

## 6A, 200V - 600V Surface Mount Ultrafast Rectifiers

### 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
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

### TYPICAL APPLICATIONS

For use in high voltage, high frequency power factor corrections, switching mode power supplies, freewheeling diodes and secondary dc to dc rectifications

### MECHANICAL DATA

**Case:** TO-277A (SMPC)

Molding compound, UL flammability classification rating 94V-0

Moisture sensitivity level: level 1, per J-STD-020

Part no. with suffix "H" means AEC-Q101 qualified

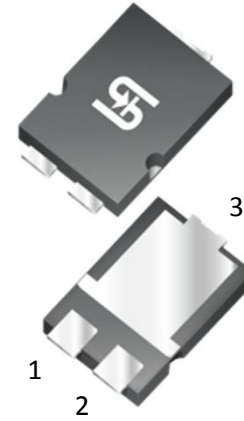
Packing code suffix "G" means green compound (halogen-free)

**Terminal:** Matte tin plated leads, solderable per JESD22-B102

Meet JESD 201 class 1A whisker test

**Polarity:** Indicated by cathode band

**Weight:** 95 mg (approximately)



**TO-277A (SMPC)**



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (T <sub>A</sub> =25°C unless otherwise noted)						
PARAMETER	SYMBOL	TPUH6D	TPUH6J	UNIT		
Marking code		UH6D	UH6J			
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	200	600	V		
Maximum average forward rectified current	I <sub>F(AV)</sub>	6		A		
Peak forward surge current, 8.3 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	80		A		
Maximum instantaneous forward voltage <sup>(1)</sup>	I <sub>F</sub> =3A	Test condition		V		
		T <sub>J</sub> =25°C	TYP		MAX	TYP
	T <sub>J</sub> =125°C	0.80	-		1.98	-
	I <sub>F</sub> =6A	T <sub>J</sub> =25°C	0.65		-	1.23
		T <sub>J</sub> =125°C	0.87	1.05	2.45	3.00
			0.73	0.90	1.59	1.80
Maximum reverse current @ rated V <sub>R</sub>		T <sub>J</sub> =25°C	10		μA	
		T <sub>J</sub> =125°C	200			
Maximum reverse recovery time	I <sub>F</sub> =0.5A, I <sub>R</sub> =1A, I <sub>RR</sub> =0.25A		25		ns	
			I <sub>F</sub> =1A, di/dt=-50A/μs, V <sub>R</sub> =30V	45		
Typical thermal resistance		R <sub>θJM</sub> <sup>(2)</sup>	12		°C/W	
		R <sub>θJA</sub> <sup>(3)</sup>	80			
Typical junction capacitance <sup>(4)</sup>		C <sub>J</sub>	50		pF	
Operating junction temperature range		T <sub>J</sub>	- 55 to +175		°C	
Storage temperature range		T <sub>STG</sub>	- 55 to +175		°C	

Note 1: Pulse test with PW=300μs, 1% duty cycle

Note 2: Mounted on FR4 PCB with 16mm x 16mm Cu pad area

Note 3: Free air, mounted on recommended pad

Note 4: Measured at 1 MHz and Applied V<sub>R</sub>=4.0 V

ORDERING INFORMATION					
PART NO.	PART NO. SUFFIX	PACKING CODE	PACKING CODE SUFFIX	PACKAGE	PACKING
TPUH6x (Note 1, 2)	H	S1	G	SMPC	1,500/ 7" Plastic reel
		S2		SMPC	6,000/ 13" Plastic reel

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

Note 2: Whole series with green compound

EXAMPLE					
PREFERRED PART NO.	PART NO.	PART NO. SUFFIX	PACKING CODE	PACKING CODE SUFFIX	DESCRIPTION
TPUH6JHS1G	TPUH6J	H	S1	G	AEC-Q101 qualified Green compound

