

## 5A, 45V Trench Schottky Rectifiers

### FEATURES

- AEC-Q101 qualified
- Patented Trench Schottky technology
- Low power loss, high efficiency
- Ideal for automated placement
- Wettable flank
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

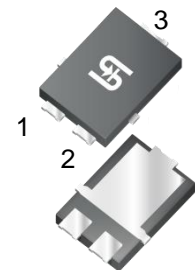
### APPLICATIONS

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

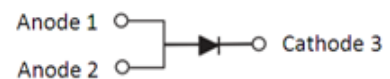
### MECHANICAL DATA

- Case: SMPC4.6U
- 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
- Polarity: As marked
- Weight: 104mg (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	5	A
$V_{RRM}$	45	V
$I_{FSM}$	110	A
$T_{JMAX}$	175	°C
Package	SMPC4.6U	



SMPC4.6U



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	TSUP5M45SH	UNIT
Marking code on the device		5M45	
Repetitive peak reverse voltage	$V_{RRM}$	45	V
Reverse voltage, total rms value	$V_{R(RMS)}$	32	V
Forward current	$I_F$	5	A
Surge peak forward current single half sine-wave superimposed on rated load	8.3 ms at $T_A = 25^\circ\text{C}$	110	A
	1.0 ms at $T_A = 25^\circ\text{C}$	180	
Junction temperature	$T_J$	-55 to +175	°C
Storage temperature	$T_{STG}$	-55 to +175	°C

<b>THERMAL PERFORMANCE</b>			
<b>PARAMETER</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>UNIT</b>
Junction-to-lead thermal resistance	$R_{\theta JL}$	5	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	45	°C/W
Junction-to-case thermal resistance	$R_{\theta JC}$	9	°C/W

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

<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 <sup>(1)</sup>	$I_F = 2.5\text{A}, T_J = 25^\circ\text{C}$	$V_F$	0.49	-	V
	$I_F = 5.0\text{A}, T_J = 25^\circ\text{C}$		0.54	0.60	V
	$I_F = 2.5\text{A}, T_J = 125^\circ\text{C}$		0.39	-	V
	$I_F = 5.0\text{A}, T_J = 125^\circ\text{C}$		0.46	0.54	V
Reverse current @ rated $V_R$ <sup>(2)</sup>	$T_J = 25^\circ\text{C}$	$I_R$	-	150	$\mu\text{A}$
	$T_J = 125^\circ\text{C}$		-	6	mA
Junction capacitance	1 MHz, $V_R = 4.0\text{V}$	$C_J$	589	-	pF

**Notes:**

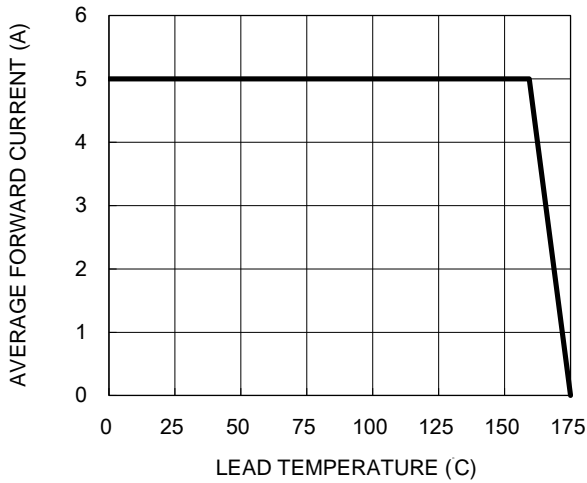
1. Pulse test with  $PW = 0.3\text{ ms}$
2. Pulse test with  $PW = 30\text{ ms}$

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE</b>	<b>PACKAGE</b>	<b>PACKING</b>
TSUP5M45SH S1G	SMPC4.6U	1,500/7" Plastic reel
TSUP5M45SH S2G	SMPC4.6U	6,000/13" Plastic reel

