

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

FEATURES

- 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 according to IEC 61249-2-21

APPLICATIONS

- DC to DC converter
- Switching mode converters and inverters
- Freewheeling application

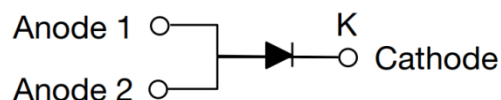
MECHANICAL DATA

- Case: TO-277A (SMPC)
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A 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 (SMPC)	
Configuration	Single die	



TO-277A (SMPC)



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

PARAMETER	SYMBOL	TPUH6D	TPUH6J	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 ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage ⁽¹⁾	TPUH6D $I_F = 3\text{A}, T_J = 25^\circ\text{C}$	V_F	0.80	-	V
	TPUH6J $I_F = 3\text{A}, T_J = 25^\circ\text{C}$		1.98	-	V
	TPUH6D $I_F = 6\text{A}, T_J = 25^\circ\text{C}$		0.87	1.05	V
	TPUH6J $I_F = 6\text{A}, T_J = 25^\circ\text{C}$		2.45	3.00	V
	TPUH6D $I_F = 3\text{A}, T_J = 125^\circ\text{C}$		0.65	-	V
	TPUH6J $I_F = 3\text{A}, T_J = 125^\circ\text{C}$		1.23	-	V
	TPUH6D $I_F = 6\text{A}, T_J = 125^\circ\text{C}$		0.73	0.90	V
	TPUH6J $I_F = 6\text{A}, T_J = 125^\circ\text{C}$		1.59	1.80	V
Reverse current @ rated V_R ⁽²⁾	$T_J = 25^\circ\text{C}$	I_R	-	10	μA
	$T_J = 125^\circ\text{C}$		-	200	μA
Junction capacitance	1MHz, $V_R = 4.0\text{V}$	C_J	50	-	pF
Reverse recovery time	$I_F = 0.5\text{A}, I_R = 1.0\text{A}$ $I_{rr} = 0.25\text{A}$	t_{rr}	-	25	ns
	$I_F = 1\text{A}, di/dt = -50\text{A}/\mu\text{s}$ $V_R = 30\text{V}$	t_{rr}	-	45	ns

Notes:

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

ORDERING INFORMATION

ORDERING CODE ⁽¹⁾	PACKAGE	PACKING
TPUH6x	TO-277A (SMPC)	6,000 / Tape & Reel

Notes:

1. "x" defines voltage from 200V(TPUH6D) to 600V(TPUH6J)

