

## Product Summary

| V <sub>RRM</sub> (V) | I <sub>O</sub> (A) | V <sub>F</sub> (MAX) (V)<br>@ +25°C | I <sub>R</sub> (Typ) (μA)<br>@ +25°C |
|----------------------|--------------------|-------------------------------------|--------------------------------------|
| 1200                 | 2                  | 1.7                                 | 11.7                                 |

## Features and Benefits

- Low Condition and Switching Loss
- High Temperature Application
- Positive Temperature Coefficient on V<sub>F</sub>
- Fast Reverse Recovery
- High Surge Current Capability
- **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](mailto:contact@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

## Description and Applications

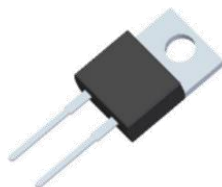
Packaged in the robust industry-standard TO220AC (Type WX) package, the DSC02120 provides very excellent reverse leakage stability at high temperatures. It is ideal for use as a rectifier, freewheel diode, or blocking diode in:

- Power Factor Correction
- Industrial Motor Drivers
- Power Inverters
- SMPS
- UPS

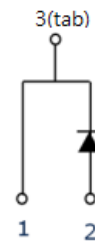
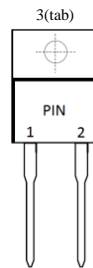
## Mechanical Data

- Package: TO220AC
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin Finish Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 <sup>Ⓔ3</sup>
- Weight: 1.868 grams (Approximate)

TO220AC (Type WX)



Top View

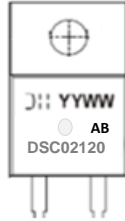


## Ordering Information (Note 4)

| Part Number | Package           | Packing   |         |
|-------------|-------------------|-----------|---------|
|             |                   | Qty.      | Carrier |
| DSC02120    | TO220AC (Type WX) | 50 Pieces | 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



JII = Manufacturer's Marking  
 DSC02120 = Product Type Marking Code  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 21 = 2021)  
 WW = Week (01 to 53)  
 AB = Fab and Assembly Code

## Maximum Ratings (@ T<sub>C</sub> = +25°C, unless otherwise specified.)

| Characteristic   | Symbol                              | Value | Unit |
|--|-------------------------------------|-------|------|
| Peak Repetitive Reverse Voltage<br>DC Blocking Voltage             | V <sub>RRM</sub><br>V <sub>DC</sub> | 1200  | V    |
| Average Rectified Output Current                                   | I <sub>O</sub>                      | 2     | A    |
| Non-Repetitive Peak Forward Surge Current 10ms Half-Sine Wave Form | I <sub>FSM</sub>                    | 24    | A    |

## Thermal Characteristics

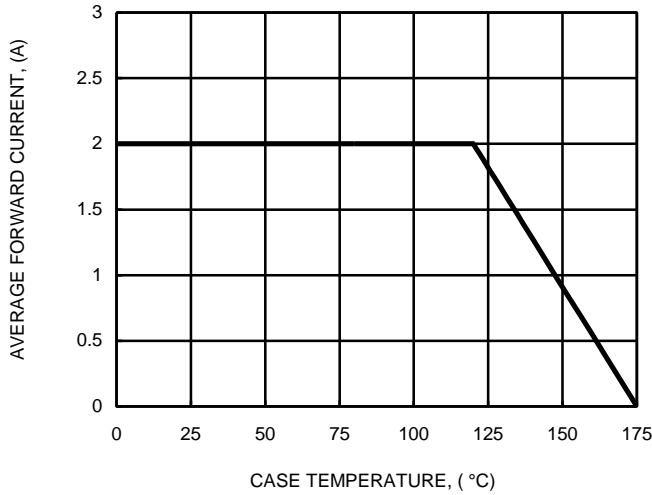
| Characteristic  | Symbol                            | Value       | Unit |
|---|-----------------------------------|-------------|------|
| Typical Thermal Resistance, Junction to Case (Notes 5, 6) | R <sub>θJC</sub>                  | 10          | °C/W |
| Typical Thermal Resistance, Junction to Lead (Notes 5, 6) | R <sub>θJL</sub>                  | 9           | °C/W |
| Operating and Storage Temperature Range                   | T <sub>J</sub> , T <sub>STG</sub> | -55 to +175 | °C   |

Notes: 5. Thermal resistance test performed in accordance with JESD-51.  
 6. The unit mounted on Aluminum substrate heatsink (20mm x 10mm x 1.64mm).

