

## 5A, 150V Trench Schottky Surface Mount Rectifier

### FEATURES

- AEC-Q101 qualified
- Excellent high temperature stability
- Low forward voltage
- Lower power loss/ high efficiency
- High forward surge capability
- Ideal for automated placement
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free

### APPLICATIONS

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

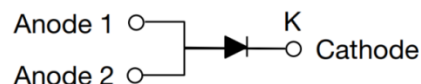
### MECHANICAL DATA

- 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: 0.11g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	5	A
$V_{RRM}$	150	V
$I_{FSM}$	125	A
$T_{J\ MAX}$	150	°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	VALUE	UNIT
Repetitive peak reverse voltage	$V_{RRM}$	150	V
Reverse voltage, total rms value	$V_{R(RMS)}$	105	V
Forward current	$I_F$	5	A
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load	$I_{FSM}$	125	A
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-lead thermal resistance <sup>(1)</sup>	R <sub>θJL</sub>	2.2	°C/W
Junction-to-ambient thermal resistance <sup>(2)</sup>	R <sub>θJA</sub>	53.2	°C/W
Junction-to-case thermal resistance <sup>(2)</sup>	R <sub>θJC</sub>	11.8	°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 <sub>A</sub> = 25°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 <sub>F</sub> = 2.5A, T <sub>J</sub> = 25°C	V <sub>F</sub>	0.71	-	V
	I <sub>F</sub> = 5.0A, T <sub>J</sub> = 25°C		0.78	0.85	V
	I <sub>F</sub> = 2.5A, T <sub>J</sub> = 125°C		0.56	-	V
	I <sub>F</sub> = 5.0A, T <sub>J</sub> = 125°C		0.63	0.69	V
Reverse current @ rated V <sub>R</sub> <sup>(2)</sup>	T <sub>J</sub> = 25°C	I <sub>R</sub>	-	10	μA
	T <sub>J</sub> = 125°C		-	5	mA
Junction capacitance	1MHz, V <sub>R</sub> = 4.0V	C <sub>J</sub>	248	-	pF

**Notes:**

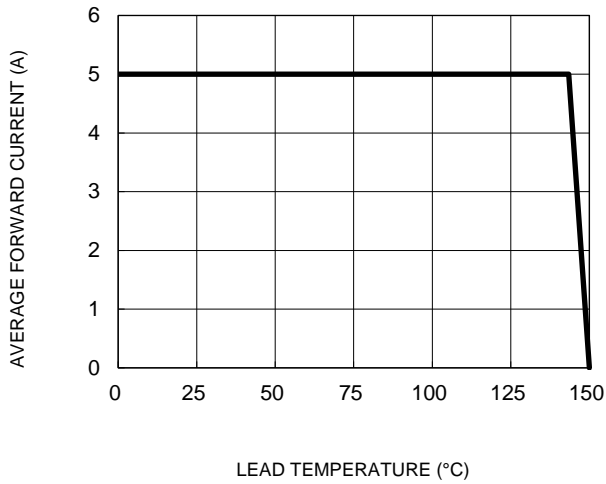
1. Pulse test with PW = 0.3ms
2. Pulse test with PW = 30ms

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE</b>	<b>PACKAGE</b>	<b>PACKING</b>
TSUP5150H	TO-277A (SMPC4.6U)	6,000 / Tape & Reel

