

## 4A, 100V - 200V Ultra Fast Surface Mount Rectifier

### FEATURES

- AEC-Q101 qualified
- Planar 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

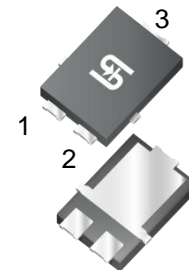
### APPLICATIONS

- High frequency switching
- DC/DC
- Snubber

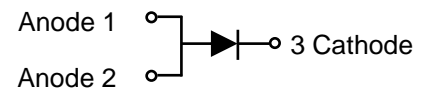
### MECHANICAL DATA

- Case: TO-277A (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: Indicated by cathode band
- Weight: 0.103g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	4	A
$V_{RRM}$	100 - 200	V
$I_{FSM}$	130	A
$T_{JMAX}$	175	°C
Package	TO-277A (SMPC4.6U)	
Configuration	Single die	



TO-277A (SMPC4.6U)



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	PUUP4BH	PUUP4DH	UNIT
Marking code on the device		PU4BH	PU4DH	
Repetitive peak reverse voltage	$V_{RRM}$	100	200	V
Reverse voltage, total rms value	$V_{R(RMS)}$	70	140	V
Forward current	$I_F$	4		A
Surge peak forward current single half sine-wave superimposed on rated load	$t = 8.3\text{ms}$	130		A
	$t = 1.0\text{ms}$	290		
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 <sup>(1)</sup>	$R_{\theta JL}$	2.0	°C/W
Junction-to-ambient thermal resistance <sup>(2)</sup>	$R_{\theta JA}$	52.4	°C/W
Junction-to-case thermal resistance <sup>(2)</sup>	$R_{\theta JC}$	11.3	°C/W

**Thermal Performance Notes:**

1. With ideal heat sink
2. 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>	$I_F = 2\text{A}, T_J = 25^\circ\text{C}$	$V_F$	0.79	-	V
	$I_F = 4\text{A}, T_J = 25^\circ\text{C}$		0.84	0.93	V
	$I_F = 2\text{A}, T_J = 125^\circ\text{C}$		0.64	-	V
	$I_F = 4\text{A}, T_J = 125^\circ\text{C}$		0.70	-	V
Reverse current @ rated $V_R$ <sup>(2)</sup>	$T_J = 25^\circ\text{C}$	$I_R$	-	2	$\mu\text{A}$
	$T_J = 125^\circ\text{C}$		-	10	$\mu\text{A}$
Junction capacitance	1MHz, $V_R = 4.0\text{V}$	$C_J$	71	-	pF
Reverse recovery time	$I_F = 0.5\text{A}, I_R = 1.0\text{A}, I_{rr} = 0.25\text{A}$	$t_{rr}$	-	25	ns
	$I_F = 1.0\text{A}, di/dt = 50\text{A}/\mu\text{s}, V_R = 30\text{V}$		31	-	
Reverse recovery current	$I_F = 4.0\text{A}, di/dt = 200\text{A}/\mu\text{s}, V_R = 100\text{V}$	$I_{RM}$	4.9	-	A
Reverse recovery charge		$Q_{rr}$	57	-	nC
Reverse recovery time		$t_{rr}$	24	-	ns

**Notes:**

1. Pulse test with PW = 0.3ms
2. Pulse test with PW = 30ms

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE</b> <sup>(1)</sup>	<b>PACKAGE</b>	<b>PACKING</b>
PUUP4xH	TO-277A (SMPC4.6U)	6,000/ Tape & Reel

