6A, 200V - 600V Ultra Fast Surface Mount Rectifier

FEATURES

- AEC-Q101 qualified
- Very low profile, typical height of 1.1mm
- Excellent high temperature stability
- Glass passivated chip junction
- Controlled avalanche characteristics
- Low leakage current
- High forward surge capability
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free

APPLICATIONS

- DC to DC converter
- Automotive application
- Car lighting
- Snubber
- Freewheeling application

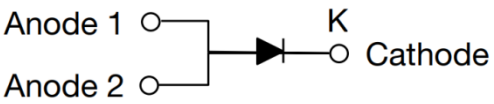
MECHANICAL DATA

- 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: 0.095g (approximately)

KEY PARAMETERS		
PARAMETER	**VALUE**	**UNIT**
I_F	6	A
V_{RRM}	200 - 600	V
I_{FSM}	80	A
$T_{J\ MAX}$	175	°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**	**TPUH6DH**	**TPUH6JH**	**UNIT**
Marking code on the device		UH6D	UH6J	
Repetitive peak reverse voltage	V_{RRM}	200	600	V
Reverse voltage, total rms value	$V_{R(RMS)}$	140	420	V
Forward current	I_F	6		A
Surge peak forward current 8.3ms single half sine wave superimposed on rated load	I_{FSM}	80		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(1)	$R_{\Theta JL}$	12	°C/W
Junction-to-ambient thermal resistance(2)	$R_{\Theta JA}$	80	°C/W

Notes:

1. Mounted on FR4 PCB with 16mm x 16mm Cu pad area
2. Free air, mounted on recommended pad

ELECTRICAL SPECIFICATIONS (T_A = 25°C unless otherwise noted)

PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage(1)	TPUH6DH	I_F = 3A, T_J = 25°C	V_F	0.80	-	V
	TPUH6JH			1.98	-	V
	TPUH6DH	I_F = 6A, T_J = 25°C		0.87	1.05	V
	TPUH6JH			2.45	3.00	V
	TPUH6DH	I_F = 3A, T_J = 125°C		0.65	-	V
	TPUH6JH			1.23	-	V
	TPUH6DH	I_F = 6A, T_J = 125°C		0.73	0.90	V
	TPUH6JH			1.59	1.80	V
Reverse current @ rated V_R(2)		T_J = 25°C	I_R	-	10	μA
		T_J = 125°C		-	200	μA
Junction capacitance		1MHz, V_R = 4.0V	C_J	50	-	pF
Reverse recovery time		I_F = 0.5A, I_R = 1.0A I_{rr} = 0.25A	t_{rr}	-	25	ns
		I_F = 1A, di/dt = -50A/μs V_R = 30V	t_{rr}	-	45	ns

Notes:

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

ORDERING INFORMATION

ORDERING CODE(1)	PACKAGE	PACKING
TPUH6xH	TO-277A (SMPC4.6U)	6,000 / Tape & Reel

Notes:

1. “x” defines voltage from 200V(TPUH6DH) to 600V(TPUH6JH)

CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.1 Forward Current Derating Curve

