

12A, 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

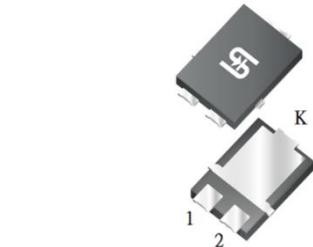
KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I_F	12	A
V_{RRM}	150	V
I_{FSM}	285	A
$T_{J MAX}$	150	°C
Package	TO-277A (SMPC4.6U)	
Configuration	Single die	

APPLICATIONS

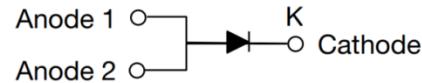
- Switching mode power supply (SMPS)
- Adapters
- DC to DC converter

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)



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	$V_{R(\text{RMS})}$	105	V
Forward current	I_F	12	A
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load	I_{FSM}	285	A
Junction temperature	T_J	- 55 to +150	°C
Storage temperature	T_{STG}	- 55 to +150	°C

THERMAL PERFORMANCE

PARAMETER	SYMBOL	TYP	UNIT
Junction-to-lead thermal resistance ⁽¹⁾	$R_{\theta JL}$	1.2	°C/W
Junction-to-ambient thermal resistance ⁽²⁾	$R_{\theta JA}$	51.4	°C/W
Junction-to-case thermal resistance ⁽²⁾	$R_{\theta JC}$	10.7	°C/W

Thermal Performance Notes:

1. With ideal heat sink
2. Units mounted on PCB (16mm x 16mm Cu pad test board)

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

PARAMETER	CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage ⁽¹⁾	$I_F = 6\text{A}, T_J = 25^\circ\text{C}$	V_F	0.71	-	V
	$I_F = 12\text{A}, T_J = 25^\circ\text{C}$		0.78	0.85	V
	$I_F = 6\text{A}, T_J = 125^\circ\text{C}$		0.57	-	V
	$I_F = 12\text{A}, T_J = 125^\circ\text{C}$		0.63	0.69	V
Reverse current @ rated V_R ⁽²⁾	$T_J = 25^\circ\text{C}$	I_R	-	20	μA
	$T_J = 125^\circ\text{C}$		-	5	mA
Junction capacitance	1MHz, $V_R = 4.0\text{V}$	C_J	520	-	pF

Notes:

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

ORDERING INFORMATION

ORDERING CODE	PACKAGE	PACKING
TSUP12150H	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

