

5A, 45V Trench Schottky Rectifier

FEATURES

- AEC-Q101 qualified
- Patented Trench Schottky 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

- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- On-board DC/DC converter
- Automotive

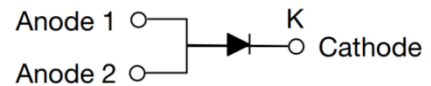
MECHANICAL DATA

- 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: 0.104g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I_F	5	A
V_{RRM}	45	V
I_{FSM}	110	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	TSUP5M45SH	UNIT
Marking code on the device		5M45	
Repetitive peak reverse voltage	V_{RRM}	45	V
Reverse voltage, total rms value	$V_{R(RMS)}$	32	V
Forward current	I_F	5	A
Surge peak forward current single half sine-wave superimposed on rated load	$t = 8.3\text{ms}$	110	A
	$t = 1.0\text{ms}$	180	
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	$R_{\theta JL}$	5	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	45	°C/W
Junction-to-case thermal resistance	$R_{\theta JC}$	9	°C/W

Thermal Performance Note: 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⁾	$I_F = 2.5\text{A}, T_J = 25^\circ\text{C}$	V_F	0.49	-	V
	$I_F = 5.0\text{A}, T_J = 25^\circ\text{C}$		0.54	0.60	V
	$I_F = 2.5\text{A}, T_J = 125^\circ\text{C}$		0.39	-	V
	$I_F = 5.0\text{A}, T_J = 125^\circ\text{C}$		0.46	0.54	V
Reverse current @ rated V_R ⁽²⁾	$T_J = 25^\circ\text{C}$	I_R	-	150	μA
	$T_J = 125^\circ\text{C}$		-	6	mA
Junction capacitance	1MHz, $V_R = 4.0\text{V}$	C_J	589	-	pF

Notes:

