

## 5A, 120V Trench Schottky Surface Mount Rectifier

### FEATURES

- AEC-Q101 qualified
- Low power loss, high efficiency
- Ideal for automated placement
- High surge current capability
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free

### APPLICATIONS

- Low voltage, high frequency
- DC/DC converter
- Freewheeling diodes
- Reverse battery protection
- Car lighting

### MECHANICAL DATA

- Case: Thin SMA
- 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: 0.029g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	5	A
$V_{RRM}$	120	V
$I_{FSM}$	125	A
$T_{J\ MAX}$	175	°C
Package	Thin SMA	
Configuration	Single die	



Thin SMA



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Repetitive peak reverse voltage	$V_{RRM}$	120	V
Reverse voltage, total rms value	$V_{R(RMS)}$	84	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 +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	$R_{\theta JL}$	13.7	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	72.1	°C/W
Junction-to-case thermal resistance	$R_{\theta JC}$	14.4	°C/W

**Thermal Performance Note:** Units mounted on PCB (5mm x 5mm 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>	$I_F = 2.5\text{A}, T_J = 25^\circ\text{C}$	$V_F$	0.65	-	V
	$I_F = 5.0\text{A}, T_J = 25^\circ\text{C}$		0.73	0.81	V
	$I_F = 2.5\text{A}, T_J = 125^\circ\text{C}$		0.53	-	V
	$I_F = 5.0\text{A}, T_J = 125^\circ\text{C}$		0.60	0.68	V
Reverse current @ rated $V_R$ <sup>(2)</sup>	$T_J = 25^\circ\text{C}$	$I_R$	-	10	$\mu\text{A}$
	$T_J = 125^\circ\text{C}$		-	2	mA
Junction capacitance	1MHz, $V_R = 4.0\text{V}$	$C_J$	288	-	pF

**Notes:**

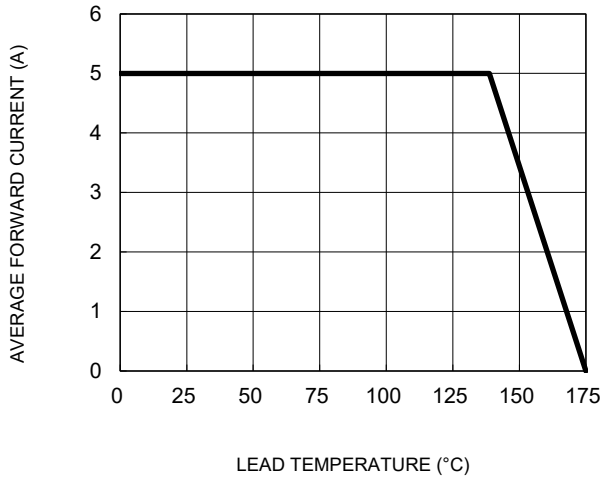
1. Pulse test with  $PW = 0.3\text{ms}$
2. Pulse test with  $PW = 30\text{ms}$

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE</b>	<b>PACKAGE</b>	<b>PACKING</b>
TSAL5H120H	Thin SMA	14,000 / Tape & Reel

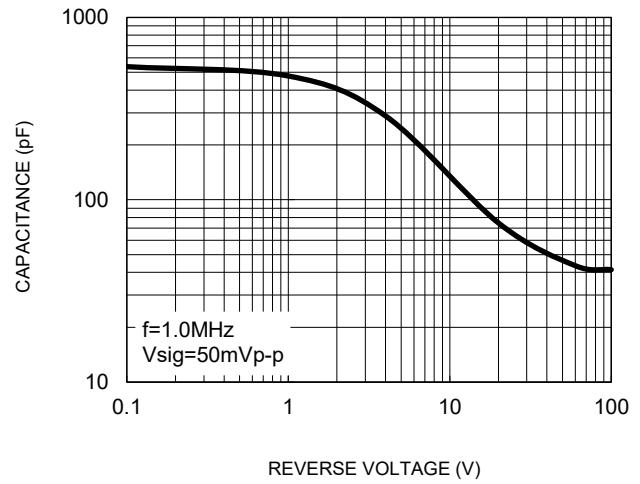
**CHARACTERISTICS CURVES**

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

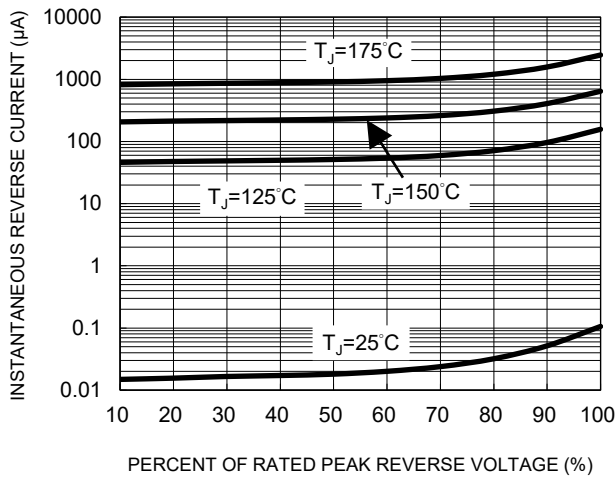
**Fig.1 Forward Current Derating Curve**



