

**DUAL N-CHANNEL ENHANCEMENT MODE MOSFET**

**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 |
|-----------|-------------------|-------------------------------|----------------------------------------------|
| N-Channel | 30V               | 0.4Ω @ V <sub>GS</sub> = 10V  | 0.8A                                         |
|           |                   | 0.7Ω @ V <sub>GS</sub> = 4.5V | 0.57A                                        |

**Description and Applications**

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

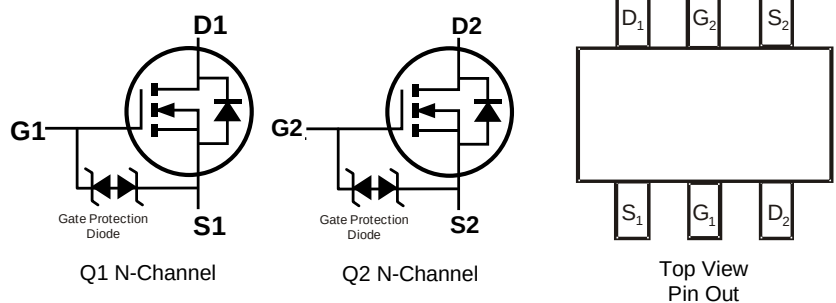
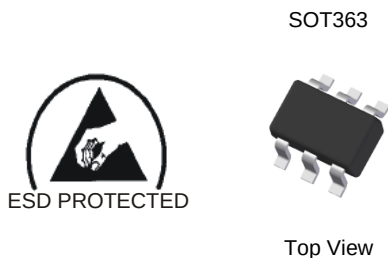
- Motor Control
- Power Management Functions
- DC-DC Converters

**Features and Benefits**

- Dual N-Channel MOSFET
- 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)**

**Mechanical Data**

- Case: SOT363
- Case 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 (B)
- Weight: 0.027 grams (Approximate)

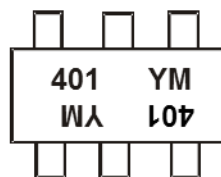


**Ordering Information (Note 4)**

| Part Number   | Case   | Packaging         |
|---------------|--------|-------------------|
| DMN3401LDW-7  | SOT363 | 3000/Tape & Reel  |
| DMN3401LDW-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**



401 = Product Type Marking Code  
YM = Date Code Marking  
Y or  $\bar{Y}$  or  $\underline{Y}$  = Year (ex: G = 2019)  
M = Month (ex: 9 = September)

**Date Code Key**

| Year | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|------|------|------|------|------|------|------|------|------|
| Code | F    | G    | H    | I    | J    | K    | L    | M    |

| 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      | Unit |
|---------------------------------------------------------|--------------|--------------------------------------------------|------------------|------------|------|
| Drain-Source Voltage                                    |              |                                                  | V <sub>DSS</sub> | 30         | V    |
| Gate-Source Voltage                                     |              |                                                  | V <sub>GSS</sub> | ±20        | V    |
| Continuous Drain Current (Note 6) V <sub>GS</sub> = 10V | Steady State | T <sub>A</sub> = +25°C<br>T <sub>A</sub> = +70°C | I <sub>D</sub>   | 0.8<br>0.6 | A    |
| Maximum Continuous Body Diode Forward Current (Note 6)  |              |                                                  | I <sub>S</sub>   | 0.4        | A    |
| Pulsed Drain Current (10μs Pulse, Duty Cycle = 1%)      |              |                                                  | I <sub>DM</sub>  | 4          | A    |

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

| Characteristic                                   |              |  | Symbol                            | Value       | Unit |
|--------------------------------------------------|--------------|--|-----------------------------------|-------------|------|
| Total Power Dissipation (Note 5)                 |              |  | P <sub>D</sub>                    | 0.29        | W    |
| Thermal Resistance, Junction to Ambient (Note 5) | Steady State |  | R <sub>θJA</sub>                  | 433         | °C/W |
| 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>                  | 360         | °C/W |
| Operating and Storage Temperature Range          |              |  | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 | °C   |