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

ORDERING INFORMATION		
ORDERING CODE	PACKAGE	PACKING
TSUP5M45SH	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

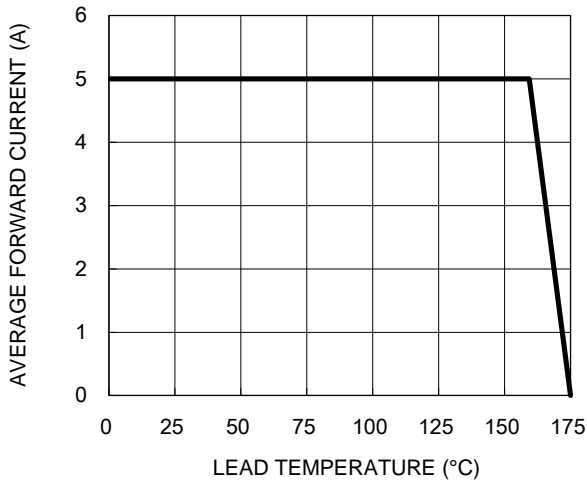


Fig.2 Typical Junction Capacitance

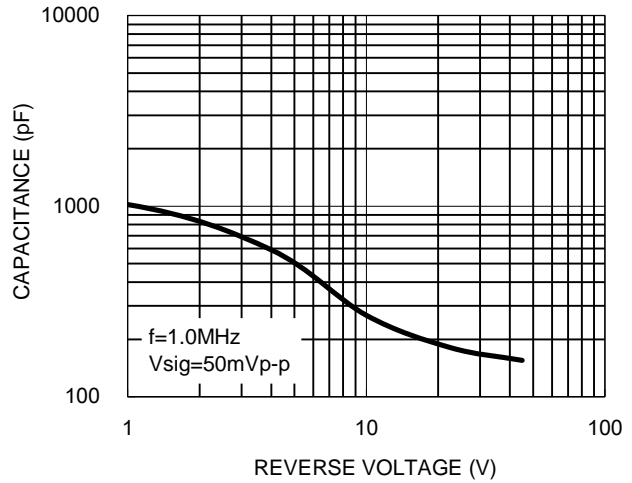


Fig.3 Typical Reverse Characteristics

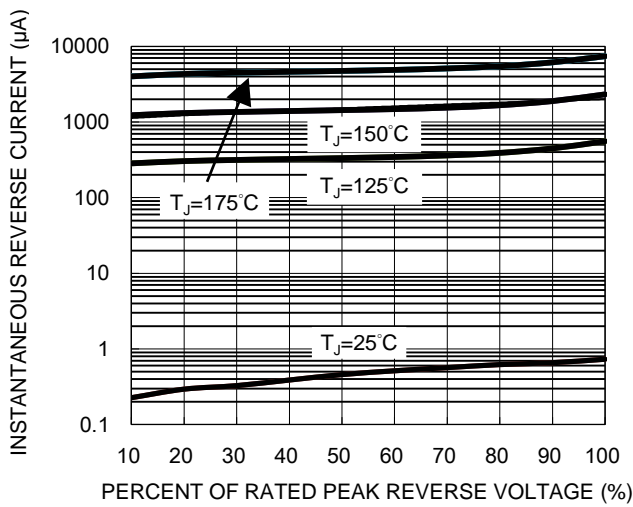


Fig.4 Typical Forward Characteristics

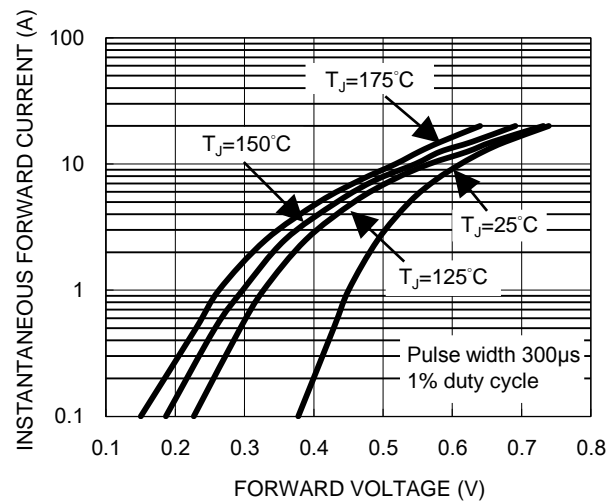
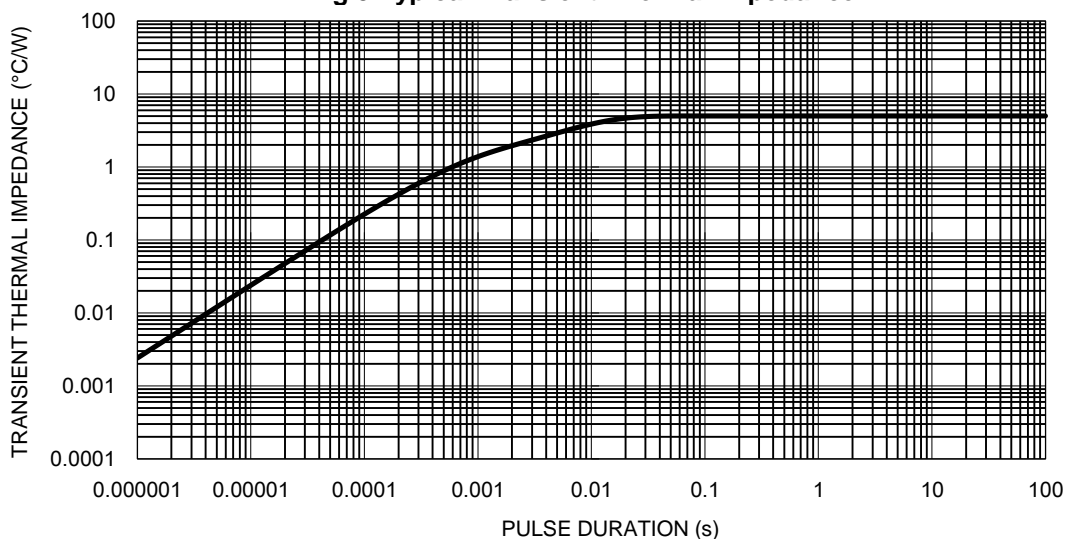
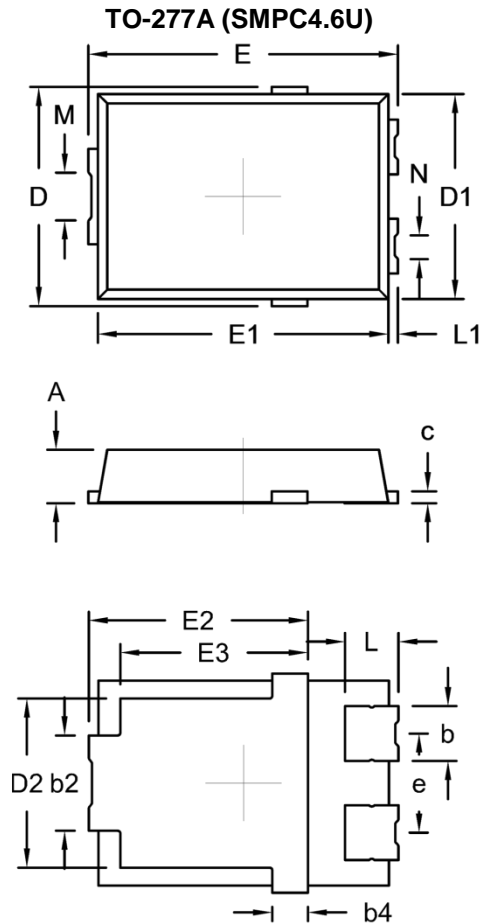


Fig.5 Typical Transient Thermal Impedance



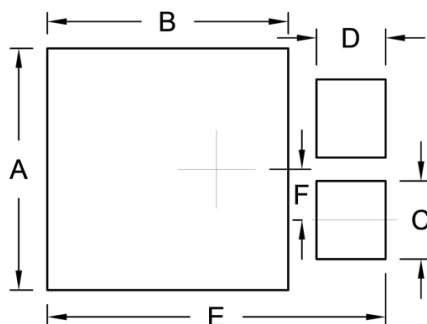
PACKAGE OUTLINE DIMENSIONS



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
YWF = Date Code
F = Factory Code

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