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

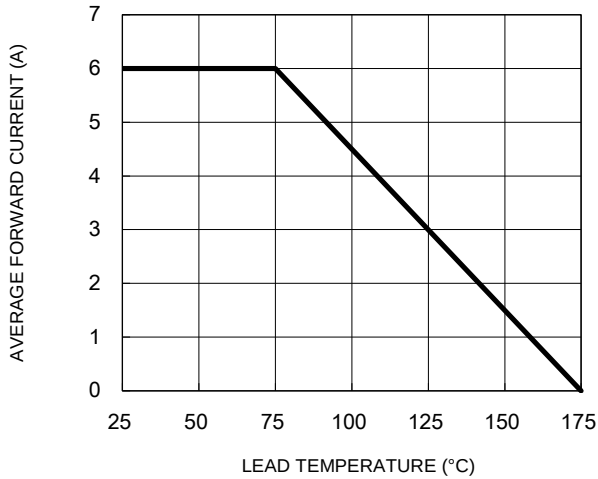


Fig.2 Typical Junction Capacitance

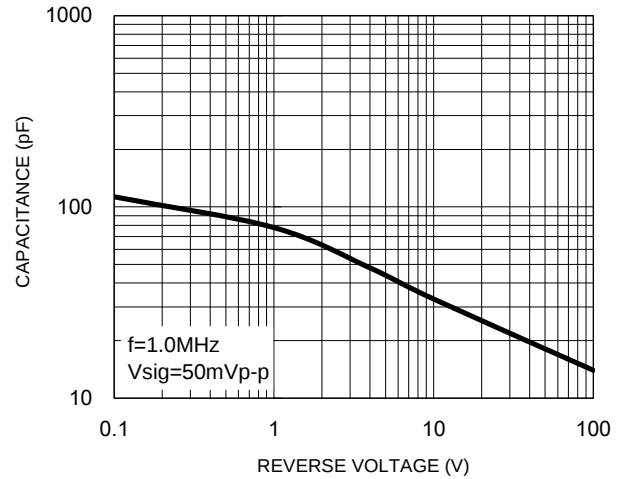


Fig.3 Typical Reverse Characteristics

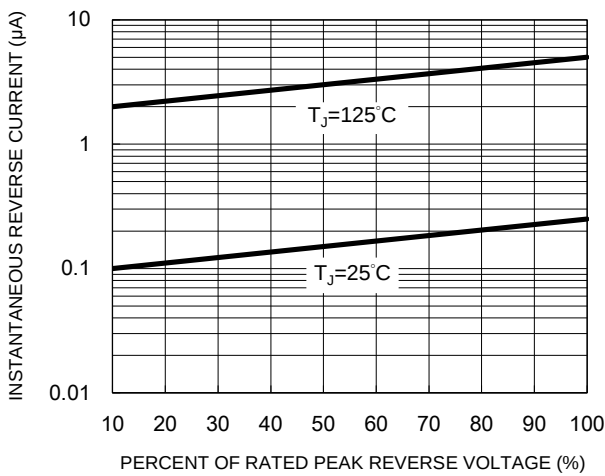


Fig.4 Typical Forward Characteristics

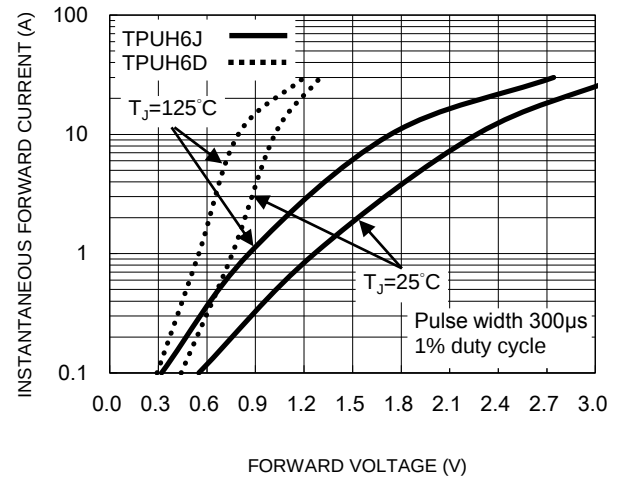
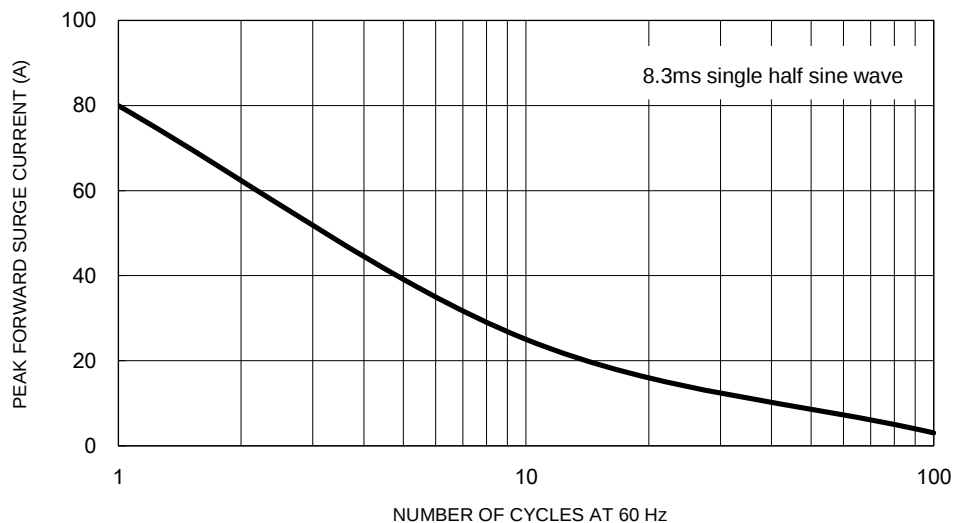