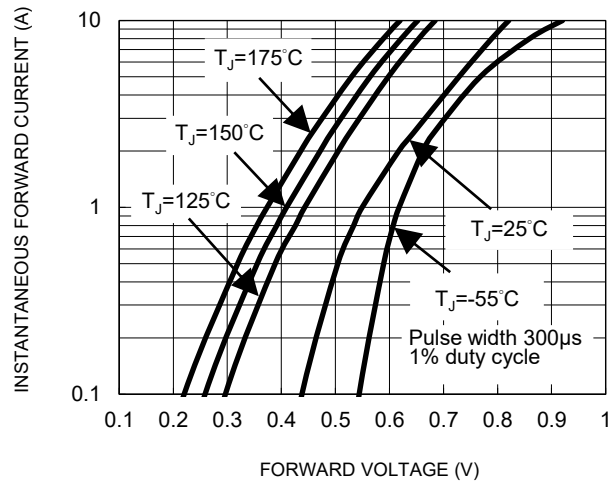
**Fig.2 Typical Junction Capacitance**



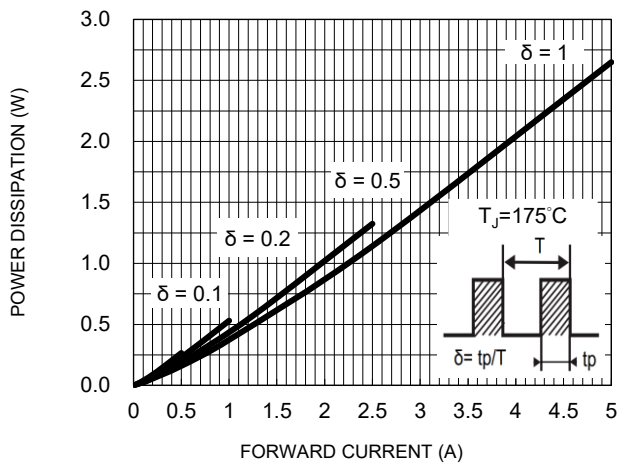
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**



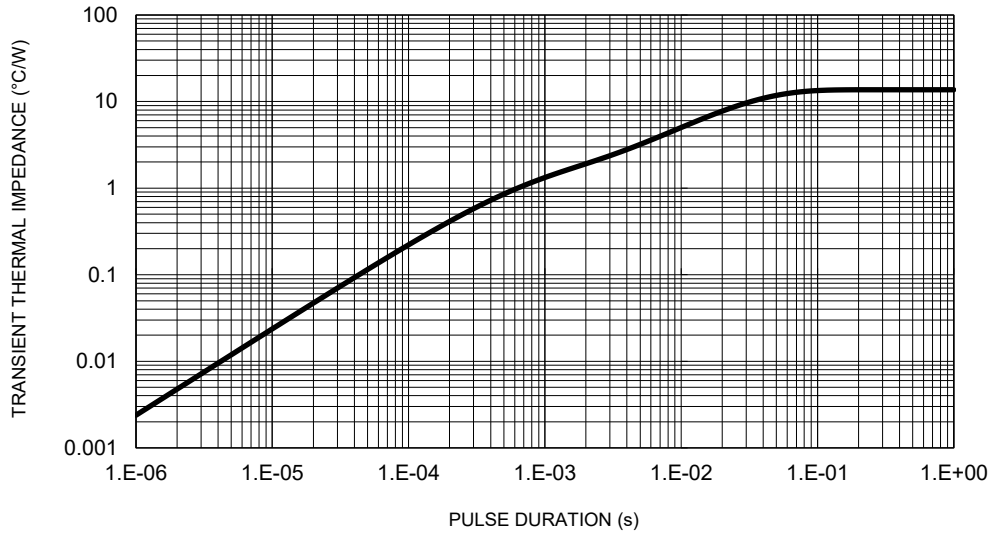
**Fig.5 Typical Forward Power Dissipation vs. Forward Current**



