

## 40A, 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
- Compliant RoHS
- Halogen-free according to IEC 61249-2-21

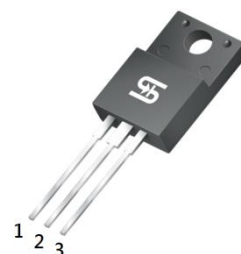
### APPLICATIONS

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

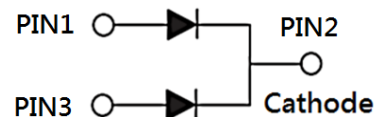
### MECHANICAL DATA

- 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 1A whisker test
- Mounting torque: 0.56 N·m maximum
- Polarity: As marked
- Weight: 1.70g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	40	A
$V_{RRM}$	100 - 200	V
$I_{FSM}$	200	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	TSF40L 100C	TSF40L 120C	TSF40L 150C	TSF40L 200C	UNIT
Marking code on the device		TSF40L 100C	TSF40L 120C	TSF40L 150C	TSF40L 200C	
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	$I_F$	40				A
Surge peak forward 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/ $\mu\text{s}$
Junction temperature	$T_J$	-55 to +150				°C
Storage temperature	$T_{STG}$	-55 to +150				°C

THERMAL PERFORMANCE				
PARAMETER		SYMBOL	TYP	UNIT
Junction-to-case thermal resistance	TSF40L100C	$R_{\theta JC}$	3.5	°C/W
	TSF40L120C			
	TSF40L150C		4.5	°C/W
	TSF40L200C			

ELECTRICAL SPECIFICATIONS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage per diode <sup>(1)</sup>	TSF40L100C	$I_F = 10\text{A}, T_J = 25^\circ\text{C}$	$V_F$	0.60	-	V
	TSF40L120C			0.67	-	V
	TSF40L150C			0.77	-	V
	TSF40L200C			0.80	-	V
	TSF40L100C	$I_F = 20\text{A}, T_J = 25^\circ\text{C}$		0.72	0.80	V
	TSF40L120C			0.79	0.85	V
	TSF40L150C			0.86	0.96	V
	TSF40L200C			0.88	0.98	V
	TSF40L100C	$I_F = 10\text{A}, T_J = 125^\circ\text{C}$		0.54	-	V
	TSF40L120C			0.58	-	V
	TSF40L150C			0.64	-	V
	TSF40L200C			0.67	-	V
	TSF40L100C	$I_F = 20\text{A}, T_J = 125^\circ\text{C}$		0.65	0.73	V
	TSF40L120C			0.69	0.77	V
	TSF40L150C			0.74	0.82	V
	TSF40L200C			0.76	0.84	V
Reverse current @ rated $V_R$ per diode <sup>(2)</sup>	TSF40L100C	$T_J = 25^\circ\text{C}$	$I_R$	-	250	$\mu\text{A}$
	TSF40L120C			-	100	$\mu\text{A}$
	TSF40L150C			-	25	$\text{mA}$
	TSF40L200C			-	15	$\text{mA}$
	TSF40L100C	$T_J = 125^\circ\text{C}$		-	25	$\text{mA}$
	TSF40L120C			-	15	$\text{mA}$
	TSF40L150C			-	15	$\text{mA}$
	TSF40L200C			-	15	$\text{mA}$

**Notes:**

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

ORDERING INFORMATION		
ORDERING CODE <sup>(1)</sup>	PACKAGE	PACKING
TSF40LxC	ITO-220AB	50 / Tube

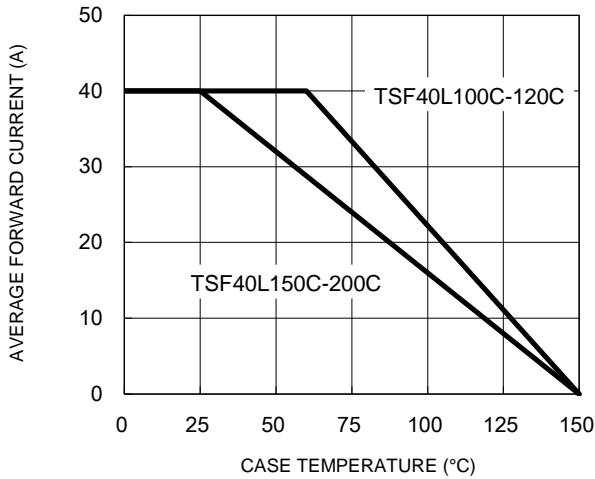
**Notes:**

1. "x" defines voltage from 100V(TSF40L100C) to 200V(TSF40L200C)

