

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

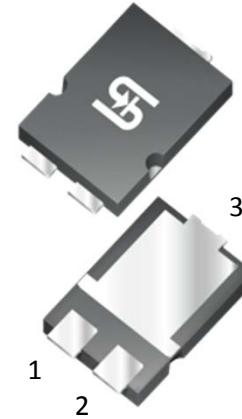
Packing code suffix "G" means green compound (halogen-free)

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

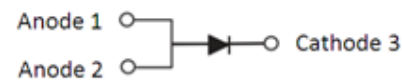
Meet JESD 201 class 1A whisker test

Polarity: Indicated by cathode band

Weight: 95 mg (approximately)



TO-277A (SMPC)



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

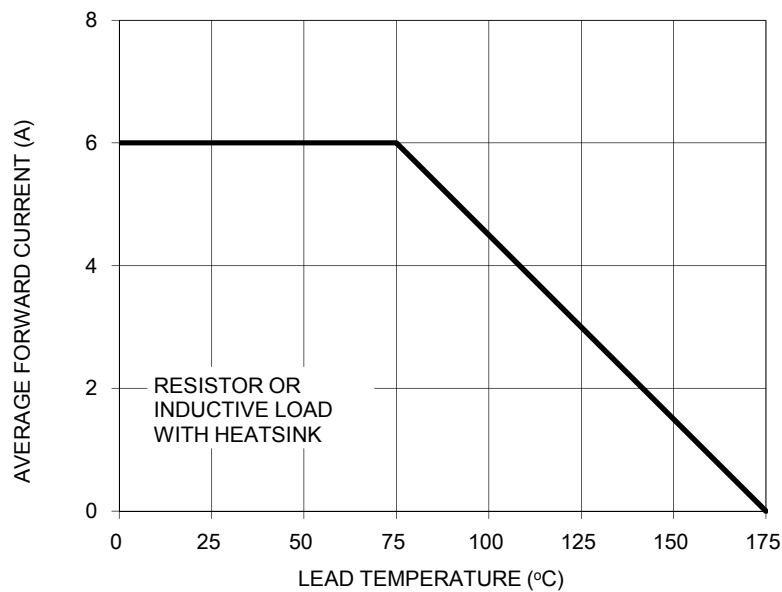


FIG. 2 TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

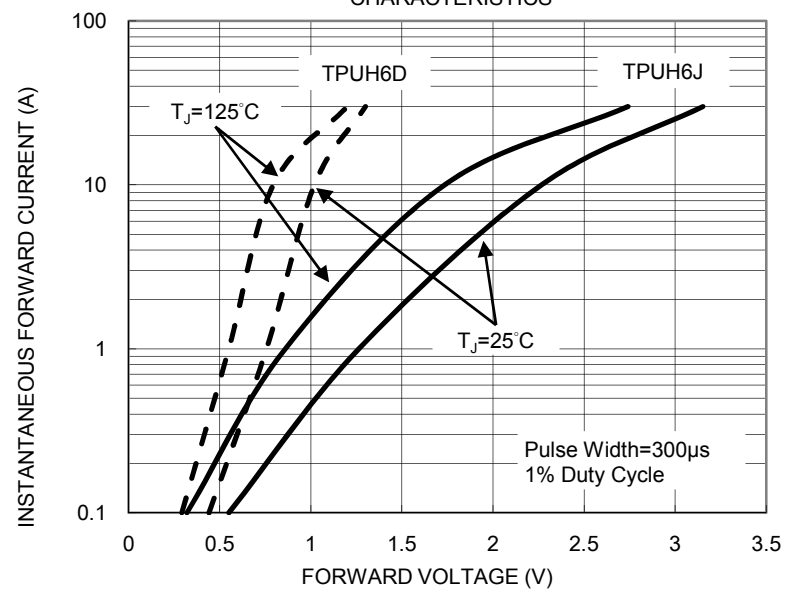


