

## Product Summary

| Device | BV <sub>DSS</sub> | R <sub>DS(ON)</sub> Max        | I <sub>D</sub> Max<br>T <sub>A</sub> = +25°C |
|--------|-------------------|--------------------------------|--|
| Q1     | 30V               | 0.4Ω @ V <sub>GS</sub> = 10V   | 0.9A   |
|        |                   | 0.7Ω @ V <sub>GS</sub> = 4.5V  | 0.68A  |
| Q2     | -30V              | 0.9Ω @ V <sub>GS</sub> = -10V  | -0.6A  |
|        |                   | 1.7Ω @ V <sub>GS</sub> = -4.5V | -0.43A                                       |

## Features and Benefits

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- ESD Protected Gate
- **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_us@diodes.com) or your local Diodes representative.**  
<https://www.diodes.com/quality/product-definitions/>

## Description and Applications

This MOSFET is designed to minimize the on-state resistance (R<sub>DS(ON)</sub>) yet maintain superior switching performance, making it ideal for high-efficiency power-management applications.

- Motor controls
- Power-management functions
- DC-DC converters

## Mechanical Data

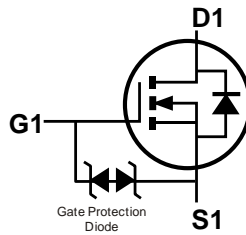
- Package: SOT363
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections Indicator: See Diagram
- Terminals: Finish — Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.027 grams (Approximate)



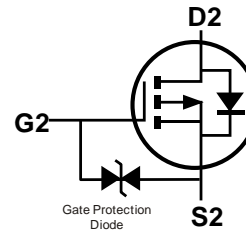
SOT363



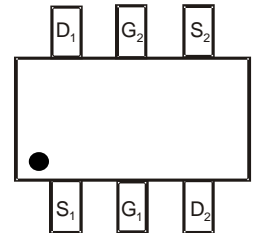
Top View



Q1 N-CHANNEL



Q2 P-CHANNEL



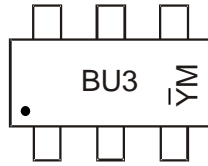
Top View  
Pin Out

## Ordering Information (Note 4)

| Part Number   | Package | Packing |             |
|---------------|---------|---------|-------------|
|               |         | Qty.    | Carrier     |
| DMC3350LDW-7  | SOT363  | 3000    | Tape & Reel |
| DMC3350LDW-13 | SOT363  | 10000   | Tape & 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



BU3 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: L = 2024)  
 M = Month (ex: 9 = September)

### Date Code Key

| Year | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | K    | L    | M    | N    | P    | R    | S    | T    | U    | V    | W    | X    |

| 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<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic   |              |  | Symbol           | Value_Q1    | Value_Q2      | Unit |
|--|--------------|--|------------------|-------------|---------------|------|
| Drain-Source Voltage   |              |  | V <sub>DSS</sub> | 30          | -30           | V    |
| Gate-Source Voltage  |              |  | V <sub>GSS</sub> | ±20         | ±20           | V    |
| Continuous Drain Current (Note 5)<br>Q1: V <sub>GS</sub> = 10V<br>Q2: V <sub>GS</sub> = -10V | Steady State | T <sub>A</sub> = +25°C<br>T <sub>A</sub> = +70°C | I <sub>D</sub>   | 0.9<br>0.72 | -0.6<br>-0.48 | A    |
| Maximum Continuous Body Diode Forward Current (Note 5)                                       |              |  | I <sub>S</sub>   | 0.44        | -0.44         | A    |
| Pulsed Drain Current (10μs Pulse, Duty Cycle = 1%)   |              |  | I <sub>DM</sub>  | 3.4         | -2.5          | A    |

## Thermal Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                                   |              | Symbol                            | Value       | Unit |
|--|--------------|-----------------------------------|-------------|------|
| Total Power Dissipation (Note 6)                 |              | P <sub>D</sub>                    | 0.35        | W    |
| Thermal Resistance, Junction to Ambient (Note 6) | Steady State | R <sub>θJA</sub>                  | 353         | °C/W |
| Total Power Dissipation (Note 5)                 |              | P <sub>D</sub>                    | 0.49        | W    |
| Thermal Resistance, Junction to Ambient (Note 5) | Steady State | R <sub>θJA</sub>                  | 254         | °C/W |
| Operating and Storage Temperature Range          |              | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 | °C   |

Notes: 5. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.  
 6. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