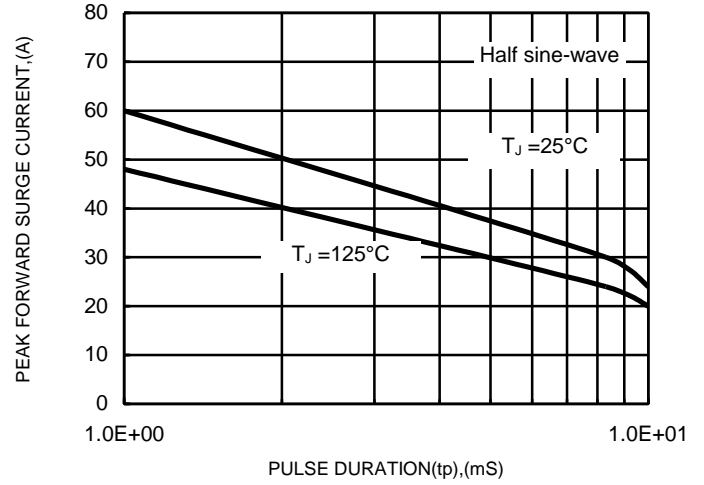
## Electrical Characteristics (@ T<sub>C</sub> = +25°C, unless otherwise specified.)

| Characteristic          | Symbol          | Min  | Typ              | Max         | Unit | Test Condition   |
|-------------------------|-----------------|------|------------------|-------------|------|--|
| Reverse Voltage         | V <sub>BR</sub> | 1200 | —                | —           | V    | I <sub>R</sub> = 0.13mA  |
| Forward Voltage Drop    | V <sub>F</sub>  | —    | 1.39<br>1.95     | 1.7<br>2.6  | V    | I <sub>F</sub> = 2A, T <sub>J</sub> = +25°C<br>I <sub>F</sub> = 2A, T <sub>J</sub> = +175°C  |
| Leakage Current         | I <sub>R</sub>  | —    | 11.7<br>157      | 128<br>---  | μA   | V <sub>R</sub> = 1200V, T <sub>J</sub> = +25°C<br>V <sub>R</sub> = 1200V, T <sub>J</sub> = +175°C  |
| Total Capacitive Charge | Q <sub>C</sub>  | —    | 10               | —           | nC   | I <sub>F</sub> = 2A, dI/dt = 200A/μs,<br>V <sub>R</sub> = 400V, T <sub>J</sub> = +25°C   |
| Total Capacitance       | C <sub>T</sub>  | —    | 130<br>105<br>29 | —<br>—<br>— | pF   | V <sub>R</sub> = 0.1V, T <sub>J</sub> = +25°C, f = 1MHz<br>V <sub>R</sub> = 1V, T <sub>J</sub> = +25°C, f = 1MHz<br>V <sub>R</sub> = 40V, T <sub>J</sub> = +25°C, f = 1MHz |

