

**DUAL N-CHANNEL ENHANCEMENT MODE MOSFET**
**Product Summary**

| BV <sub>DSS</sub> | R <sub>DS(ON)</sub> max       | I <sub>D</sub> max<br>T <sub>A</sub> = +25°C |
|-------------------|-------------------------------|----------------------------------------------|
| 60V               | 2Ω @ V <sub>GS</sub> = 4.5V   | 350mA                                        |
|                   | 2.5Ω @ V <sub>GS</sub> = 2.5V |                                              |

**Description**

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.

**Applications**

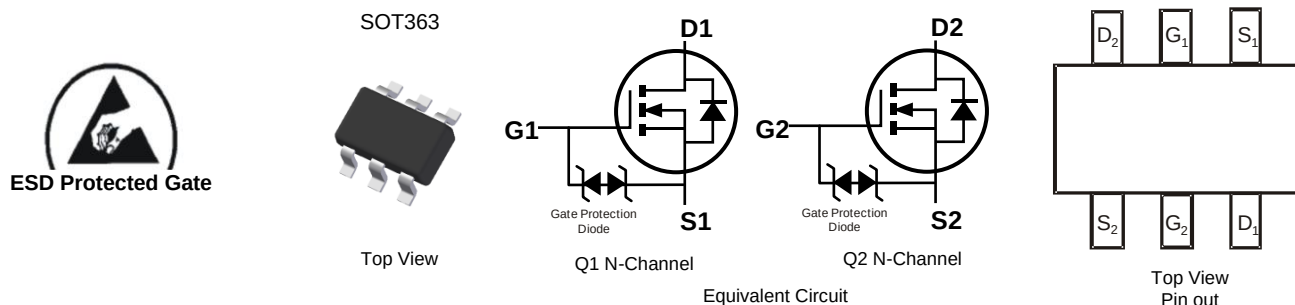
- Motor Control
- Power Management Functions

**Features**

- Dual N-Channel MOSFET
- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Ultra-Small Surface Mount Package
- **ESD Protected Gate**
- **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**

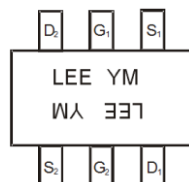
**Mechanical Data**

- Case: SOT363
- Case Material: Molded Plastic. "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Alloy 42 Leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208 (e3)
- Terminal Connections: See Diagram
- Weight: 0.006 grams (Approximate)


**Ordering Information** (Note 4)

| Part Number   | Case   | Packaging         |
|---------------|--------|-------------------|
| DMN62D0UDW-7  | SOT363 | 3000/Tape & Reel  |
| DMN62D0UDW-13 | SOT363 | 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](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**


LEE = Product Type Marking Code  
 YM = Date Code Marking  
 Y or Y = Year (ex: D = 2016)  
 M = Month (ex: 9 = September)