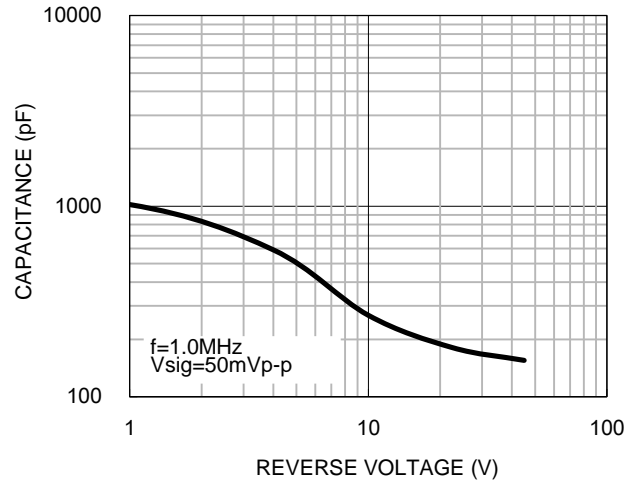
**CHARACTERISTICS CURVES**

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

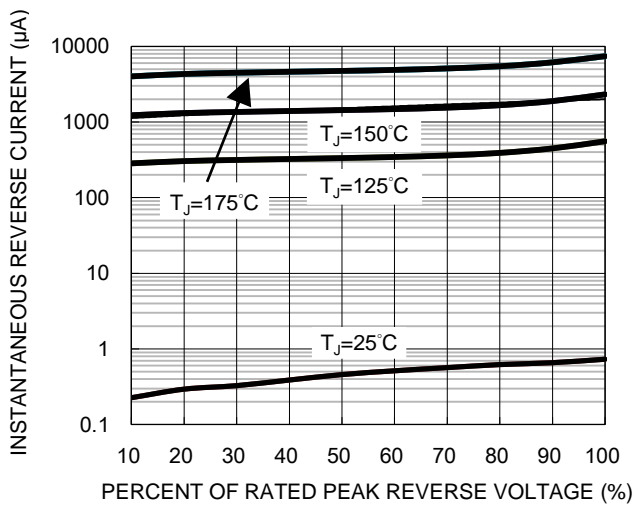
**Fig.1 Forward Current Derating Curve**



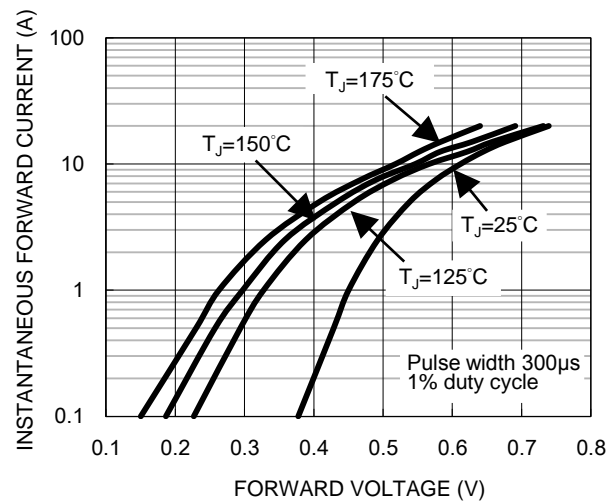
**Fig.2 Typical Junction Capacitance**



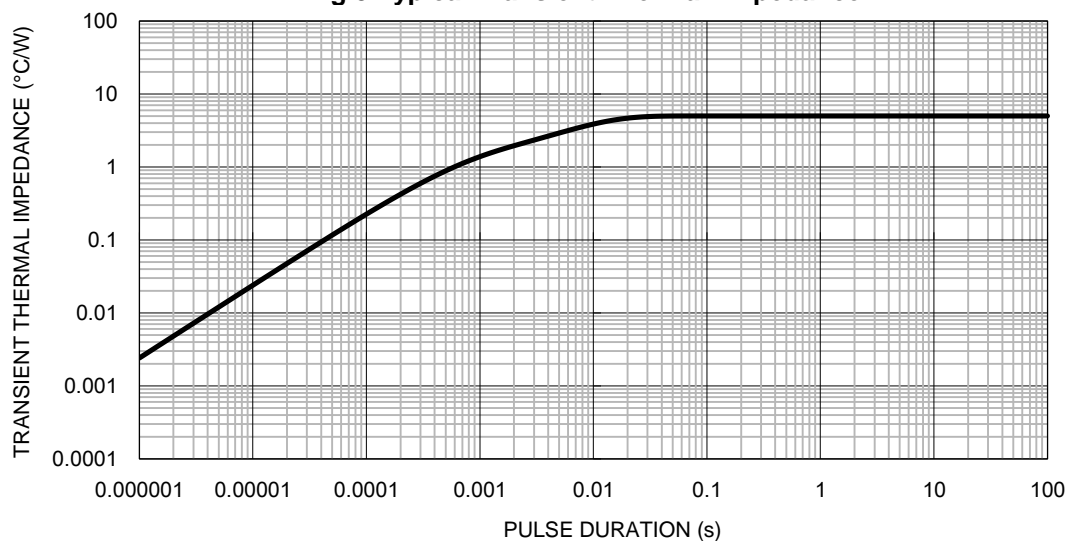
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**

