

Product Summary

| V_{RRM} (V) | I_o (A) | V_F (Max) (V) @ +25°C | I_R (Typ) (μ A) @ +25°C |
|---------------|-----------|----------------------------|-----------------------------------|
| 650 | 10 | 1.7 | 1.2 |

Description and Applications

Packaged in the robust industry-standard TO252 (Type WX) package, the DIODES™ DSC10C065D1 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](#) 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 **Ⓔ3**
- Weight: 0.310 grams (Approximate)

TO252 (Type WX)

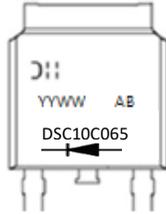


Ordering Information (Note 4)

| Part Number | Package | Packing | |
|----------------|-----------------|---------|---------|
| | | Qty. | Carrier |
| DSC10C065D1-13 | 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



D11 = Manufacturer's Marking
 DSC10C065 = Product Type Marking Code
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 23 = 2023)
 WW = Week (01 to 53)
 AB = Fab and Assembly Code

Maximum Ratings (@T_c = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|--|------------------|-------|------|
| Peak Repetitive Reverse Voltage | V _{RRM} | 650 | V |
| DC Blocking Voltage | V _{DC} | | |
| Average Rectified Output Current | I _O | 10 | A |
| Non-Repetitive Peak Forward Surge Current 10ms Half-Sine Wave Form | I _{FSM} | 47 | A |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Typical Thermal Resistance, Junction to Case (Notes 5, 6, 7) | R _{θJC} | 3 | °C/W |
| Typical Thermal Resistance, Junction to Lead (Notes 5, 6, 7) | R _{θJL} | 2 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +175 | °C |

Notes: 5. Thermal resistance test performed in accordance with JESD-51.
 6. With aluminum fin heatsink—100mm×42mm×26mm.
 7. Device mounted on 1inch² copper pad, 2oz. The heat generated must be less than the thermal conductivity from junction to case: $dP_D/dT_J < 1/R_{\theta JC}$ or junction to ambient: $dP_D/dT_J < 1/R_{\theta JA}$.

Electrical Characteristics (@T_c = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|-------------------------|-----------------|-----|------------------|-------------|------|--|
| Reverse Voltage | V _{BR} | 650 | — | — | V | I _R = 0.1mA |
| Forward Voltage Drop | V _F | — | 1.41 1.80 | 1.7 2.5 | V | I _F = 10A, T _J = +25°C I _F = 10A, T _J = +175°C |
| Leakage Current | I _R | — | 1.2 133 | 230 — | μA | V _R = 650V, T _J = +25°C V _R = 650V, T _J = +175°C |
| Total Capacitive Charge | Q _C | — | 27 | — | nC | I _F = 10A, di/dt = 200A/μs, V _R = 400V, T _J = +25°C |
| Total Capacitance | C _T | — | 348 273 68 | — — — | pF | V _R = 0.1V, T _J = +25°C, f = 1MHz V _R = 1V, T _J = +25°C, f = 1MHz V _R = 40V, T _J = +25°C, f = 1MHz |