**RATINGS AND CHARACTERISTICS CURVES**

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

FIG. 1 MAXIMUM FORWARD CURRENT DERATING CURVE

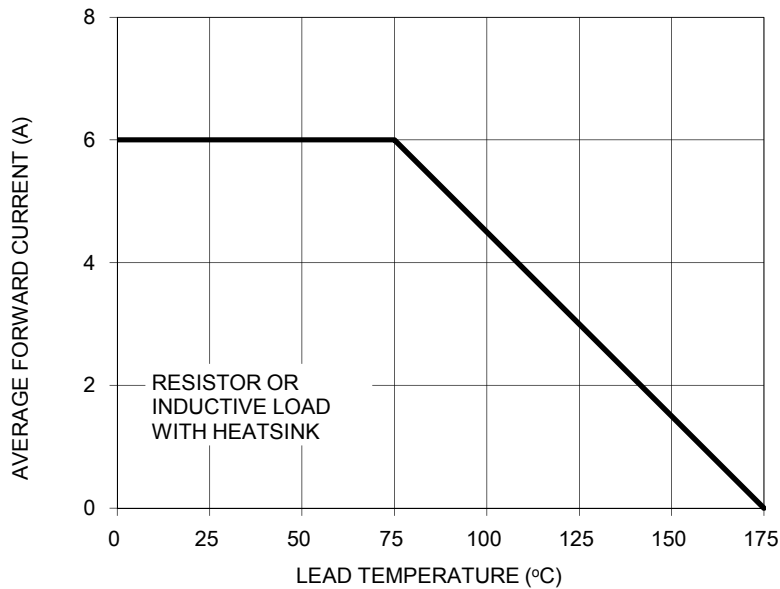


FIG. 2 TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

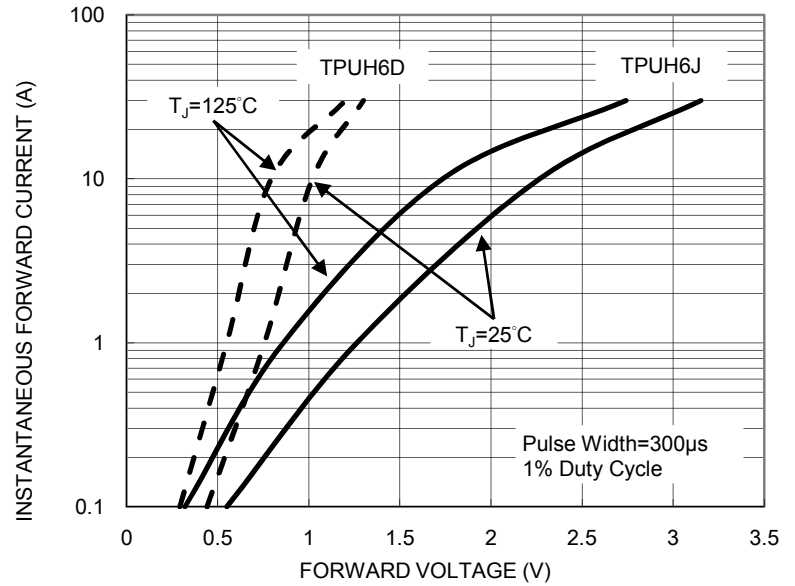


FIG. 3 MAXIMUM NON-REPETITIVE FORWARD PEAK SURGE CURRENT

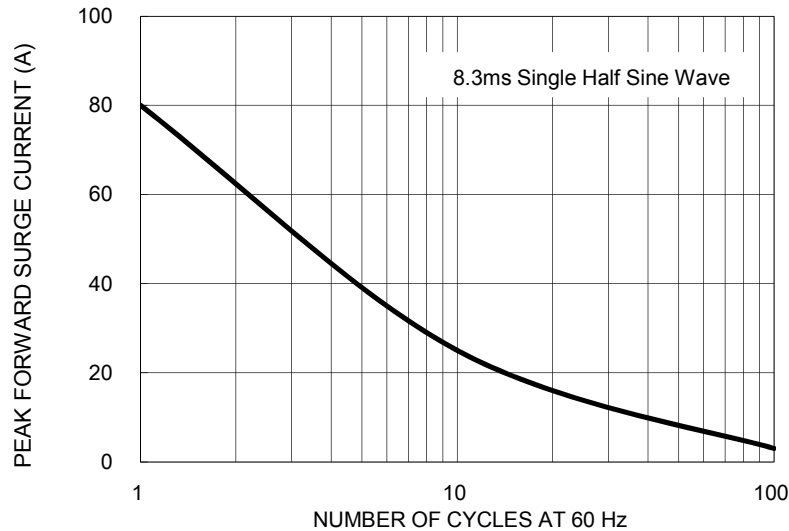


FIG. 4 TYPICAL REVERSE CHARACTERISTICS

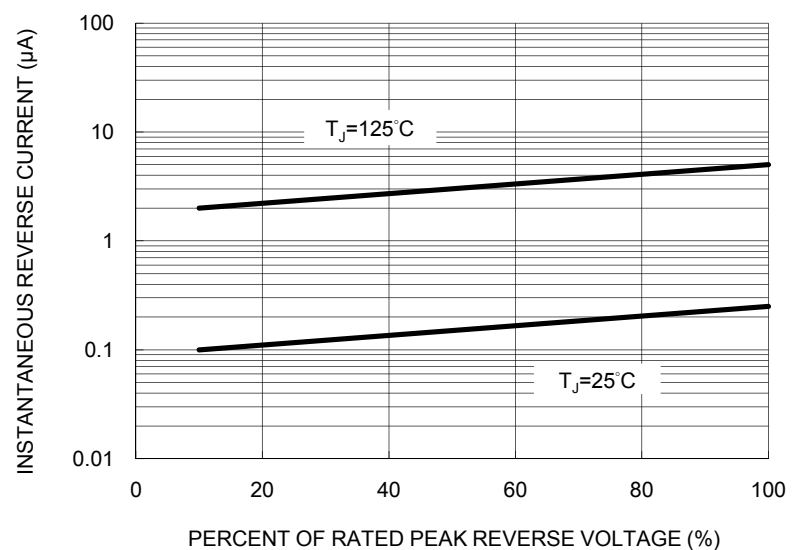


FIG. 5 TYPICAL JUNCTION CAPACITANCE

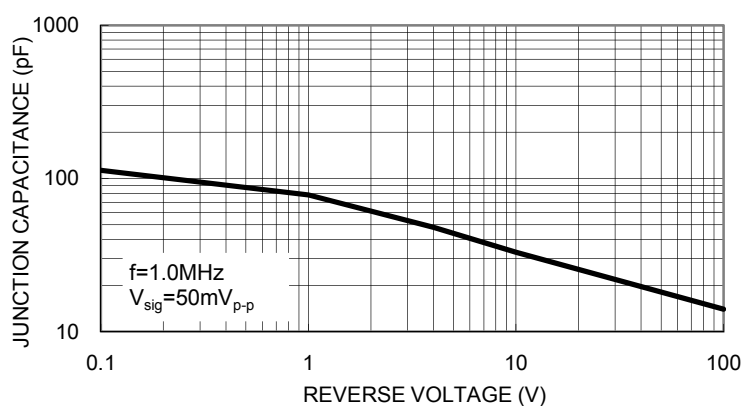
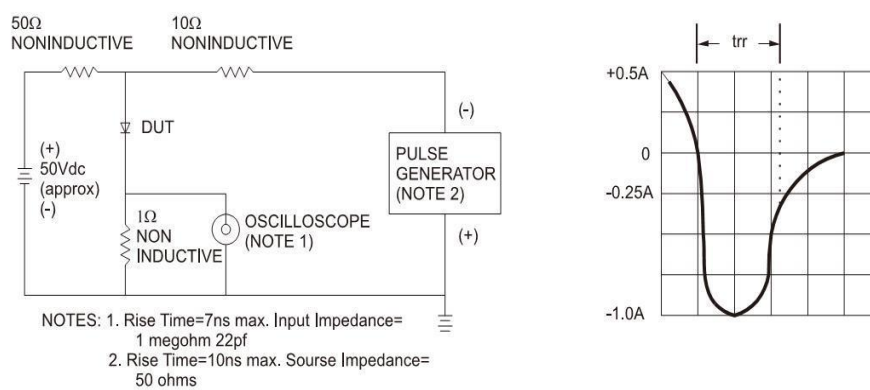
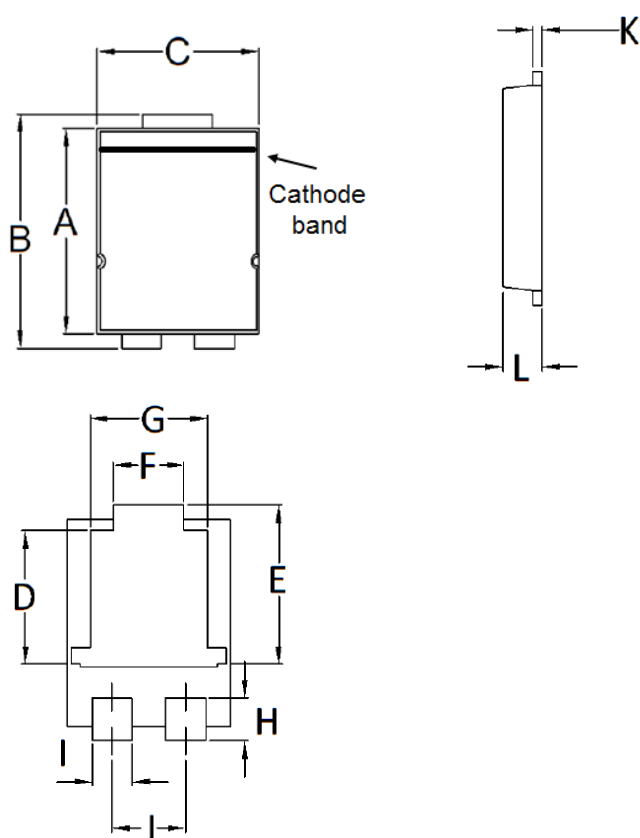


FIG.6 REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT DIAGRAM

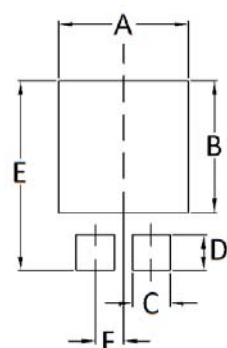


PACKAGE OUTLINE DIMENSIONS  
**TO-277A (SMPC)**



DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	5.650	5.750	0.222	0.226
B	6.350	6.650	0.250	0.262
C	4.550	4.650	0.179	0.183
D	3.540	3.840	0.139	0.151
E	4.235	4.535	0.167	0.179
F	1.850	2.150	0.073	0.085
G	3.170	3.470	0.125	0.137
H	1.043	1.343	0.041	0.053
I	1.000	1.300	0.039	0.051
J	1.930	2.230	0.076	0.088
K	0.175	0.325	0.007	0.013
L	1.000	1.200	0.039	0.047

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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