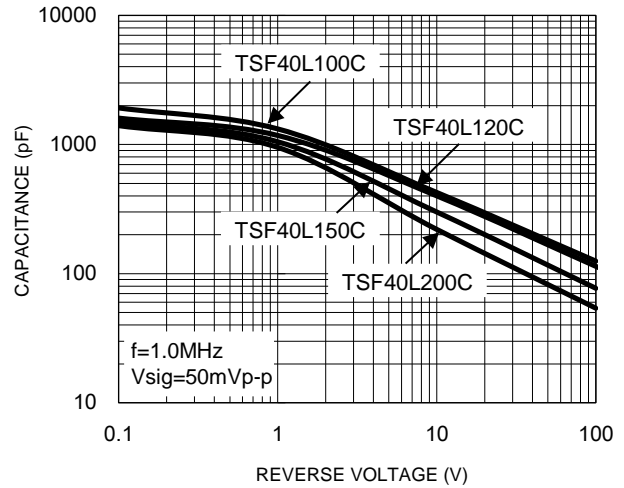
**CHARACTERISTICS CURVES**

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

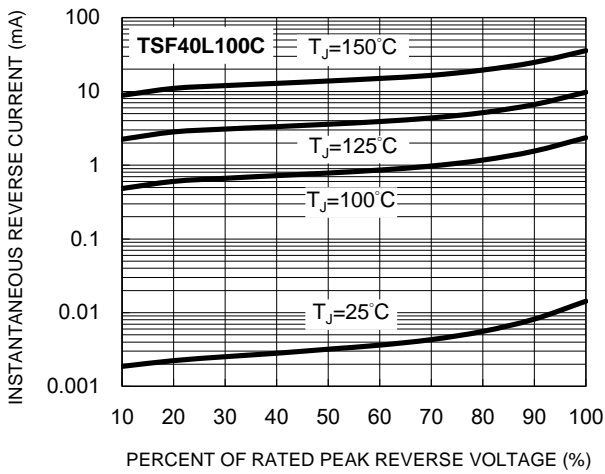
**Fig.1 Forward Current Derating Curve**



