## Product Summary (Per Leg, @ $T_A$ = +25°C)

| $V_{RRM}$ (V) | $I_O$ (A) | $V_F$ (V) | $I_R$ (µA) |
|---|---|---|---|
| 400 | 8 | 1.3 | 10 |

## Features and Benefits

- Super-Fast Switching Capability
- Glass Passivated Die Construction
- Rating to 400V Peak Reverse Voltage
- High Surge Capacity
- 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

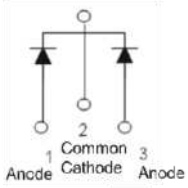
## Mechanical Data

- 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 e3
- Polarity: See Diagram
- Weight: 1.927 grams (Approximate)

**TO220AB (Type WX)**



Top View Bottom View




Package Pin Out Configuration

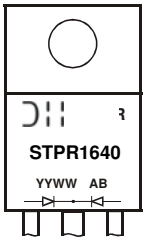
## Ordering Information (Note 4)

| Part Number | Qualification | Package | Packing | |
|---|---|---|---|---|
| | | | Qty. | Carrier |
| STPR1640 | 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)**




STPR1640 = Product Type Marking Code
= 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


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## Maximum Ratings (@ $T_A$ = +25°C, unless otherwise specified.)

| Characteristic | | Symbol | Value | Unit |
|---|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>DC Blocking Voltage | | $V_{RRM}$<br>$V_R$ | 400 | V |
| Average Rectified Output Current, @ $T_C$ = +110°C | (Per Leg)<br>(Total) | $I_O$ | 8<br>16 | A |
| Peak Forward Surge Current,<br>8.3ms Single Half Sine-Wave Superimposed on Rated Load | | $I_{FSM}$ | 100 | A |

## Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Typical Thermal Resistance Junction to Case (Note 5, 6) | $R_{\theta JC}$ | 2 | °C/W |
| Typical Thermal Resistance Junction to Lead (Note 5, 6) | $R_{\theta JL}$ | 2 | °C/W |
| Operating and Storage Temperature Range | $T_J$, $T_{STG}$ | -55 to +150 | °C |

## Electrical Characteristics (@ $T_A$ = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|---|---|---|---|---|---|
| Reverse Breakdown Voltage (Note 7) | $V_{(BR)R}$ | 400 | — | — | V | $I_R$ = 10μA |
| Forward Voltage (Note 8) | $V_F$ | —<br>— | —<br>0.98 | 1.30<br>1.20 | V | $I_F$ = 8A, $T_J$ = +25°C<br>$I_F$ = 8A, $T_J$ = +125°C |
| | | —<br>— | —<br>1.17 | 1.50<br>1.40 | V | $I_F$ = 16A, $T_J$ = +25°C<br>$I_F$ = 16A, $T_J$ = +125°C |
| Reverse Leakage Current (Note 7) | $I_R$ | —<br>— | —<br>1.87 | 10<br>500 | μA<br>μA | $V_R$ = 400V, $T_J$ = +25°C<br>$V_R$ = 400V, $T_J$ = +100°C |
| Typical Total Capacitance | $C_T$ | — | 45 | — | pF | $V_R$ = 4V, f = 1.0MHz |
| Reverse Recovery Time | $t_{RR}$ | — | — | 35 | ns | $I_F$ = 0.5A, $I_R$ = 1.0A, $I_{RR}$ = 0.25A |

Notes:
5. Thermal resistance test performed in accordance with JESD-51.
6. The unit mounted on copper heatsink 100mm x 100mm x 1.98mm.
7. Short duration pulse test used to minimize self-heating effect.
8. 300μs pulse width, 2% duty cycle.


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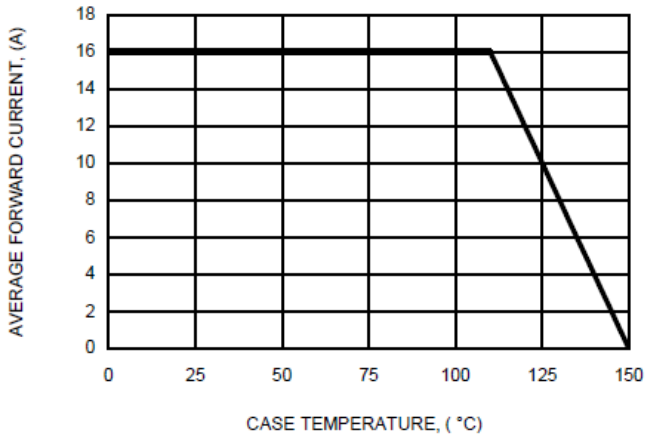



