



# 600V 1A 50ns Rectifier – MURC160

Rev 1.0  
27/12/22

Ultra-Fast recovery rectifier diode in bare die form

## Features:

- Low leakage current
- High forward surge current capability
- Low forward voltage drop
- Robust construction
- High reliability tested grades.

## Ordering Information

The following part suffixes apply:

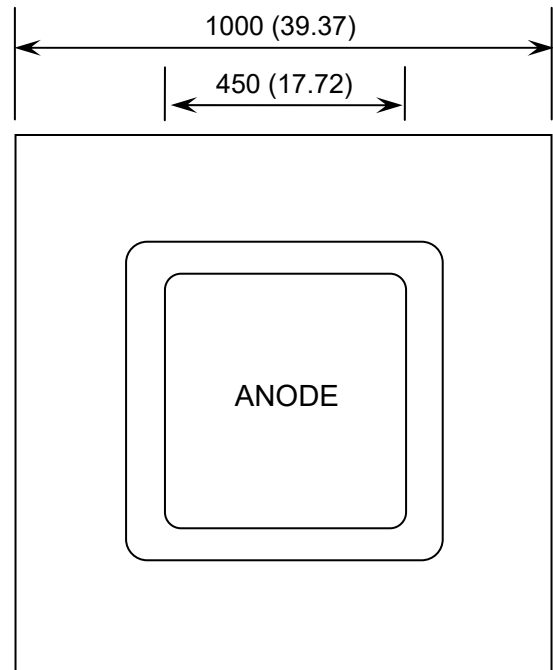
- No suffix - MIL-STD-750 /2073 Visual Inspection
- “H” - MIL-STD-750 /2073 Visual Inspection  
+ MIL-PRF-38534 Class H LAT
- “K” - MIL-STD-750 /2073 Visual Inspection  
+ MIL-PRF-38534 Class K LAT

LAT = Lot Acceptance Test.

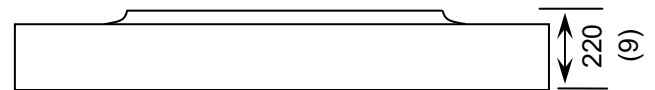
For further information on LAT process flows see below.

[www.siliconsupplies.com/quality/bare-die-lot-qualification](http://www.siliconsupplies.com/quality/bare-die-lot-qualification)

## Die Dimensions in $\mu\text{m}$ (mils)



CHIP BACKSIDE IS CATHODE



## Supply Formats:

- Default – Die in Waffle Pack (100 per tray capacity)
- Sawn Wafer on Tape – By specific request
- Unsawn Wafer – By specific request
- With additional electrical selection – By specific request

## Mechanical Specification

Die Size (Unsawn)	1000 x 1000 39.37 x 39.37	$\mu\text{m}$ mils
Anode Pad Size	450 x 450 17.72 x 17.72	$\mu\text{m}$ mils
Die Thickness	220 ( $\pm 20$ ) 8.66 ( $\pm 0.79$ )	$\mu\text{m}$ mils
Top Metal Composition	Al 7.5 $\mu\text{m}$	
Back Metal Composition	Ti/Ni/Ag	





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## Absolute Maximum Ratings<sup>1</sup> $T_J = 25^\circ\text{C}$ unless otherwise stated

PARAMETER	SYMBOL	VALUE	UNIT
Peak Repetitive Reverse Voltage	$V_{RRM}$	600	V
Working Peak Repetitive Reverse Voltage	$V_{RWM}$		
DC Blocking Voltage	$V_R$		
RMS Reverse Voltage	$V_{R(RMS)}$	420	V
Average Forward Rectified Current,	$I_{F(AV)}$	1	A
Non-Repetitive Peak Forward Surge Current <sup>3</sup>	$I_{FSM}$	35	A
Operating Junction temperature	$T_J$	-65 to 175	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-65 to 175	$^\circ\text{C}$