**Electrical Characteristics – N Channel – Q1** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                             | Symbol              | Min | Typ  | Max | Unit | Test Condition   |
|--|---------------------|-----|------|-----|------|--|
| <b>OFF CHARACTERISTICS (Note 7)</b>        |                     |     |      |     |      |  |
| Drain-Source Breakdown Voltage             | BV <sub>DSS</sub>   | 30  | —    | —   | V    | V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA   |
| Zero Gate Voltage Drain Current            | I <sub>DSS</sub>    | —   | —    | 1.0 | μA   | V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V  |
| Gate-Source Leakage                        | I <sub>GSS</sub>    | —   | —    | ±10 | μA   | V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V   |
| <b>ON CHARACTERISTICS (Note 7)</b>         |                     |     |      |     |      |  |
| Gate Threshold Voltage                     | V <sub>GS(TH)</sub> | 0.8 | —    | 1.6 | V    | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA                                   |
| Static Drain-Source On-Resistance          | R <sub>DS(ON)</sub> | —   | 0.24 | 0.4 | Ω    | V <sub>GS</sub> = 10V, I <sub>D</sub> = 0.59A  |
|  |                     | —   | 0.32 | 0.7 |      | V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 0.2A  |
| Diode Forward Voltage                      | V <sub>SD</sub>     | —   | 0.7  | 1.2 | V    | V <sub>GS</sub> = 0V, I <sub>S</sub> = 0.1A  |
| <b>DYNAMIC CHARACTERISTICS (Note 8)</b>    |                     |     |      |     |      |  |
| Input Capacitance                          | C <sub>iss</sub>    | —   | 38.4 | —   | pF   | V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0V<br>f = 1.0MHz                                    |
| Output Capacitance                         | C <sub>oss</sub>    | —   | 10.5 | —   | pF   |  |
| Reverse Transfer Capacitance               | C <sub>rss</sub>    | —   | 6.4  | —   | pF   |  |
| Total Gate Charge (V <sub>GS</sub> = 4.5V) | Q <sub>g</sub>      | —   | 0.5  | —   | nC   | V <sub>DS</sub> = 10V, I <sub>D</sub> = 250mA  |
| Total Gate Charge (V <sub>GS</sub> = 10V)  | Q <sub>g</sub>      | —   | 1.1  | —   | nC   |  |
| Gate-Source Charge                         | Q <sub>gs</sub>     | —   | 0.2  | —   | nC   |  |
| Gate-Drain Charge                          | Q <sub>gd</sub>     | —   | 0.1  | —   | nC   |  |
| Turn-On Delay Time                         | t <sub>D(ON)</sub>  | —   | 3.2  | —   | ns   |  |
| Turn-On Rise Time                          | t <sub>r</sub>      | —   | 12   | —   | ns   | V <sub>GS</sub> = 10V, V <sub>DS</sub> = 30V<br>I <sub>D</sub> = 100mA, R <sub>G</sub> = 25Ω |
| Turn-Off Delay Time                        | t <sub>D(OFF)</sub> | —   | 82   | —   | ns   |  |
| Turn-Off Fall Time                         | t <sub>f</sub>      | —   | 51   | —   | ns   |  |

**Electrical Characteristics – P Channel – Q2** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                              | Symbol              | Min | Typ  | Max  | Unit | Test Condition  |
|---|---------------------|-----|------|------|------|---|
| <b>OFF CHARACTERISTICS (Note 7)</b>         |                     |     |      |      |      |   |
| Drain-Source Breakdown Voltage              | BV <sub>DSS</sub>   | -30 | —    | —    | V    | V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA   |
| Zero Gate Voltage Drain Current             | I <sub>DSS</sub>    | —   | —    | -1   | μA   | V <sub>DS</sub> = -24V, V <sub>GS</sub> = 0V  |
| Gate-Source Leakage                         | I <sub>GSS</sub>    | —   | —    | ±10  | μA   | V <sub>GS</sub> = ±16V, V <sub>DS</sub> = 0V  |
| <b>ON CHARACTERISTICS (Note 7)</b>          |                     |     |      |      |      |   |
| Gate Threshold Voltage                      | V <sub>GS(TH)</sub> | -1  | —    | -2.6 | V    | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA                                   |
| Static Drain-Source On-Resistance           | R <sub>DS(ON)</sub> | —   | 0.46 | 0.9  | Ω    | V <sub>GS</sub> = -10V, I <sub>D</sub> = -0.42A   |
|   |                     | —   | 0.89 | 1.7  |      | V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -0.2A   |
| Diode Forward Voltage                       | V <sub>SD</sub>     | —   | -0.8 | -1.2 | V    | V <sub>GS</sub> = 0V, I <sub>S</sub> = -0.23A   |
| <b>DYNAMIC CHARACTERISTICS (Note 8)</b>     |                     |     |      |      |      |   |
| Input Capacitance                           | C <sub>iss</sub>    | —   | 19   | —    | pF   | V <sub>DS</sub> = -15V, V <sub>GS</sub> = 0V<br>f = 1.0MHz                                    |
| Output Capacitance                          | C <sub>oss</sub>    | —   | 16   | —    | pF   |   |
| Reverse Transfer Capacitance                | C <sub>rss</sub>    | —   | 3    | —    | pF   |   |
| Total Gate Charge (V <sub>GS</sub> = -4.5V) | Q <sub>g</sub>      | —   | 0.36 | —    | nC   | V <sub>DS</sub> = -10V, I <sub>D</sub> = -0.24A   |
| Total Gate Charge (V <sub>GS</sub> = -10V)  | Q <sub>g</sub>      | —   | 0.8  | —    | nC   |   |
| Gate-Source Charge                          | Q <sub>gs</sub>     | —   | 0.1  | —    | nC   |   |
| Gate-Drain Charge                           | Q <sub>gd</sub>     | —   | 0.1  | —    | nC   |   |
| Turn-On Delay Time                          | t <sub>D(ON)</sub>  | —   | 30   | —    | ns   |   |
| Turn-On Rise Time                           | t <sub>r</sub>      | —   | 74   | —    | ns   | V <sub>GS</sub> = -10V, V <sub>DD</sub> = -15V<br>I <sub>D</sub> = -0.5A, R <sub>G</sub> = 1Ω |
| Turn-Off Delay Time                         | t <sub>D(OFF)</sub> | —   | 28   | —    | ns   |   |
| Turn-Off Fall Time                          | t <sub>f</sub>      | —   | 31   | —    | ns   |   |

Notes: 7. Short duration pulse test used to minimize self-heating effect.  
8. Guaranteed by design. Not subject to product testing.

