**Solid State Devices, Inc.**
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# 1N8021 thru 1N8023 SERIES

**1 AMP**
**100 – 200 VOLTS**
**5 nsec**
**HYPER FAST**
**RECOVERY RECTIFIER**

## Designer's Data Sheet

**Part Number/Ordering Information** [1/]

**1N802 __ __ __**

- **Screening** [2/]
  - __ = Not Screened
  - TX = TX Level
  - TXV = TXV Level
  - S = S Level
- **Package Type**
  - __ = Axial Leaded
  - SMS = Surface Mount Square Tab
- **Device Type** ( VRWM )
  - **1** = 100 V
  - **2** = 150 V
  - **3** = 200 V

## FEATURES:

- Hyper fast reverse recovery time: 5 ns Max
- Low forward voltage drop
- Low reverse leakage current
- Avalanche breakdown
- Void free ceramic frit glass construction
- High temperature category I eutectic metallurgical bond
- Hermetically sealed
- Solid silver leads
- Excellent liquid-to-liquid cryogenic thermal shock performance
- Available in axial & square tab versions
- For high efficiency applications
- TX, TXV, and S-Level screening available [2/]
- Available as a QPL product per MIL-PRF-19500/770
- Replacement for 1N6638, 1N6642 and 1N5806

## MAXIMUM RATINGS [3/]

| RATING | | SYMBOL | VALUE | UNIT |
|---|---|---|---|---|
| **Peak Repetitive Reverse Voltage**<br>**DC Blocking Voltage** | 1N8021<br>1N8022<br>1N8023 | $V_{RWM}$<br>$V_R$ | 100<br>150<br>200 | Volts |
| **Average Rectified Forward Current**<br>(Resistive load, 60 Hz, sine wave, $T_C$ = 25°C) | | $I_O$ | 1 | Amp |
| **Peak Surge Current**<br>(8.3 msec pulse, half sine wave superimposed on Io, allow junction to reach equilibrium between pulses, $T_C$ = 25°C) | | $I_{FSM}$ | 20 | Amps |
| **Operating & Storage Temperature** | | $T_{OP}$ **and** $T_{STG}$ | -65 to +175 | °C |
| **Thermal Resistance**<br>SMS- Junction to End Tab<br>Axial- Junction to Lead @ .375" | | $R_{\theta JE}$<br>$R_{\theta JL}$ | 20<br>80 | °C/W |

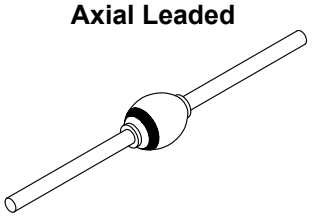
**NOTES:**

**1/** For ordering information, price, and availability - contact factory.

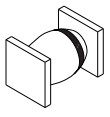
**2/** Screening based on MIL-PRF-19500. Screening flows available on request.

**3/** Unless otherwise specified, all electrical characteristics @25°C.

**Axial Leaded**



**SMS**



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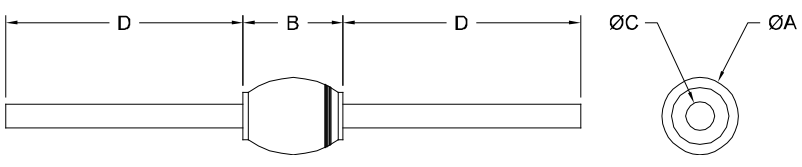
## ELECTRICAL CHARACTERISTICS 3/

| CHARACTERISTICS | | SYMBOL | LIMIT | UNIT |
|---|---|---|---|---|
| Maximum Instantaneous Forward Voltage Drop (Pulsed, $T_A$ = 25°C) | @ $I_F$ = 1mA | $V_{F1}$ | 0.525 | Vdc |
| | @ $I_F$ = 10mA | $V_{F2}$ | 0.650 | |
| | @ $I_F$ = 100mA | $V_{F3}$ | 0.800 | |
| | @ $I_F$ = 200mA | $V_{F4}$ | 0.850 | |
| | @ $I_F$ = 500mA | $V_{F5}$ | 0.910 | |
| | @ $I_F$ = 1A | $V_{F6}$ | 0.980 | |
| Maximum Instantaneous Forward Voltage Drop (Pulsed, $T_A$ = 150°C) | @ $I_F$ = 10mA | $V_{F7}$ | 0.500 | Vdc |
| | @ $I_F$ = 100mA | $V_{F8}$ | 0.620 | |
| Maximum Instantaneous Forward Voltage Drop (Pulsed, $T_A$ = -55°C) | @ $I_F$ = 10mA | $V_{F9}$ | 0.810 | Vdc |
| | @ $I_F$ = 100mA | $V_{F10}$ | 0.900 | |
| Minimum Breakdown Voltage $I_R$ = 100 µA | 1N8021 | $BV_R$ | 110 | Vdc |
| | 1N8022 | | 165 | |
| | 1N8023 | | 220 | |
| Maximum Reverse Leakage Current (300 µs Pulse Minimum , $T_A$ = 25°C) | @ $V_R$ = 20V | $I_{R1}$ | 80 | nA |
| | @ $V_R$ = 75V | $I_{R2}$ | 120 | |
| | @ $V_R$ = max rated | $I_{R3}$ | 750 | |
| Maximum Reverse Leakage Current (300 µs Pulse Minimum , $T_A$ = 125°C) | @ $V_R$ = 20V | $I_{R4}$ | 50 | µA |
| | @ $V_R$ = 75V | $I_{R5}$ | 75 | |
| | @ $V_R$ = max rated | $I_{R6}$ | 150 | |
| Maximum Junction Capacitance ($T_A$ = 25°C , f = 1MHz) $V_R$ = 0V | | $C_{J1}$ | 6 | pf |
| Maximum Junction Capacitance ($T_A$ = 25°C , f = 1MHz) $V_R$ = 1.5V | | $C_{J2}$ | 5 | pf |
| Maximum Junction Capacitance ($T_A$ = 25°C , f = 1MHz) $V_R$ = 10V | | $C_{J3}$ | 4 | pf |
| Maximum Reverse Recovery Time ($I_F$ = 50 mA, $I_R$ = 100 mA, $I_{RR}$ = 25 mA) | | $t_{rr}$ | 5 | nsec |
| Maximum Forward Recovery Time ($I_F$ = 50 mA) | | $t_{fr}$ | 20 | nsec |

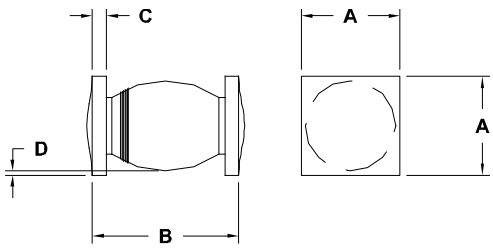
### AXIAL

| DIM | MIN | MAX |
|---|---|---|
| A | .056” | .075” |
| B | .125” | .140” |
| C | .018” | .022” |
| D | 1.00” | 1.50” |




### SMS

| DIM | MIN | MAX |
|---|---|---|
| A | .070” | .085” |
| B | .168” | .200” |
| C | .019” | .028” |
| D | .001” | -- |




**NOTE:** All specifications are subject to change without notification.
SCD's for these devices should be reviewed by SSDI prior to release.