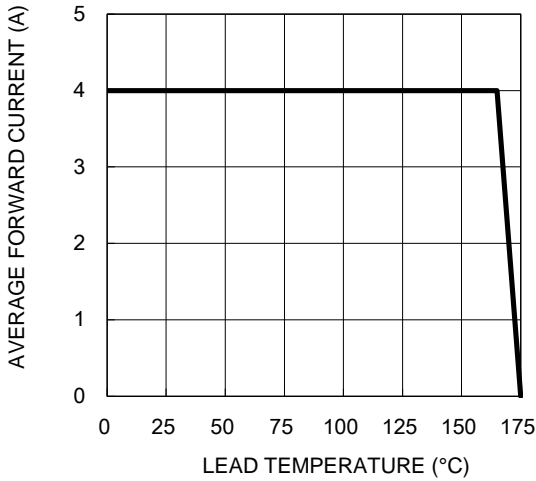
**Notes:**

1. "x" defines voltage from 100V(PUUP4BH) to 200V(PUUP4DH)

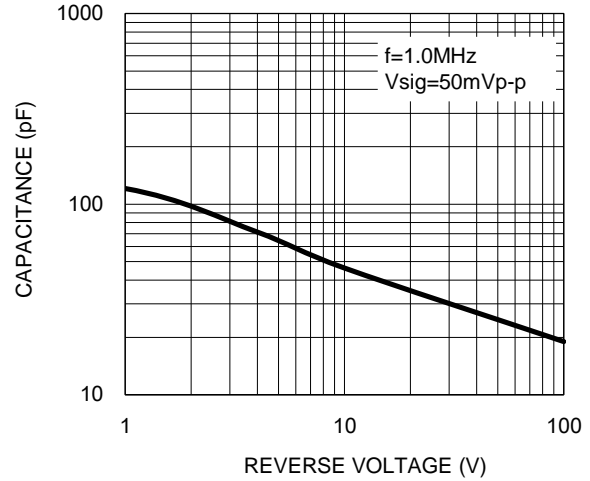
**CHARACTERISTICS CURVES**

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

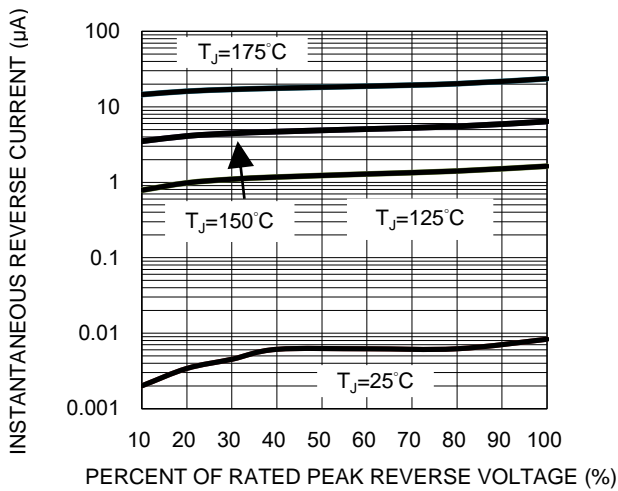
**Fig.1 Forward Current Derating Curve**



