6A, 200V - 1000V High Efficient Surface Mount Rectifier

FEATURES

- AEC-Q101 qualified
- Glass passivated chip junction
- Low power loss, high efficiency
- Fast switching for 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

- Switch Mode Power Supply
- Inverters and Converters
- Freewheeling diodes

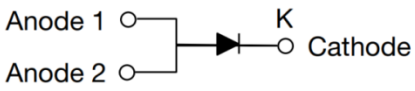
MECHANICAL DATA

- 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	6	A
V_{RRM}	200 - 1000	V
I_{FSM}	140	A
$T_{J\ MAX}$	175, 150	°C
Package	TO-277A (SMPC4.6U)	
Configuration	Single die	

Pb-Free RoHS COMPLIANT HALOGEN FREE

TO-277A (SMPC4.6U)



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)								
PARAMETER		**SYMBOL**	**TUAU 6DH**	**TUAU 6GH**	**TUAU 6JH**	**TUAU 6KH**	**TUAU 6MH**	**UNIT**
Marking code on the device			AU6DH	AU6GH	AU6JH	AU6KH	AU6MH	
Repetitive peak reverse voltage		V_{RRM}	200	400	600	800	1000	V
Reverse voltage, total rms value		$V_{R(RMS)}$	140	280	420	560	700	V
Forward current		I_F	6					A
Surge peak forward current single half sine-wave superimposed on rated load	t = 8.3ms	I_{FSM}	140					A
	t = 1.0ms		230					
Junction temperature		T_J	-55 to +175			-55 to +150		°C
Storage temperature		T_{STG}	-55 to +175			-55 to +150		°C

THERMAL PERFORMANCE

PARAMETER	SYMBOL	TYP	UNIT
Junction-to-lead thermal resistance	$R_{\Theta JL}$	6	°C/W
Junction-to-ambient thermal resistance	$R_{\Theta JA}$	50	°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°C unless otherwise noted)

PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage[1]	TUAU6DH	I_F = 3A, T_J = 25°C	V_F	0.82	-	V
		I_F = 6A, T_J = 25°C		0.89	1.00	V
		I_F = 3A, T_J = 125°C		0.68	-	V
		I_F = 6A, T_J = 125°C		0.76	-	V
	TUAU6GH TUAU6JH	I_F = 3A, T_J = 25°C		1.05	-	V
		I_F = 6A, T_J = 25°C		1.17	1.30	V
		I_F = 3A, T_J = 125°C		0.84	-	V
		I_F = 6A, T_J = 125°C		0.98	1.21	V
	TUAU6KH TUAU6MH	I_F = 3A, T_J = 25°C		1.29	-	V
		I_F = 6A, T_J = 25°C		1.48	1.70	V
		I_F = 3A, T_J = 125°C		0.94	-	V
		I_F = 6A, T_J = 125°C		1.12	-	V
Reverse current @ rated V_R[2]		T_J = 25°C	I_R	-	5	μA
		T_J = 125°C		-	100	μA
Junction capacitance	TUAU6DH TUAU6GH TUAU6JH	1MHz, V_R = 4.0V	C_J	64	-	pF
	TUAU6KH TUAU6MH			43	-	pF
Reverse recovery time	TUAU6DH TUAU6GH TUAU6JH	I_F = 0.5A, I_R = 1.0A I_{rr} = 0.25A	t_{rr}	-	50	ns
	TUAU6KH TUAU6MH			-	75	ns

Notes:

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

ORDERING INFORMATION

ORDERING CODE[1]	PACKAGE	PACKING
TUAU6xH	TO-277A (SMPC4.6U)	6,000 / Tape & Reel

Notes:

1. "x" defines voltage from 200V(TUAU6DH) to 1000V(TUAU6MH)

CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.1 Forward Current Derating Curve