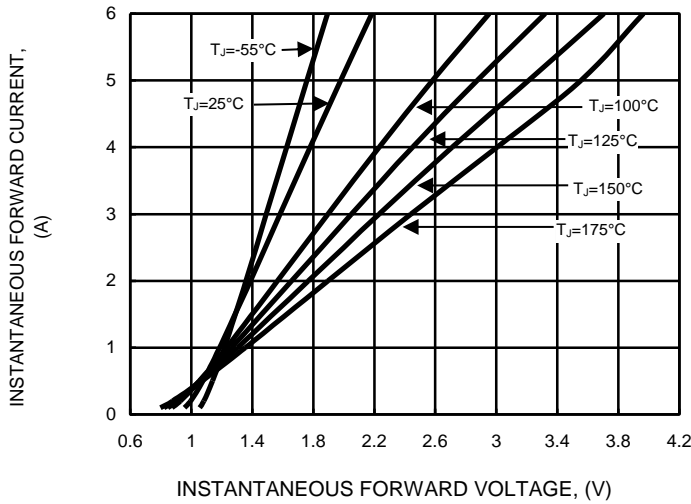
**FIG.1 FORWARD CURRENT DERATING CURVE**



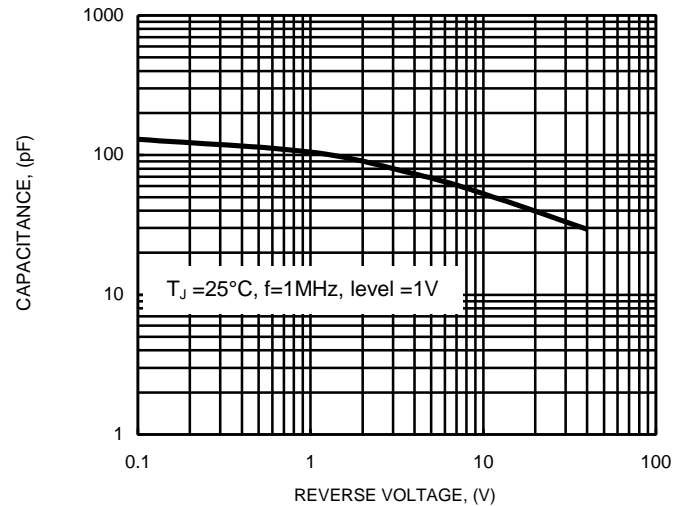
**FIG.2 NON-REPETITIVE PEAK SURGE FORWARD CURRENT**



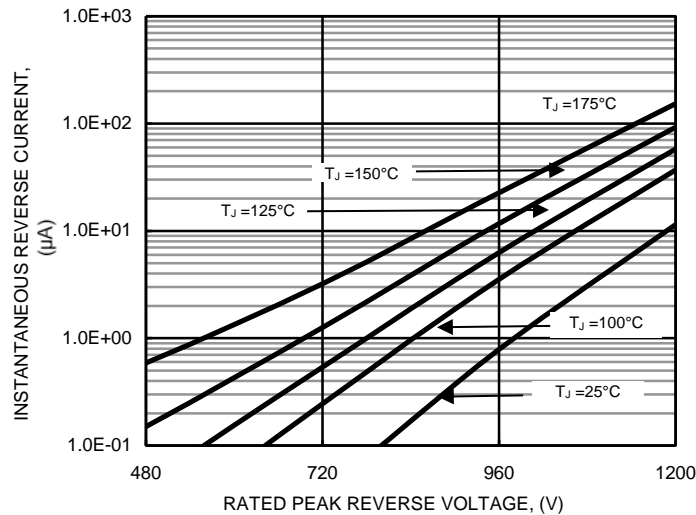
**FIG.3 TYPICAL FORWARD CHARACTERISTICS**



