

Product Summary (Per Leg, @ $T_A = +25^\circ\text{C}$)

| V_{RRM} (V) | I_O (A) | V_F (V) | I_R (μA) |
|---------------|-----------|-----------|-------------------------|
| 400 | 5 | 1.3 | 10 |

Features and Benefits

- Super-Fast Switching Capability
- Glass Passivated Die Construction
- Rating to 400V Peak Reverse Voltage
- High Current Capability
- Low Forward Voltage Drop
- Low Reverse Leakage Current
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](#) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

Applications

- Switched Mode Power Supplies
- High Frequency DC to DC Converters

Mechanical Data

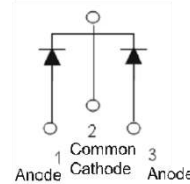
- Package: TO220AB (Type WX)
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Terminals: Finish—Matte Tin Plated Leads Solderable per MIL-STD-202, Method 208 $\text{\textcircled{3}}$
- Polarity: See Diagram
- Weight: 2.0275 grams (Approximate)

TO220AB (Type WX)


Top View



Bottom View

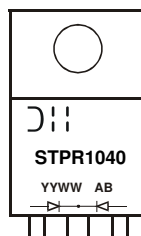


Package Pin Out Configuration

Ordering Information (Note 4)

| Part Number | Qualification | Package | Packing | |
|-------------|---------------|-------------------|---------|---------|
| | | | Qty. | Carrier |
| STPR1040 | Commercial | TO220AB (Type WX) | 50 pcs | Tube |

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information
TO220AB (Type WX)


STPR1040 = Product Type Marking Code
 $\text{D}|||$ = Manufacturer's Marking
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 21 for 2021)
 WW = Week Code (01 to 53)
 AB = Foundry and Assembly Code

Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|---|--------------------|---------|------|
| Peak Repetitive Reverse Voltage DC Blocking Voltage | V_{RRM} V_R | 400 | V |
| Average Rectified Output Current (Fig. 1) (Per Leg) (Total) | I_o | 5 10 | A |
| Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I_{FSM} | 80 | A |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|-----------------|-------------|--------------------|
| Typical Thermal Resistance Junction to Case (Note 5, 6) | $R_{\theta JC}$ | 4.2 | $^\circ\text{C/W}$ |
| Typical Thermal Resistance Junction to Lead (Note 5, 6) | $R_{\theta JL}$ | 6.0 | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to +150 | $^\circ\text{C}$ |

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|------------------------------------|-------------|-----|-----|------|---------------|---|
| Reverse Breakdown Voltage (Note 7) | $V_{(BR)R}$ | 400 | — | — | V | $I_R = 10\mu\text{A}$ |
| Forward Voltage (Note 8) | V_F | — | — | 1.30 | V | $I_F = 5\text{A}, T_J = +25^\circ\text{C}$ |
| | | — | — | 1.20 | V | $I_F = 5\text{A}, T_J = +125^\circ\text{C}$ |
| | | — | — | 1.50 | V | $I_F = 10\text{A}, T_J = +25^\circ\text{C}$ |
| | | — | — | 1.40 | V | $I_F = 10\text{A}, T_J = +125^\circ\text{C}$ |
| Reverse Leakage Current (Note 7) | I_R | — | — | 10 | μA | $V_R = 400\text{V}, T_J = +25^\circ\text{C}$ |
| | | — | — | 250 | μA | $V_R = 400\text{V}, T_J = +100^\circ\text{C}$ |
| Typical Total Capacitance | C_T | — | — | 50 | pF | $V_R = 4\text{V}, f = 1.0\text{MHz}$ |
| Reverse Recovery Time | t_{RR} | — | — | 35 | ns | $I_F = 0.5\text{A}, I_R = 1.0\text{A}, I_{RR} = 0.25\text{A}$ |

- Notes:
5. Thermal resistance test performed in accordance with JESD-51.
 6. The unit mounted on copper heatsink 50mm x 50mm x 2mm.
 7. Short duration pulse test used to minimize self-heating effect.
 8. 300 μs pulse width, 2% duty cycle.

