

## 20A, 45V - 60V Trench Schottky Rectifier

### FEATURES

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

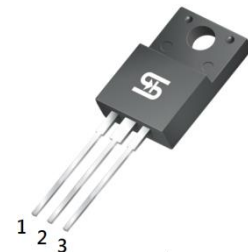
### APPLICATIONS

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

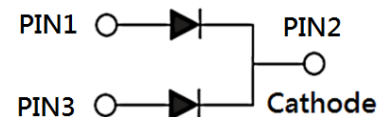
### MECHANICAL DATA

- Case: ITO-220AB
- 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
- Mounting torque: 0.56 N·m maximum
- Polarity: As marked
- Weight: 1.70g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	20	A
$V_{RRM}$	45 - 60	V
$I_{FSM}$	120	A
$T_{JMAX}$	150	°C
Package	ITO-220AB	
Configuration	Dual dies	



ITO-220AB



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	TSF20L45C	TSF20L60C	UNIT
Marking code on the device		TSF20L45C	TSF20L60C	
Repetitive peak reverse voltage	$V_{RRM}$	45	60	V
Reverse voltage, total rms value	$V_{R(RMS)}$	31	42	V
Forward current	$I_F$	20		A
Surge peak forward current, 8.3ms single half sine-wave superimposed on rated load	$I_{FSM}$	120		A
Critical rate of rise of off-state voltage	dv/dt	10,000		V/ $\mu\text{s}$
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-case thermal resistance	$R_{\theta JC}$	4	°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 per diode <sup>(1)</sup>	TSF20L45C	$I_F = 10\text{A}, T_J = 25^\circ\text{C}$	$V_F$	0.55	0.65	V
	TSF20L60C			0.57	0.66	V
	TSF20L45C	$I_F = 20\text{A}, T_J = 25^\circ\text{C}$		0.70	0.79	V
	TSF20L60C			0.72	0.81	V
	TSF20L45C	$I_F = 10\text{A}, T_J = 125^\circ\text{C}$		0.53	0.63	V
	TSF20L60C			0.55	0.64	V
	TSF20L45C	$I_F = 20\text{A}, T_J = 125^\circ\text{C}$		0.68	0.77	V
	TSF20L60C			0.70	0.79	V
Reverse current @ rated $V_R$ per diode <sup>(2)</sup>		$T_J = 25^\circ\text{C}$	$I_R$	-	500	$\mu\text{A}$
		$T_J = 125^\circ\text{C}$		-	100	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>
TSF20LxC	ITO-220AB	50 / Tube

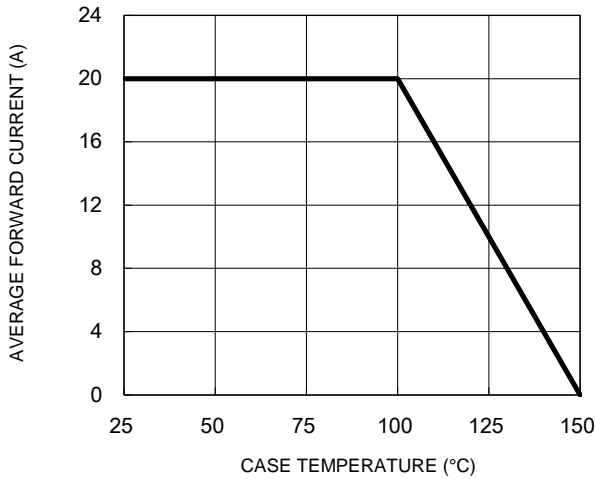
**Notes:**

1. "x" defines voltage from 45V(TSF20L45C) to 60V(TSF20L60C)

