

Product Summary

| $V_{(BR)DSS}$ | $R_{DS(ON)}$ | Package | I_D max $T_A = +25^\circ C$ |
|---------------|--------------------------------|---------|----------------------------------|
| 30V | 52m Ω @ $V_{GS} = 10V$ | SOT323 | 4A |
| | 65m Ω @ $V_{GS} = 4.5V$ | | |
| | 85m Ω @ $V_{GS} = 2.5V$ | | |

Features

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Applications

- DC-DC Converters
- Power Management Functions
- Battery Operated Systems and Solid-State Relays

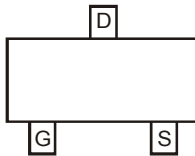
Mechanical Data

- Case: SOT323
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin annealed over Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208 **e3**
- Terminal Connections: See Diagram
- Weight: 0.006 grams (approximate)

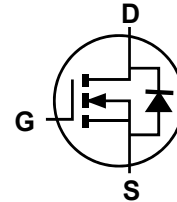
SOT323



Top View



Pin Configuration
Top View



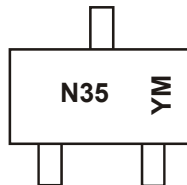
Equivalent Circuit

Ordering Information (Note 4)

| Part Number | Case | Packaging |
|--------------|--------|-------------------|
| DMN3065LW-7 | SOT323 | 3000/Tape & Reel |
| DMN3065LW-13 | SOT323 | 10000/Tape & Reel |

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. See http://www.diodes.com/quality/lead_free.html 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 <http://www.diodes.com/products/packages.html>.

Marking Information



N35 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: A = 2013)
 M = Month (ex: 9 = September)

Date Code Key

| Year | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|------|------|------|------|------|------|------|------|
| Code | Z | A | B | C | D | E | F |

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | O | N | D |

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

| Characteristic | Symbol | Value | Unit |
|--|------------------|-------|------|
| Drain Source Voltage | V _{DSS} | 30 | V |
| Gate-Source Voltage | V _{GSS} | ±12 | V |
| Drain Current (Note 5) | I _D | 4 | A |
| Body-Diode Continuous Current (Note 5) | I _S | 1 | A |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Total Power Dissipation (Note 5) | P _D | 770 | mW |
| Thermal Resistance, Junction to Ambient @T _A = +25°C (Note 5) | R _{θJA} | 162 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

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

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|---------------------|-----|------|------|------|---|
| OFF CHARACTERISTICS (Note 6) | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | 30 | — | — | V | V _{GS} = 0V, I _D = 250μA |
| Zero Gate Voltage Drain Current | I _{DSS} | — | — | 1 | μA | V _{DS} = 30V, V _{GS} = 0V |
| Gate-Body Leakage | I _{GSS} | — | — | ±100 | nA | V _{GS} = ±12V, V _{DS} = 0V |
| ON CHARACTERISTICS (Note 6) | | | | | | |
| Gate Threshold Voltage | V _{GS(th)} | 0.5 | — | 1.5 | V | V _{DS} = V _{GS} , I _D = 250μA |
| Static Drain-Source On-Resistance | R _{DS(on)} | — | — | 52 | mΩ | V _{GS} = 10V, I _D = 4A |
| | | — | — | 65 | | V _{GS} = 4.5V, I _D = 3A |
| | | — | — | 85 | | V _{GS} = 2.5V, I _D = 2A |
| Source-Drain Diode Forward Voltage | V _{SD} | — | — | 1.2 | V | V _{GS} = 0V, I _S = 2.0A |
| DYNAMIC CHARACTERISTICS(7) | | | | | | |
| Input Capacitance | C _{iss} | — | 465 | — | pF | V _{DS} = 15V, V _{GS} = 0V, f = 1.0MHz |
| Output Capacitance | C _{oss} | — | 49.5 | — | pF | |
| Reverse Transfer Capacitance | C _{rss} | — | 43.8 | — | pF | |
| Gate Resistance | R _g | — | 2.3 | — | Ω | V _{DS} = 0V, V _{GS} = 0V, f = 1MHz |
| Total Gate Charge (V _{GS} =10V) | Q _g | — | 11.7 | — | nC | V _{DS} = 15V, I _D = 4 A |
| Total Gate Charge (V _{GS} =4.5V) | Q _g | — | 5.5 | — | nC | V _{DS} = 15V, I _D = 4 A |
| Gate-Source Charge | Q _{gs} | — | 1.1 | — | nC | |
| Gate-Drain Charge | Q _{gd} | — | 1.8 | — | nC | |
| Turn-On Delay Time | t _{D(on)} | — | 1.9 | — | ns | V _{DD} = 15V, V _{GEN} = 10V, R _{GEN} = 3Ω, R _L = 3.75Ω |
| Turn-On Rise Time | t _r | — | 1.6 | — | ns | |
| Turn-Off Delay Time | t _{D(off)} | — | 10.3 | — | ns | |
| Turn-Off Fall Time | t _f | — | 2.0 | — | ns | |

- Notes: 5. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad layout
6. Short duration pulse test used to minimize self-heating effect.
7. Guaranteed by design. Not subject to production testing.