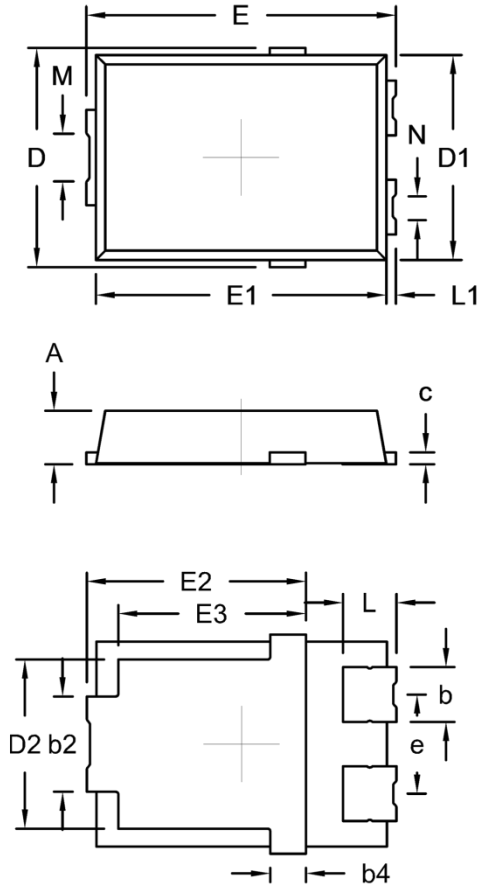


**Fig.5 Typical Transient Thermal Impedance**



**PACKAGE OUTLINE DIMENSIONS** (Unit: Millimeters)

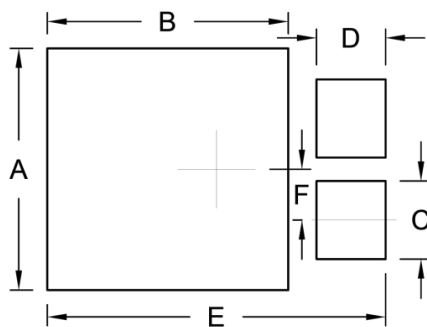
**SMPC4.6U**



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	1.00	1.20	0.039	0.047
b	1.05	1.35	0.041	0.053
b2	1.90	2.20	0.075	0.087
b4	0.75 (NOM.)		0.030 (NOM.)	
c	0.15	0.40	0.006	0.016
D	4.45	4.75	0.175	0.187
D1	4.25	4.35	0.167	0.171
D2	3.40	3.70	0.134	0.146
E	6.35	6.65	0.250	0.262
E1	6.05	6.15	0.238	0.242
E2	4.40	4.80	0.173	0.189
E3	3.94 (NOM.)		0.155 (NOM.)	
e	2.08 (NOM.)		0.082 (NOM.)	
L	0.94	1.24	0.037	0.049
L1	0.05	0.35	0.002	0.014
M	0.65	1.15	0.026	0.045
N	0.25	0.75	0.010	0.030

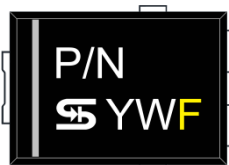
Package body size D1 and E1 do not include mold flash  
Mold flash shall not exceed 0.1mm per side

**SUGGESTED PAD LAYOUT**



Symbol	Unit (mm)	Unit (inch)
A	4.95	0.195
B	4.95	0.195
C	1.60	0.063
D	1.42	0.056
E	6.95	0.274
F	1.04	0.041

**MARKING DIAGRAM**



P/N = Marking Code  
YW = Date Code  
F = Factory Code

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