

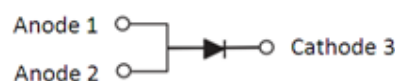
## 10A, 200V - 600V High Current Density Switchmode Superfast Surface Mount Rectifiers

### 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 <sup>(1)</sup> @ 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		$\mu\text{A}$
		250	500		
Maximum reverse recovery time	$I_F=1\text{A}, di/dt=-50\text{A}/\mu\text{s}, V_R=30\text{V}$ $I_F=0.5\text{A}, I_R=1\text{A}, I_{RR}=0.25\text{A}$	60		-	ns
		35		40	
Typical thermal resistance	$R_{\theta JL}$ <sup>(2)</sup>	8.4			$^\circ\text{C}/\text{W}$
	$R_{\theta JA}$ <sup>(3)</sup>	78			
Typical junction capacitance <sup>(4)</sup>	$C_J$	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

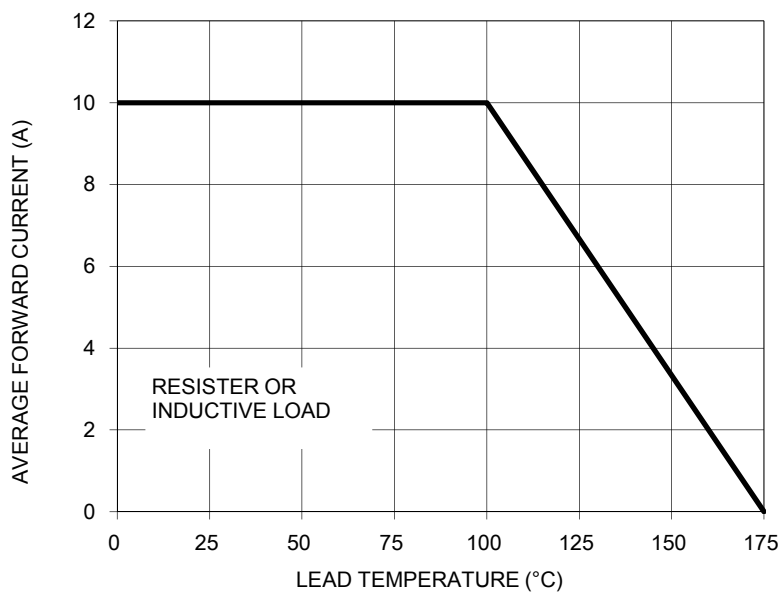


FIG. 2 TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

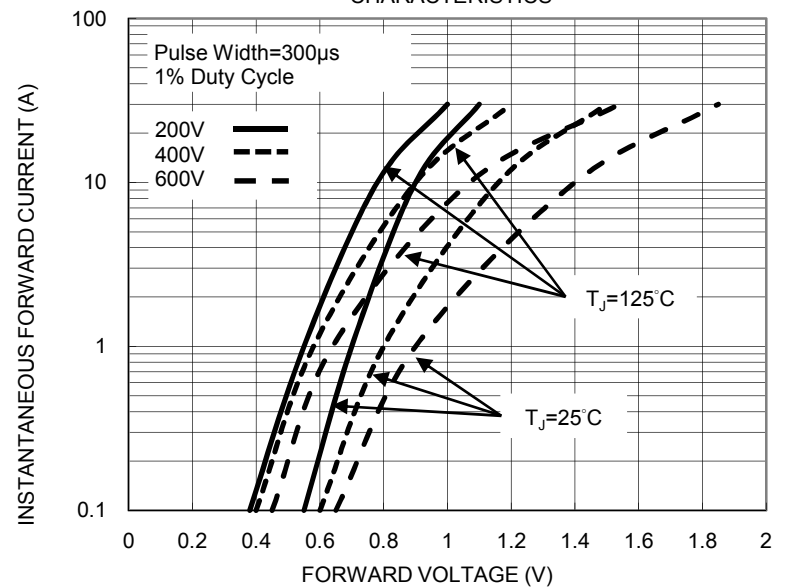


FIG. 3 MAXIMUM NON-REPETITIVE FORWARD PEAK SURGE CURRENT

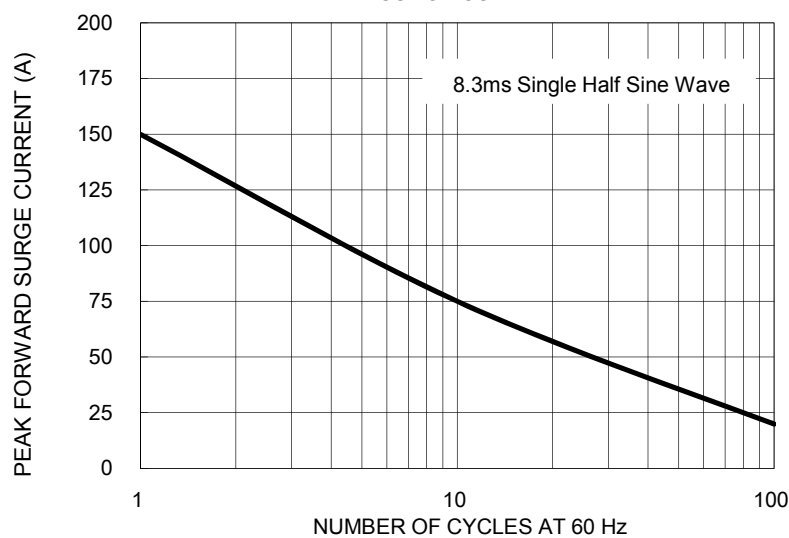


FIG. 4 TYPICAL REVERSE CHARACTERISTICS