**Electrical Characteristics** (@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 | 1.2  | 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> | —   | 0.2  | 0.4 | Ω    | V <sub>GS</sub> = 10V, I <sub>D</sub> = 0.59A                                                 |
|                                            |                     | —   | 0.3  | 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> = 10mA                                                   |
| <b>DYNAMIC CHARACTERISTICS (Note 8)</b>    |                     |     |      |     |      |                                                                                               |
| Input Capacitance                          | C <sub>iss</sub>    | —   | 50   | —   | pF   | V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0V,<br>f = 1.0MHz                                    |
| Output Capacitance                         | C <sub>oss</sub>    | —   | 12   | —   | pF   |                                                                                               |
| Reverse Transfer Capacitance               | C <sub>rss</sub>    | —   | 10   | —   | pF   |                                                                                               |
| Gate Resistance                            | R <sub>g</sub>      | —   | 58   | —   | Ω    | V <sub>DS</sub> = V <sub>GS</sub> = 0V, f = 1.0MHz                                            |
| Total Gate Charge (V <sub>GS</sub> = 4.5V) | Q <sub>g</sub>      | —   | 0.5  | —   | nC   | V <sub>DS</sub> = 10V, V <sub>GS</sub> = 10V<br>I <sub>D</sub> = 250mA                        |
| Total Gate Charge (V <sub>GS</sub> = 10V)  | Q <sub>g</sub>      | —   | 1.2  | —   | 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>  | —   | 3.5  | —   | ns   | V <sub>GS</sub> = 10V, V <sub>DS</sub> = 30V,<br>I <sub>D</sub> = 100mA, R <sub>G</sub> = 25Ω |
| Turn-On Rise Time                          | t <sub>R</sub>      | —   | 3.3  | —   | ns   |                                                                                               |
| Turn-Off Delay Time                        | t <sub>D(OFF)</sub> | —   | 16.8 | —   | ns   |                                                                                               |
| Turn-Off Fall Time                         | t <sub>F</sub>      | —   | 13.8 | —   | ns   |                                                                                               |