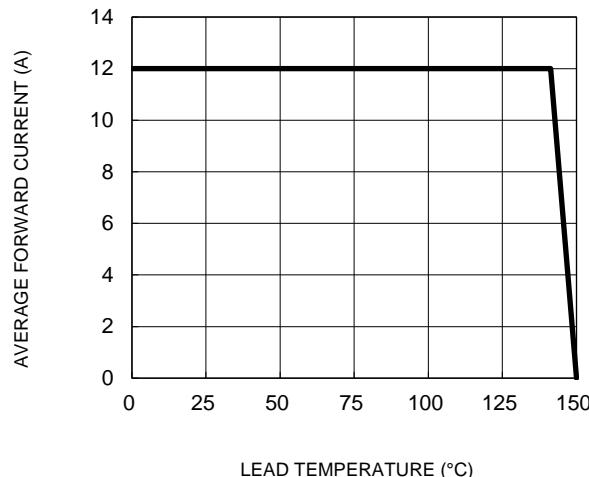


Fig.2 Typical Junction Capacitance

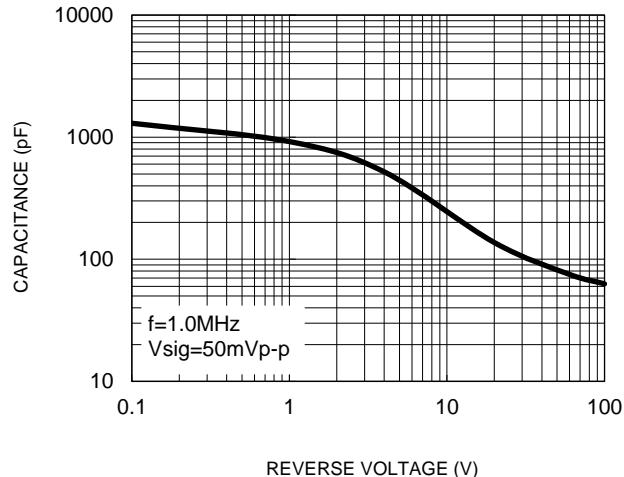


Fig.3 Typical Reverse Characteristics

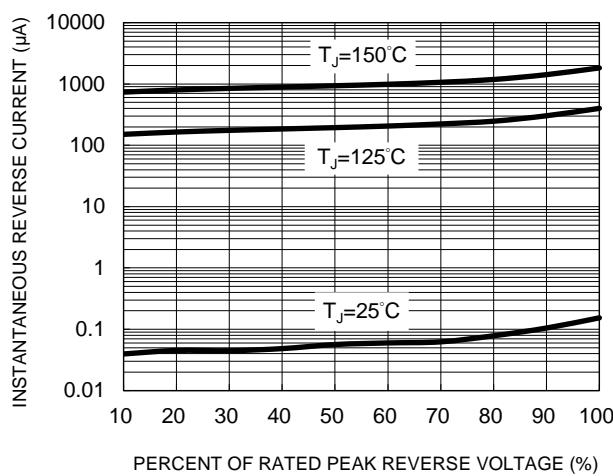


Fig.4 Typical Forward Characteristics

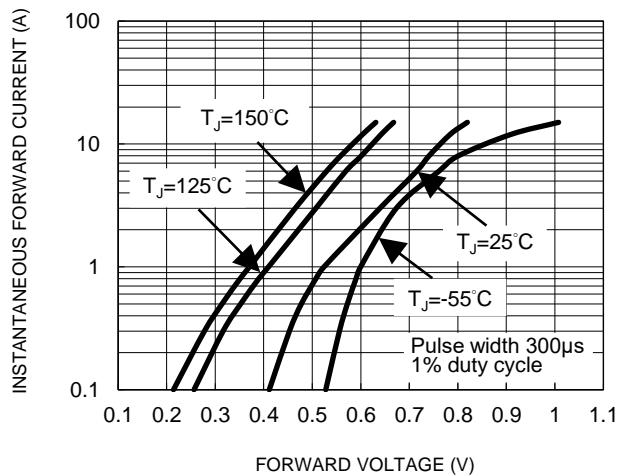
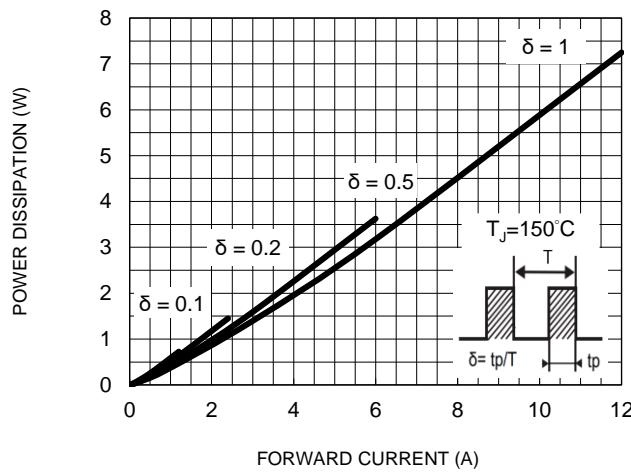
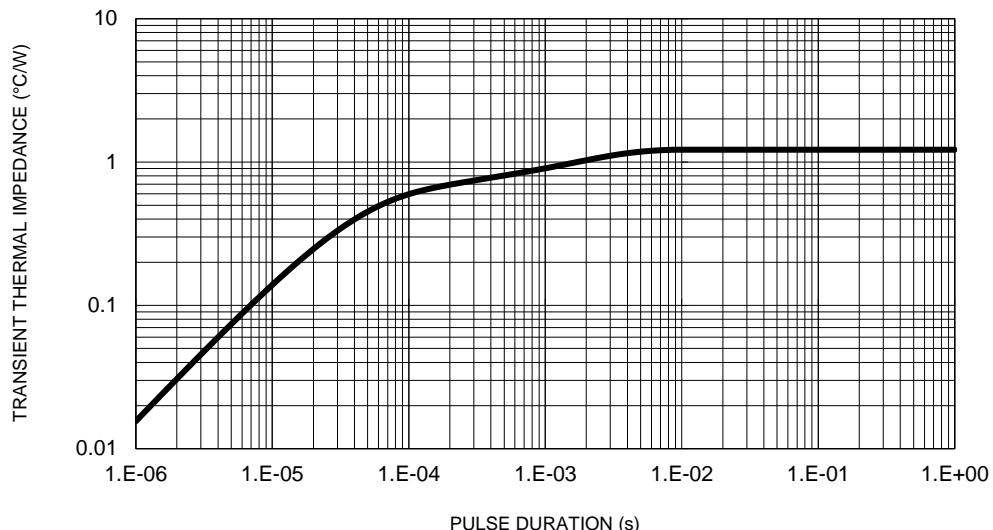