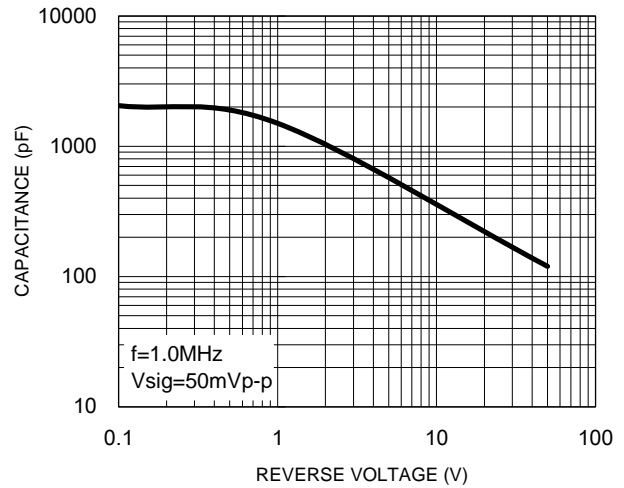
**CHARACTERISTICS CURVES**

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

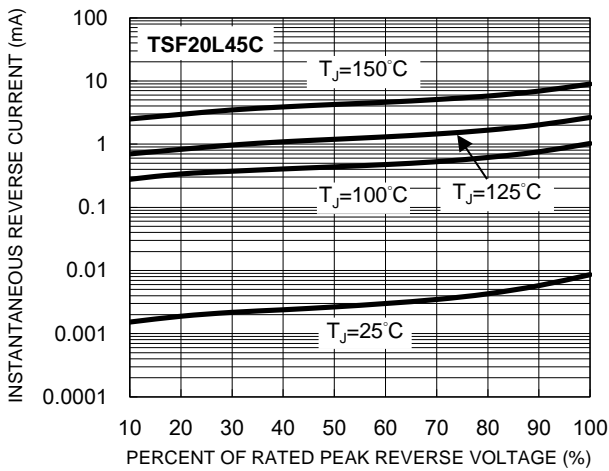
**Fig.1 Forward Current Derating Curve**



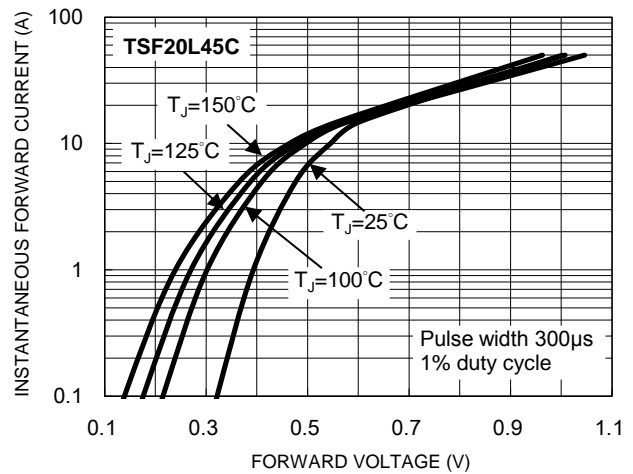
**Fig.2 Typical Junction Capacitance**



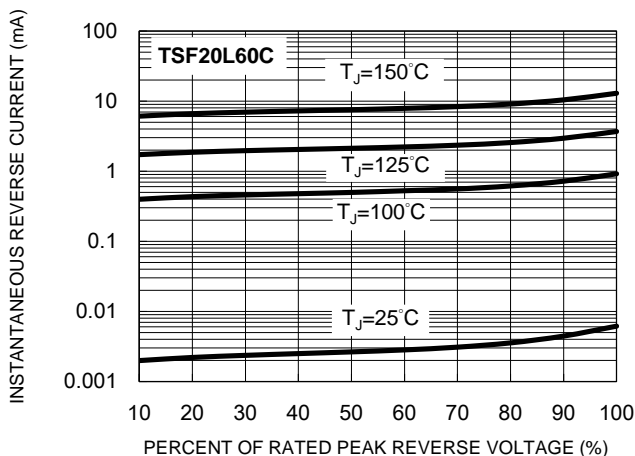
**Fig.3 Typical Reverse Characteristics**