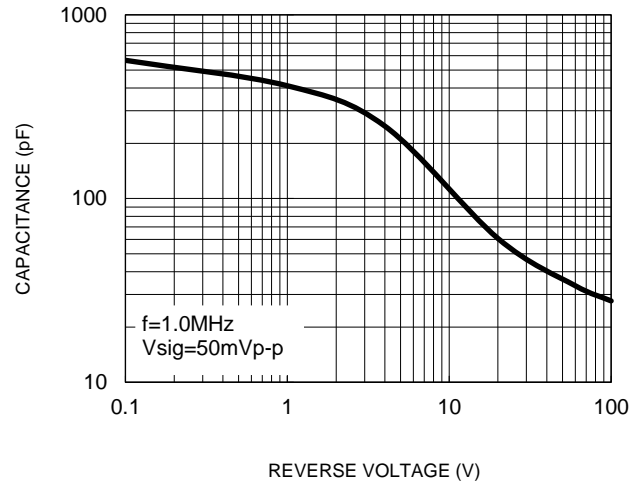
**CHARACTERISTICS CURVES**

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

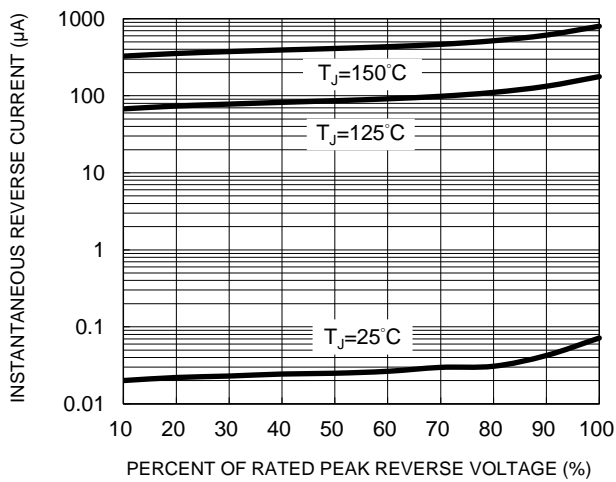
**Fig.1 Forward Current Derating Curve**



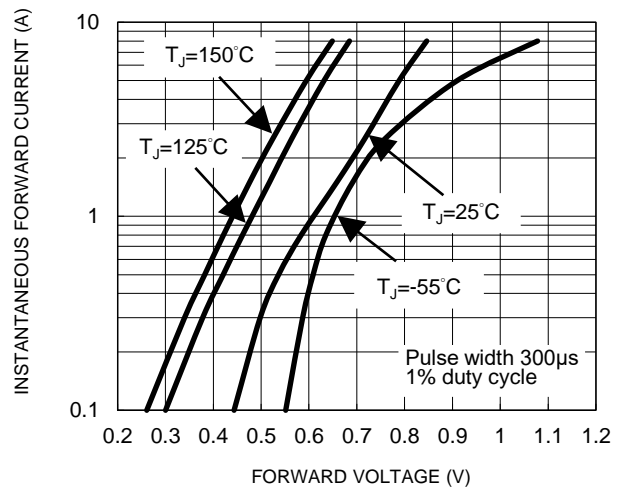
**Fig.2 Typical Junction Capacitance**



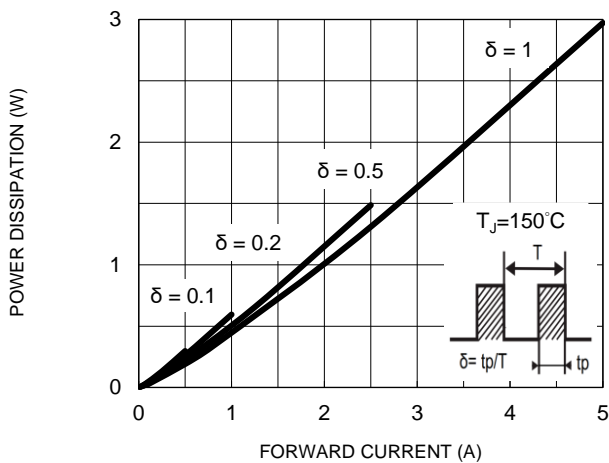
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**



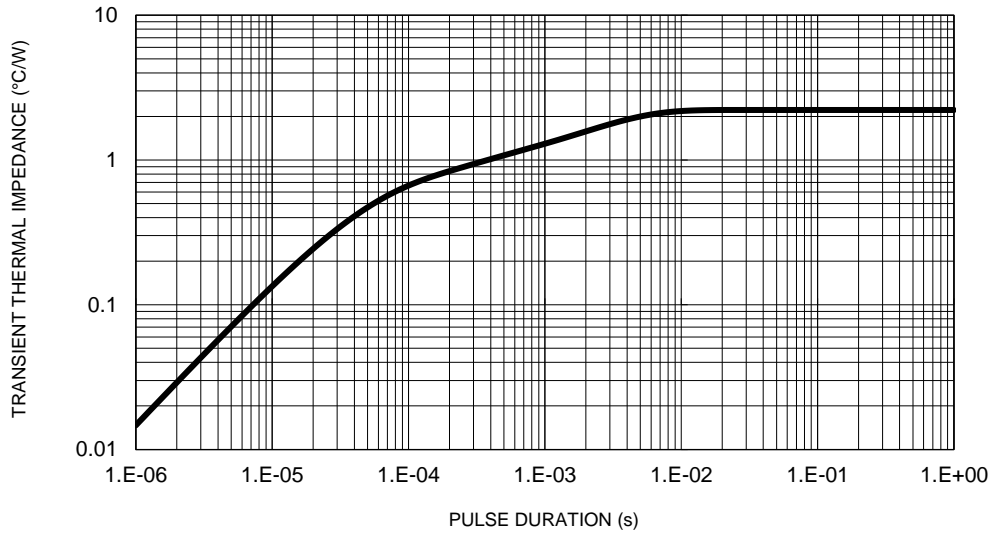
**Fig.5 Typical Forward Power Dissipation vs. Forward Current**