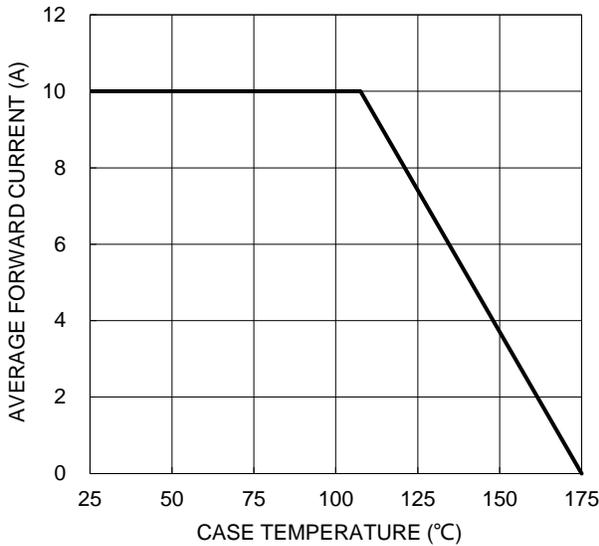


Figure 1. Forward Current Derating Curve

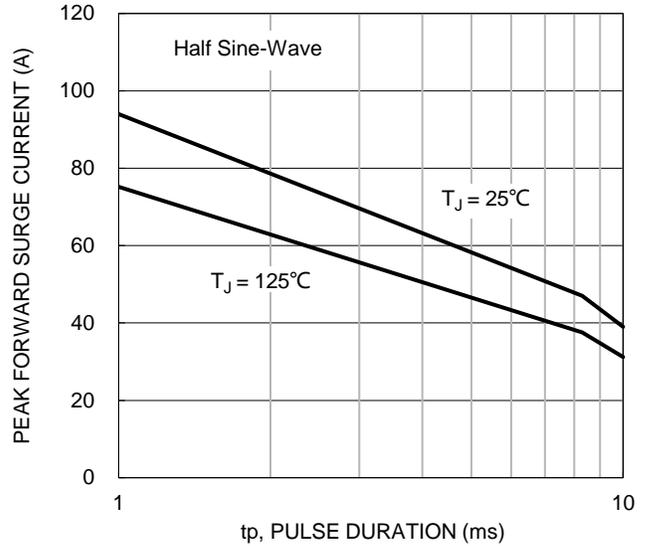


Figure 2. Non-Repetitive Peak Surge Forward Current

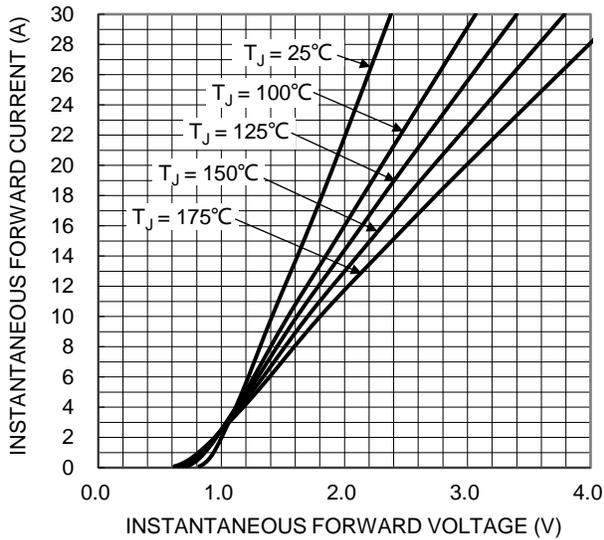


Figure 3. Typical Forward Characteristics

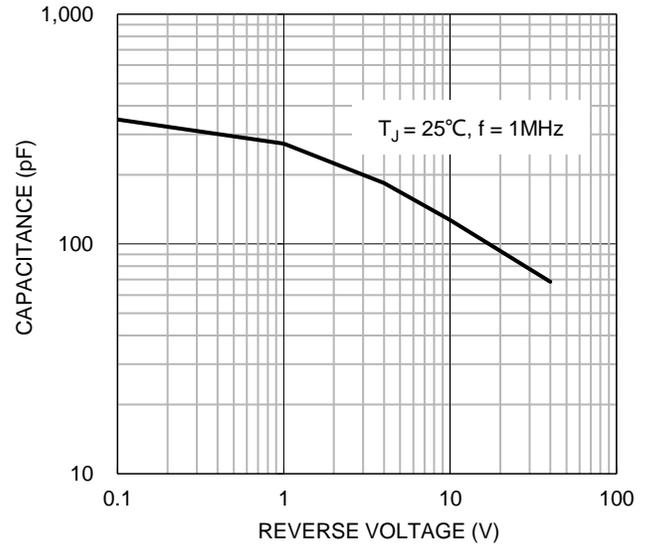


Figure 4. Typical Junction Capacitance

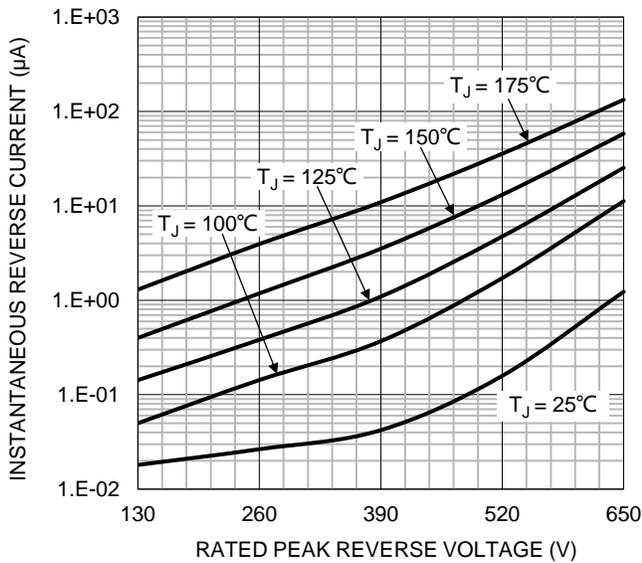


Figure 5. Typical Reverse Characteristics

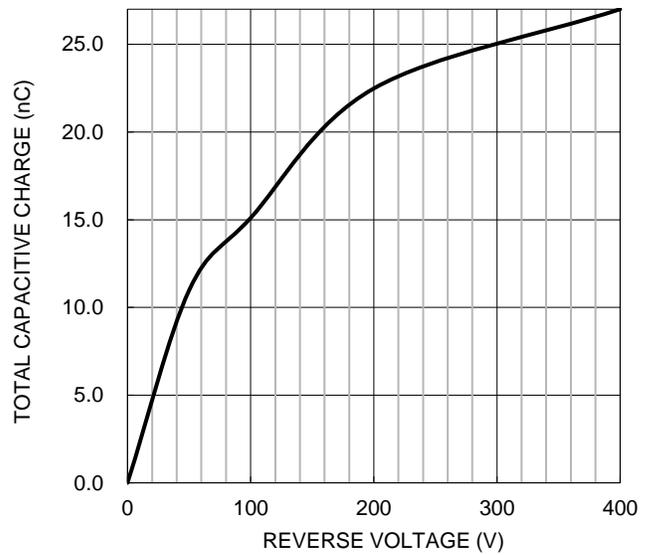
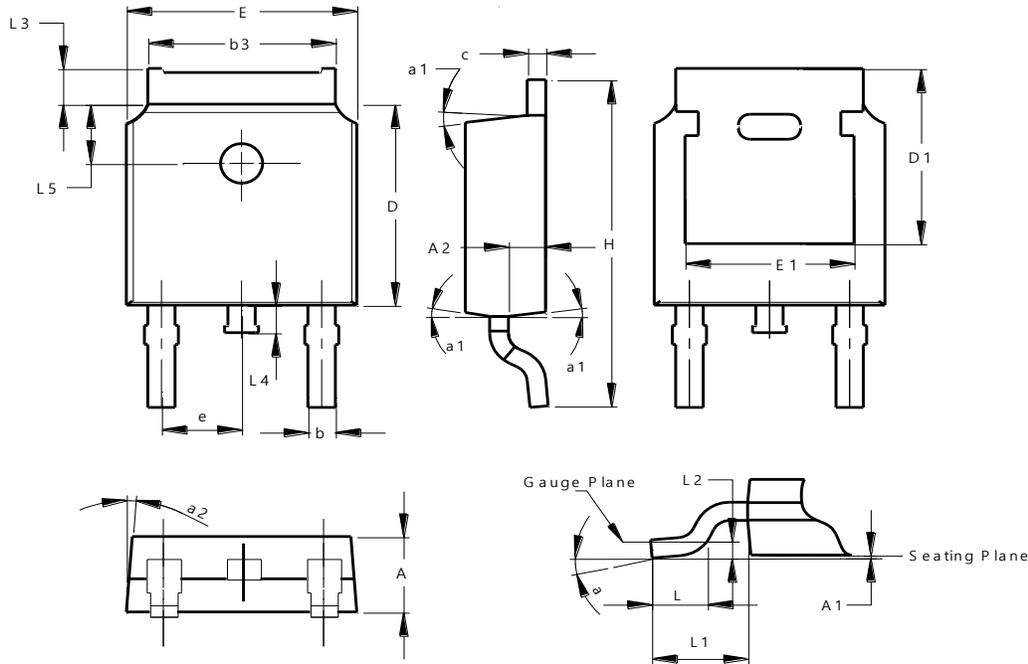


Figure 6. Typical Capacitive Charges

Package Outline Dimensions