**CHARACTERISTICS CURVES**

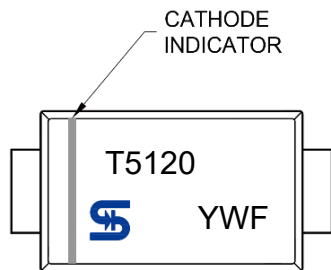
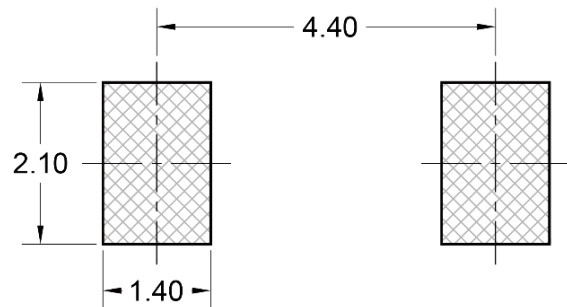
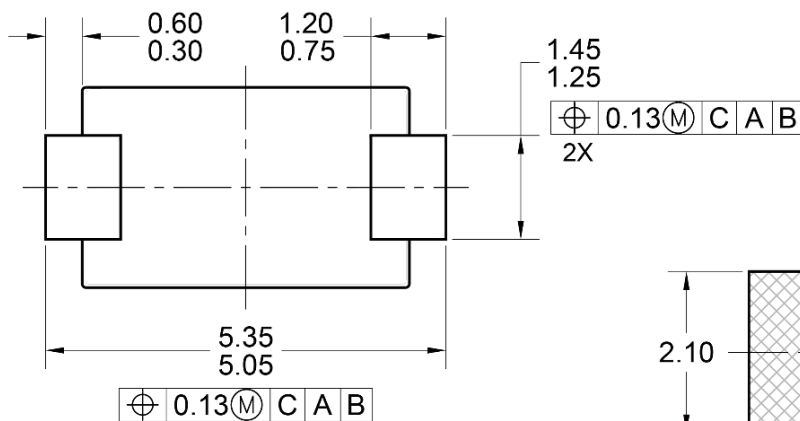
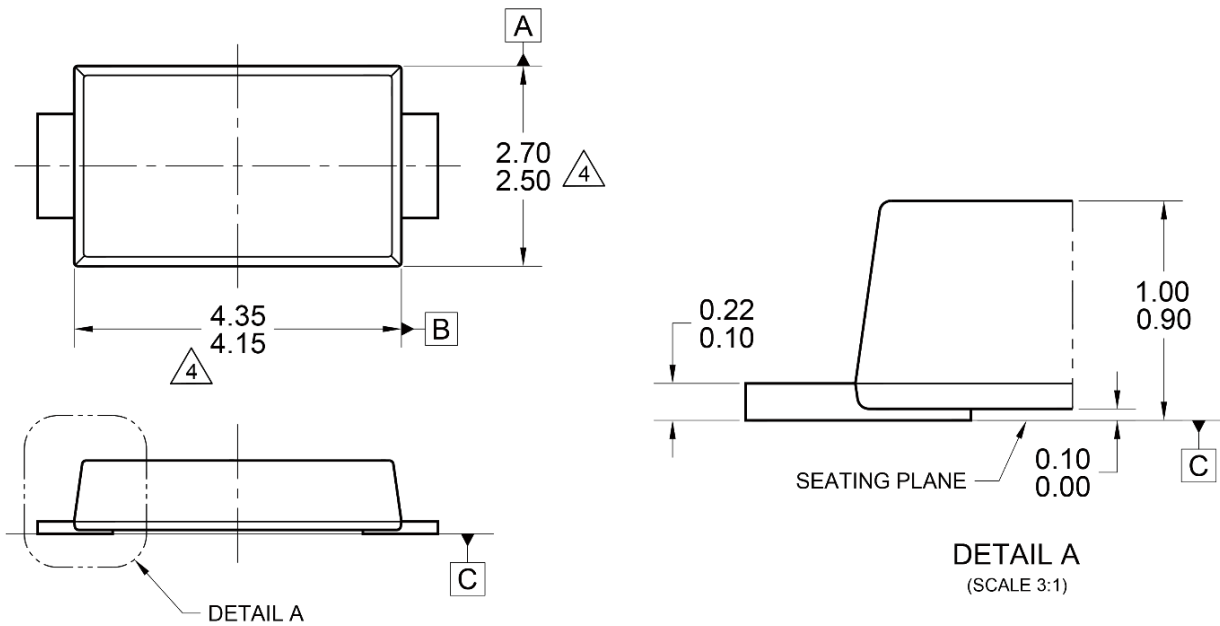
(T<sub>A</sub> = 25°C unless otherwise noted)

**Fig.6 Typical Transient Thermal Characteristics**



**PACKAGE OUTLINE DIMENSIONS**

**Thin SMA**



**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-2009.
3. PACKAGE OUTLINE REFERENCE: JEDEC DO-221, VARIATION AC, ISSUE B.
4. MODDED PLASTIC BODY DIMENSIONS DO NOT INCLUDE MOLD FLASH.
5. SUGGESTED PAD LAYOUT IS FOR REFERENCE PURPOSE ONLY.
6. DWG NO. REF: HQ2SD07-TSMA-074 REV A.

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