

## 20A, 45V - 60V Low $V_F$ 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

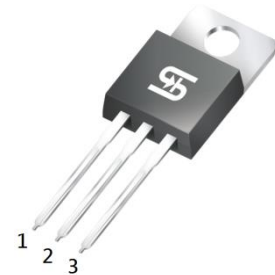
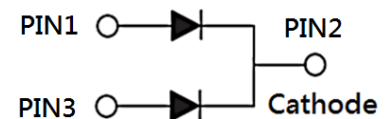
### APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- DC to DC converters

### MECHANICAL DATA

- Case: TO-220AB
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Mounting torque: 0.56 N·m maximum
- Meet JESD 201 class 2 whisker test
- Polarity: As marked
- Weight: 1.88g (approximately)

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


**TO-220AB**


ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	TST20U45C	TST20U60C	UNIT
Marking code on the device		TST20U45C	TST20U60C	
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	TST20U45C	$R_{\theta JC}$	2	°C/W
	TST20U60C		2.4	°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>	TST20U45C	$I_F = 10\text{A}, T_J = 25^\circ\text{C}$	$V_F$	-	0.53	V
	TST20U60C			-	0.54	V
	TST20U45C	$I_F = 20\text{A}, T_J = 25^\circ\text{C}$		-	0.60	V
	TST20U60C			-	0.63	V
	TST20U45C	$I_F = 10\text{A}, T_J = 125^\circ\text{C}$		0.39	0.44	V
	TST20U60C			0.43	0.48	V
	TST20U45C	$I_F = 20\text{A}, T_J = 125^\circ\text{C}$		-	0.55	V
	TST20U60C			-	0.61	V
Reverse current @ rated $V_R$ per diode <sup>(2)</sup>		$T_J = 25^\circ\text{C}$	$I_R$	-	300	$\mu\text{A}$
		$T_J = 125^\circ\text{C}$		-	60	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>
TST20UxC	TO-220AB	50 / Tube

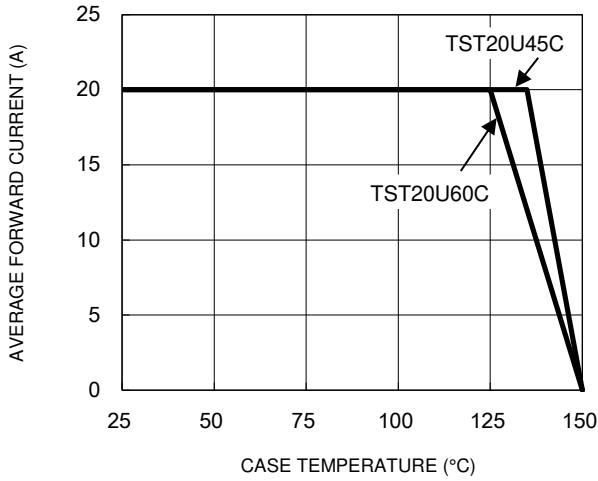
**Notes:**

1. "x" defines voltage from 45V(TST20U45C) to 60V(TST20U60C)

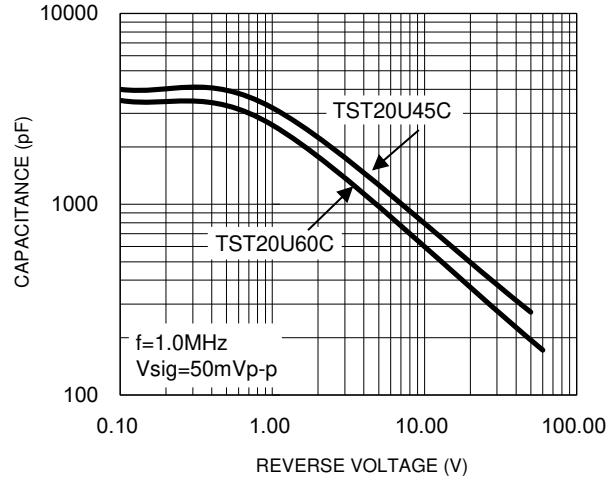
**CHARACTERISTICS CURVES**

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

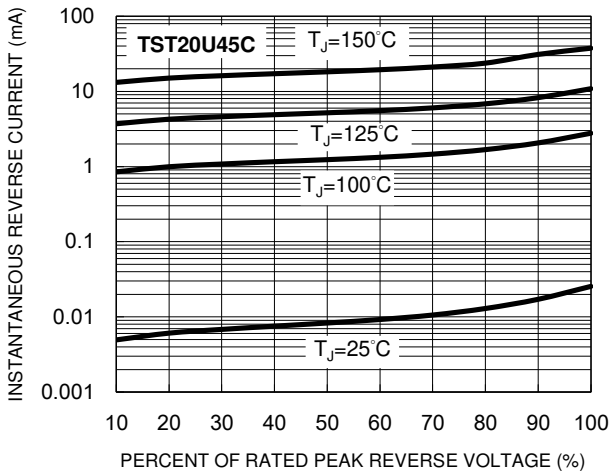
**Fig.1 Forward Current Derating Curve**



