

## Product Summary

| $V_{RRM}$ (V) | $I_O$ (A) | $V_F$ (Max) (V)<br>@ +25°C | $I_R$ (Typ) ( $\mu$ A)<br>@ +25°C |
|---------------|-----------|----------------------------|-----------------------------------|
| 650           | 6         | 1.7                        | 0.68                              |

## Description and Applications

Packaged in the robust industry-standard TO252 (Type WX) package, the DIODES™ DSC06065D1 provides 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

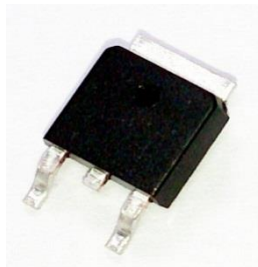
## Features and Benefits

- Low Conduction and Switching Loss
- High Temperature Application
- Positive Temperature Coefficient on  $V_F$
- 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-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact_us@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

## Mechanical Data

- Package: TO252
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 **e3**
- Weight: 0.310 grams (Approximate)

TO252 (Type WX)

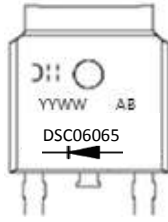


## Ordering Information (Note 4)

| Part Number | Package         | Packing |         |
|-------------|-----------------|---------|---------|
|             |                 | Qty.    | Carrier |
| DSC06065D1  | TO252 (Type WX) | 2,500   | Reel    |

- 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



D = Manufacturer's Marking  
 DSC06065 = Product Type Marking Code  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 22 = 2022)  
 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                                     | V <sub>RRM</sub> | 650   | V    |
| DC Blocking Voltage                                                 | V <sub>DC</sub>  | 650   | V    |
| Average Rectified Output Current                                    | I <sub>O</sub>   | 6     | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms Half-Sine Wave Form | I <sub>FSM</sub> | 36    | A    |

## Thermal Characteristics

| Characteristic                                            | Symbol                            | Value       | Unit |
|-----------------------------------------------------------|-----------------------------------|-------------|------|
| Typical Thermal Resistance, Junction to Case (Notes 5, 6) | R <sub>θJC</sub>                  | 5           | °C/W |
| Typical Thermal Resistance, Junction to Lead (Notes 5, 6) | R <sub>θJL</sub>                  | 4           | °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 copper heatsink (44mm x 30mm x 24mm).

## 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> | 650 | —                | —           | V    | I <sub>R</sub> = 0.20mA                                                                                                                                                    |
| Forward Voltage Drop    | V <sub>F</sub>  | —   | 1.55<br>2.00     | 1.7<br>2.50 | V    | I <sub>F</sub> = 6A, T <sub>J</sub> = +25°C<br>I <sub>F</sub> = 6A, T <sub>J</sub> = +175°C                                                                                |
| Leakage Current         | I <sub>R</sub>  | —   | 0.68<br>12.9     | 200<br>640  | μA   | V <sub>R</sub> = 650V, T <sub>J</sub> = +25°C<br>V <sub>R</sub> = 650V, T <sub>J</sub> = +175°C                                                                            |
| Total Capacitive Charge | Q <sub>C</sub>  | —   | 15               | —           | nC   | I <sub>F</sub> = 6A, dI/dt = 250A/μs,<br>V <sub>R</sub> = 400V, T <sub>J</sub> = +25°C                                                                                     |
| Total Capacitance       | C <sub>T</sub>  | —   | 226<br>187<br>55 | —           | 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 |