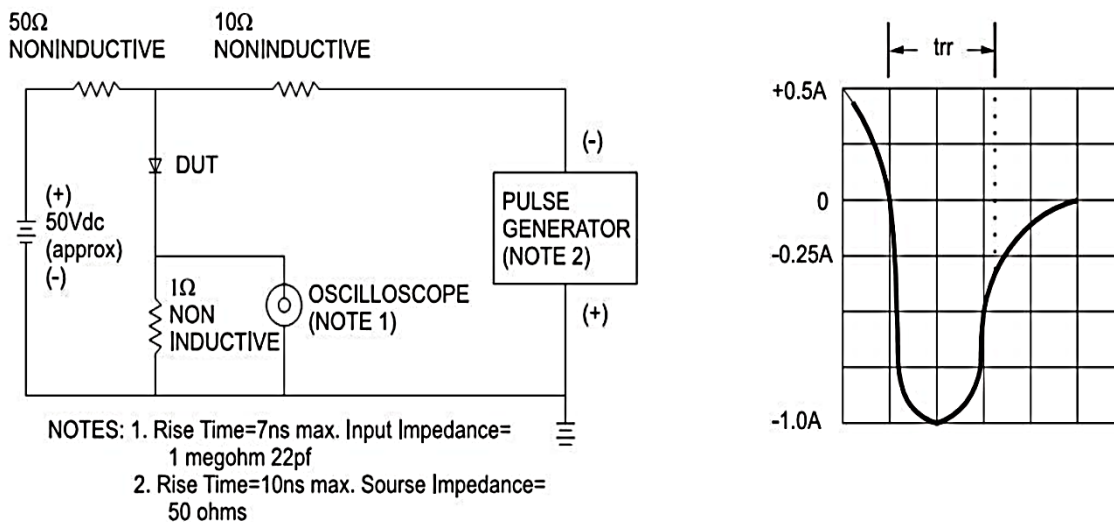
Fig.5 Maximum Non-Repetitive Forward Surge Current



CHARACTERISTICS CURVES

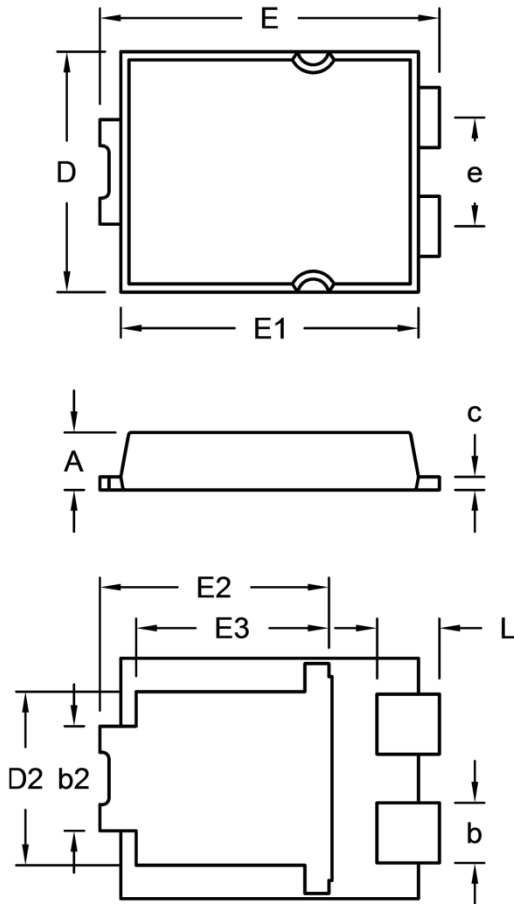
($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.6 Reverse Recovery Time Characteristic and Test Circuit Diagram



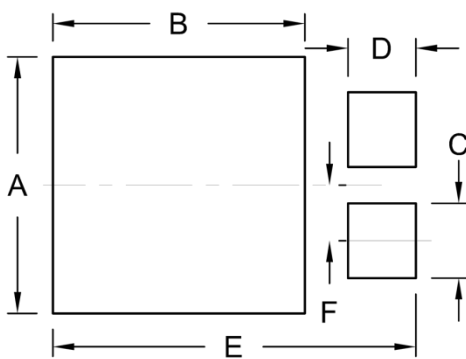
PACKAGE OUTLINE DIMENSIONS

TO-277A (SMPC)



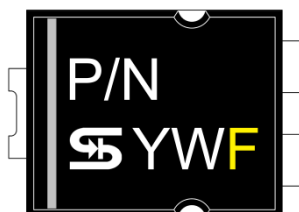
DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	1.000	1.200	0.039	0.047
b	1.000	1.300	0.039	0.051
b2	1.850	2.150	0.073	0.085
c	0.175	0.325	0.007	0.013
D	4.550	4.650	0.179	0.183
D2	3.170	3.470	0.125	0.137
E	6.350	6.650	0.250	0.262
E1	5.650	5.750	0.222	0.226
E2	4.235	4.535	0.167	0.179
E3	3.540	3.840	0.139	0.151
e	1.930	2.230	0.076	0.088
L	1.043	1.343	0.041	0.053

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	4.80	0.189
B	4.72	0.186
C	1.40	0.055
D	1.27	0.050
E	6.80	0.268
F	1.04	0.041

MARKING DIAGRAM



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

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