## Product Summary

| $V_{RRM}$ (V) | $I_O$ (A) | $V_{F\ (Max)}$ (V) @ +25°C | $I_{R\ (Typ)}$ (µA) @ +25°C |
|---|---|---|---|
| 650 | 6 | 1.5 | 0.27 |

## Features and Benefits

- Low Conduction and Switching Loss
- High-Temperature Application
- Positive Temperature Coefficient on $V_F$
- Fast Reverse Recovery
- High Surge Current Capability
- **Totally Lead-Free & Fully 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/**

## Description and Applications

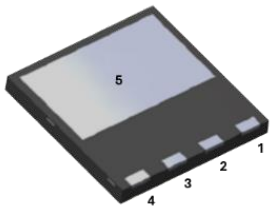
Packaged in the robust industry-standard DFN8080 package, the DSC06A065LP provides excellent reverse leakage stability at high temperatures. It is ideal for use as a rectifier, freewheel diode, or blocking diode in:

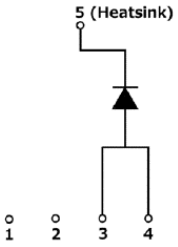
- Power factor correction
- Industrial motor drivers
- Power inverters
- SMPS
- UPS

## Mechanical Data

- Package: DFN8080
- 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: 0.214 grams (Approximate)

**DFN8080**



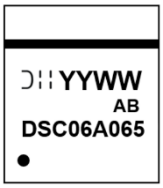




## Ordering Information (Note 4)

| Orderable Part Number | Package | Packing | |
|---|---|---|---|
| | | Qty. | Carrier |
| DSC06A065LP-13 | DFN8080 | 2,500 | Reel |

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
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




= Manufacturer's Marking
DSC06A065 = Product Type Marking Code
YYWW = Date Code Marking
YY = Last Two Digits of Year (ex: 24 = 2024)
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<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{DC}$ | 650 | V |
| Average Rectified Output Current | $I_O$ | 6 | A |
| Non-Repetitive Peak Forward Surge Current 10ms Half Sine Waveform | $I_{FSM}$ | 38 | A |

## Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Typical Thermal Resistance, Junction to Case (Notes 5, 6, 7) | $R_{\theta JC}$ | 1.58 | °C/W |
| Typical Thermal Resistance, Junction to Ambient (Notes 5, 6, 7) | $R_{\theta JA}$ | 4.26 | °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. The unit mounted on copper heatsink 71.5mm x 12mm x 0.26mm.
7. Device mounted on 1inch$^2$ 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 | $V_F$ | —<br>— | 1.35<br>1.7 | 1.50<br>2.25 | V | $I_F$ = 6A, $T_J$ = +25°C<br>$I_F$ = 6A, $T_J$ = +175°C |
| Leakage Current | $I_R$ | —<br>— | 0.27<br>2.23 | 20<br>100 | µA | $V_R$ = 650V, $T_J$ = +25°C<br>$V_R$ = 650V, $T_J$ = +175°C |
| Total Capacitive Charge | $Q_C$ | — | 8 | — | nC | $I_F$ = 6A, di/dt = 200A/µs,<br>$V_R$ = 400V, $T_J$ = +25°C |
| Total Capacitance | $C_T$ | —<br>—<br>— | 295<br>227<br>57 | —<br>—<br>— | pF | $V_R$ = 0.1V, $T_J$ = +25°C, f = 1MHz<br>$V_R$ = 1V, $T_J$ = +25°C, f = 1MHz<br>$V_R$ = 40V, $T_J$ = +25°C, f = 1MHz |