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

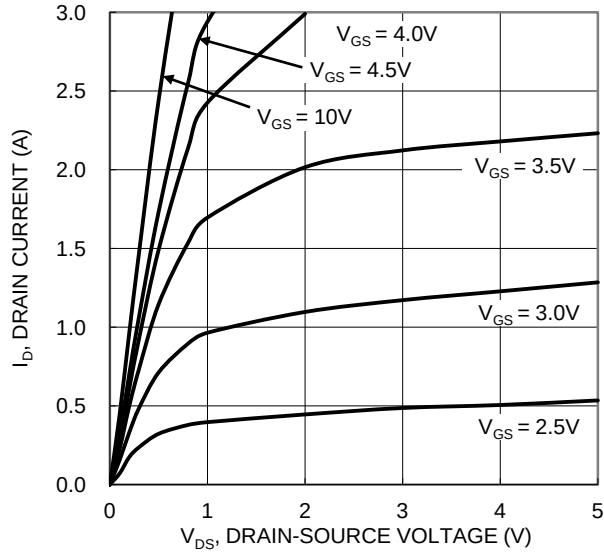


Figure 1. Typical Output Characteristic

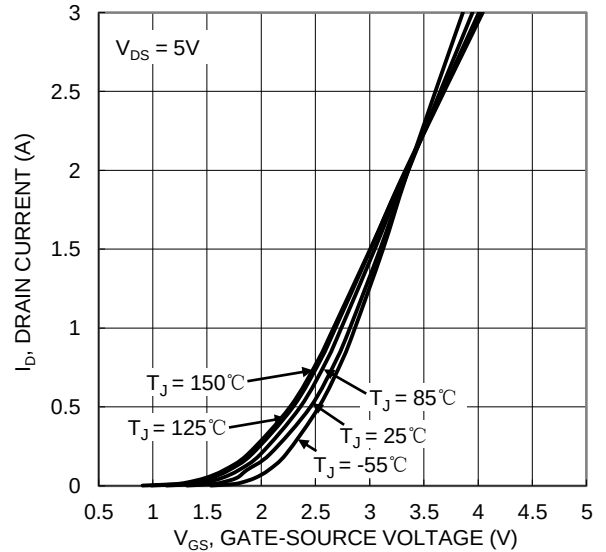


Figure 2. Typical Transfer Characteristic

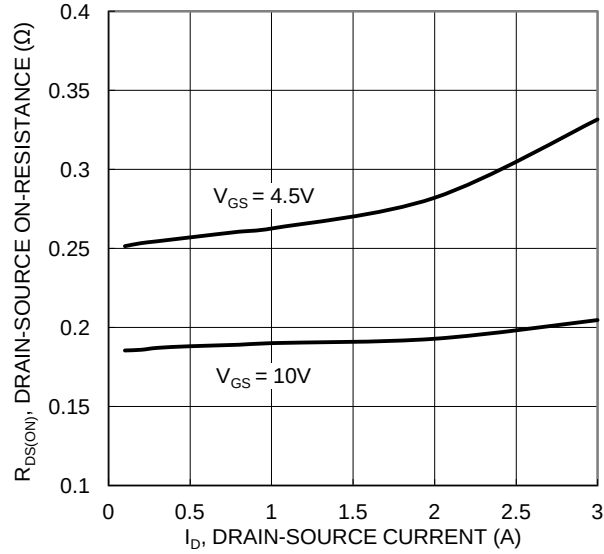