**Fig. 1 FORWARD CURRENT DERATING CURVE**

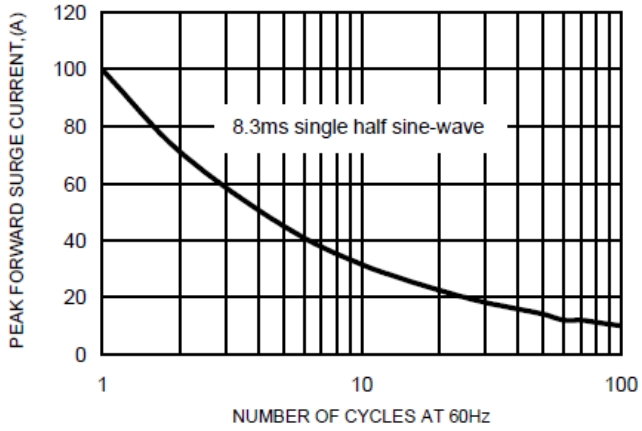



**Fig. 2 MAXIMUM NON-REPETITIVE SURGE CURRENT**

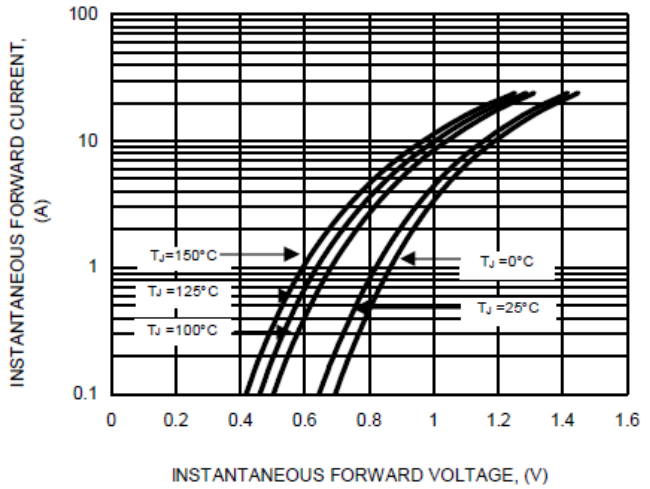



**Fig. 3 TYPICAL FORWARD CHARACTERISTICS**

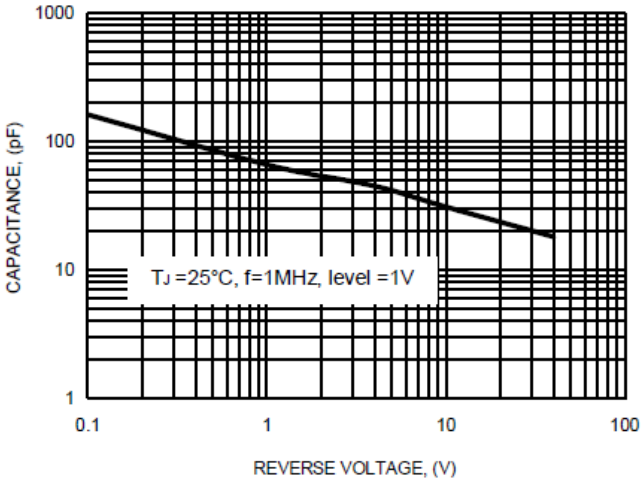



**Fig. 4 TYPICAL TOTAL CAPACITANCE**

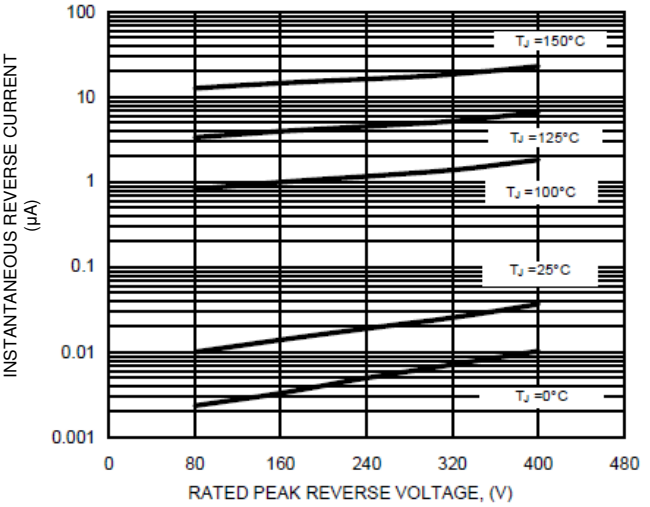


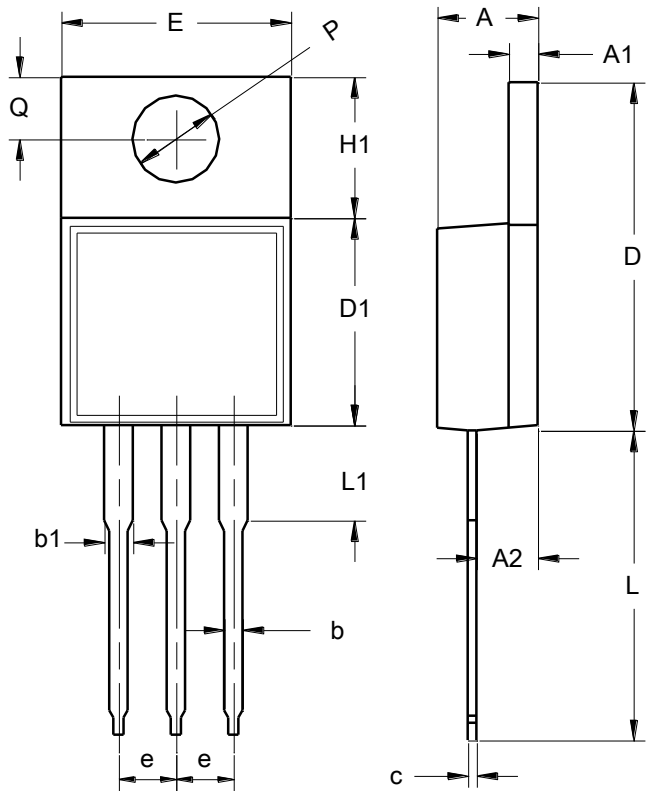

**Fig. 5 TYPICAL REVERSE CHARACTERISTICS**


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## 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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