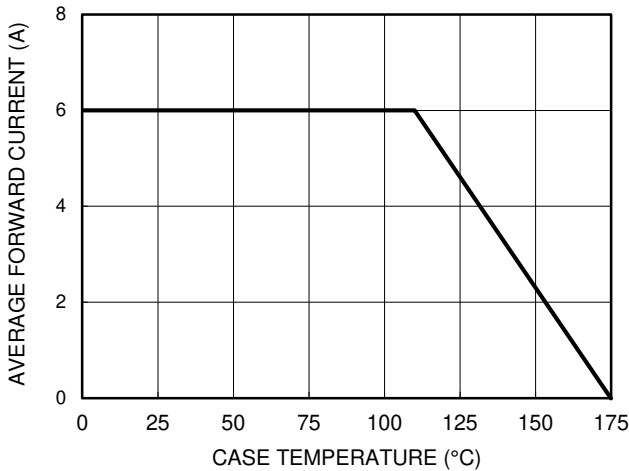


Figure 1. Forward Current Derating Curve

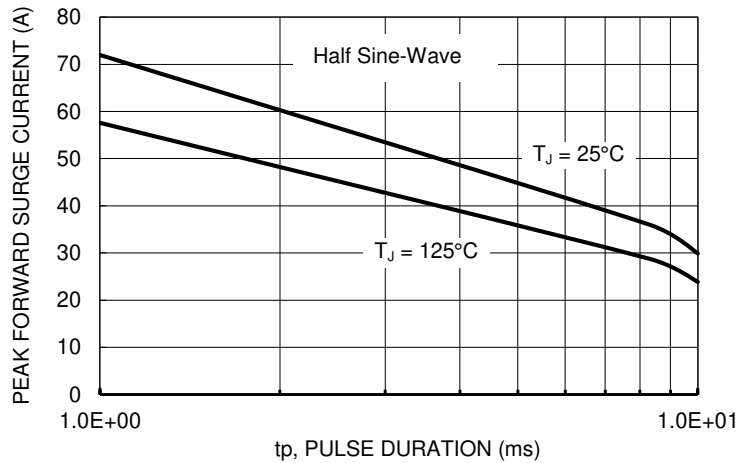


Figure 2. Non-Repetitive Peak Surge Forward Current

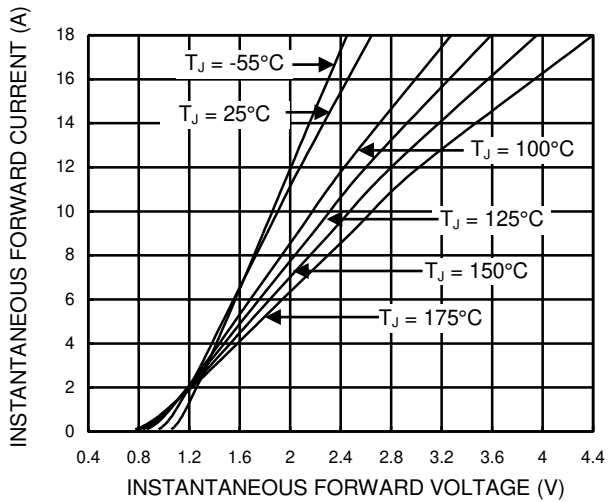


Figure 3. Typical Forward Characteristics

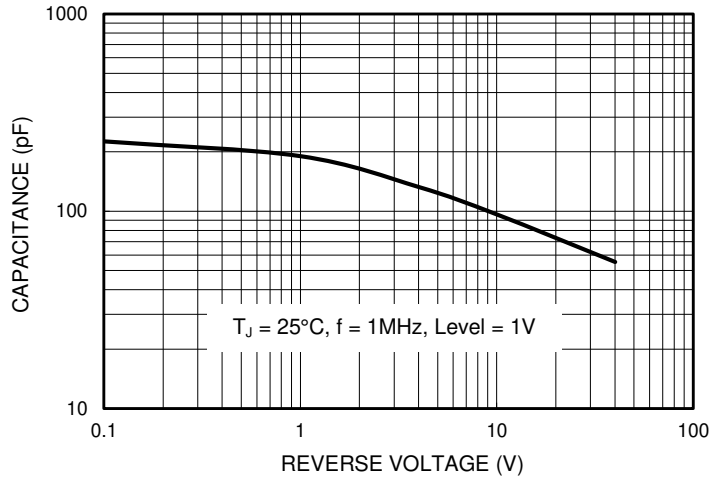


Figure 4. Typical Junction Capacitance

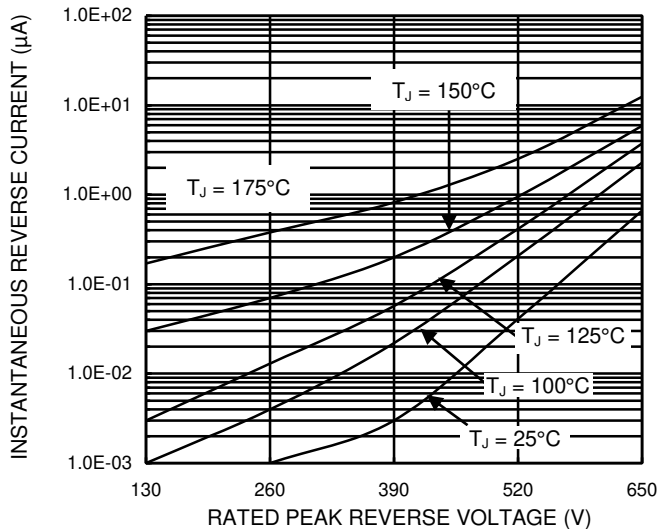


Figure 5. Typical Reverse Characteristics

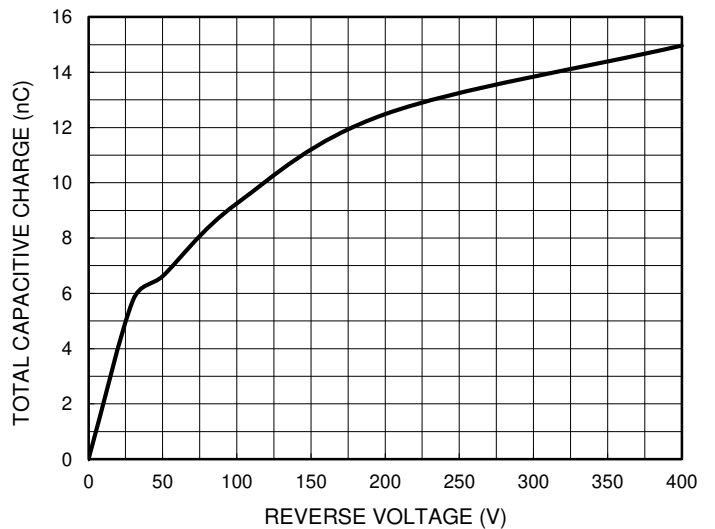
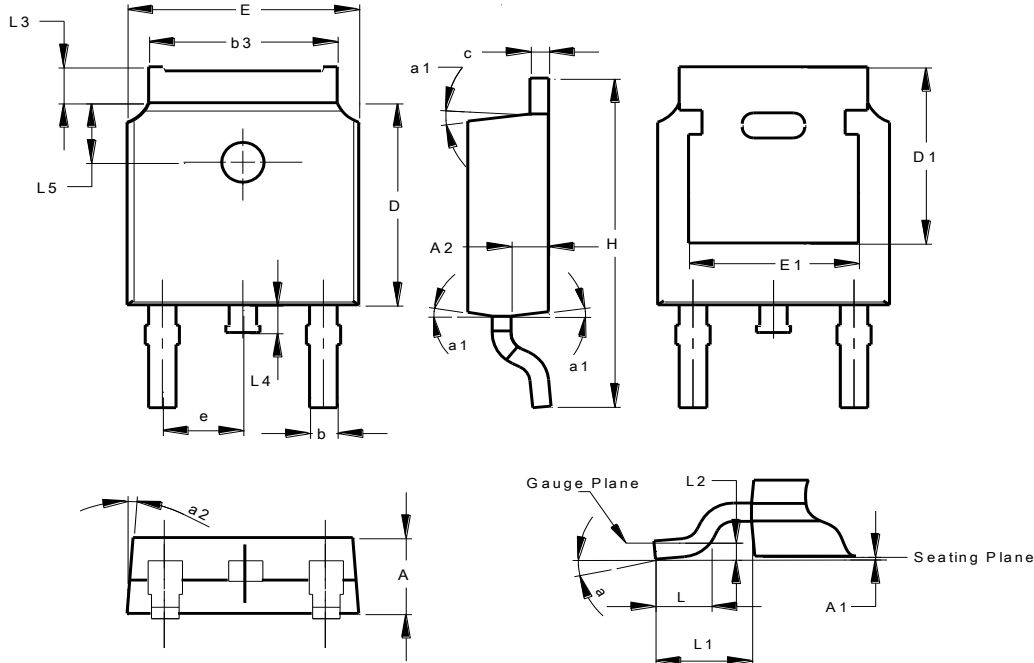


Figure 6. Typical Capacitive Charges

**Package Outline Dimensions**

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

**TO252 (Type WX)**

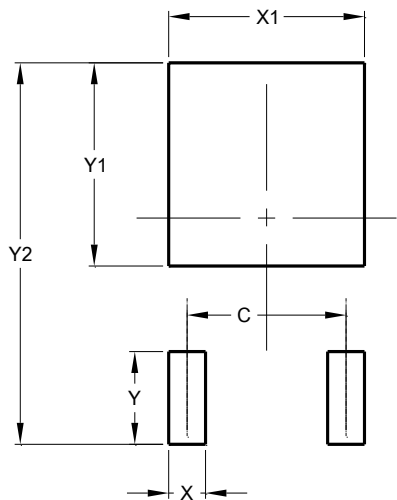


| TO252 (Type WX)             |           |       |       |
|-----------------------------|-----------|-------|-------|
| Dim                         | Min       | Max   | Typ   |
| A                           | 2.20      | 2.40  | 2.30  |
| A1                          | 0.00      | 0.15  | --    |
| A2                          | 0.97      | 1.17  | 1.07  |
| b                           | 0.68      | 0.90  | 0.78  |
| b3                          | 5.20      | 5.50  | 5.33  |
| c                           | 0.43      | 0.63  | 0.53  |
| D                           | 5.98      | 6.22  | 6.10  |
| D1                          | 5.30 REF  |       |       |
| e                           | 2.286 REF |       |       |
| E                           | 6.40      | 6.80  | 6.60  |
| E1                          | 4.63      | 5.03  | 4.83  |
| H                           | 9.40      | 10.50 | 10.10 |
| L                           | 1.38      | 1.75  | 1.50  |
| L1                          | 2.90 REF  |       |       |
| L2                          | 0.51 BSC  |       |       |
| L3                          | 0.88      | 1.28  | --    |
| L4                          | --        | 1.00  | --    |
| L5                          | 1.65      | 1.95  | 1.80  |
| a                           | 0°        | 8°    | -     |
| a1                          | 5°        | 9°    | 7°    |
| a2                          | 5°        | 9°    | 7°    |
| <b>All Dimensions in mm</b> |           |       |       |

**Suggested Pad Layout**

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

**TO252 (Type WX)**



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 4.572         |
| X          | 1.060         |
| X1         | 5.632         |
| Y          | 2.600         |
| Y1         | 5.700         |
| Y2         | 10.700        |

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