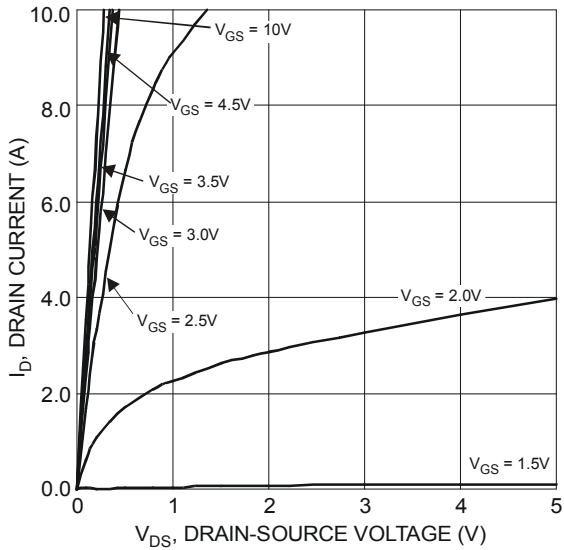


Figure 1 Typical Output Characteristics

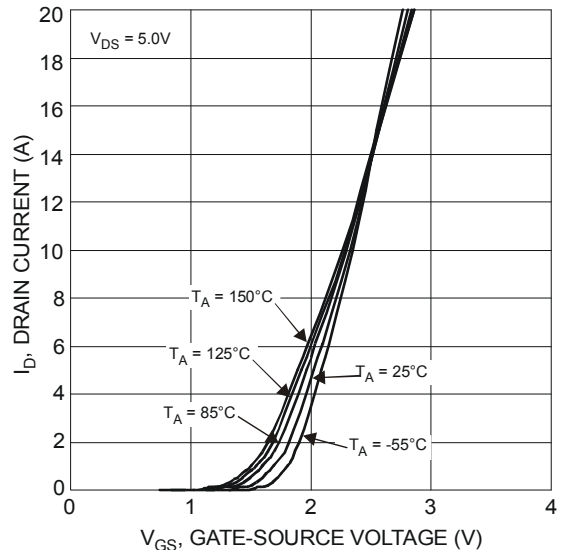


Figure 2 Typical Transfer Characteristics

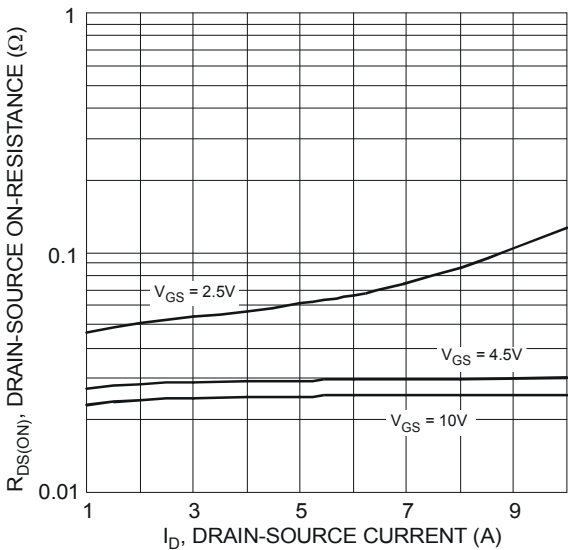


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

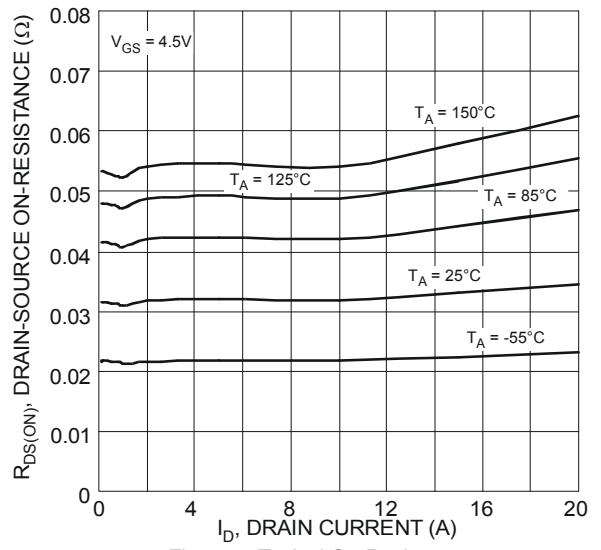


Figure 4 Typical On-Resistance vs. Drain Current and Temperature

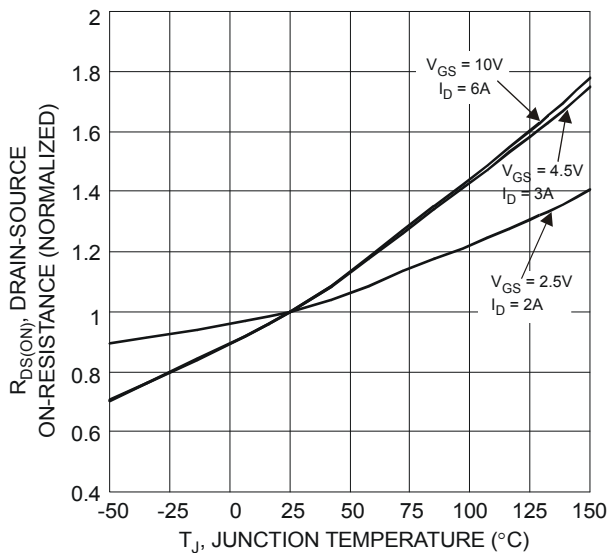


Figure 5 On-Resistance Variation with Temperature

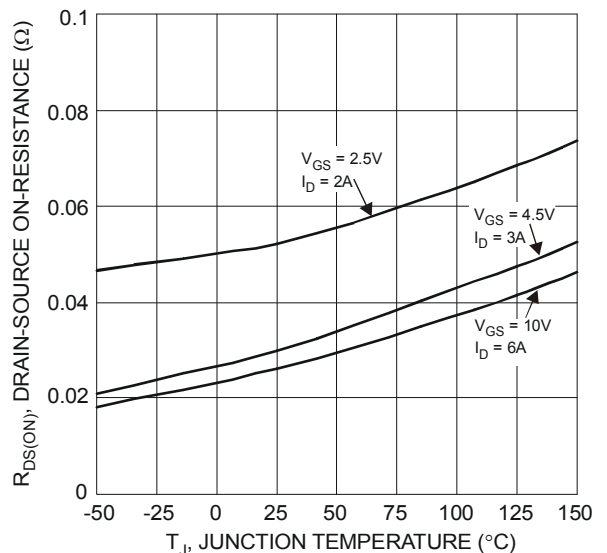