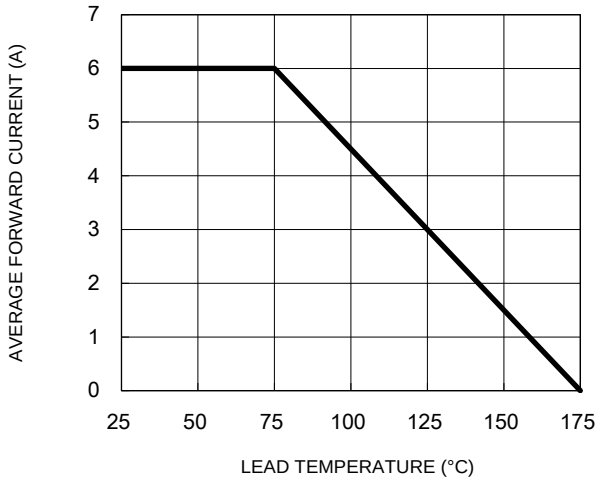


Fig.2 Typical Junction Capacitance

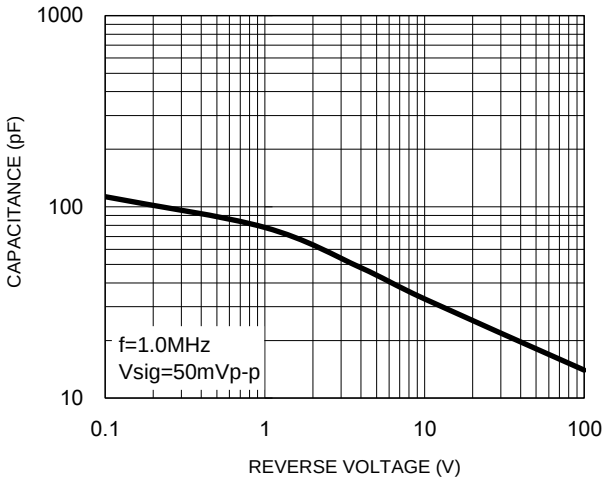


Fig.3 Typical Reverse Characteristics

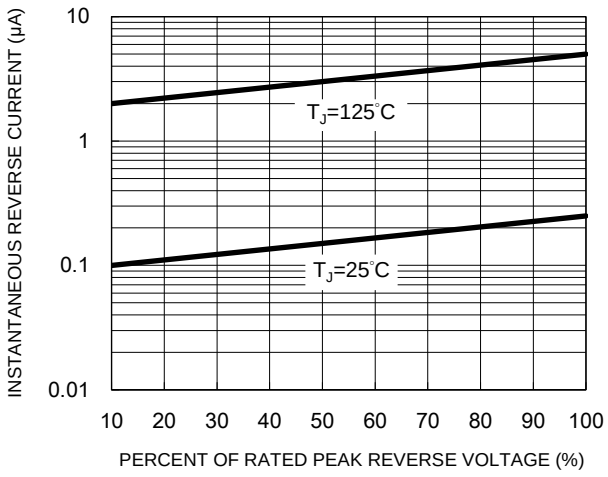


Fig.4 Typical Forward Characteristics

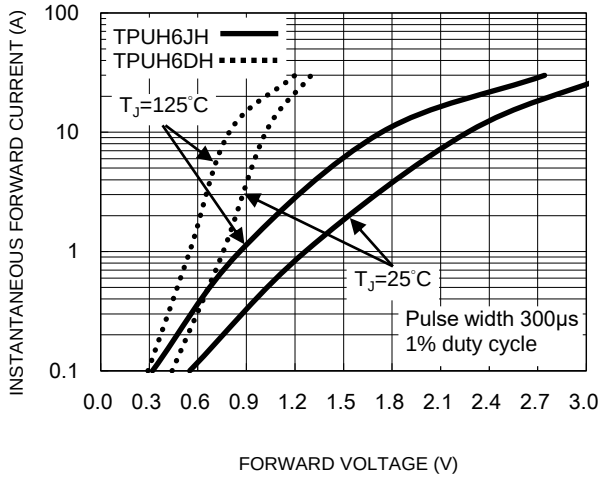
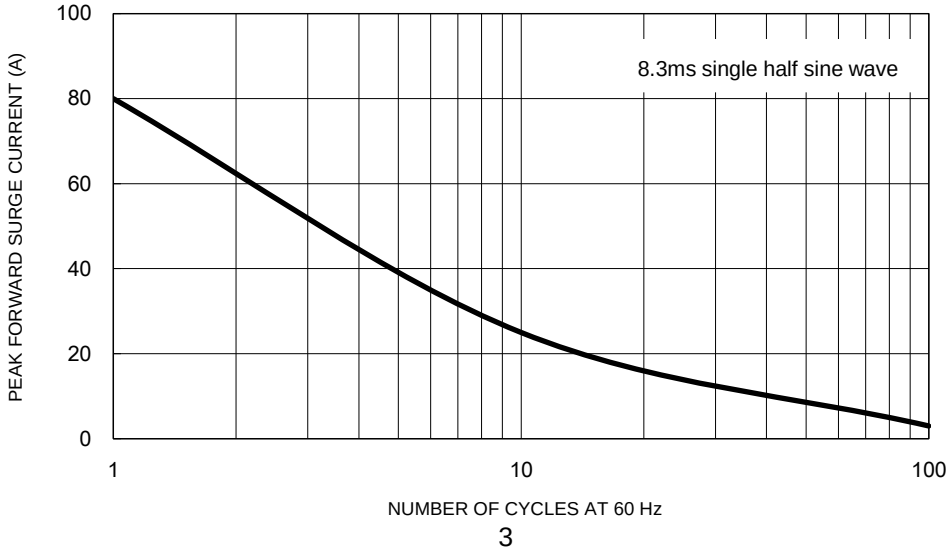