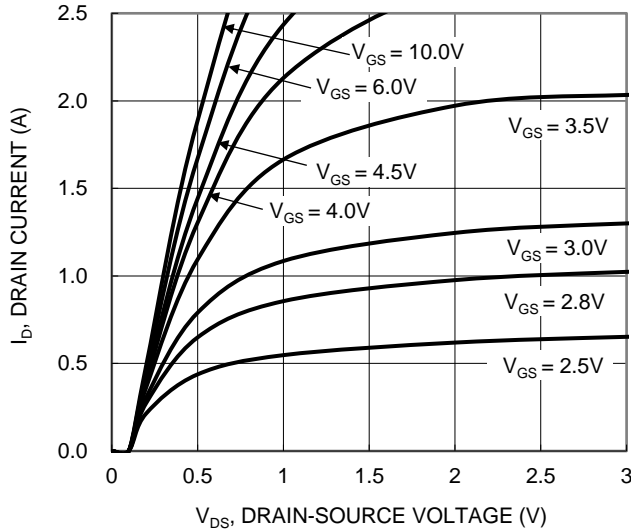


Figure 1. Typical Output Characteristic (Q1)

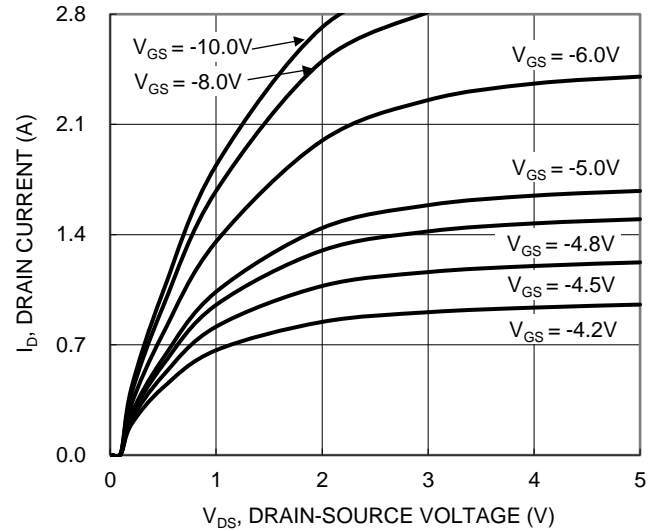


Figure 2. Typical Output Characteristic (Q2)

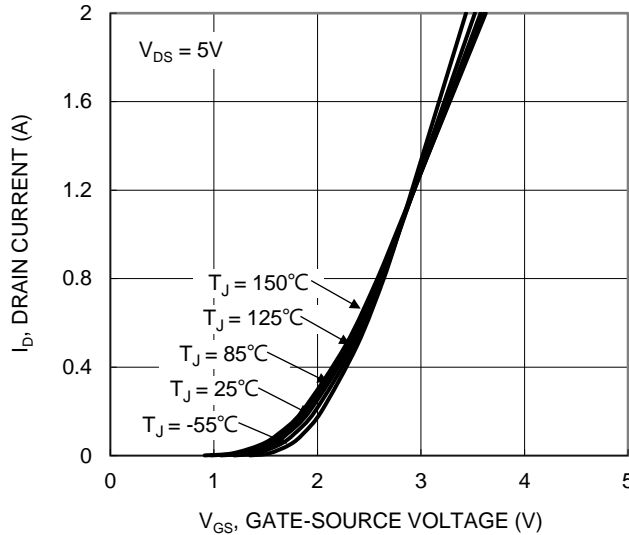


Figure 3. Typical Transfer Characteristic (Q1)

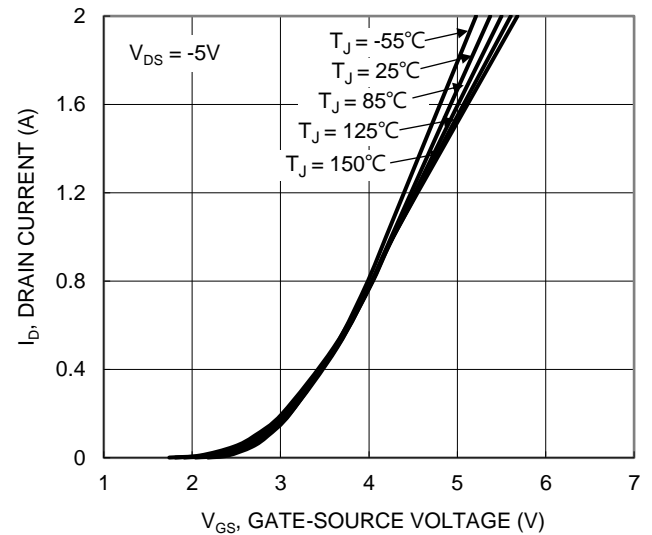


Figure 4. Typical Transfer Characteristic (Q2)

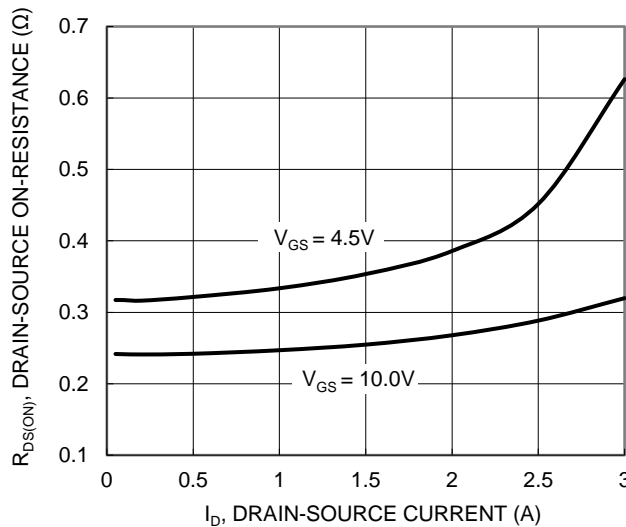


Figure 5. Typical On-Resistance vs. Drain Current and Gate Voltage (Q1)