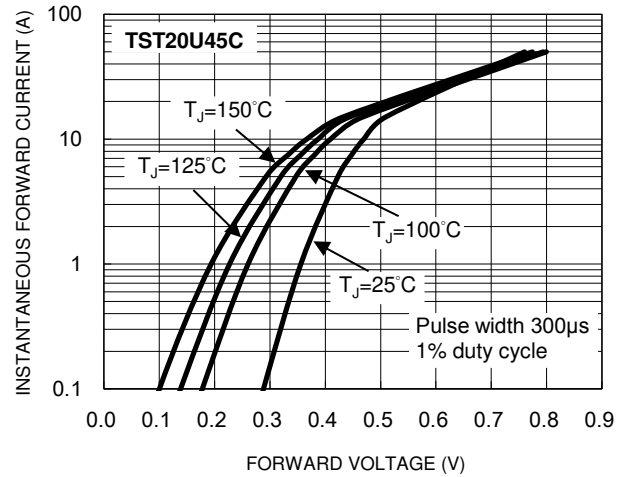
**Fig.2 Typical Junction Capacitance**



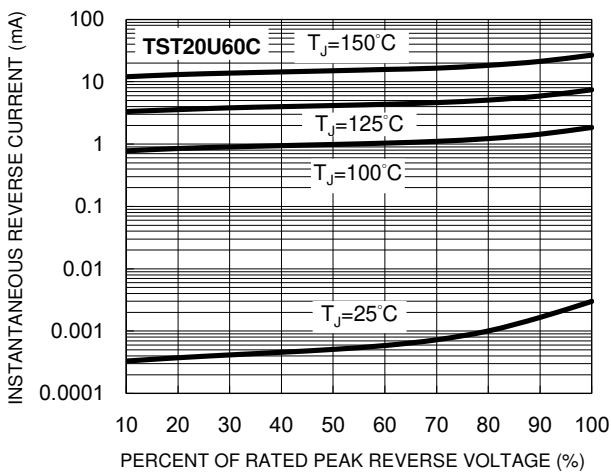
**Fig.3 Typical Reverse Characteristics**



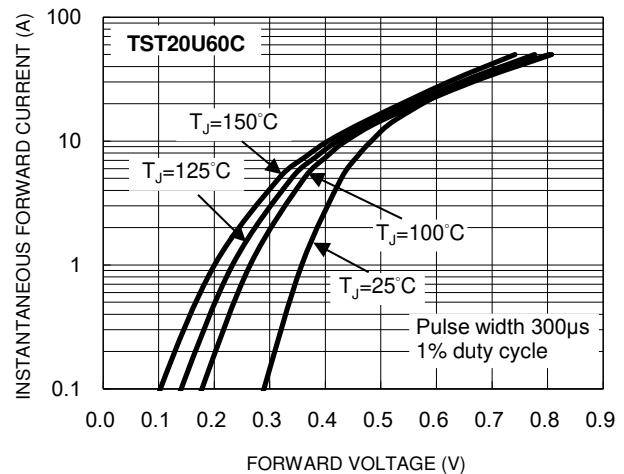
**Fig.4 Typical Forward Characteristics**



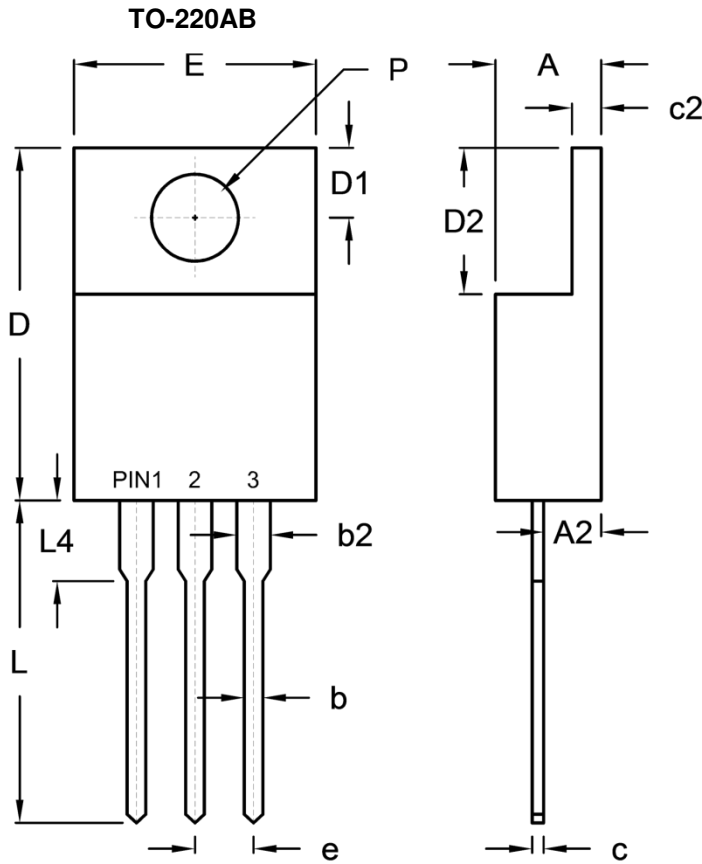
**Fig.5 Typical Reverse Characteristics**



**Fig.6 Typical Forward Characteristics**



**PACKAGE OUTLINE DIMENSIONS**



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	4.42	4.76	0.174	0.187
A2	2.20	2.80	0.087	0.110
b	0.68	0.94	0.027	0.037
b2	1.14	1.77	0.045	0.070
c	0.35	0.64	0.014	0.025
c2	1.14	1.40	0.045	0.055
D	14.60	16.00	0.575	0.630
D1	2.62	3.44	0.103	0.135
D2	5.84	6.86	0.230	0.270
E	-	10.50	-	0.413
e	2.41	2.67	0.095	0.105
L	13.19	14.79	0.519	0.582
L4	2.80	4.20	0.110	0.165
P	3.54	4.00	0.139	0.157

**MARKING DIAGRAM**



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

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