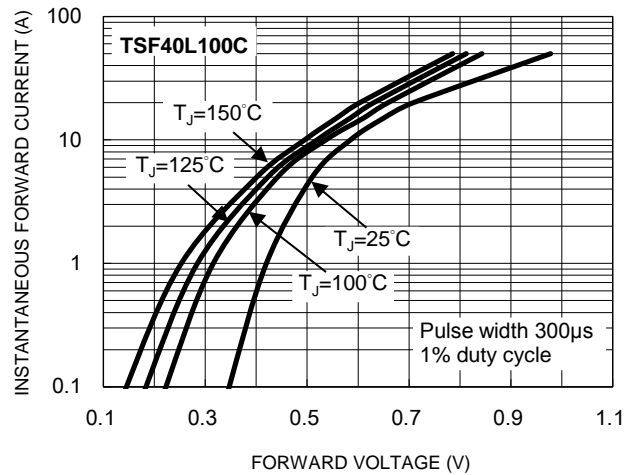
**Fig.2 Typical Junction Capacitance**



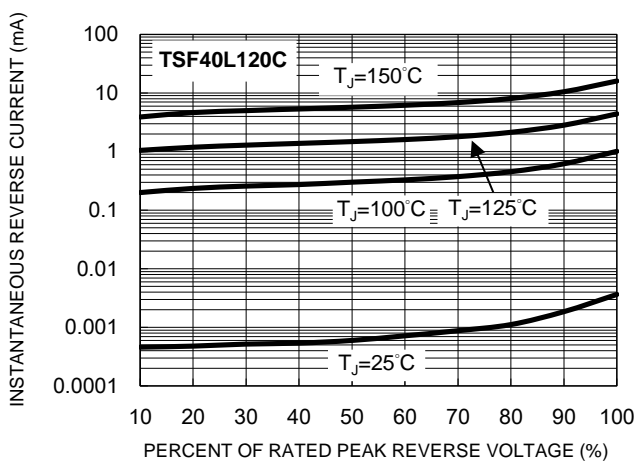
**Fig.3 Typical Reverse Characteristics**



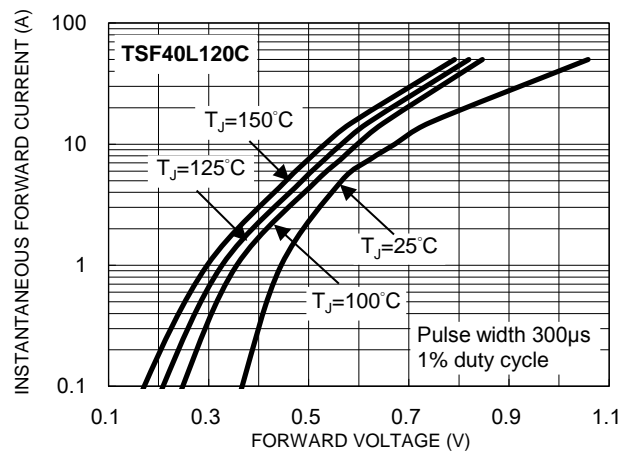
**Fig.4 Typical Forward Characteristics**



**Fig.5 Typical Reverse Characteristics**



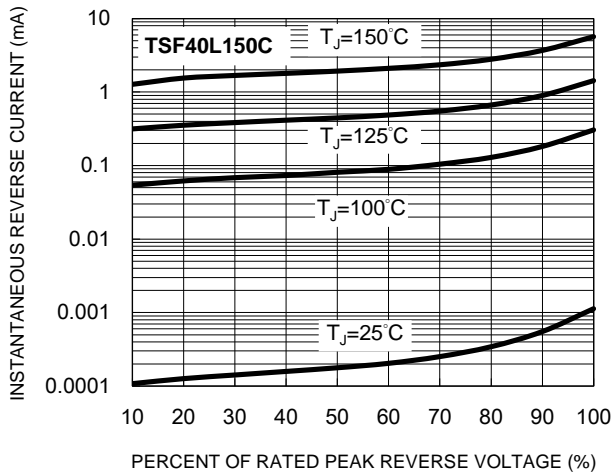
**Fig.6 Typical Forward Characteristics**