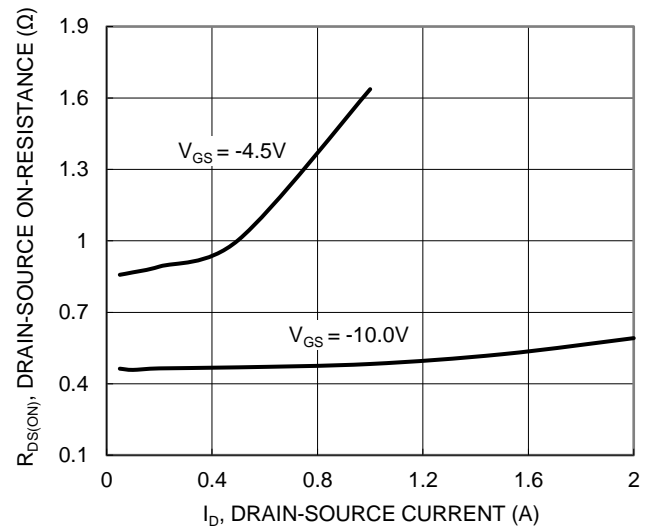


Figure 6. Typical On-Resistance vs. Drain Current and Gate Voltage (Q2)

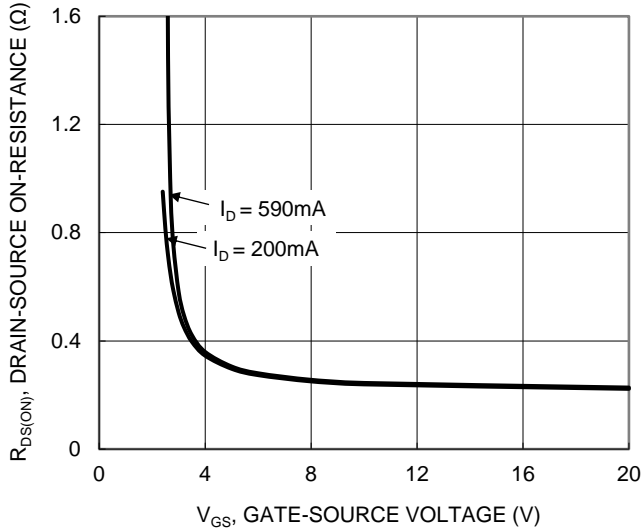


Figure 7. Typical Transfer Characteristic (Q1)

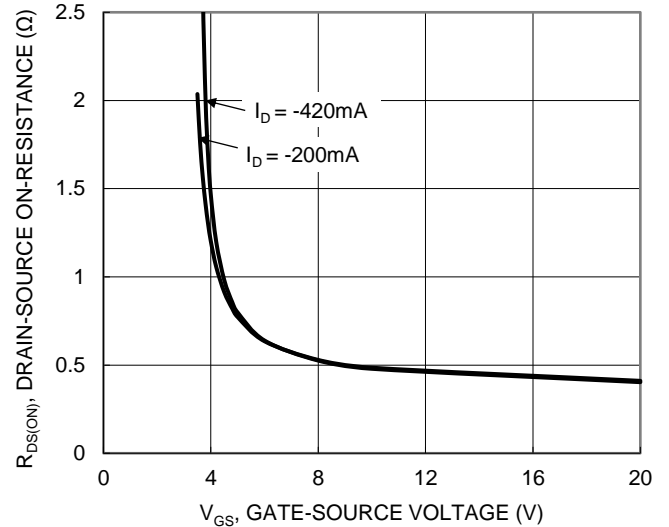


Figure 8. Typical Transfer Characteristic (Q2)

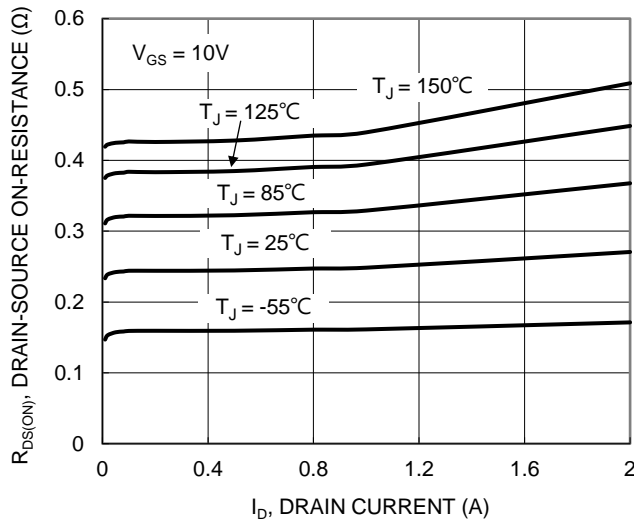


Figure 9. Typical On-Resistance vs. Drain Current and Junction Temperature (Q1)

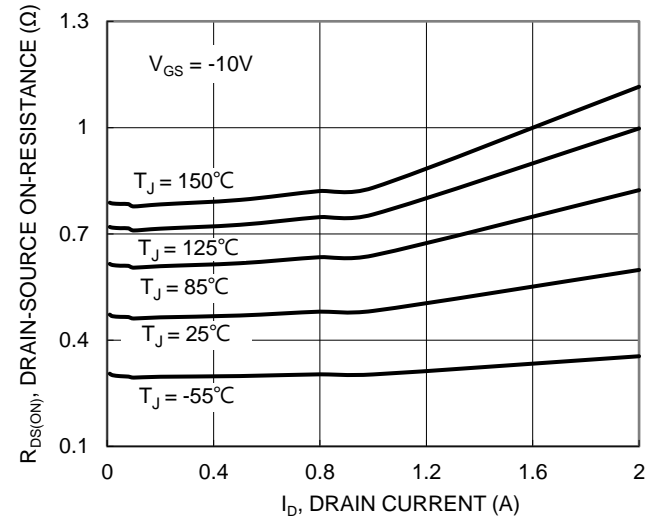


Figure 10. Typical On-Resistance vs. Drain Current and Junction Temperature (Q2)