**Date Code Key**

| Year  | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|
| Code  | D    | E    | F    | G    | H    | I    | J    | K    | L    | M    | N    | O    |
| 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> | 60    | V    |
| Gate-Source Voltage                                      |              |                        | V <sub>GSS</sub> | ±20   | V    |
| Continuous Drain Current (Note 6) V <sub>GS</sub> = 4.5V | Steady State | T <sub>A</sub> = +25°C | I <sub>D</sub>   | 350   | mA   |
|                                                          |              | T <sub>A</sub> = +70°C |                  | 290   |      |
| Maximum Continuous Body Diode Forward Current (Note 6)   |              |                        | I <sub>S</sub>   | 0.4   | 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>                    | 320         | mW   |
| Thermal Resistance, Junction to Ambient (Note 5) | Steady State |  | R <sub>θJA</sub>                  | 400         | °C/W |
| Total Power Dissipation (Note 6)                 |              |  | P <sub>D</sub>                    | 410         | mW   |
| Thermal Resistance, Junction to Ambient (Note 6) | Steady State |  | R <sub>θJA</sub>                  | 312         | °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>   | 60  | —    | —   | 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> = 60V, 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> | 0.5 | —    | 1.0 | V    | V <sub>DS</sub> = 10V, I <sub>D</sub> = 250μA                                                 |
| Static Drain-Source On-Resistance       | R <sub>DS(ON)</sub> | —   | 1.2  | 2.0 | Ω    | V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 0.1A                                                 |
|                                         |                     |     | 1.4  | 2.5 |      | V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 0.05A                                                |
|                                         |                     |     | 1.8  | 3.0 |      | V <sub>GS</sub> = 1.8V, I <sub>D</sub> = 0.05A                                                |
| Forward Transconductance                | Y <sub>fs</sub>     | —   | 1.8  | —   | S    | V <sub>DS</sub> = 10V, I <sub>D</sub> = 0.2A                                                  |
| Diode Forward Voltage                   | V <sub>SD</sub>     | —   | 0.8  | 1.3 | V    | V <sub>GS</sub> = 0V, I <sub>S</sub> = 115mA                                                  |
| <b>DYNAMIC CHARACTERISTICS (Note 8)</b> |                     |     |      |     |      |                                                                                               |
| Input Capacitance                       | C <sub>iss</sub>    | —   | 32   | —   | pF   | V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V<br>f = 1.0MHz                                     |
| Output Capacitance                      | C <sub>oss</sub>    | —   | 3.9  | —   | pF   |                                                                                               |
| Reverse Transfer Capacitance            | C <sub>rss</sub>    | —   | 2.4  | —   | pF   |                                                                                               |
| Gate Resistance                         | R <sub>g</sub>      | —   | 101  | —   | Ω    | f = 1MHz, V <sub>GS</sub> = 0V, V <sub>DS</sub> = 0V                                          |
| Total Gate Charge                       | Q <sub>g</sub>      | —   | 0.5  | —   | nC   | V <sub>GS</sub> = 4.5V, V <sub>DS</sub> = 10V,<br>I <sub>D</sub> = 250mA                      |
| Gate-Source Charge                      | Q <sub>gs</sub>     | —   | 0.09 | —   | nC   |                                                                                               |
| Gate-Drain Charge                       | Q <sub>gd</sub>     | —   | 0.09 | —   | nC   |                                                                                               |
| Turn-On Delay Time                      | t <sub>D(ON)</sub>  | —   | 2.4  | —   | ns   | V <sub>DD</sub> = 30V, V <sub>GS</sub> = 10V,<br>R <sub>G</sub> = 25Ω, I <sub>D</sub> = 200mA |
| Turn-On Rise Time                       | t <sub>R</sub>      | —   | 2.5  | —   | ns   |                                                                                               |
| Turn-Off Delay Time                     | t <sub>D(OFF)</sub> | —   | 22.6 | —   | ns   |                                                                                               |
| Turn-Off Fall Time                      | t <sub>F</sub>      | —   | 12.5 | —   | ns   |                                                                                               |

- Notes:
5. Device mounted on FR-4 PCB, with minimum recommended pad layout
  6. Device mounted on 1" x 1" FR-4 PCB with high coverage 2oz. Copper, single sided.
  7. Short duration pulse test used to minimize self-heating effect.
  8. Guaranteed by design. Not subject to product testing.