## Electrical Characteristics $T_J = 25^\circ\text{C}$ unless otherwise stated

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Maximum Instantaneous Forward Voltage <sup>4</sup>	$V_F$	$I_F = 1\text{A}, T_J = 25^\circ\text{C}$	-	1.10	1.25	V
		$I_F = 1\text{A}, T_J = 150^\circ\text{C}$	-	-	1.05	
Maximum Instantaneous Reverse Leakage Current <sup>4</sup>	$I_{RM} @ V_{RRM}$	$V_{RRM} = 600\text{V}, T_J = 25^\circ\text{C}$	-	0.02	1	$\mu\text{A}$
		$V_{RRM} = 600\text{V}, T_J = 150^\circ\text{C}$	-	-	150	
Reverse Recovery Time	$t_{rr}$	$I_F = 0.5\text{A}, I_R = 1.0\text{A}, I_{rr} = 0.25\text{A}$	-	-	50	ns
Junction Capacitance	$C_J$	$V_R = 4\text{V}, f = 1.0\text{MHz}$	-	15	-	pF

1. Operation above the absolute maximum rating may cause device failure. Operation at the absolute maximum ratings, for extended periods, may reduce device reliability. 2.  $V_R = 600\text{V}$ , Square Wave, 20kHz Pulse Width = 3.8ms 3. Assembled in SOD-123F, surge applied at rated load conditions halfwave, single phase, 60Hz, die form requires heat sinking 4. Pulse Test: Pulse Width = 300s, Duty Cycle  $\leq 2.0\%$

## Typical Characteristics $T_J = 25^\circ\text{C}$ unless otherwise stated

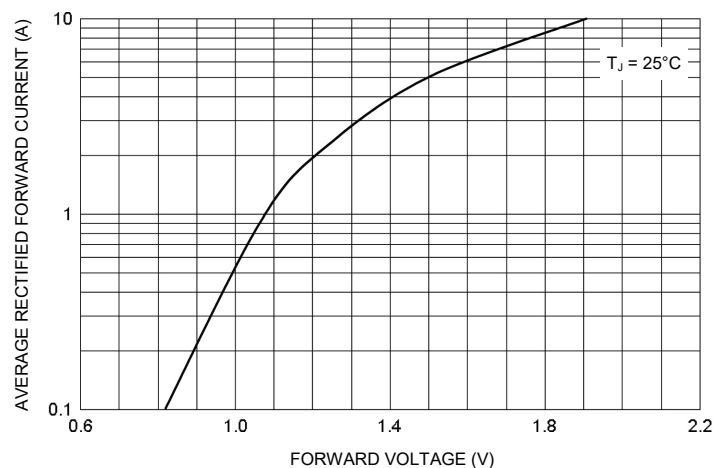


FIGURE 1. Forward Voltage Characteristics





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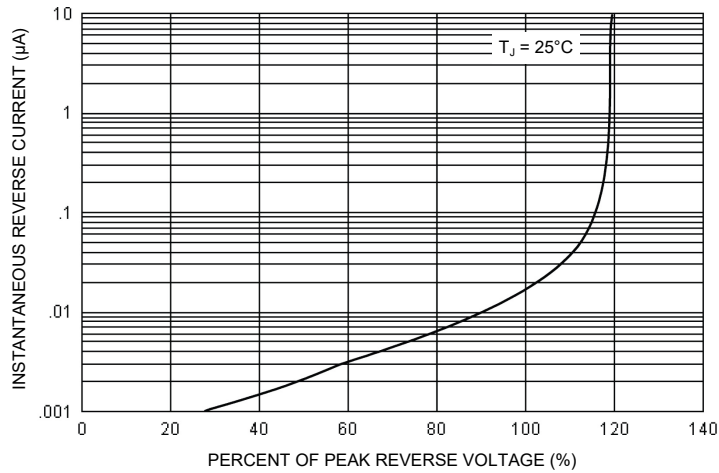