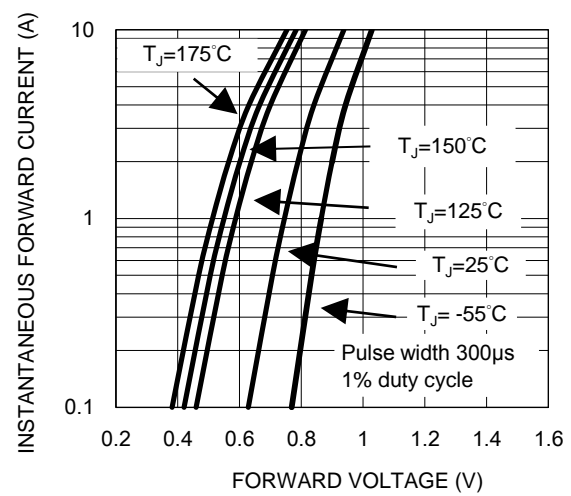
**Fig.2 Typical Junction Capacitance**



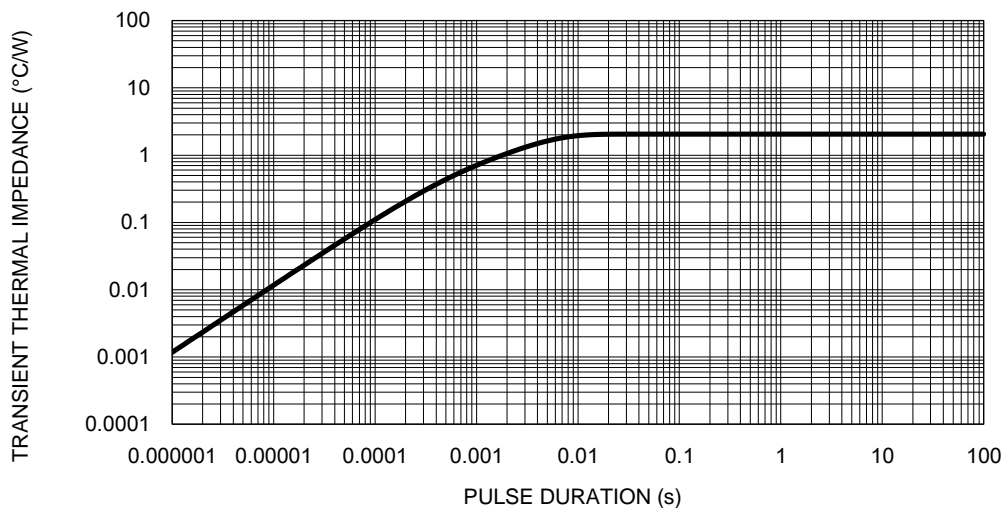
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**

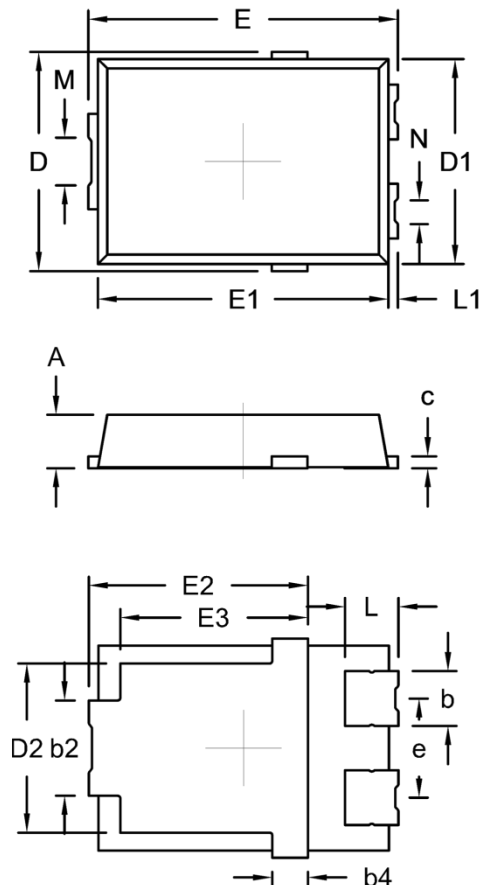


**Fig.5 Typical Transient Thermal Impedance**



**PACKAGE OUTLINE DIMENSIONS**

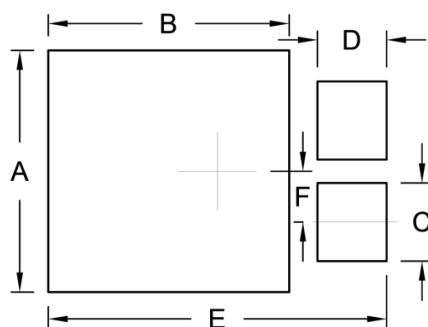
TO-277A (SMPC4.6U)



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

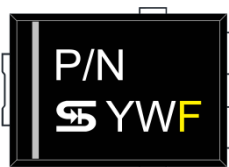
Package body size D1 and E1 do not include mold flash  
Mold flash shall not exceed 0.1mm per side

**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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