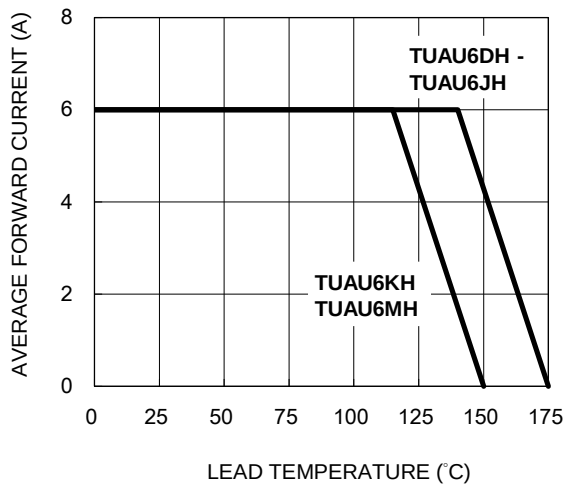


Fig.2 Typical Junction Capacitance

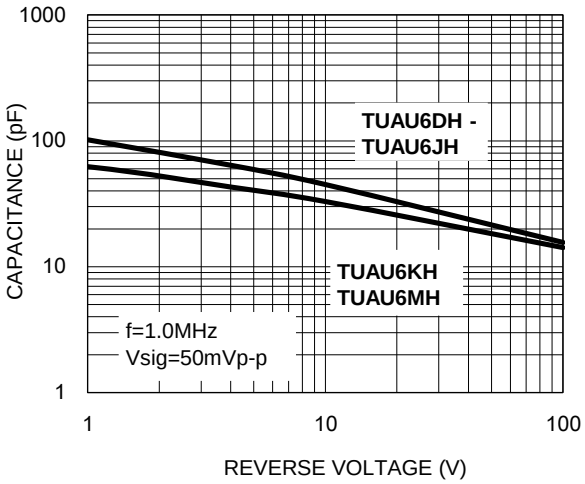


Fig.3 Typical Reverse Characteristics

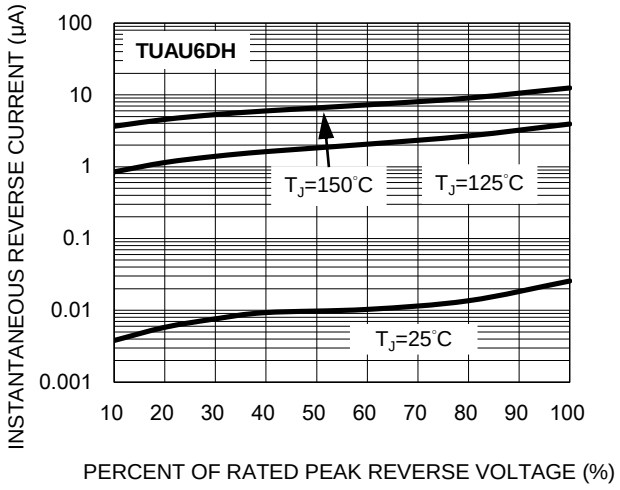


Fig.4 Typical Forward Characteristics

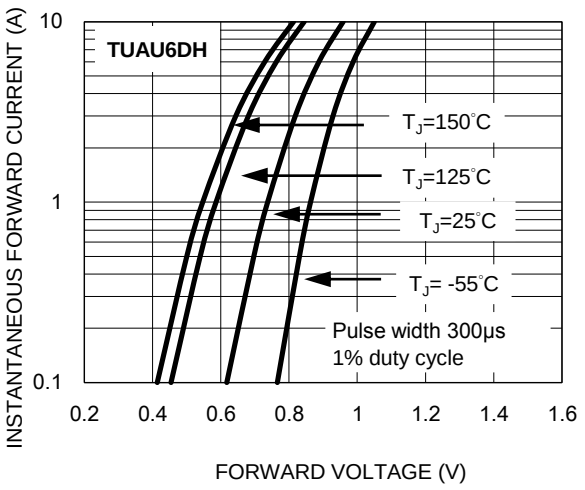