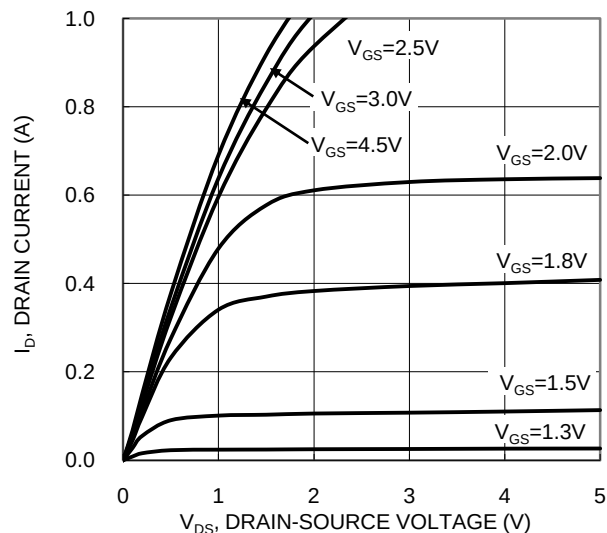


Figure 1. Typical Output Characteristic

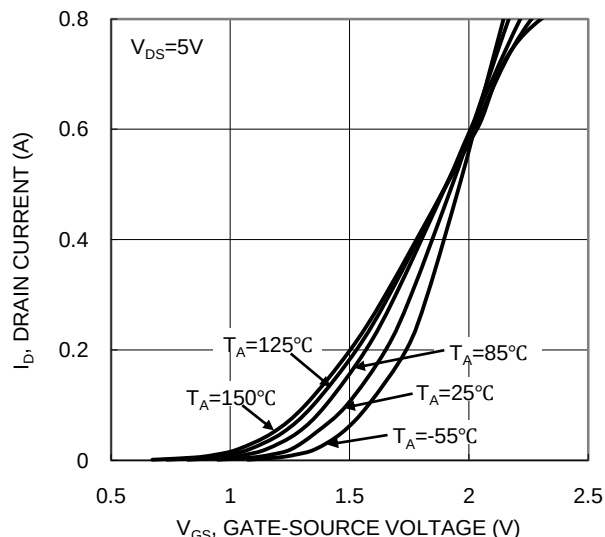


Figure 2. Typical Transfer Characteristic

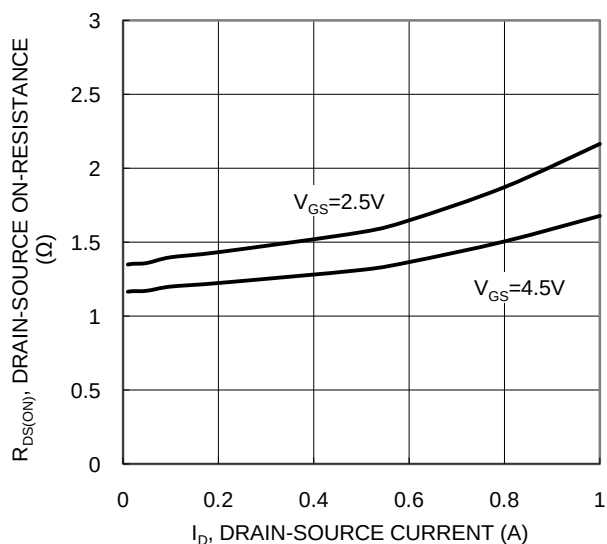


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