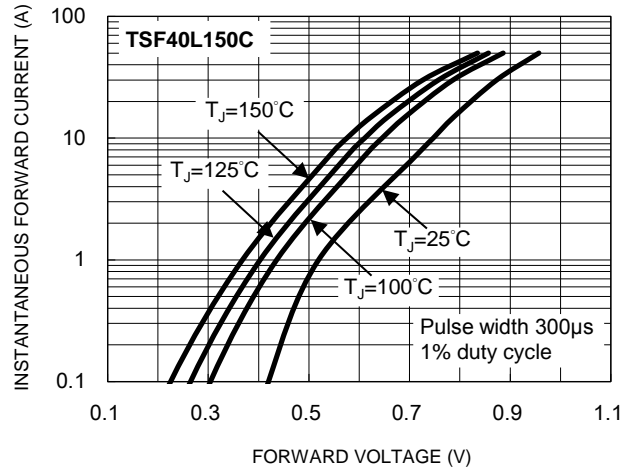
**CHARACTERISTICS CURVES**

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

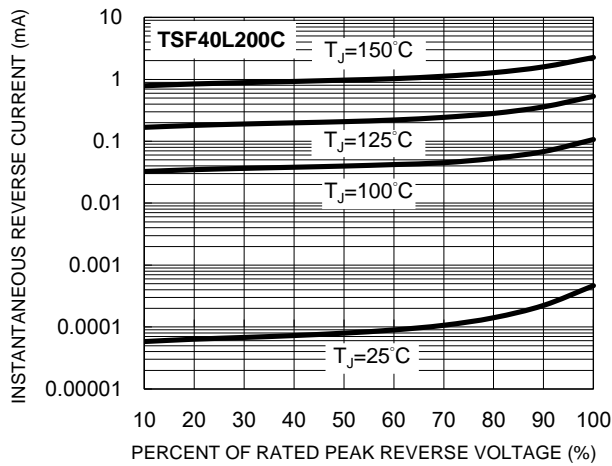
**Fig.7 Typical Reverse Characteristics**



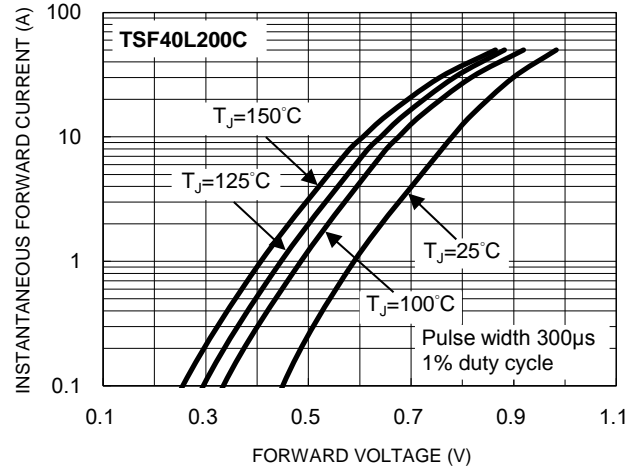
**Fig.8 Typical Forward Characteristics**



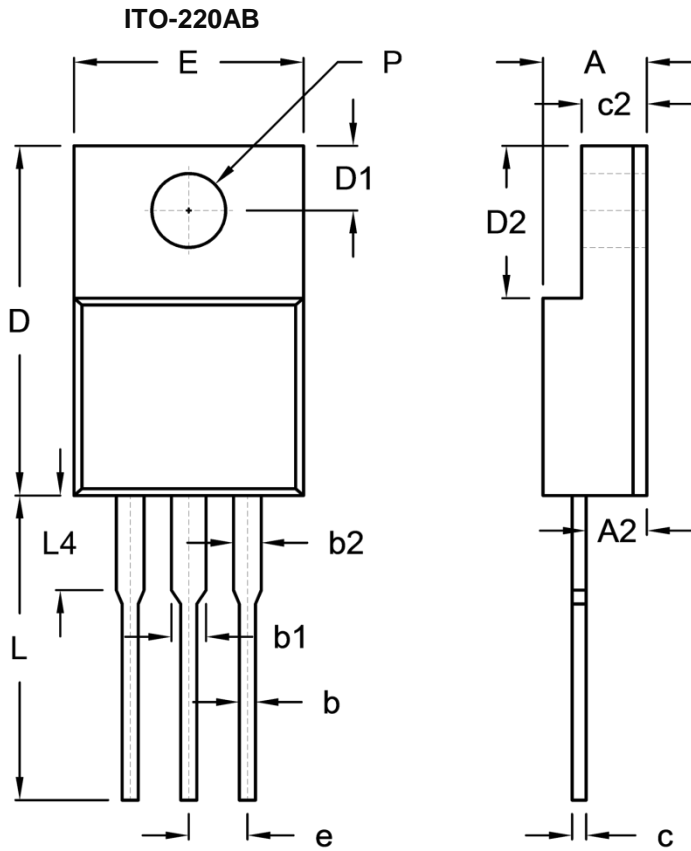
**Fig.9 Typical Reverse Characteristics**



**Fig.10 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