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

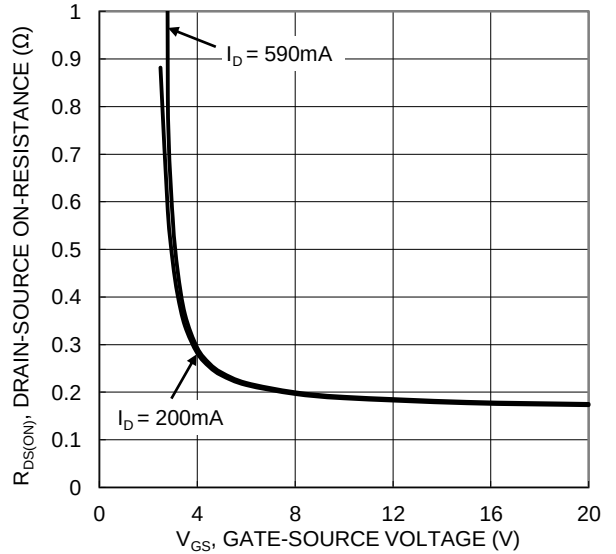


Figure 4. Typical Transfer Characteristic

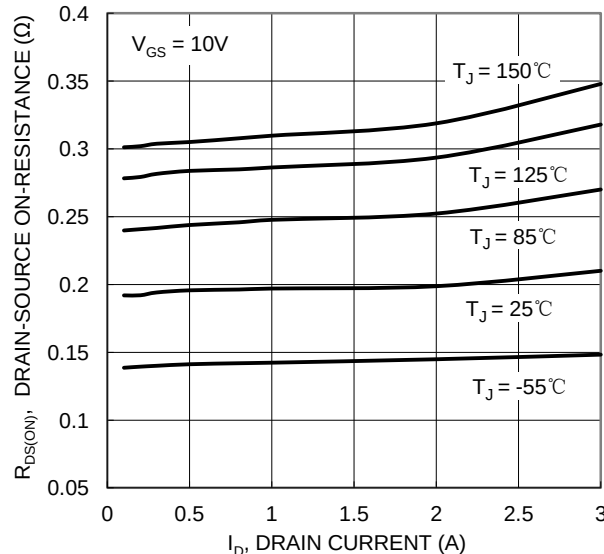


Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature

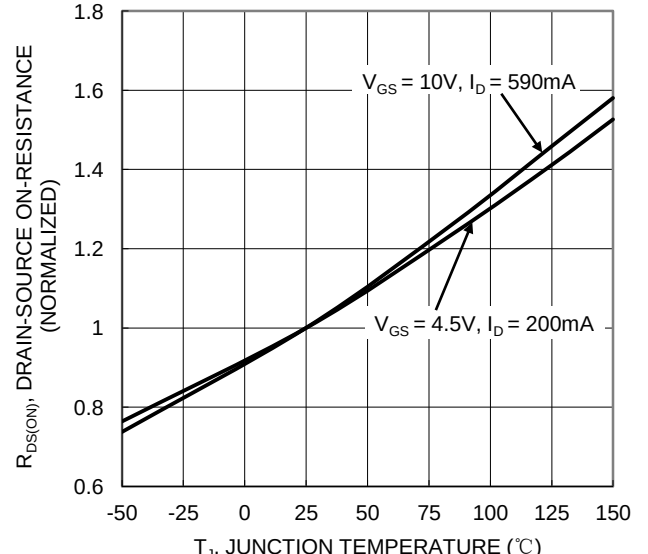