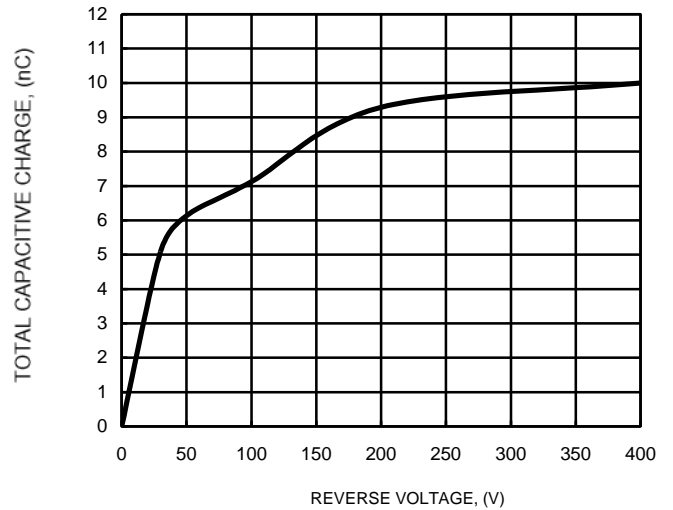
**FIG.4 TYPICAL JUNCTION CAPACITANCE**



**FIG.5 TYPICAL REVERSE CHARACTERISTICS**



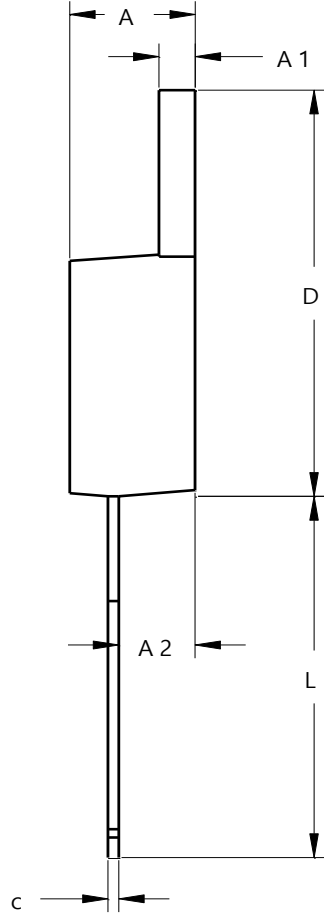
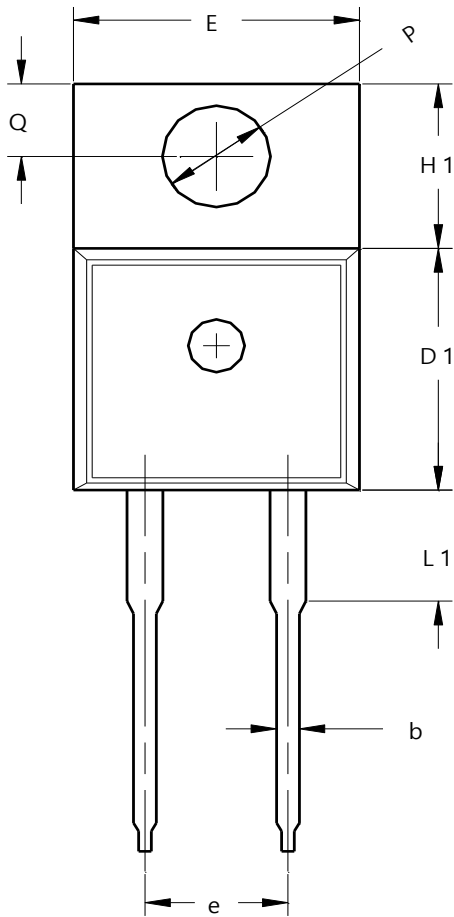
**FIG.6 TYPICAL CAPACITIVE CHARGES**



**Package Outline Dimensions**

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

**TO220AC (Type WX)**



| TO220AC (Type WX)    |       |       |
|----------------------|-------|-------|
| Dim                  | Min   | Typ   |
| A                    | 3.56  | 4.83  |
| A1                   | 1.14  | 1.40  |
| A2                   | 2.03  | 2.92  |
| b                    | 0.51  | 1.14  |
| c                    | 0.30  | 0.64  |
| D                    | 14.40 | 15.20 |
| D1                   | 8.26  | 9.28  |
| E                    | 9.65  | 10.67 |
| e                    | 4.83  | 5.33  |
| 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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