

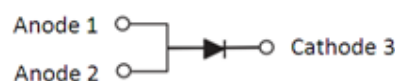
10A, 200V - 600V High Current Density Switchmode Superfast Surface Mount Rectifiers

FEATURES

- Very low profile, typical height of 1.1mm
- 175°C operating junction temperature
- Glass passivated chip junction
- Low conduction loss
- 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 definition



TO-277A (SMPC)



TYPICAL APPLICATIONS

The devices were designed with a priority on V_F to minimize the conduction losses as secondary rectification of SMPS, while the diodes remain fast enough to fit applications where the switching frequency is counted in tens of kilohertz. The miniature high power density surface mount packages is perfect for space constraint design.

MECHANICAL DATA

Case: TO-277A (SMPC)

Molding compound, UL flammability classification rating 94V-0

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

Packing code with 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: 0.095 g (approximately)

| MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise noted) | | | | | |
|---|--------------------------------|--|---------|---------|---------------------------|
| PARAMETER | SYMBOL | TPMR10D | TPMR10G | TPMR10J | UNIT |
| Marking code | | MR10D | MR10G | MR10J | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 200 | 400 | 600 | V |
| Maximum average forward rectified current | $I_{F(AV)}$ | 10 | | | A |
| Peak forward surge current, 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | 150 | | | A |
| Maximum instantaneous forward voltage ⁽¹⁾ @ 10 A | $T_J=25^\circ\text{C}$ | 0.95 | 1.20 | 1.80 | V |
| | $T_J=125^\circ\text{C}$ | 0.86 | 1.00 | - | |
| Maximum reverse current @ rated V_R $T_J=25^\circ\text{C}$ $T_J=125^\circ\text{C}$ | I_R | 5 | 10 | | μA |
| | | 250 | 500 | | |
| Maximum reverse recovery time | t_{rr} | $I_F=1\text{A}, di/dt=-50\text{A}/\mu\text{s}, V_R=30\text{V}$ | | 60 | - |
| | | $I_F=0.5\text{A}, I_R=1\text{A}, I_{RR}=0.25\text{A}$ | | 35 | 40 |
| Typical thermal resistance | $R_{\theta JL}$ ⁽²⁾ | 8.4 | | | $^\circ\text{C}/\text{W}$ |
| | $R_{\theta JA}$ ⁽³⁾ | 78 | | | |
| Typical junction capacitance ⁽⁴⁾ | C_J | 140 | | | pF |
| Operating junction temperature range | T_J | - 55 to +175 | | | $^\circ\text{C}$ |
| Storage temperature range | T_{STG} | - 55 to +175 | | | $^\circ\text{C}$ |

Note 1: Pulse test with $PW=300\mu\text{s}$, 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 $V_R=4.0$ Volts

| ORDERING INFORMATION | | | | |
|------------------------|--------------|---------------------|---------|-------------------------|
| PART NO. | PACKING CODE | PACKING CODE SUFFIX | PACKAGE | PACKING |
| TPMR10x (Note 1, 2) | S1 | G | SMPC | 1,500/ 7" Plastic reel |
| | S2 | | SMPC | 6,000/ 13" Plastic reel |

Note 1: "X" defines voltage from 200V (TPMR10D) to 600V (TPMR10J)

Note 2: Whole series with green compound (halogen-free)

| EXAMPLE | | | | |
|--------------------|----------|--------------|---------------------|----------------|
| PREFERRED PART NO. | PART NO. | PACKING CODE | PACKING CODE SUFFIX | DESCRIPTION |
| TPMR10D S1G | TPMR10D | S1 | G | Green compound |