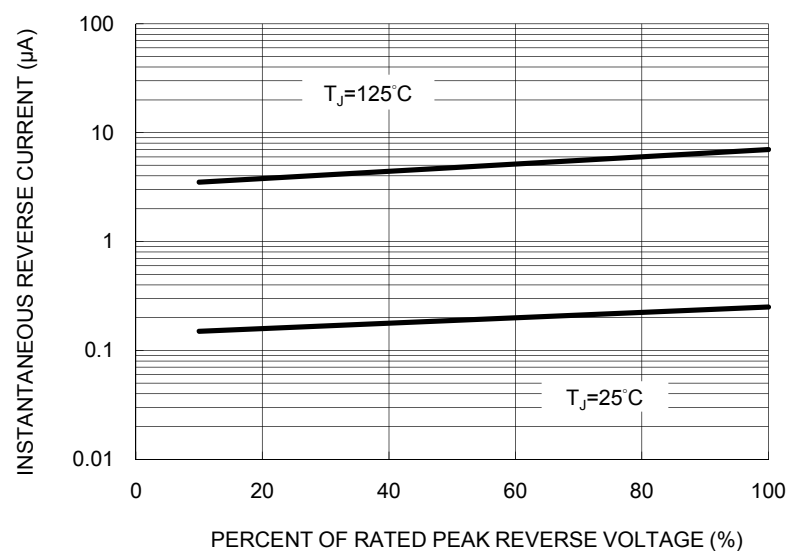


FIG. 5 TYPICAL JUNCTION CAPACITANCE

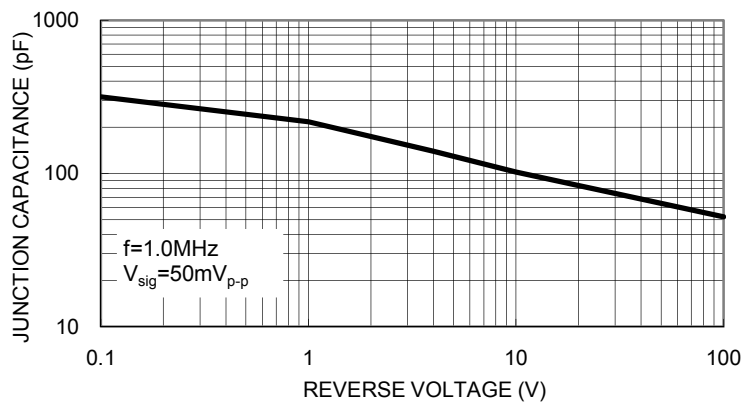
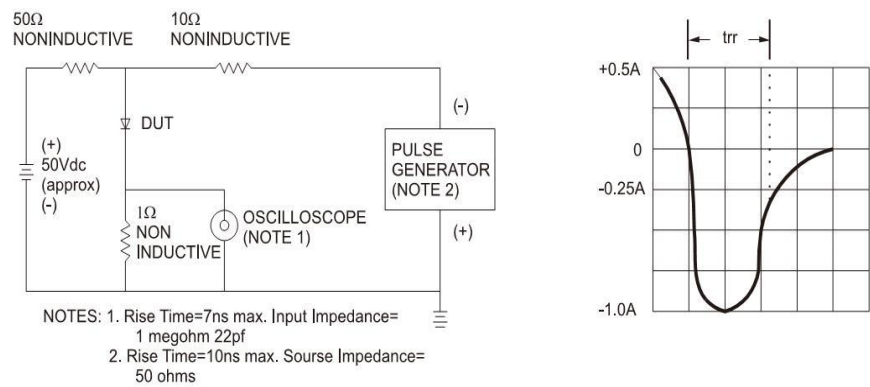
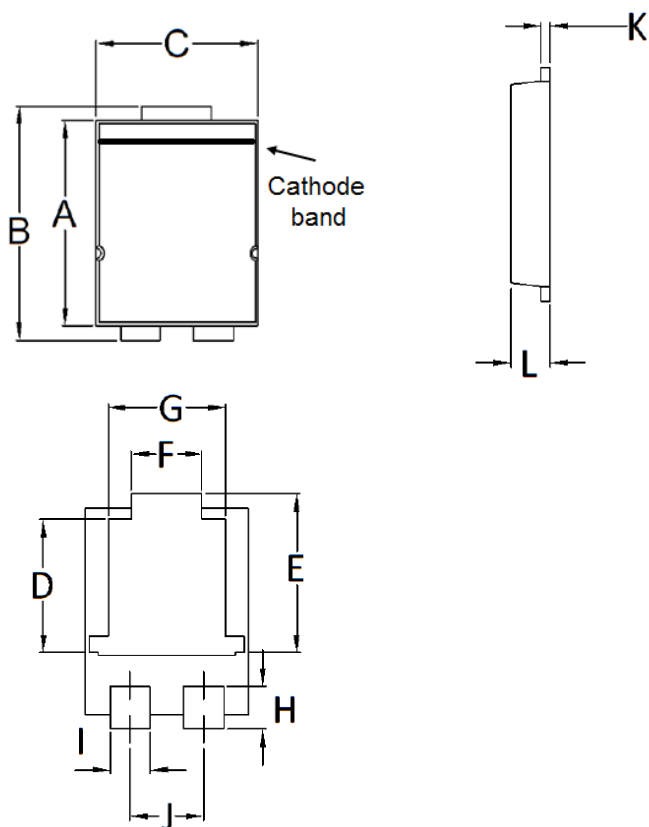


FIG.6- REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT DIAGRAM

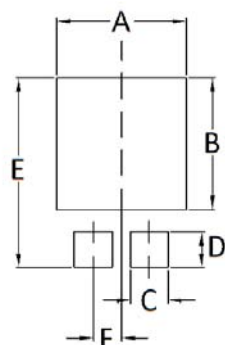


PACKAGE OUTLINE DIMENSIONS  
**TO-277A (SMPC)**



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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