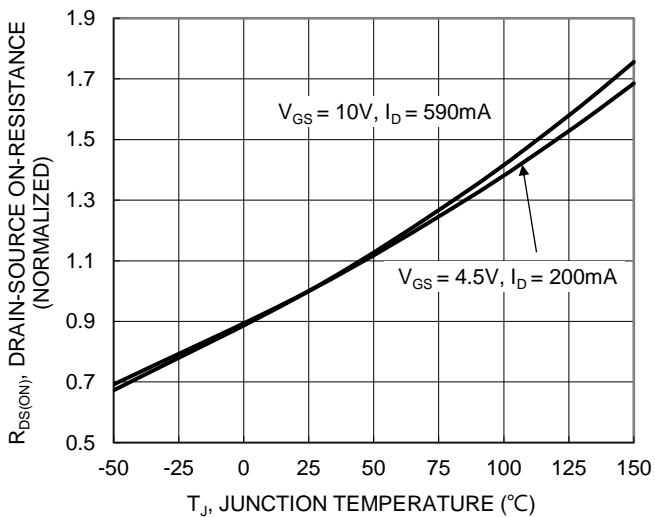


Figure 11. On-Resistance Variation with Junction Temperature (Q1)

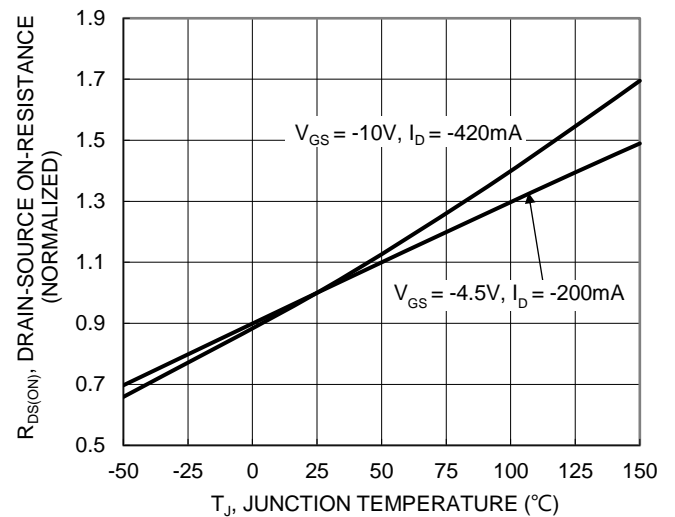


Figure 12. On-Resistance Variation with Junction Temperature (Q2)

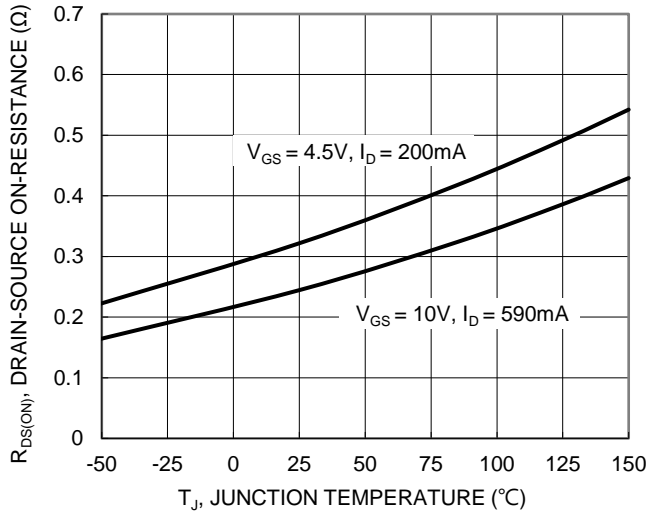


Figure 13. On-Resistance Variation with Junction Temperature (Q1)

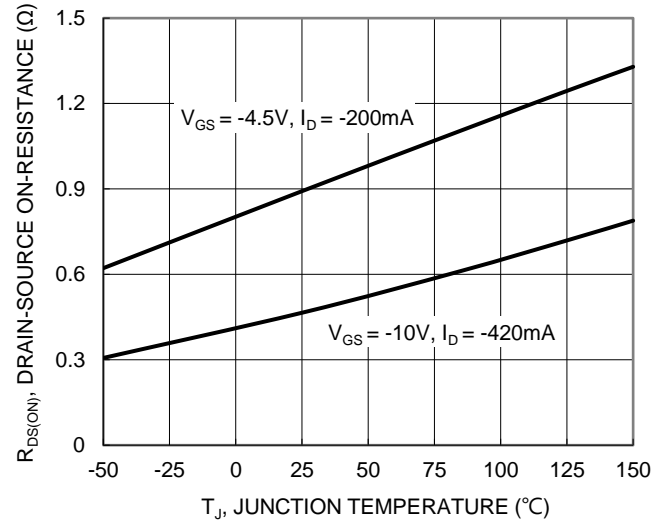


Figure 14. On-Resistance Variation with Junction Temperature (Q2)