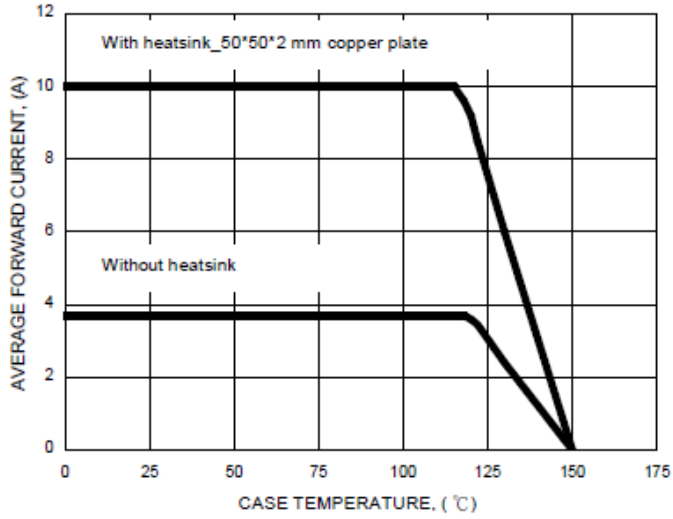


Fig. 1 FORWARD CURRENT DERATING CURVE

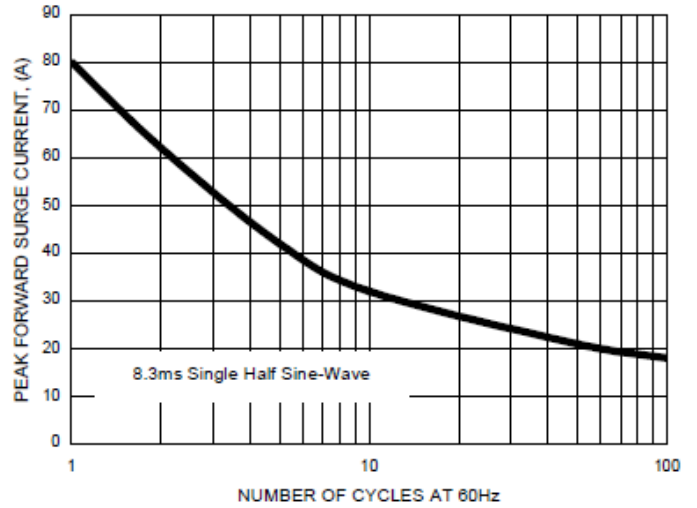


Fig. 2 MAXIMUM NON-REPETITIVE SURGE CURRENT

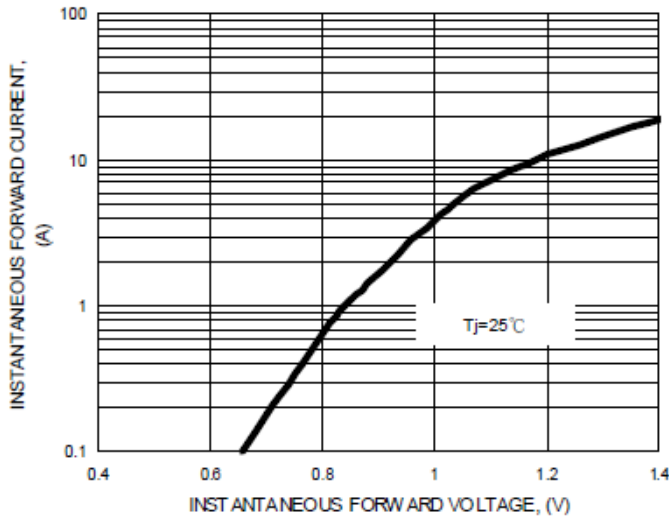


Fig. 3 TYPICAL FORWARD CHARACTERISTICS

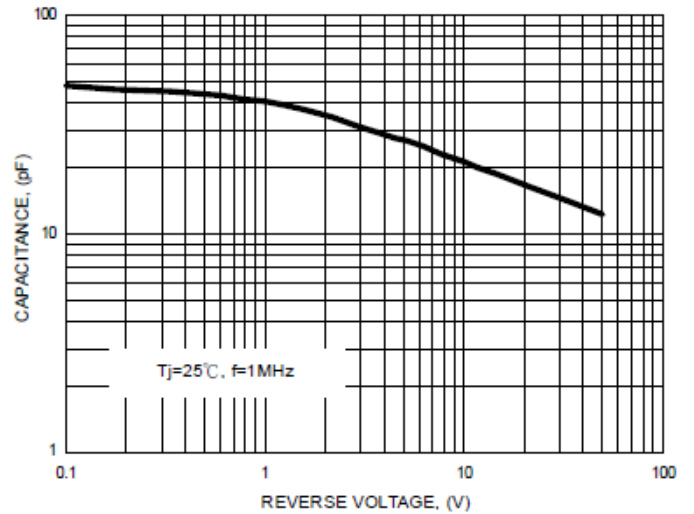


Fig. 4 TYPICAL TOTAL CAPACITANCE

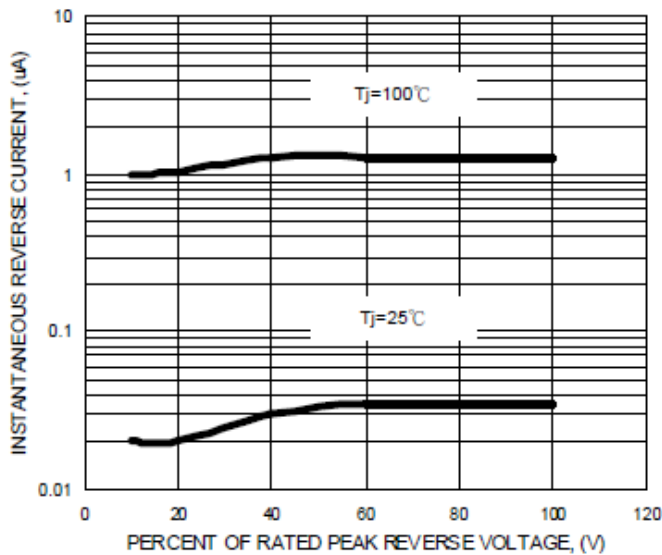
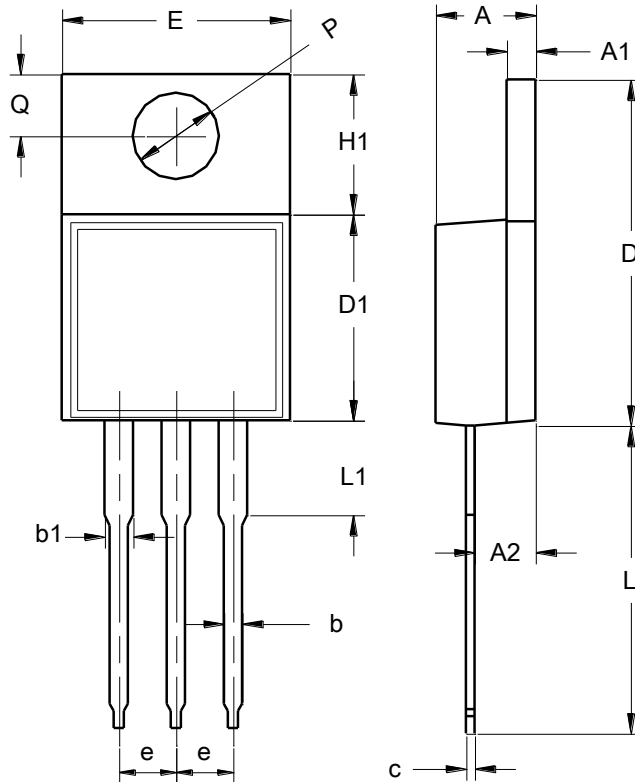


Fig. 5 TYPICAL REVERSE CHARACTERISTICS

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

TO220AB (Type WX)



| TO220AB (Type WX) | | |
|-----------------------------|-------|-------|
| Dim | Min | Max |
| A | 3.56 | 4.83 |
| A1 | 1.14 | 1.40 |
| A2 | 2.03 | 2.92 |
| b | 0.51 | 1.14 |
| b1 | 1.14 | 1.70 |
| c | 0.30 | 0.64 |
| D | 14.40 | 15.20 |
| D1 | 8.26 | 9.28 |
| E | 9.65 | 10.67 |
| e | 2.29 | 2.79 |
| H1 | 5.84 | 6.86 |
| L | 12.70 | 14.73 |
| L1 | -- | 4.20 |
| PØ | 3.53 | 4.09 |
| Q | 2.54 | 3.43 |
| All Dimensions in mm | | |

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