

5A, 45V 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}	45	V
I_{FSM}	150	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}	45	V
Reverse voltage, total rms value	$V_{R(RMS)}$	31	V
Forward current	I_F	5	A
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load	I_{FSM}	150	A
Junction temperature	T_J	- 55 to +175	°C
Storage temperature	T_{STG}	- 55 to +175	°C

THERMAL PERFORMANCE			
PARAMETER	SYMBOL	TYP	UNIT
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)

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage ⁽¹⁾	$I_F = 2.5\text{A}, T_J = 25^\circ\text{C}$	V_F	0.48	-	V
	$I_F = 5.0\text{A}, T_J = 25^\circ\text{C}$		0.53	0.61	V
	$I_F = 2.5\text{A}, T_J = 125^\circ\text{C}$		0.37	-	V
	$I_F = 5.0\text{A}, T_J = 125^\circ\text{C}$		0.44	0.52	V
Reverse current @ rated V_R ⁽²⁾	$T_J = 25^\circ\text{C}$	I_R	-	30	μA
	$T_J = 125^\circ\text{C}$		-	10	mA
Junction capacitance	1MHz, $V_R = 4.0\text{V}$	C_J	689	-	pF

Notes:

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

ORDERING INFORMATION		
ORDERING CODE	PACKAGE	PACKING
TSAL5M45H	Thin SMA	14,000 / Tape & Reel

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

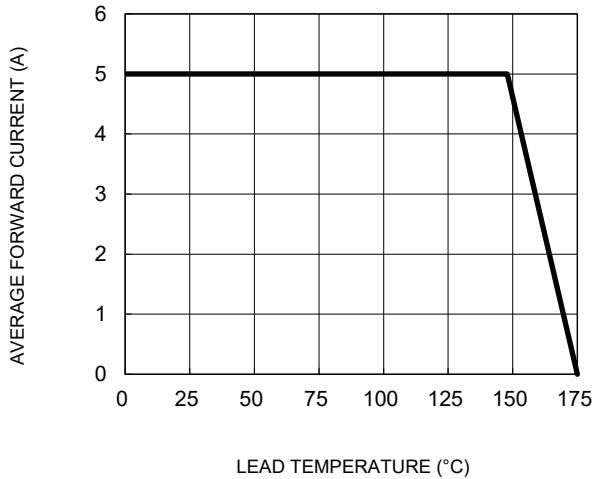


Fig.2 Typical Junction Capacitance

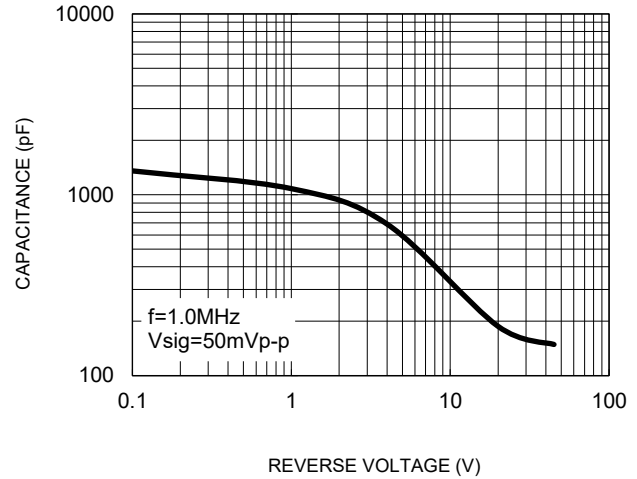


Fig.3 Typical Reverse Characteristics

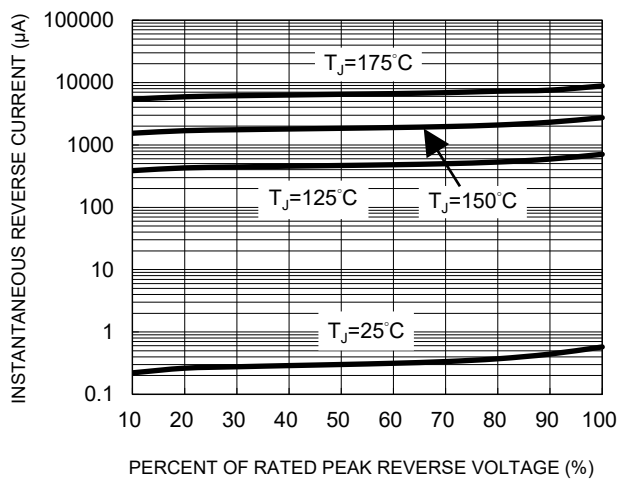


Fig.4 Typical Forward Characteristics

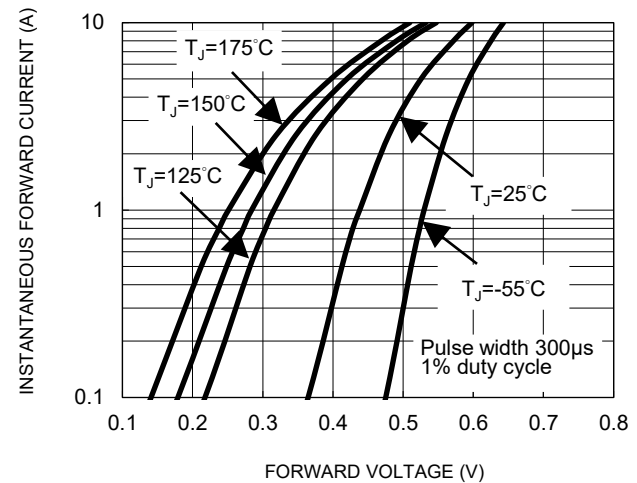
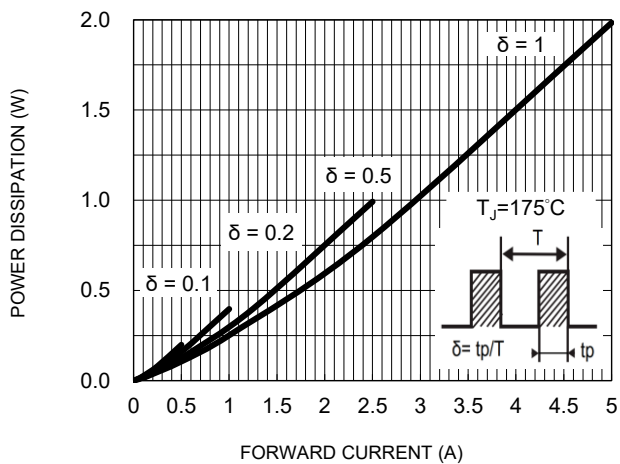


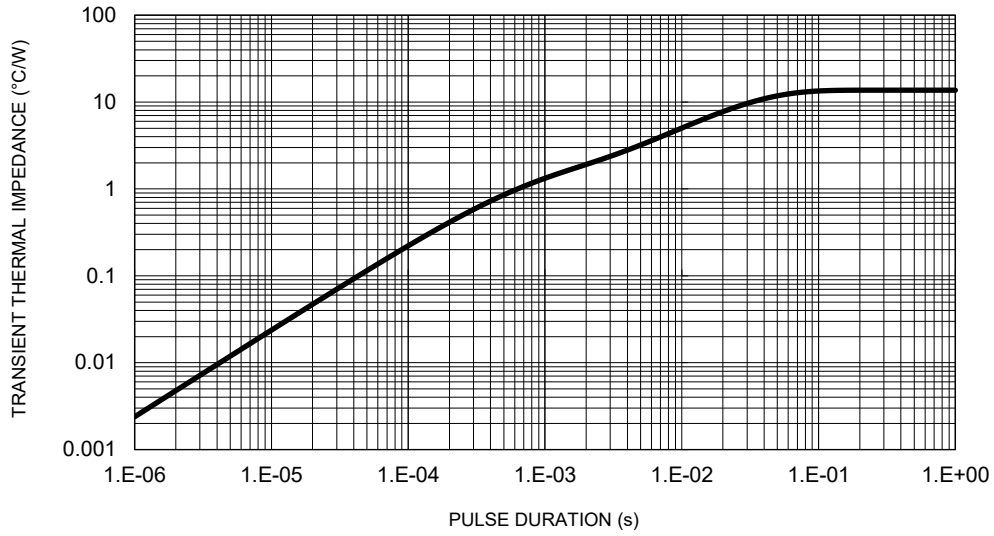
Fig.5 Typical Forward Power Dissipation vs. Forward Current



