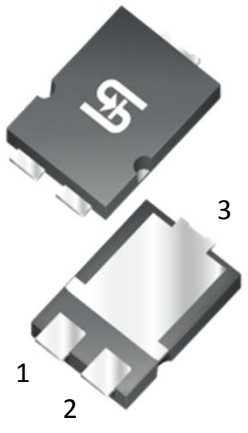
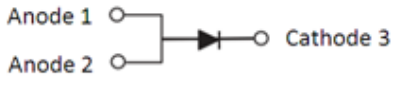
# 6A, 200V - 600V Surface Mount Ultrafast Rectifiers

## FEATURES

- Very low profile, typical height of 1.1mm
- Excellent high temperature stability
- Glass passivated chip junction
- Controled 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




**TO-277A (SMPC)**




Pb-Free

RoHS COMPLIANT

HALOGEN FREE

## 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)

| 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 | $I_R$ | 10 | | | | μA |
| | | $T_J$=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 | | | $R_{\theta JM}$ (2) | 12 | | | | °C/W |
| | | | $R_{\theta JA}$ (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 recommned 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<br>Green compound |

## RATINGS AND CHARACTERISTICS CURVES

($T_A$=25°C unless otherwise noted)

FIG.1 MAXIMUM FORWARD CURRENT DERATING CURVE

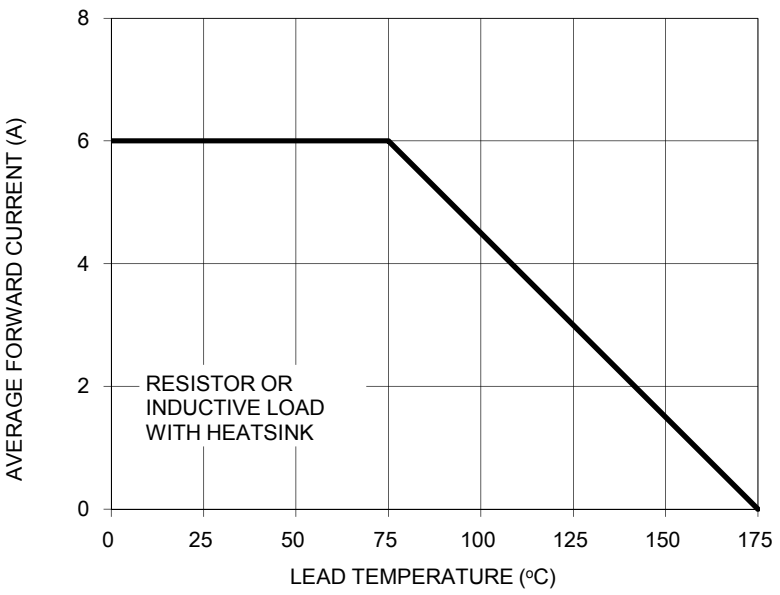



FIG. 2 TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

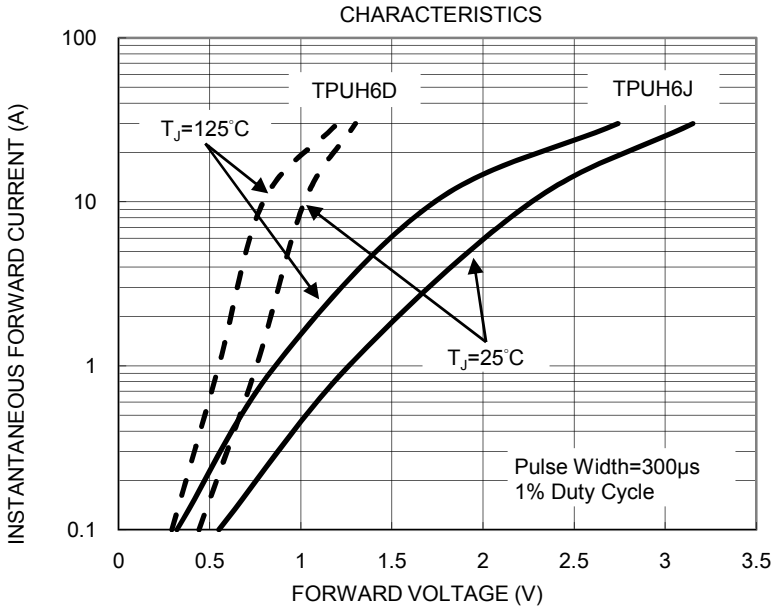



FIG. 3 MAXIMUM NON-REPETITIVE FORWARD PEAK SURGE CURRENT

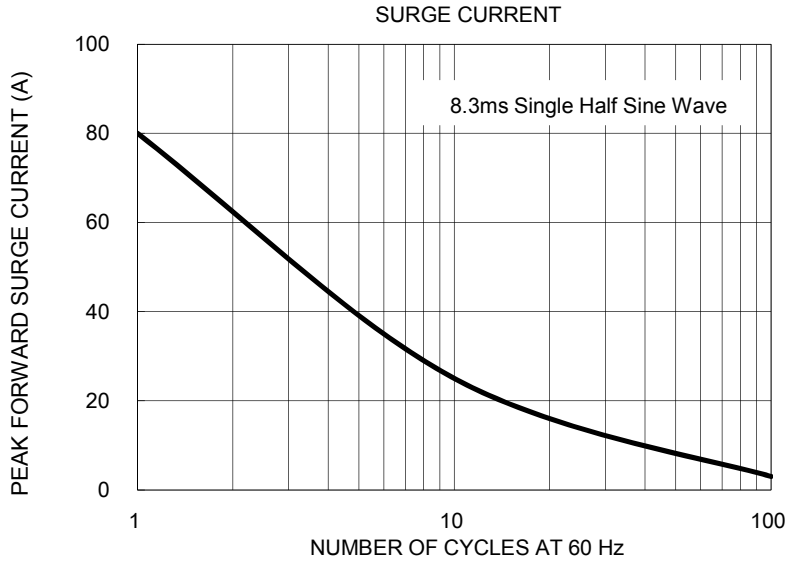



FIG. 4 TYPICAL REVERSE CHARACTERISTICS

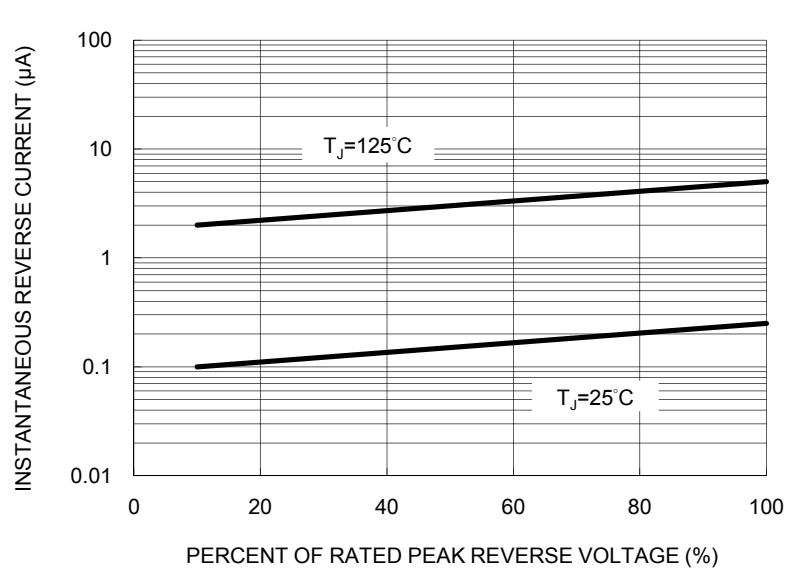


FIG. 5 TYPICAL JUNCTION CAPACITANCE

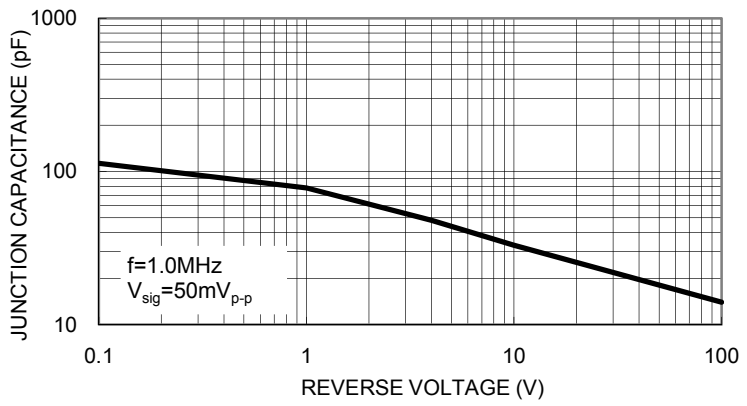
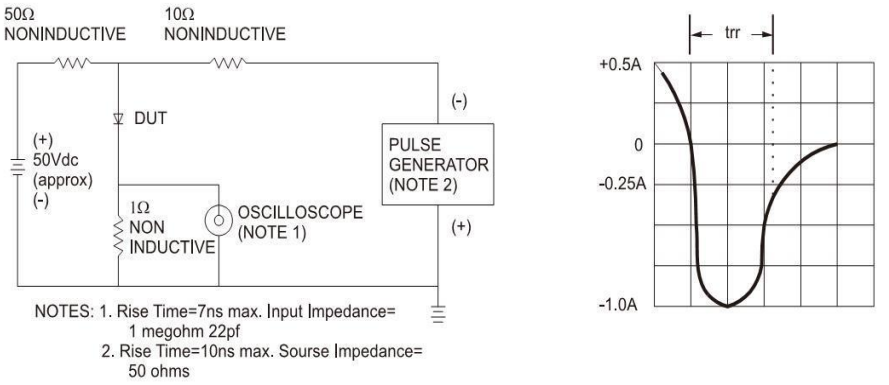
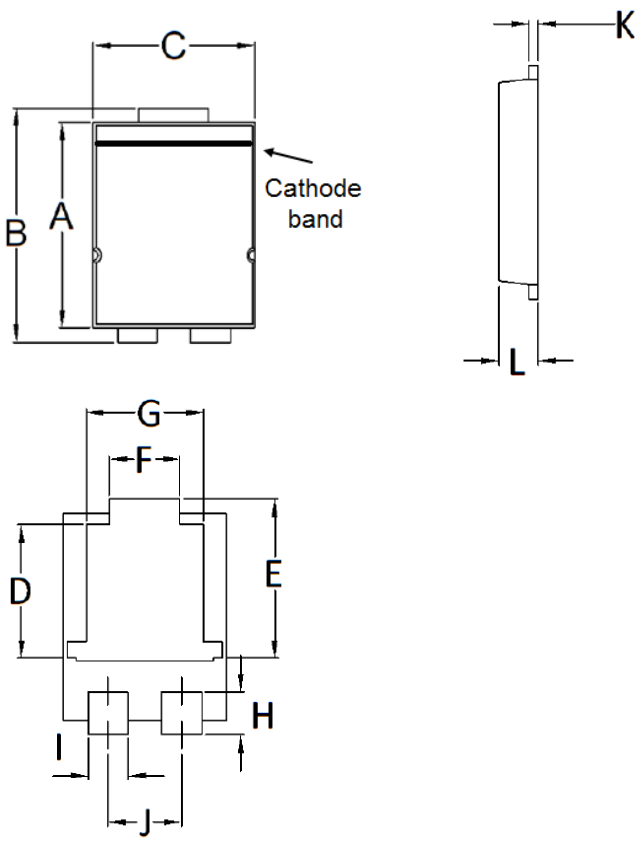



FIG.6 REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT DIAGRAM



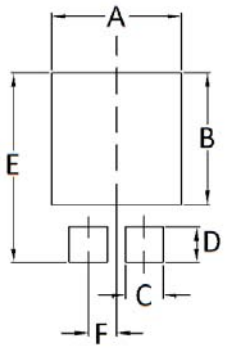

## PACKAGE OUTLINE DIMENSIONS

**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

## Notice

Specifications of the products displayed herein are subject to change without notice. TSC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in TSC's terms and conditions of sale for such products, TSC assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TSC products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify TSC for any damages resulting from such improper use or sale.

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

**Данный компонент на территории Российской Федерации**

**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

http://moschip.ru/get-element

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

**Офис по работе с юридическими лицами:**

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:
moschip.ru
moschip.ru_4
moschip.ru_6
moschip.ru_9