

## Product Summary

V <sub>RRM</sub> (V)	I <sub>o</sub> (A)	V <sub>F</sub> (Max) (V) @ +25°C	I <sub>R</sub> (Typ) (μA) @ +25°C
650	12	1.7	0.19

## Features and Benefits

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

## Description and Applications

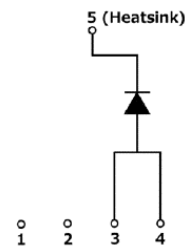
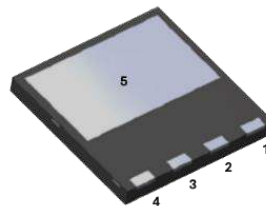
Packaged in the robust industry-standard DFN8080 package, the DSC12A065LP provides excellent reverse leakage stability at high temperatures. It is ideal for use as a rectifier, freewheel diode, or blocking diode in:

- 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

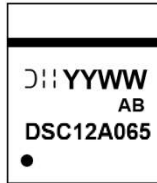


## Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
DSC12A065LP-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



DSC12A065 = Product Type Marking Code  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 25 = 2025)  
 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>		
Average Rectified Output Current	I <sub>O</sub>	12	A
Non-Repetitive Peak Forward Surge Current 10ms Half Sine Waveform	I <sub>FSM</sub>	55	A

## Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Case (Notes 5, 6, 7)	R <sub>θJC</sub>	1.25	°C/W
Typical Thermal Resistance, Junction to Ambient (Notes 5, 6, 7)	R <sub>θJA</sub>	3.83	°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 ink-80mm\*80mm\*1.5mm.  
 7. Device mounted on 1inch<sup>2</sup> copper pad, 2oz. The heat generated must be less than the thermal conductivity from junction to case: dP<sub>D</sub>/dT<sub>J</sub> < 1/R<sub>θJC</sub> or junction to ambient: dP<sub>D</sub>/dT<sub>J</sub> < 1/R<sub>θJA</sub>.

## 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> = 0.1mA
Forward Voltage Drop	V <sub>F</sub>	—	1.44 1.86	1.7 2.5	V	I <sub>F</sub> = 12A, T <sub>J</sub> = +25°C I <sub>F</sub> = 12A, T <sub>J</sub> = +175°C
Leakage Current	I <sub>R</sub>	—	0.19 2.59	20 190	μA	V <sub>R</sub> = 650V, T <sub>J</sub> = +25°C V <sub>R</sub> = 650V, T <sub>J</sub> = +175°C
Total Capacitive Charge	Q <sub>C</sub>	—	14	—	nC	I <sub>F</sub> = 12A, di/dt = 200A/μs, V <sub>R</sub> = 400V, T <sub>J</sub> = +25°C
Total Capacitance	C <sub>T</sub>	—	516 394 96	—	pF	V <sub>R</sub> = 0.1V, T <sub>J</sub> = +25°C, f = 1MHz V <sub>R</sub> = 1V, T <sub>J</sub> = +25°C, f = 1MHz V <sub>R</sub> = 40V, T <sub>J</sub> = +25°C, f = 1MHz