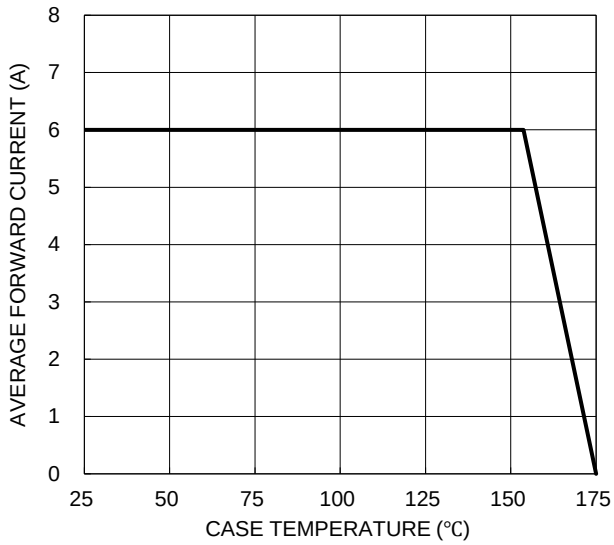



Figure 1. Forward Current Derating Curve

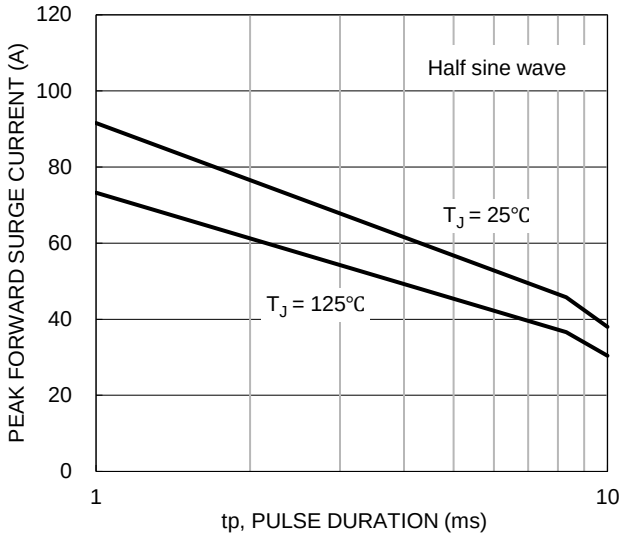



Figure 2. Non-Repetitive Peak Surge Forward Current

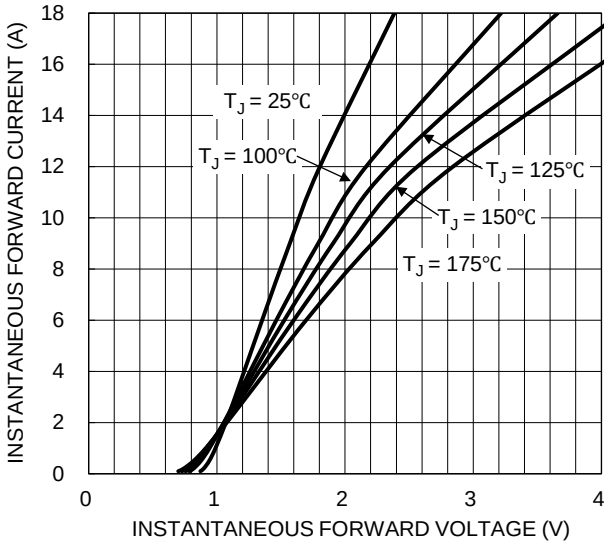



Figure 3. Typical Forward Characteristics

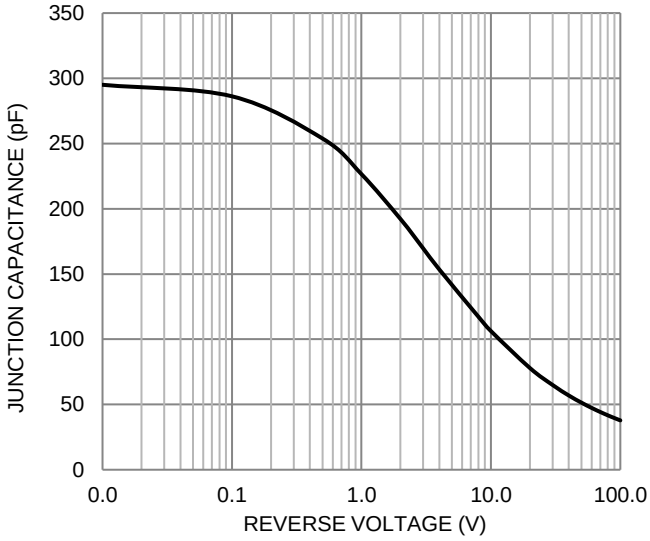



Figure 4. Typical Junction Capacitance

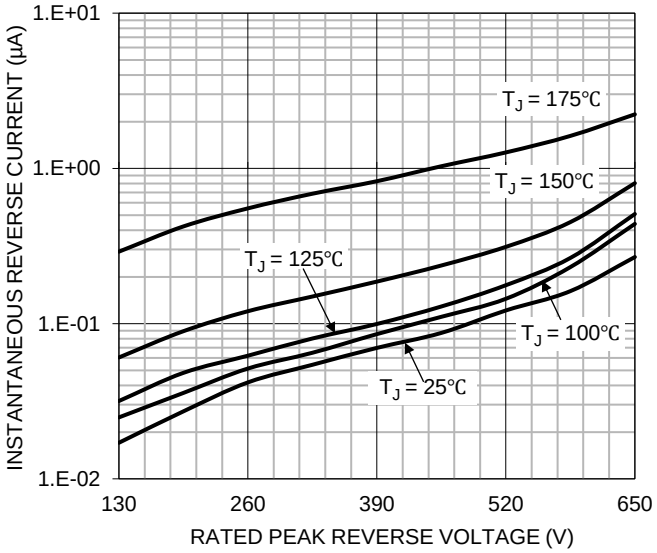



Figure 5. Typical Reverse Characteristics

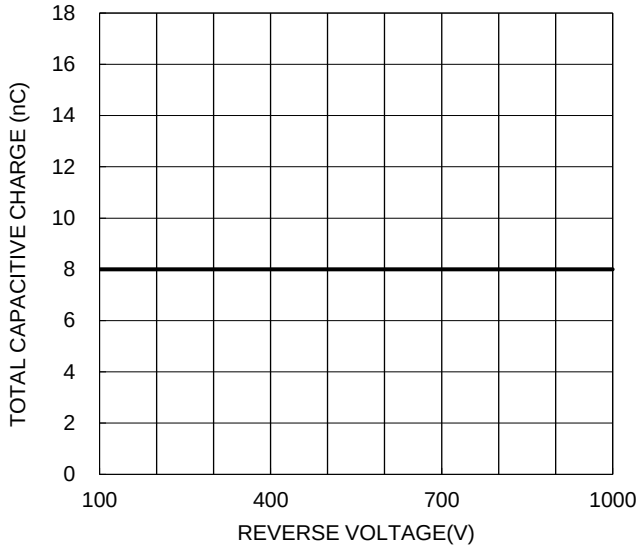



Figure 6. Typical Capacitive Charges

## Package Outline Dimensions

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

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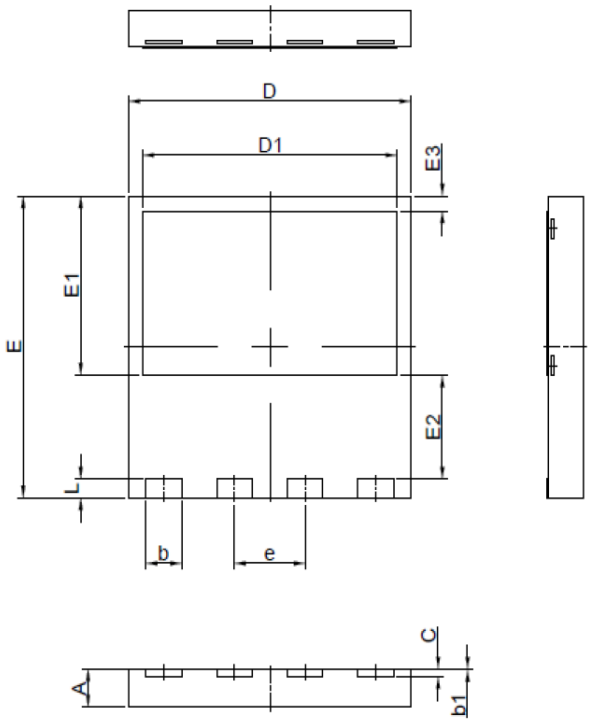
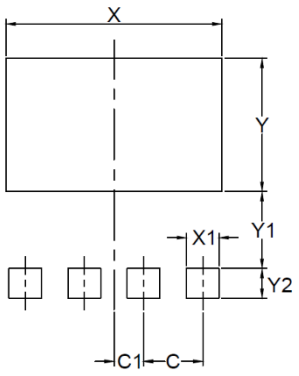



| DFN8080 | | | |
|---|---|---|---|
| DIM. | MIN. | MAX. | TYP. |
| A | 0.90 | 1.10 | 1.00 |
| b | 0.90 | 1.10 | 1.00 |
| b1 | 0 | 0.05 | 0.02 |
| C | 0.20 REF. | | |
| D | 7.90 | 8.10 | 8.00 |
| D1 | 7.10 | 7.30 | 7.20 |
| E | 7.90 | 8.10 | 8.00 |
| E1 | 4.65 | 4.85 | 4.75 |
| E2 | 2.65 | 2.85 | 2.75 |
| E3 | 0.30 | 0.50 | 0.40 |
| e | 2.0 BSC | | |
| L | 0.40 | 0.60 | 0.50 |
| All Dimension in millimeter | | | |

## Suggested Pad Layout

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

**DFN8080**




| Dim. | Millimeters |
|---|---|
| | DFN8080 |
| C | 2.0 |
| C1 | 1.0 |
| X | 7.3 |
| X1 | 1.1 |
| Y | 4.5 |
| Y1 | 2.6 |
| Y2 | 1.0 |

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