Fig.5 Typical Reverse Characteristics

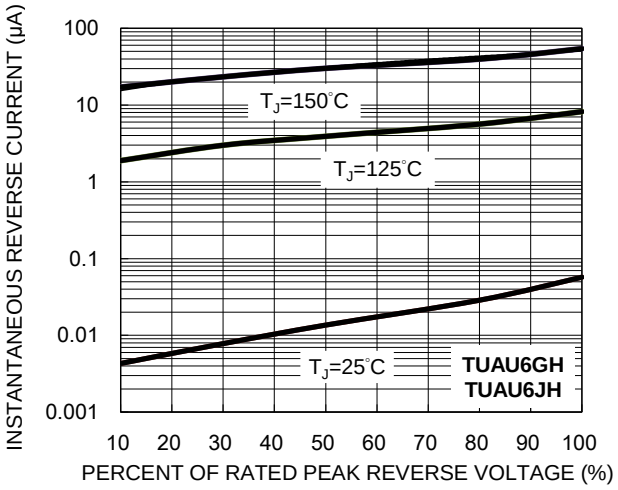
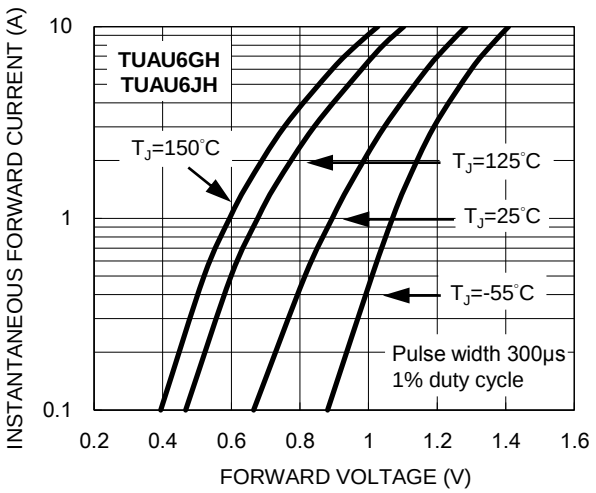


Fig.6 Typical Forward Characteristics



CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.7 Typical Reverse Characteristics