CHARACTERISTICS CURVES

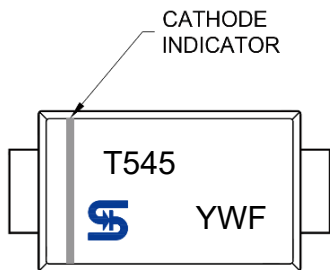
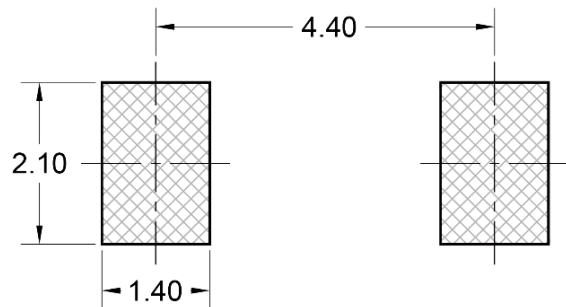
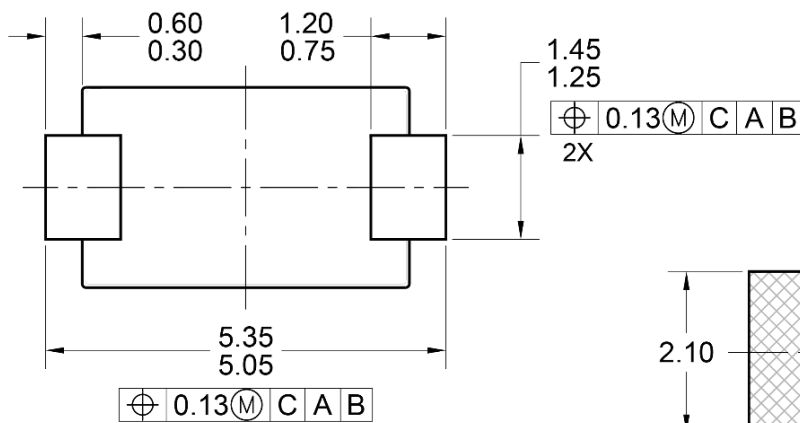
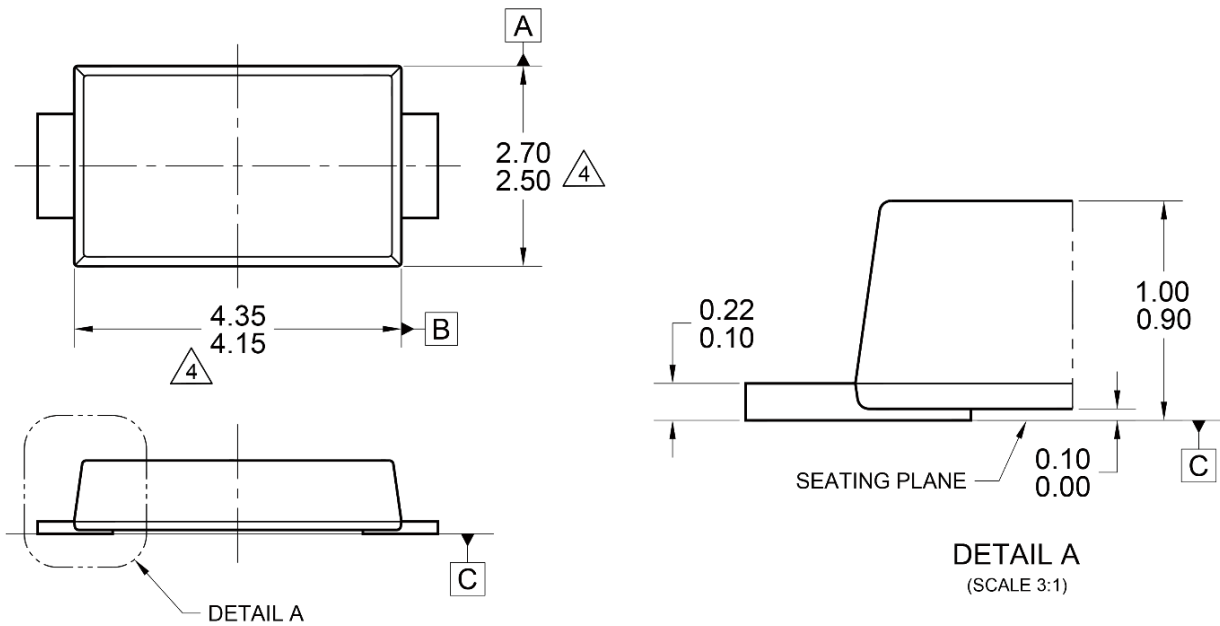
($T_A = 25^\circ\text{C}$ unless otherwise noted)

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. MODERATED 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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