FIG. 3 MAXIMUM NON-REPETITIVE FORWARD PEAK SURGE CURRENT

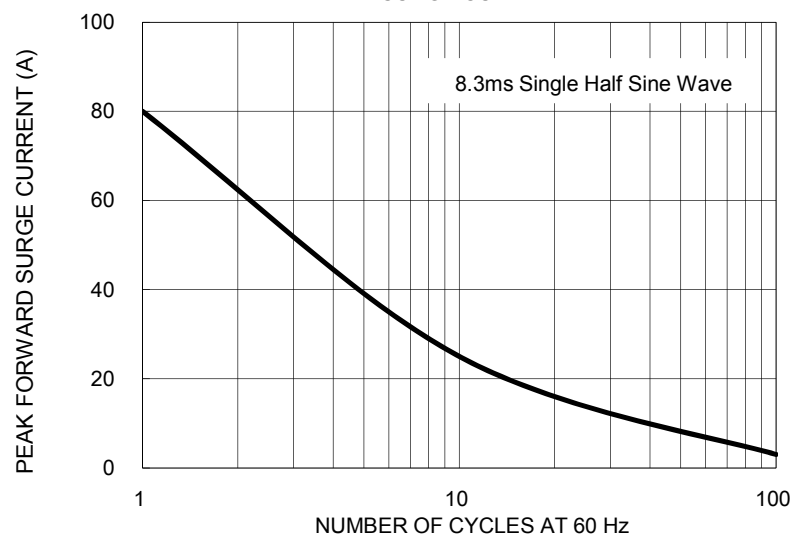


FIG. 4 TYPICAL REVERSE CHARACTERISTICS

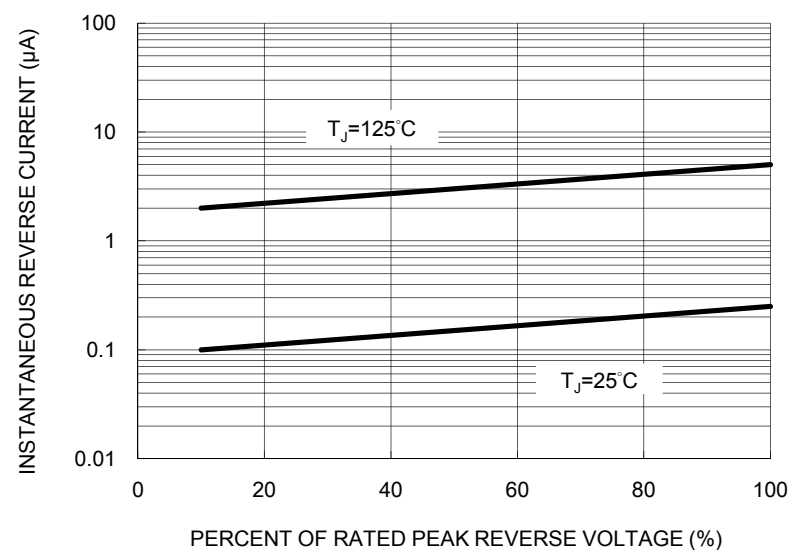


FIG. 5 TYPICAL JUNCTION CAPACITANCE

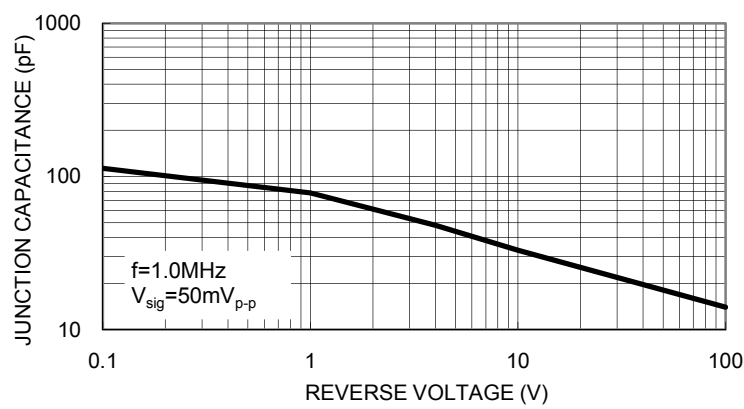
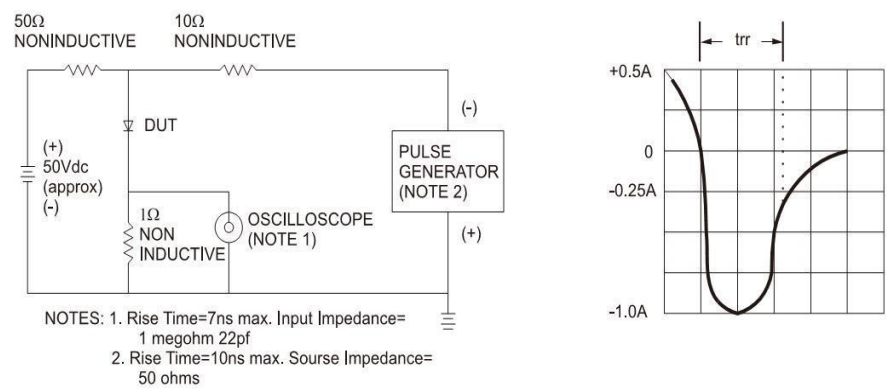
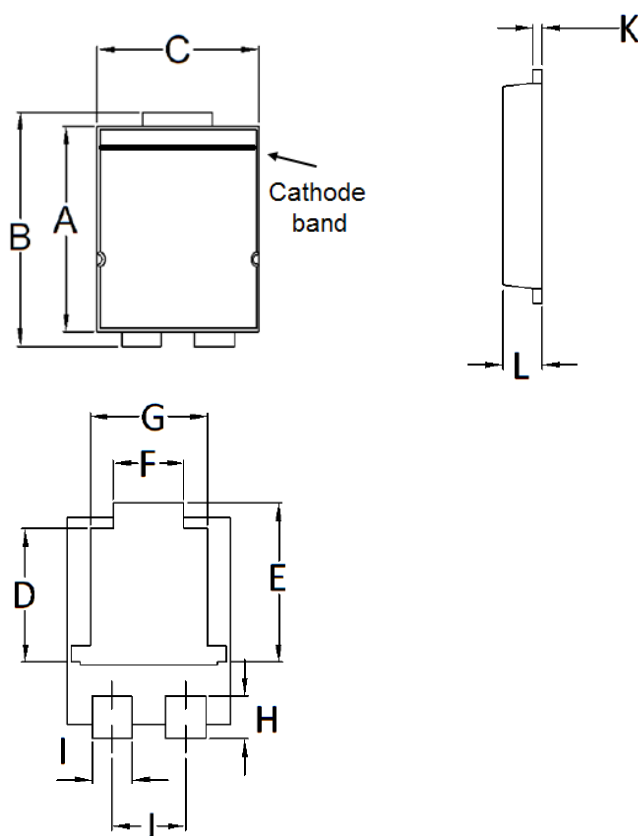


FIG.6 REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT DIAGRAM

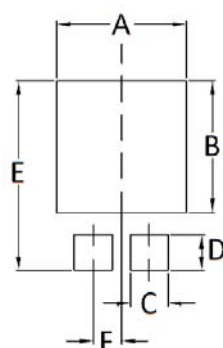


PACKAGE OUTLINE DIMENSIONS
TO-277A (SMPC)



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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