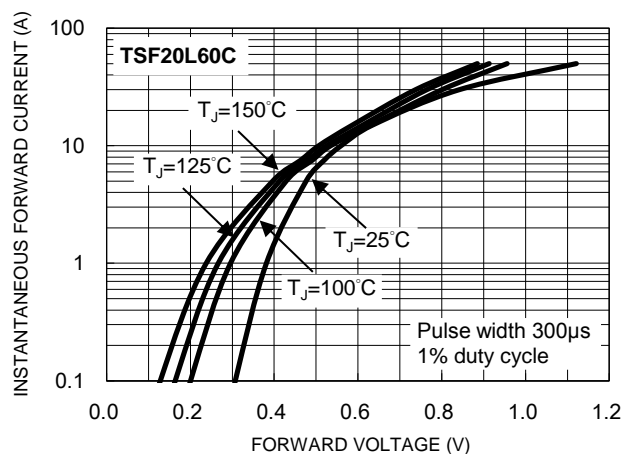
**Fig.4 Typical Forward Characteristics**



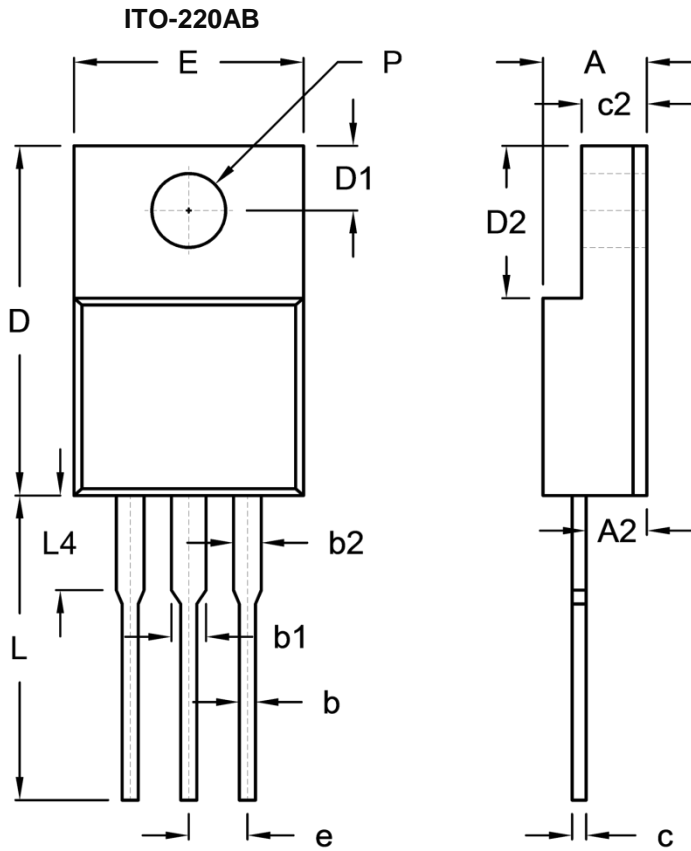
**Fig.5 Typical Reverse Characteristics**



**Fig.6 Typical Forward Characteristics**



**PACKAGE OUTLINE DIMENSIONS**



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	4.30	4.70	0.169	0.185
A2	2.30	2.96	0.091	0.117
b	0.50	0.90	0.020	0.035
b1	-	1.80	-	0.071
b2	0.95	1.45	0.037	0.057
c	0.46	0.76	0.018	0.030
c2	2.50	3.16	0.098	0.124
D	14.80	15.50	0.583	0.610
D1	2.40	3.20	0.094	0.126
D2	6.30	6.90	0.248	0.272
E	9.60	10.30	0.378	0.406
e	2.41	2.67	0.095	0.105
L	12.60	13.80	0.496	0.543
L4	-	4.10	-	0.161
P	3.00	3.40	0.118	0.134

**MARKING DIAGRAM**



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

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