		0.035 (TYP)	
L3	1.400 (TYP)		0.055 (TYP)	

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	10.80	0.425
B	8.30	0.327
C	1.27	0.050
D	4.05	0.159
E	15.95	0.628
F	2.54	0.100
G	9.775	0.385

MARKING DIAGRAM



- P/N = Marking Code
- G = Green Compound
- YWW = Date Code
- F = Factory Code

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