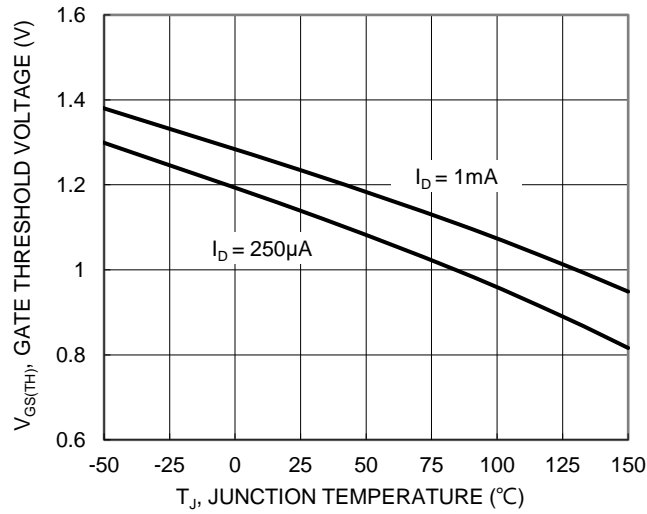


Figure 15. Gate Threshold Variation vs. Junction Temperature (Q1)

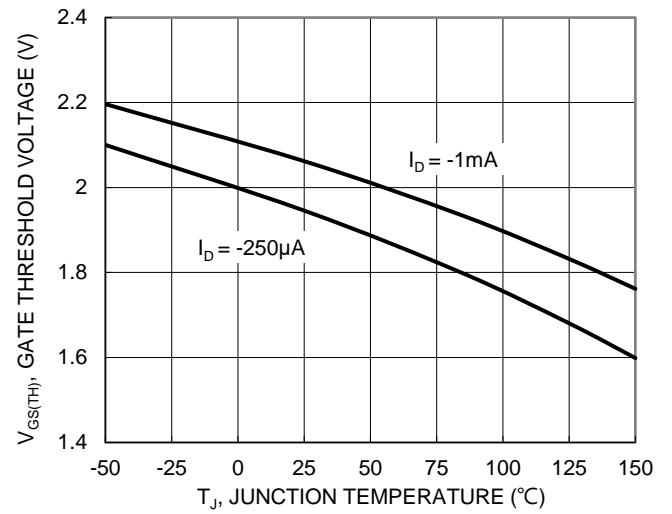


Figure 16. Gate Threshold Variation vs. Junction Temperature (Q2)

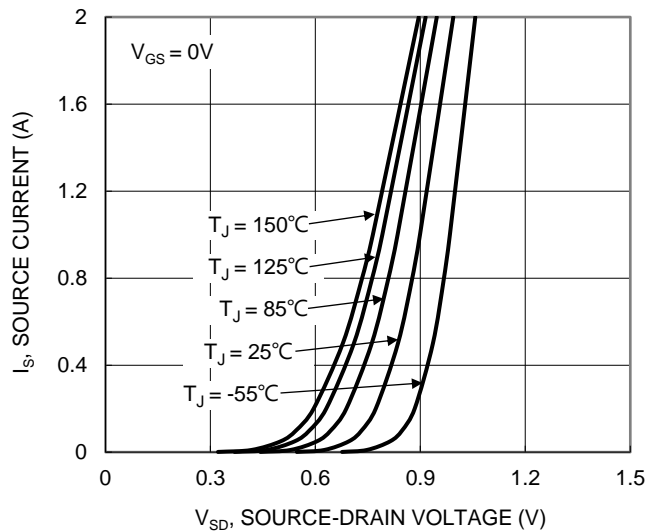


Figure 17. Diode Forward Voltage vs. Current (Q1)

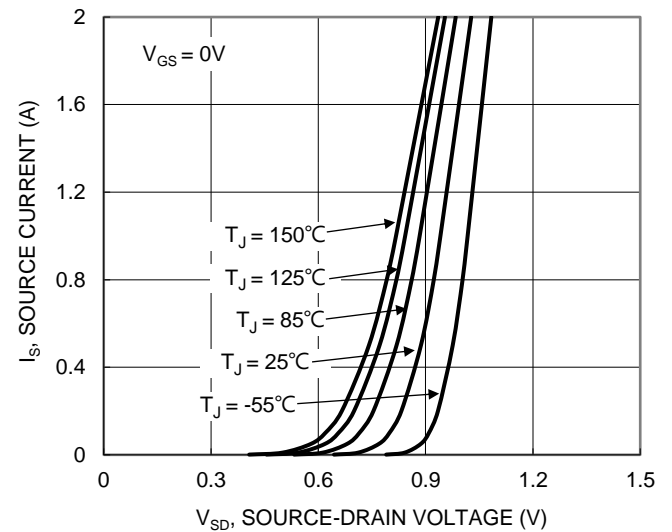


Figure 18. Diode Forward Voltage vs. Current (Q2)

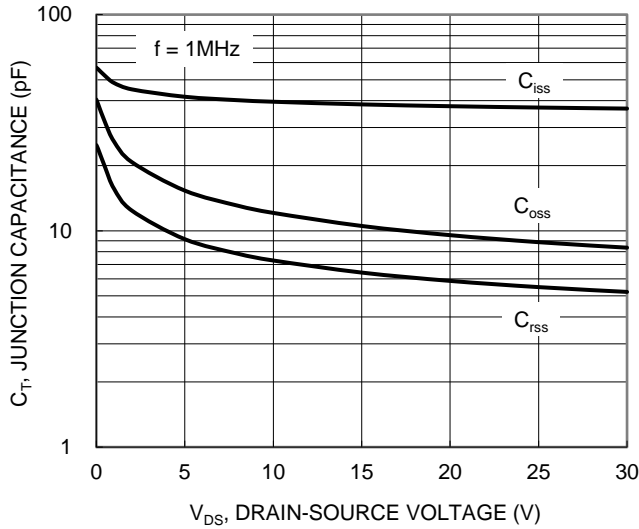


Figure 19. Typical Junction Capacitance (Q1)