RATINGS AND CHARACTERISTICS CURVES

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

FIG.1 MAXIMUM FORWARD CURRENT DERATING CURVE

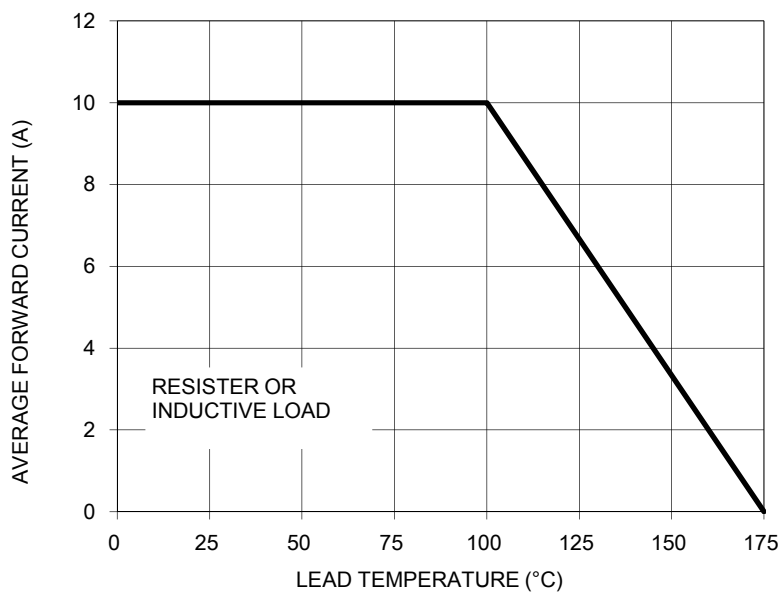


FIG. 2 TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

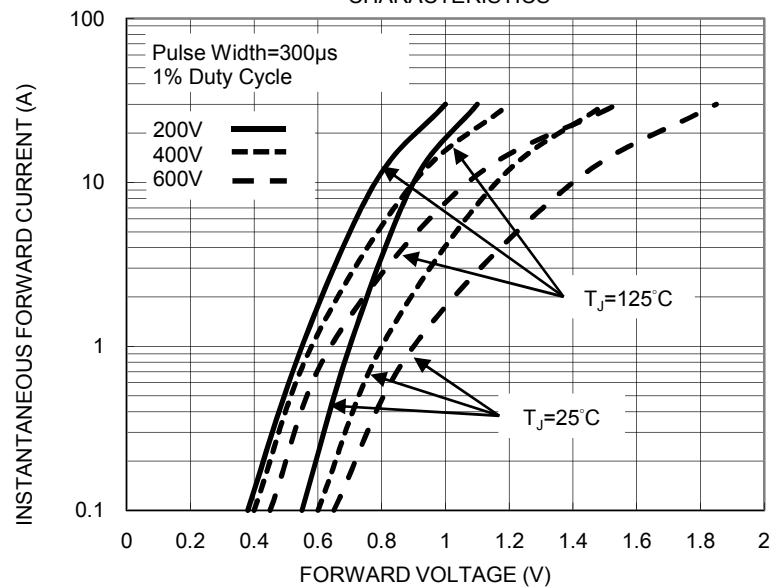


FIG. 3 MAXIMUM NON-REPETITIVE FORWARD PEAK SURGE CURRENT

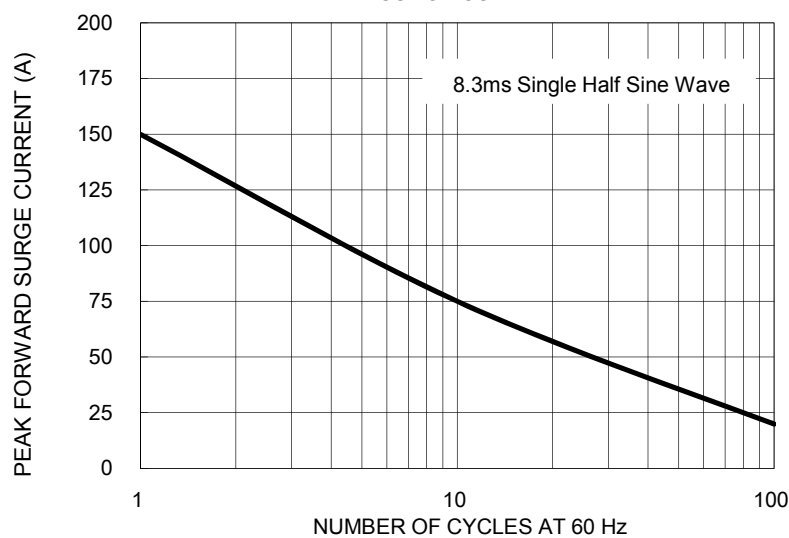


FIG. 4 TYPICAL REVERSE CHARACTERISTICS

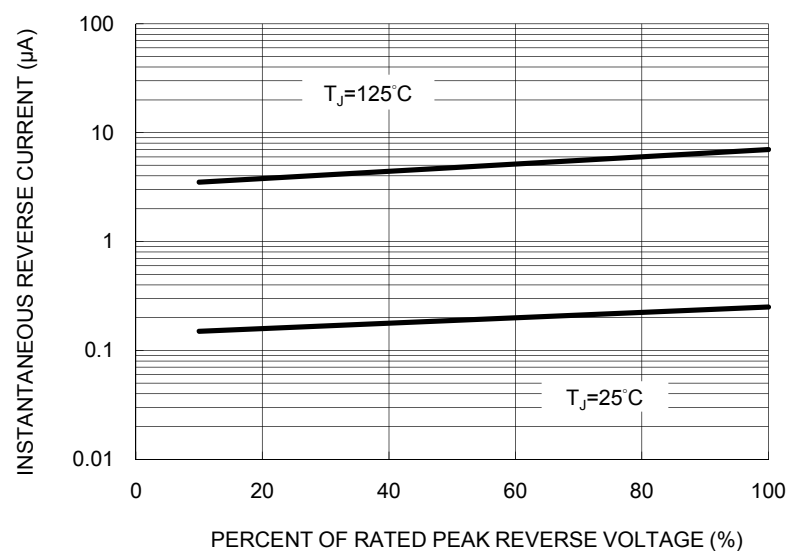


FIG. 5 TYPICAL JUNCTION CAPACITANCE