Figure 6 On-Resistance Variation with Temperature

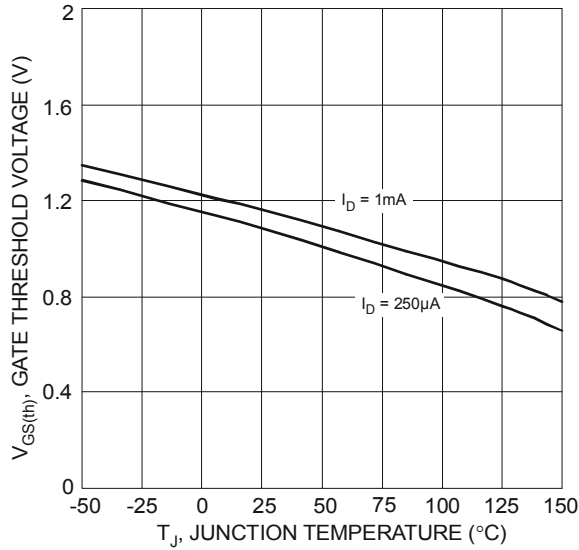


Figure 7 Gate Threshold Variation vs. Ambient Temperature

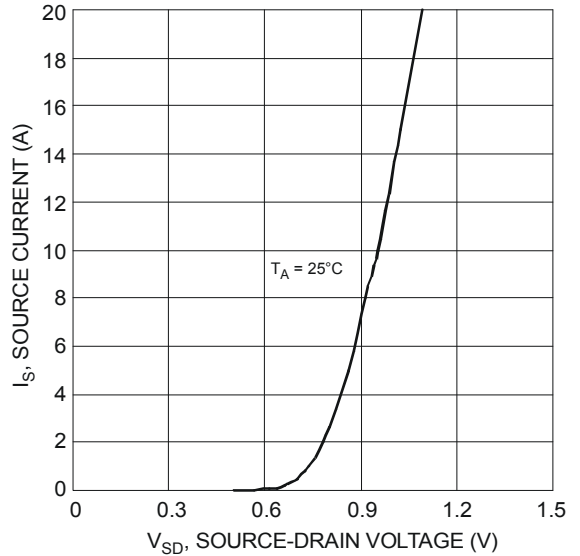


Figure 8 Diode Forward Voltage vs. Current

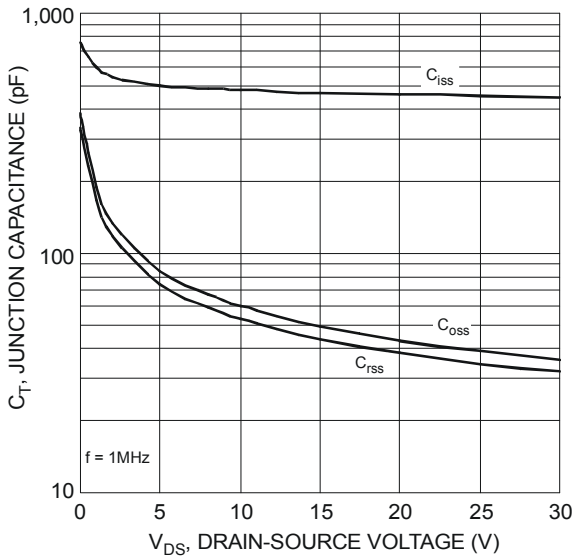


Figure 9 Typical Junction Capacitance

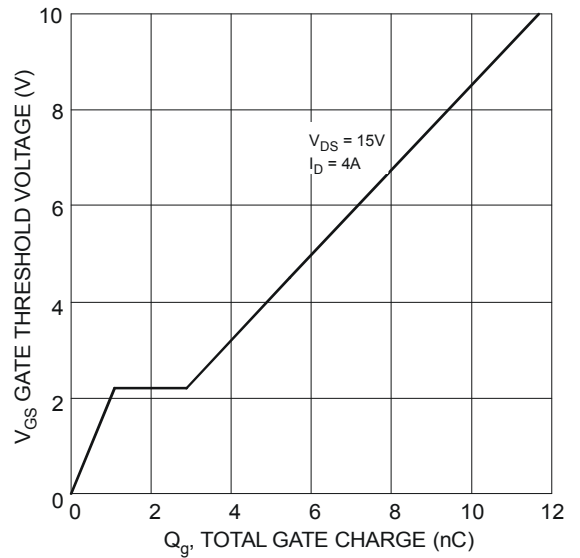
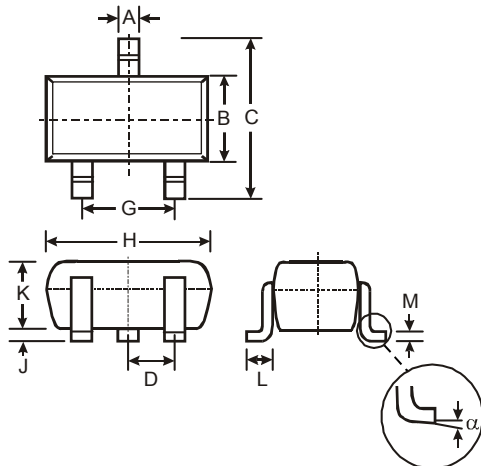


Figure 10 Gate Charge

Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.

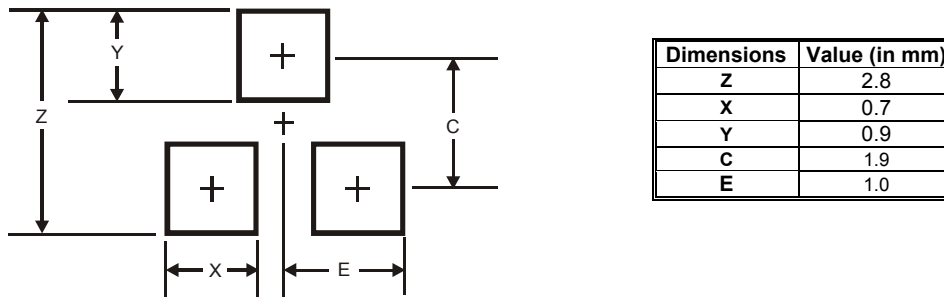


| SOT323 | | | |
|----------|------|------|------|
| Dim | Min | Max | Typ |
| A | 0.25 | 0.40 | 0.30 |
| B | 1.15 | 1.35 | 1.30 |
| C | 2.00 | 2.20 | 2.10 |
| D | - | - | 0.65 |
| G | 1.20 | 1.40 | 1.30 |
| H | 1.80 | 2.20 | 2.15 |
| J | 0.0 | 0.10 | 0.05 |
| K | 0.90 | 1.00 | 1.00 |
| L | 0.25 | 0.40 | 0.30 |
| M | 0.10 | 0.18 | 0.11 |
| α | 0° | 8° | - |

All Dimensions in mm

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



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