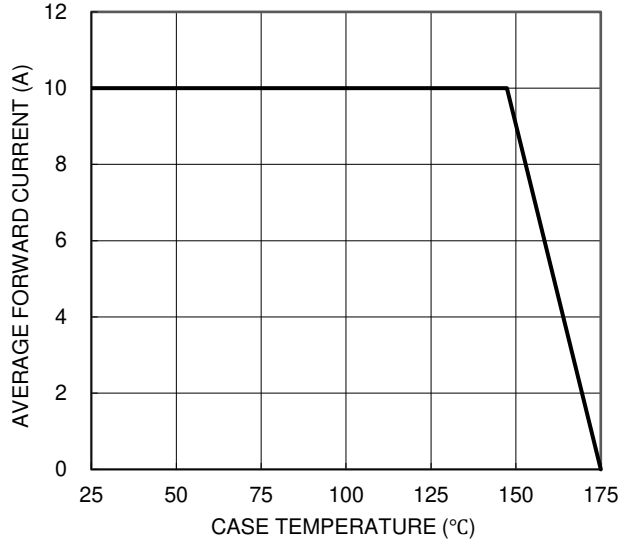


Figure 1. Forward Current Derating Curve

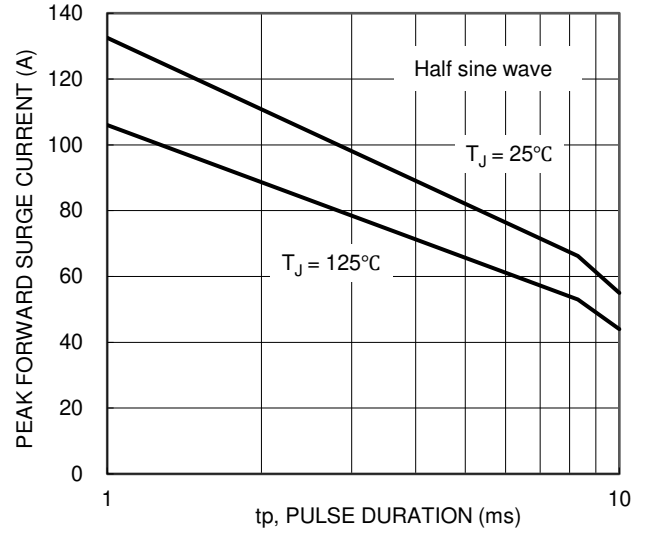


Figure 2. Non-Repetitive Peak Surge Forward Current

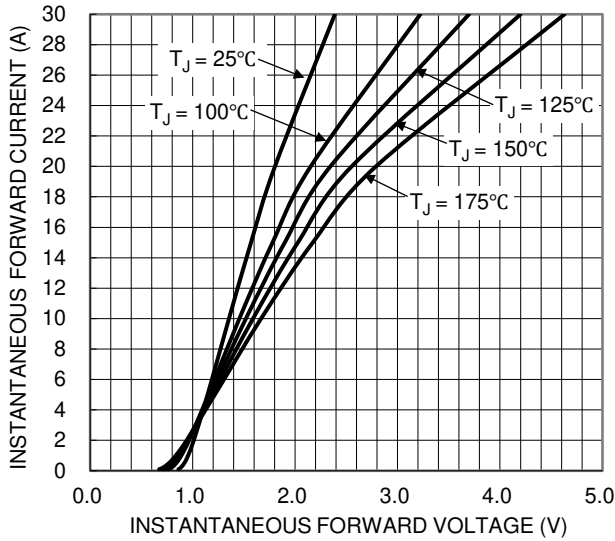


Figure 3. Typical Forward Characteristics

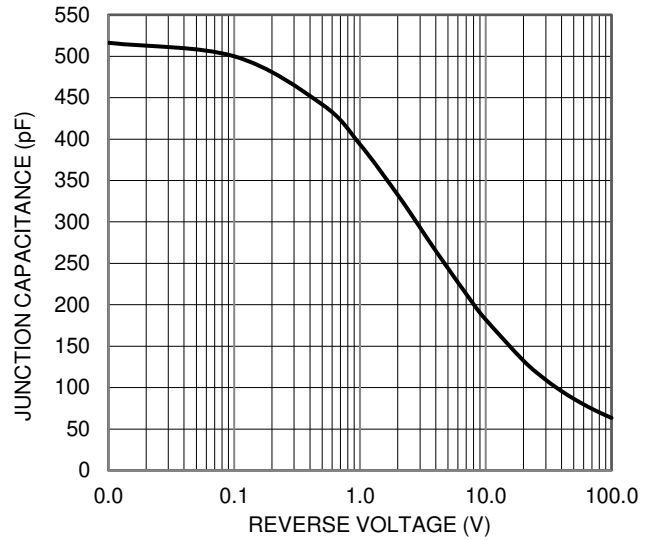


Figure 4. Typical Junction Capacitance

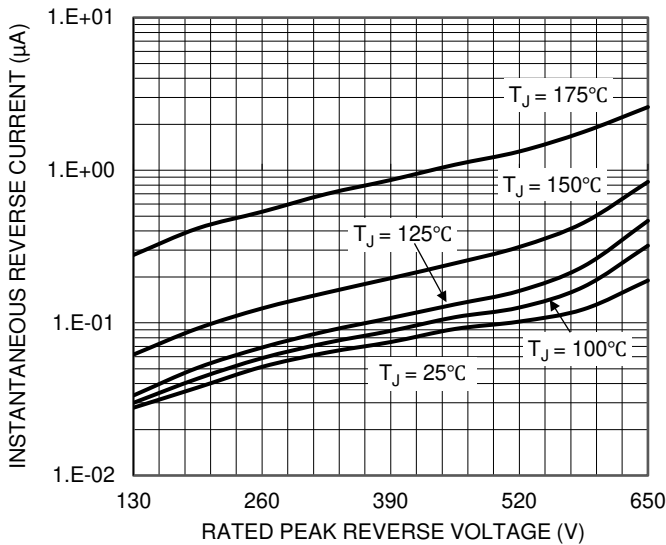


Figure 5. Typical Reverse Characteristics

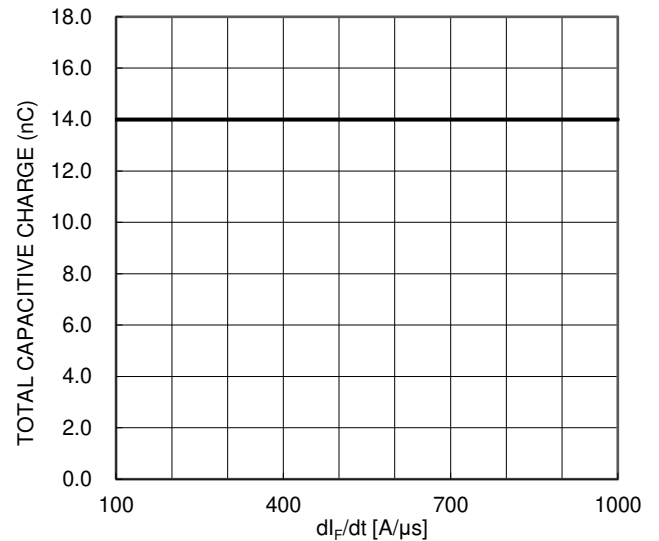
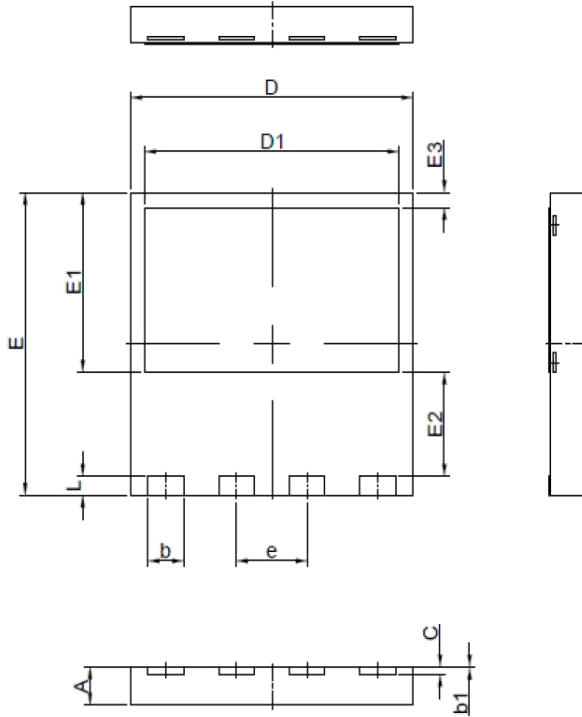


Figure 6. Typical Capacitive Charges vs. Current Slope

**Package Outline Dimensions**

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

**DFN8080**

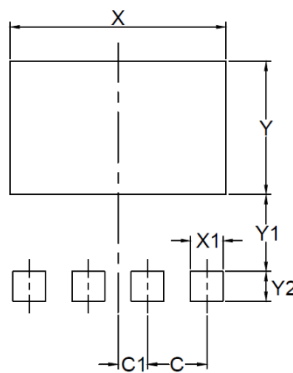


DFN8080			
DIM.	MIN.	MAX.	TYP.
A	0.90	1.10	1.00
b	0.90	1.10	1.00
b1	0	0.05	0.02
C	0.20 REF.		
D	7.90	8.10	8.00
D1	7.10	7.30	7.20
E	7.90	8.10	8.00
E1	4.65	4.85	4.75
E2	2.65	2.85	2.75
E3	0.30	0.50	0.40
e	2.0 BSC		
L	0.40	0.60	0.50
All Dimension in millimeter			

**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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