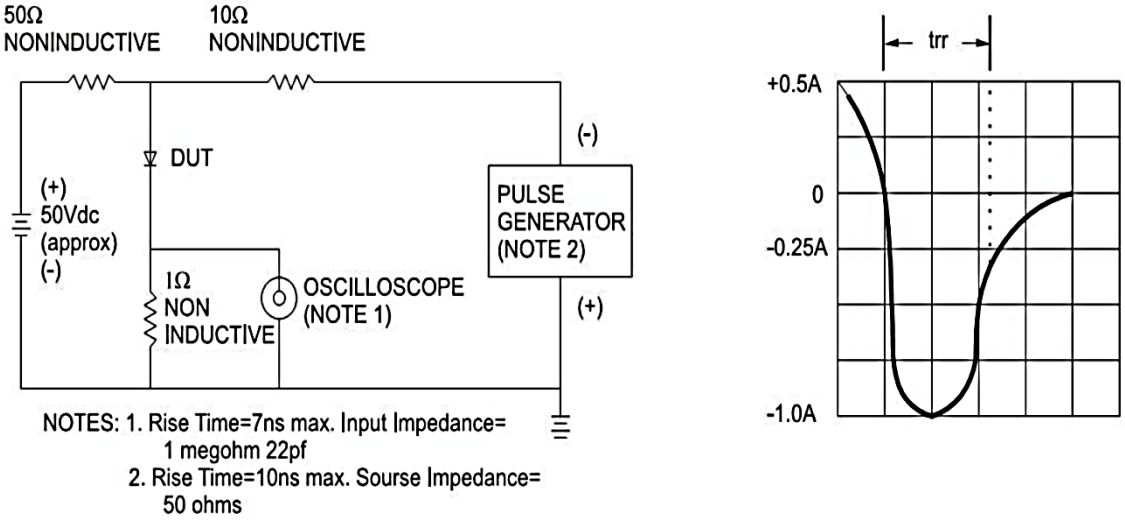
Fig.5 Maximum Non-Repetitive Forward Surge Current



CHARACTERISTICS CURVES

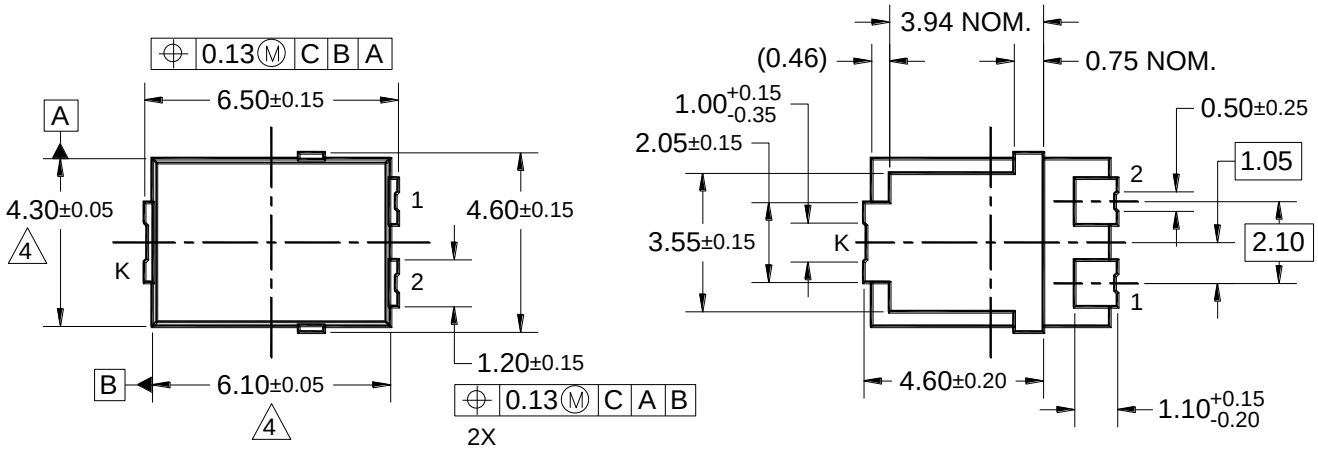
(T_A = 25°C unless otherwise noted)

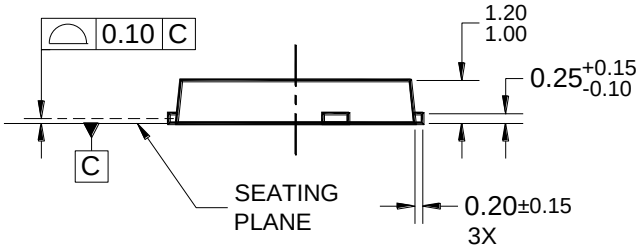
Fig.6 Reverse Recovery Time Characteristic and Test Circuit Diagram

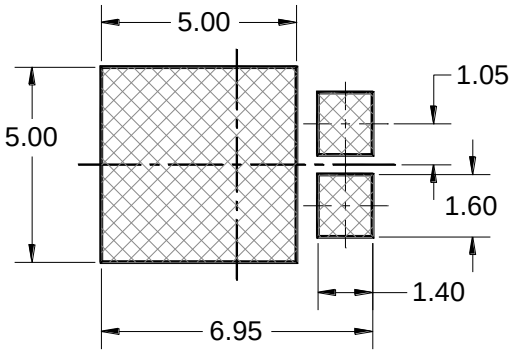


PACKAGE OUTLINE DIMENSIONS

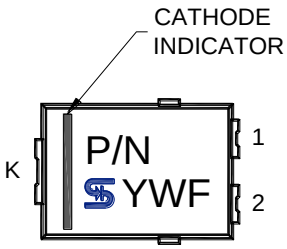
TO-277A (SMPC4.6U)







SUGGESTED PAD LAYOUT



MARKING DIAGRAM

P/N	=	MARKING CODE
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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