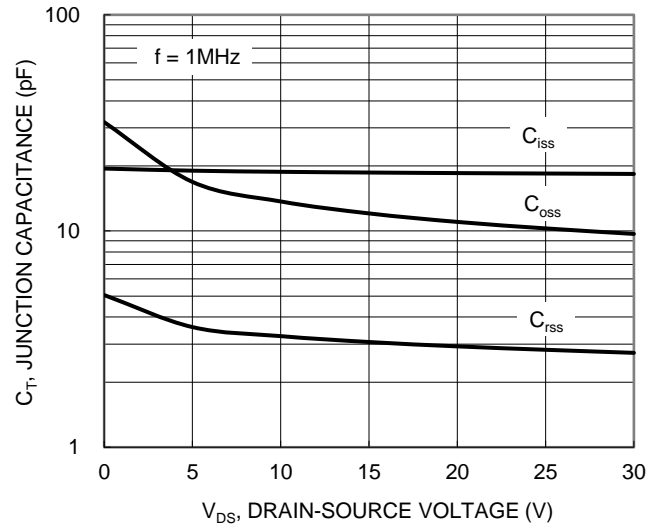


Figure 20. Typical Junction Capacitance (Q2)

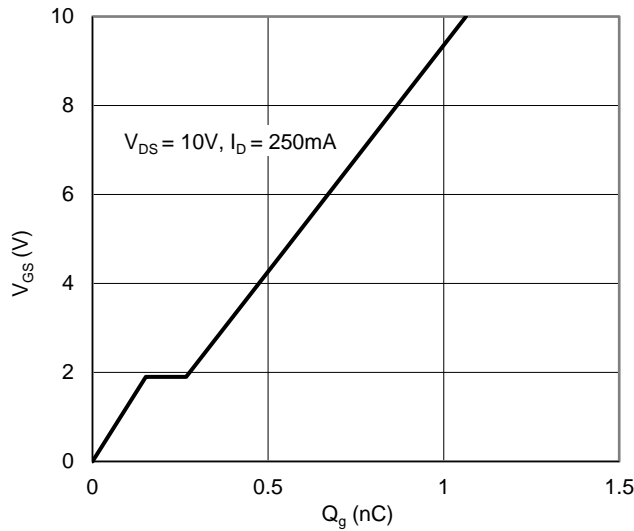


Figure 21. Gate Charge (Q1)

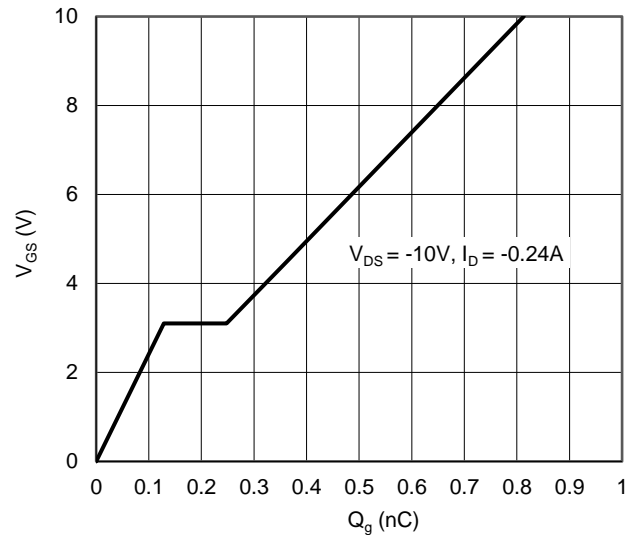


Figure 22. Gate Charge (Q2)

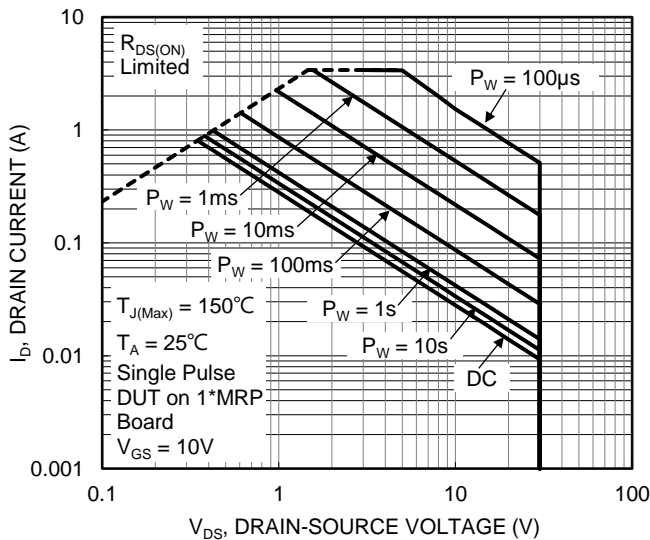


Figure 23. SOA, Safe Operation Area (Q1)

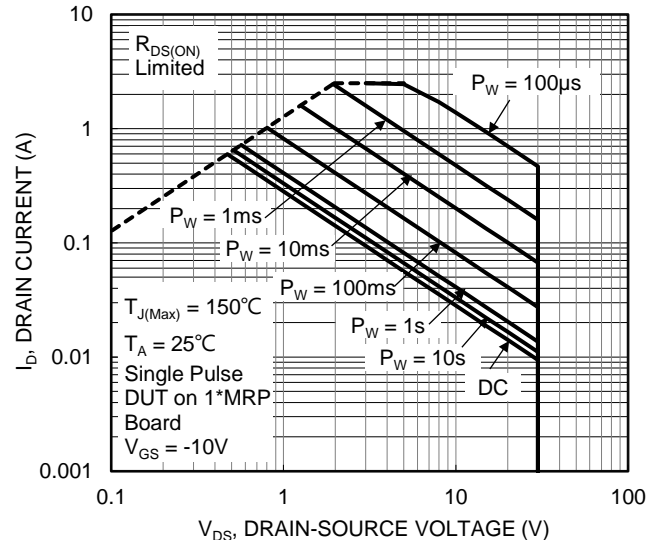


Figure 24. SOA, Safe Operation Area (Q2)