**CHARACTERISTICS CURVES**

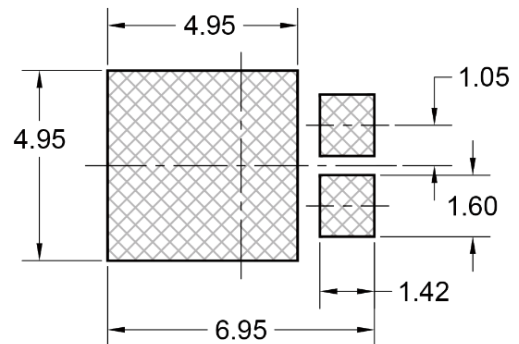
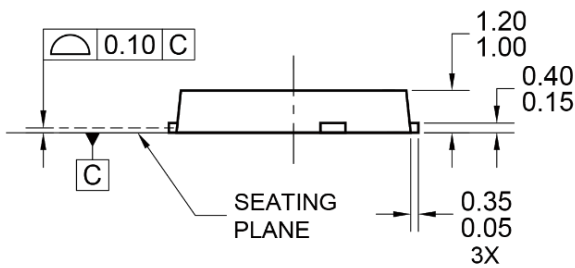
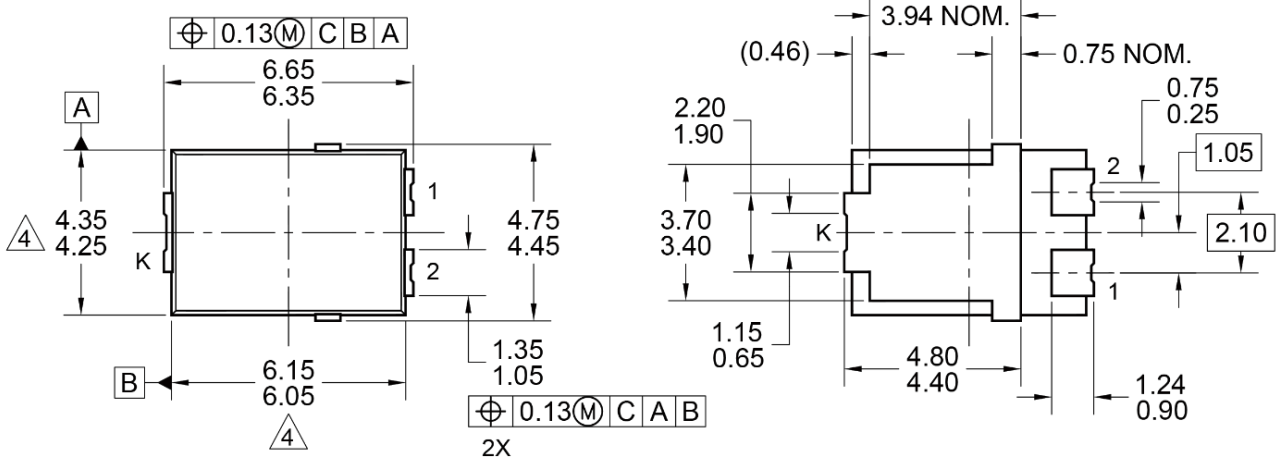
(T<sub>A</sub> = 25°C unless otherwise noted)

**Fig.6 Typical Transient Thermal Characteristics**

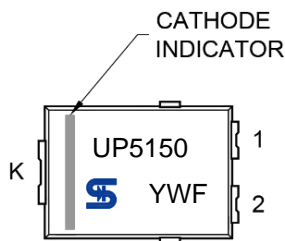


**PACKAGE OUTLINE DIMENSIONS**

**TO-277A(SMPC4.6U)**



SUGGESTED PAD LAYOUT  
(REFERENCE ONLY)



MARKING DIAGRAM

YW = Date code  
F = Factory code

NOTES: UNLESS OTHERWISE SPECIFIED

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
3. PACKAGE OUTLINE REFERENCE: JEDEC TO-277 ISSUE A.
4. MOLDED PLASTIC BODY DIMENSIONS DO NOT INCLUDE MOLD LASH, PROTRUSIONS OR GATE BURRS.
5. DWG NO. REF: HQ2SD07-SMPC4.6U-031 REV A.

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