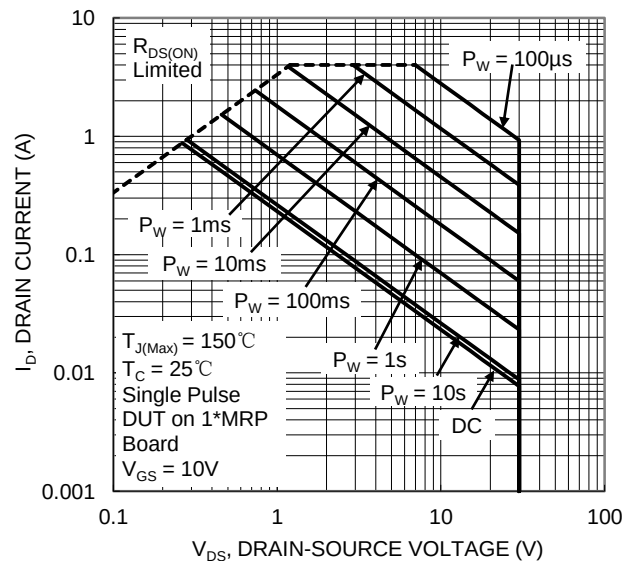
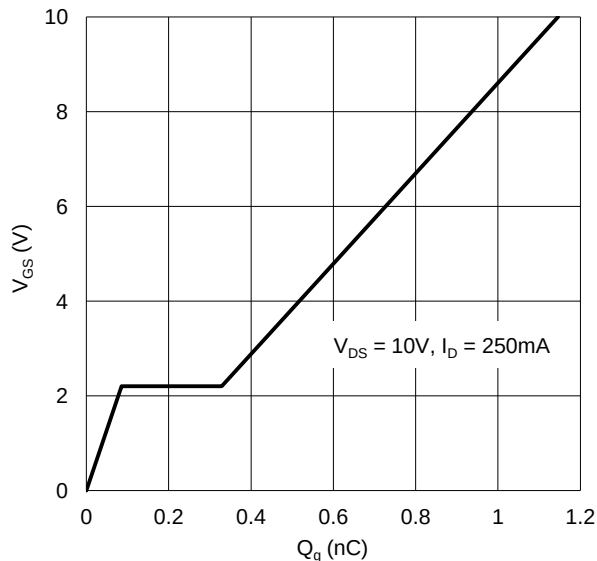
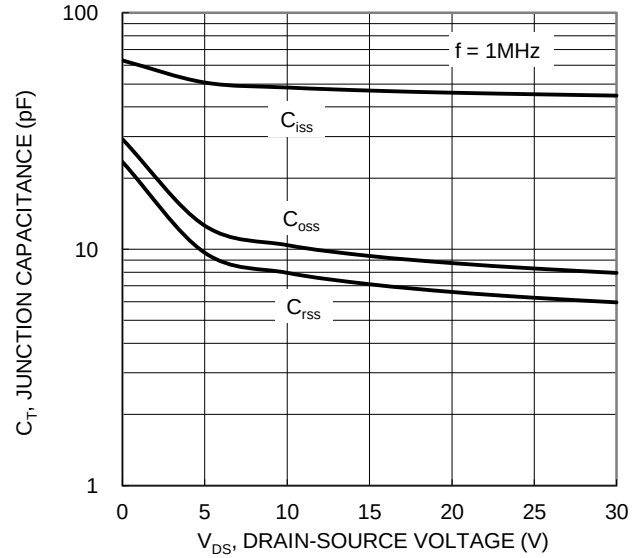
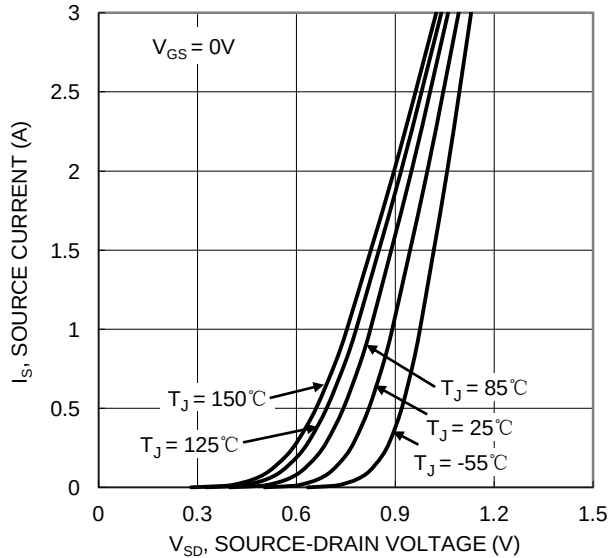
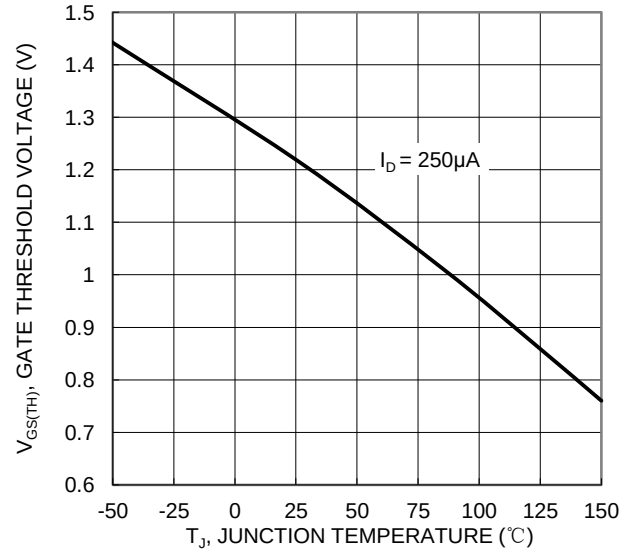
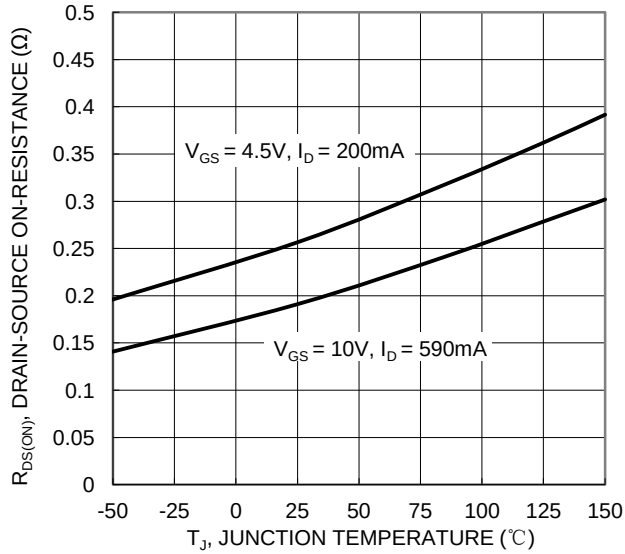