FIGURE 2. Reverse Current Versus Reverse Voltage

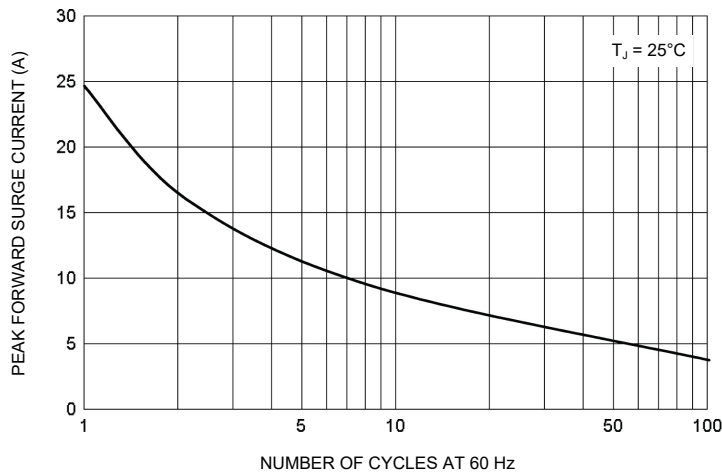


FIGURE 3. Peak Forward Surge Current Versus Cycles at 60 Hz

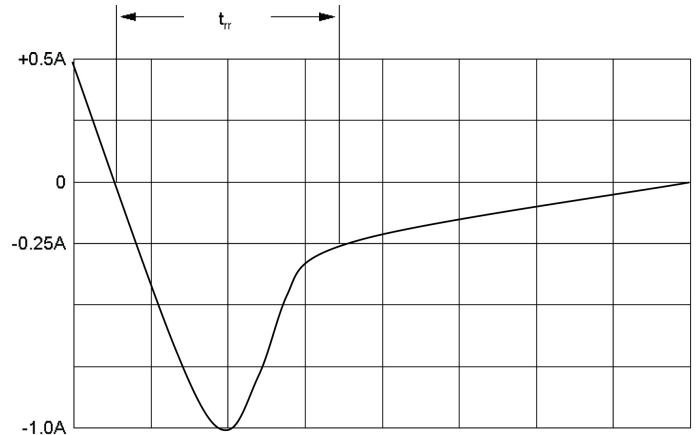
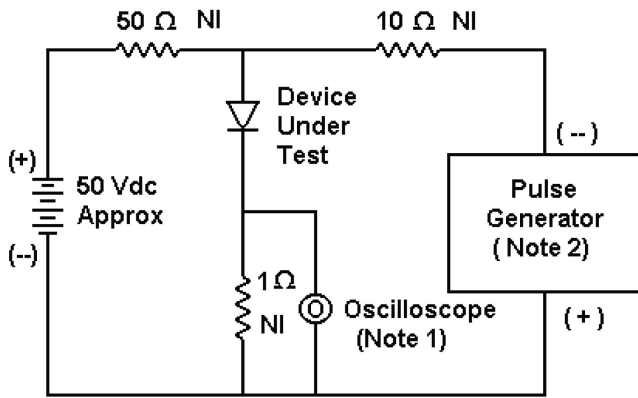




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- Notes:
1. Rise Time = 7 ns max. Input Impedance = 1 M  $\Omega$  , 22 pF
  2. Rise Time = 10 ns max. Input Impedance = 50  $\Omega$

Set time base for 10/20 ns/cm

FIGURE 4. Reverse Recovery Time Characteristics + Test Circuit

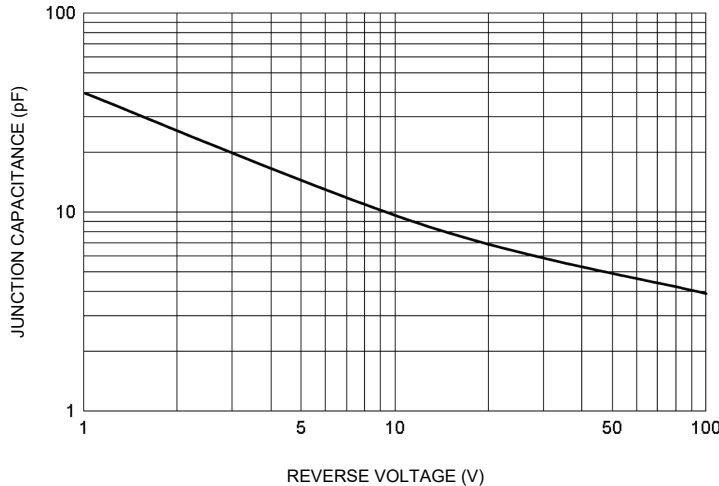


FIGURE 5. Typical Junction Capacitance

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