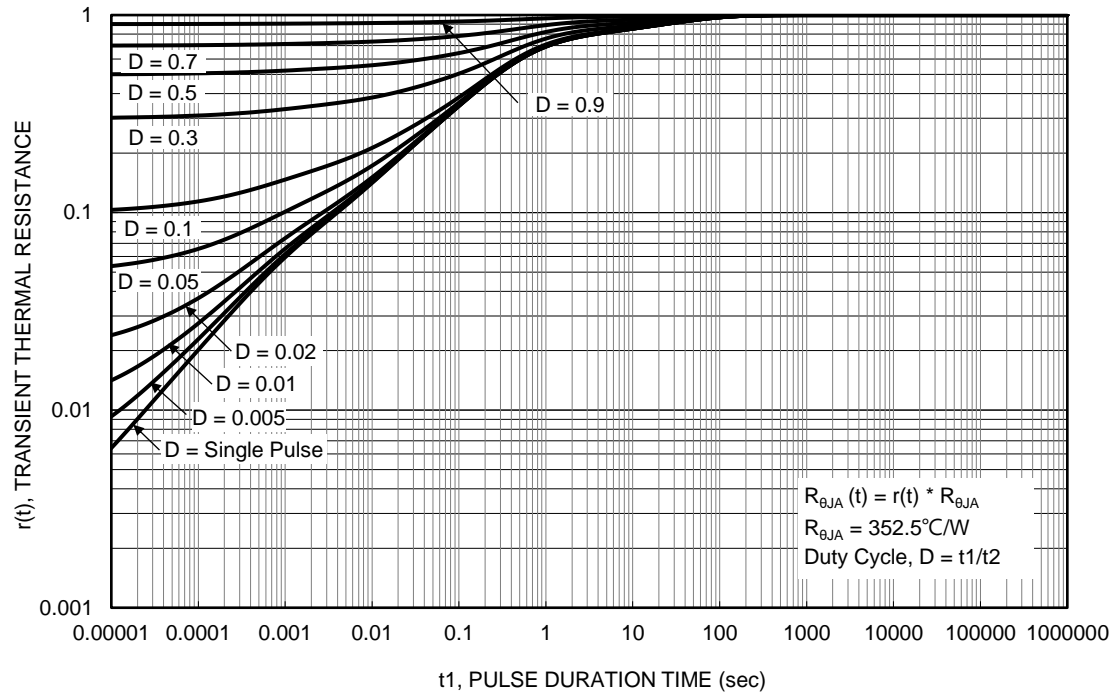


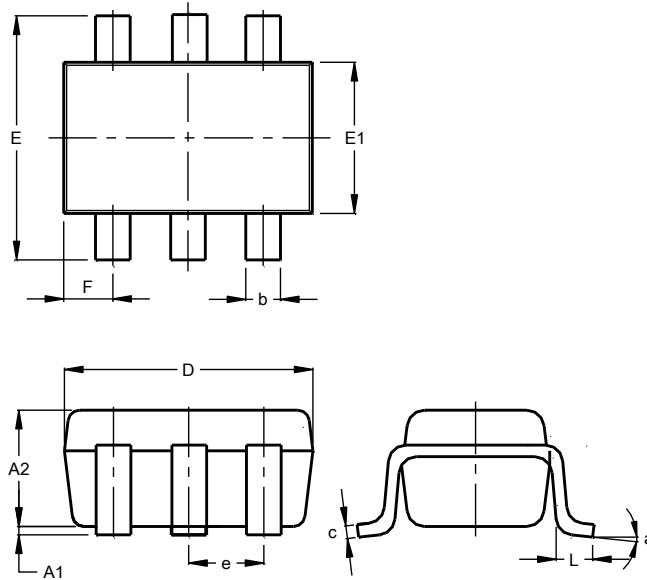
Figure 25. Transient Thermal Resistance (Q1/Q2)



## Package Outline Dimensions

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

### SOT363

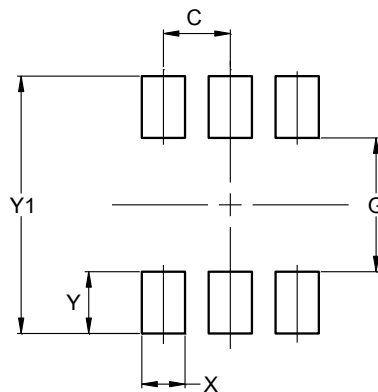


| SOT363               |           |      |       |
|----------------------|-----------|------|-------|
| Dim                  | Min       | Max  | Typ   |
| A1                   | 0.00      | 0.10 | 0.05  |
| A2                   | 0.90      | 1.00 | 0.95  |
| b                    | 0.10      | 0.30 | 0.25  |
| c                    | 0.10      | 0.22 | 0.11  |
| D                    | 1.80      | 2.20 | 2.15  |
| E                    | 2.00      | 2.20 | 2.10  |
| E1                   | 1.15      | 1.35 | 1.30  |
| e                    | 0.650 BSC |      |       |
| F                    | 0.40      | 0.45 | 0.425 |
| L                    | 0.25      | 0.40 | 0.30  |
| a                    | 0°        | 8°   | --    |
| All Dimensions in mm |           |      |       |

## Suggested Pad Layout

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

### SOT363



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 0.650         |
| G          | 1.300         |
| X          | 0.420         |
| Y          | 0.600         |
| Y1         | 2.500         |

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