Figure 6. On-Resistance Variation with Junction Temperature



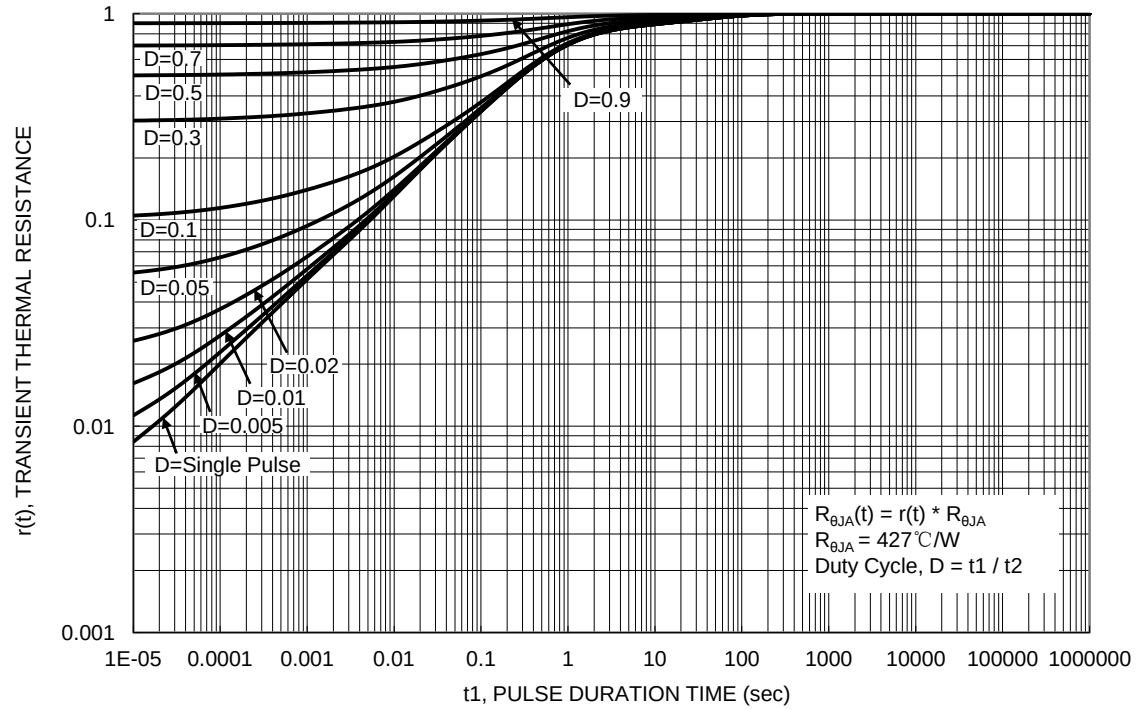
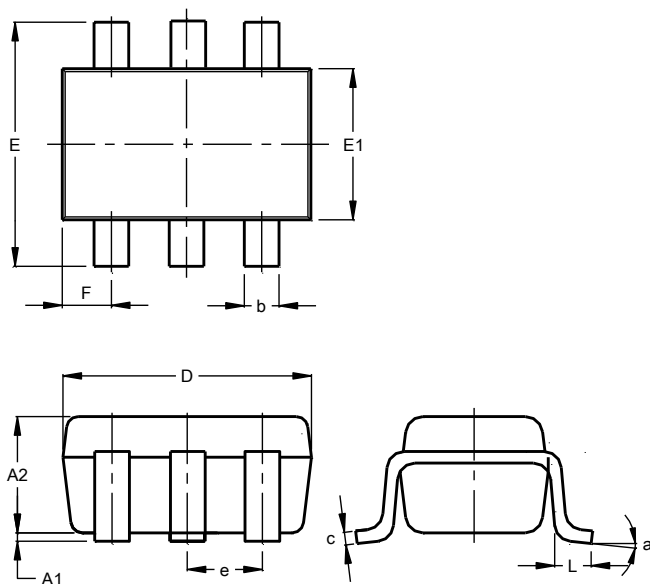


Figure 13. Transient Thermal Resistance

## Package Outline Dimensions

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

### SOT363

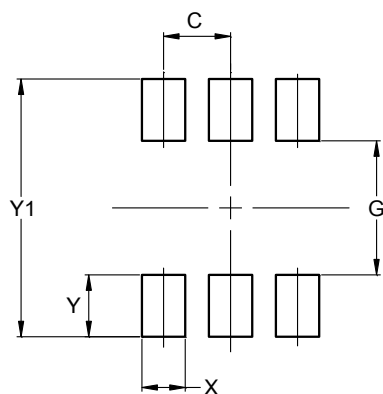


| SOT363               |           |      |       |
|----------------------|-----------|------|-------|
| Dim                  | Min       | Max  | Typ   |
| A1                   | 0.00      | 0.10 | 0.05  |
| A2                   | 0.90      | 1.00 | 0.95  |
| b                    | 0.10      | 0.30 | 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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