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

TO252 (Type WX)

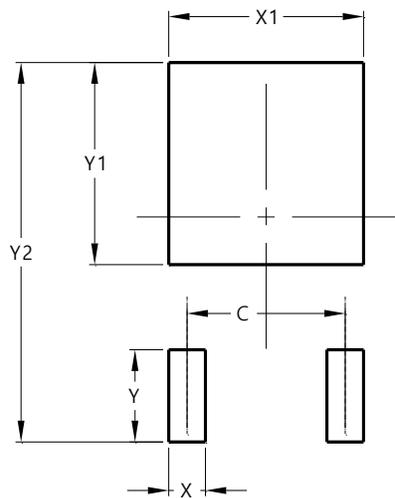


| TO252 (Type WX) | | | |
|-----------------------------|-----------|-------|-------|
| Dim | Min | Max | Typ |
| A | 2.20 | 2.40 | 2.30 |
| A1 | 0.00 | 0.15 | -- |
| A2 | 0.97 | 1.17 | 1.07 |
| b | 0.68 | 0.90 | 0.78 |
| b3 | 5.20 | 5.50 | 5.33 |
| c | 0.43 | 0.63 | 0.53 |
| D | 5.98 | 6.22 | 6.10 |
| 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° |
| All Dimensions in mm | | | |

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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