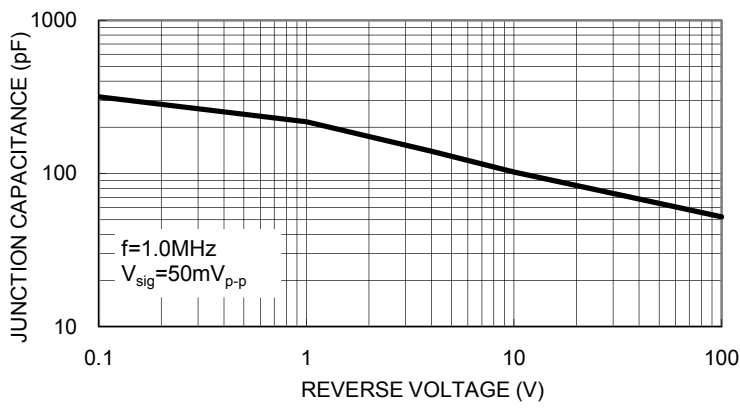
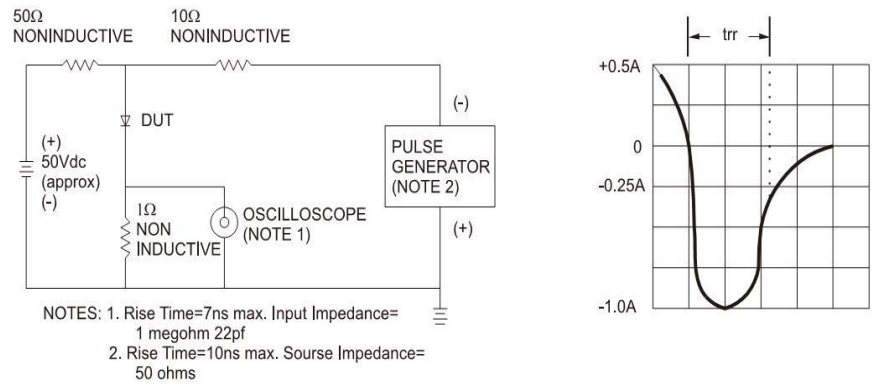
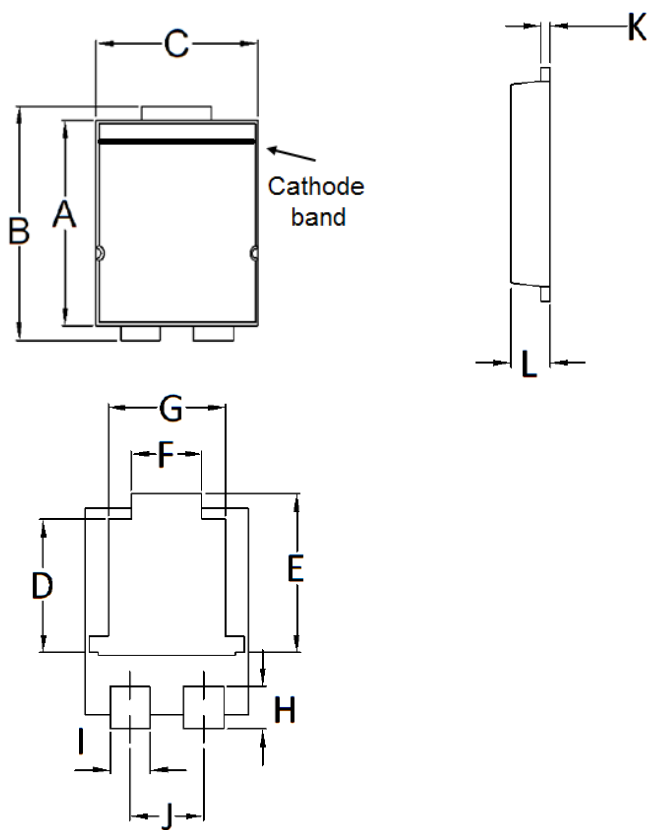


FIG.6- REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT DIAGRAM

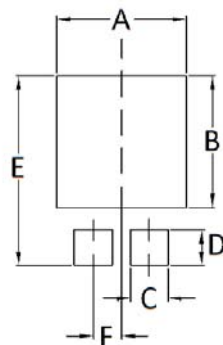


PACKAGE OUTLINE DIMENSIONS
TO-277A (SMPC)



| 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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- Техническая поддержка проекта;
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