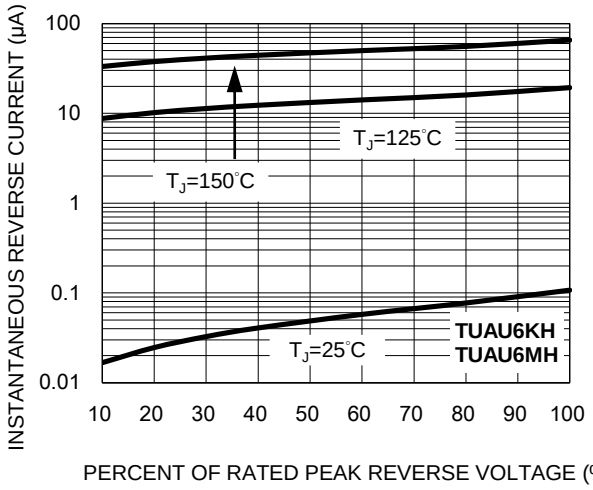


Fig.8 Typical Forward Characteristics

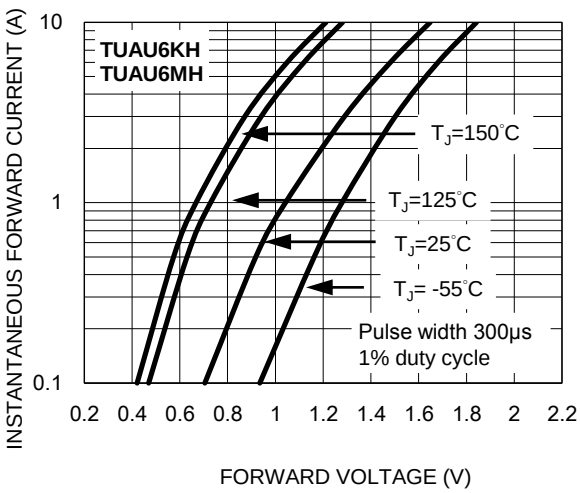
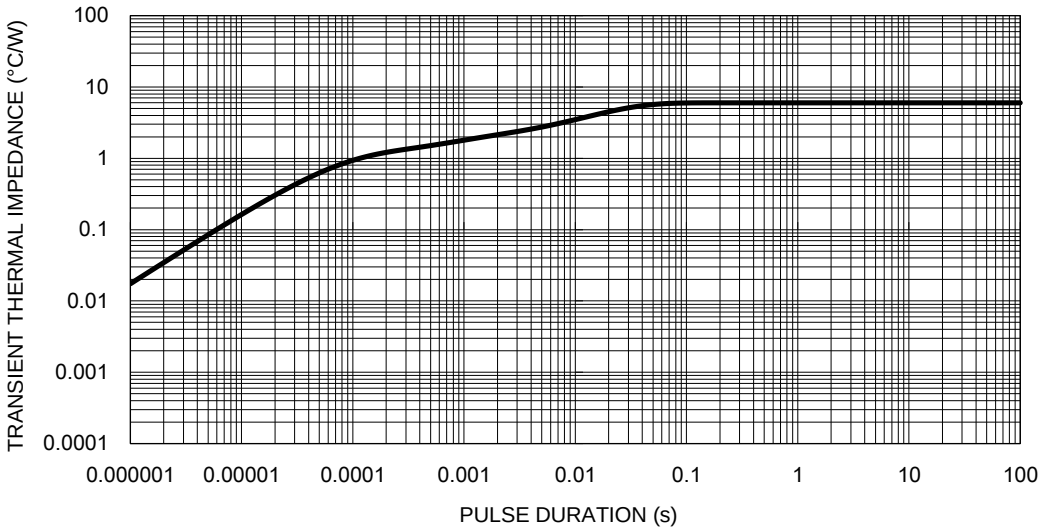
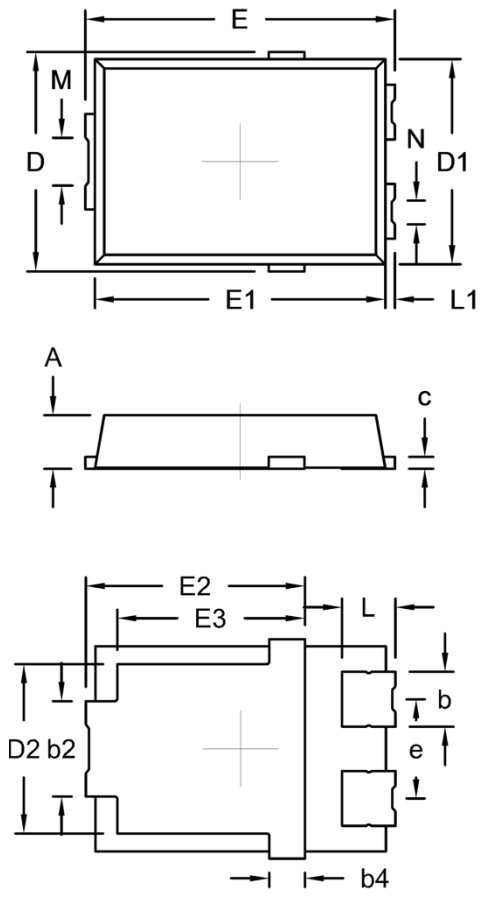


Fig.9 Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS

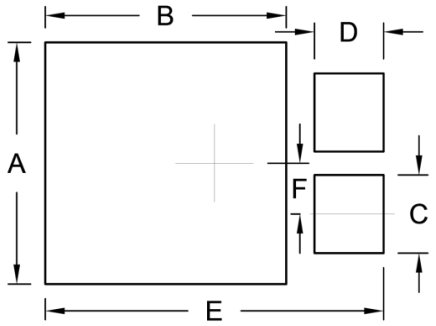
TO-277A (SMPC4.6U)



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

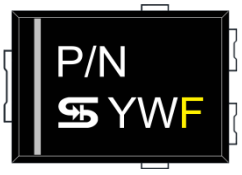
SUGGESTED PAD LAYOUT



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

Notes:
This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

MARKING DIAGRAM



P/N = Marking Code
YW = Date Code
F = Factory Code

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