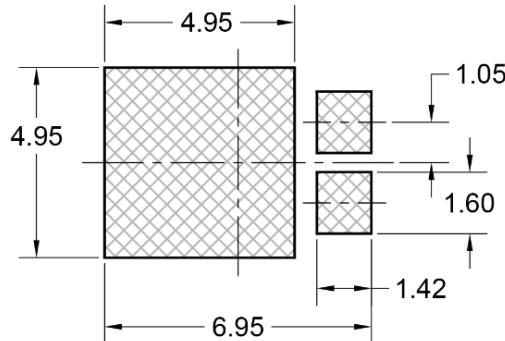
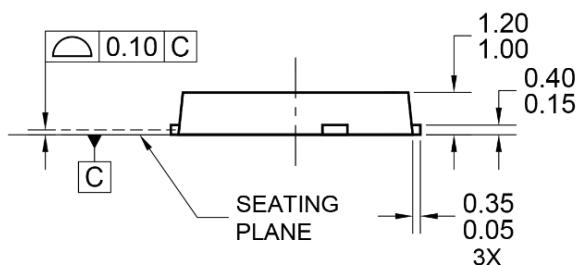
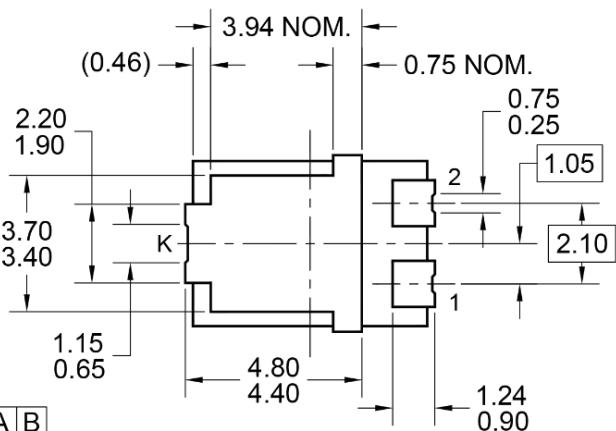
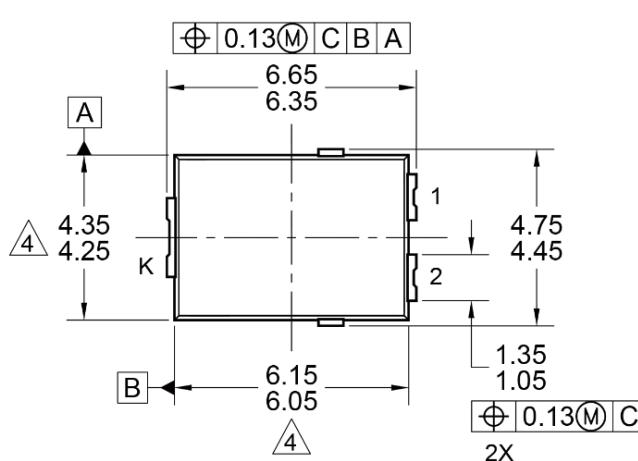
Fig.5 Typical Forward Power Dissipation vs. Forward Current



CHARACTERISTICS CURVES $(T_A = 25^\circ\text{C}$ unless otherwise noted)**Fig.6 Typical Transient Thermal Characteristics**

PACKAGE OUTLINE DIMENSIONS

TO-277A(SMPC4.6U)



A photograph of a rectangular electronic component labeled 'UP12150' in the center. Below it is a blue stylized 'S' logo. To the left is a terminal labeled 'K'. To the right are two numerical labels: '1' at the top and '2' at the bottom. A line points from the text 'CATHODE INDICATOR' to the top edge of the component.

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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