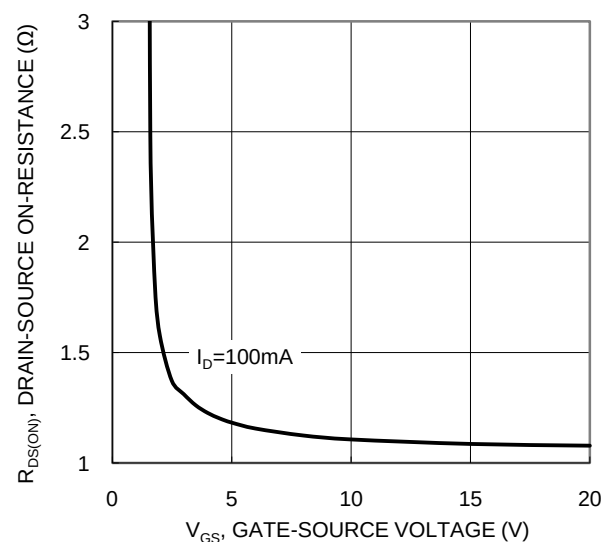


Figure 4. Typical Transfer Characteristic

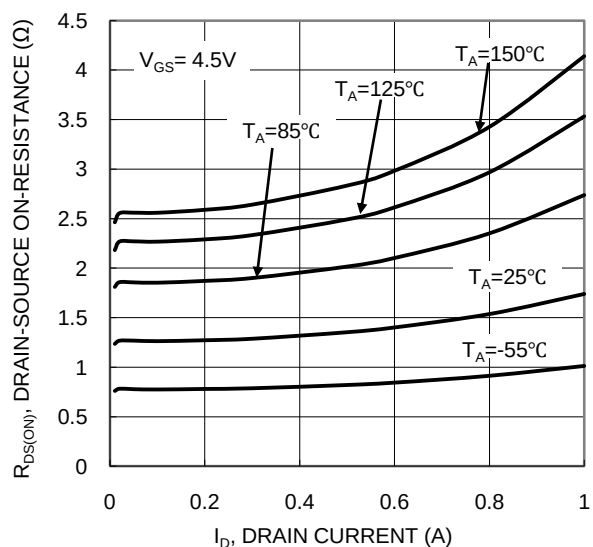


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

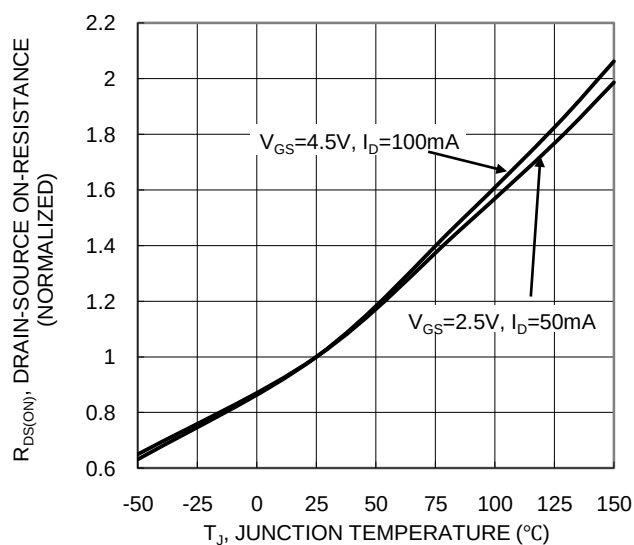
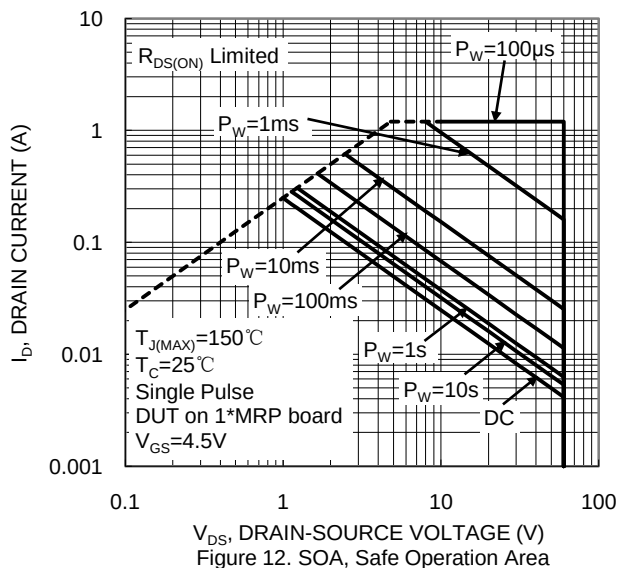
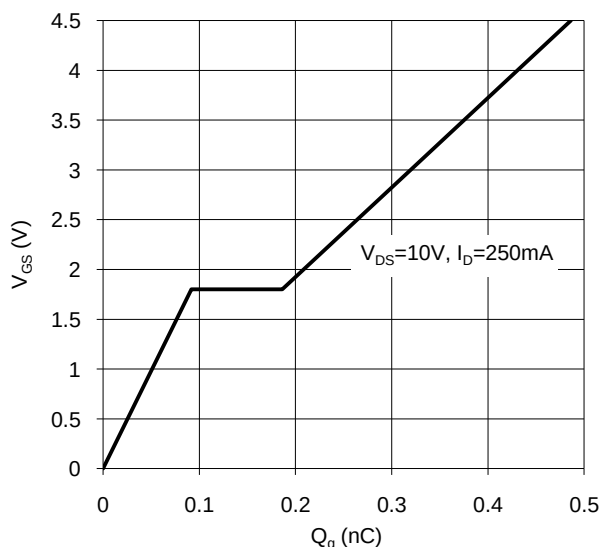
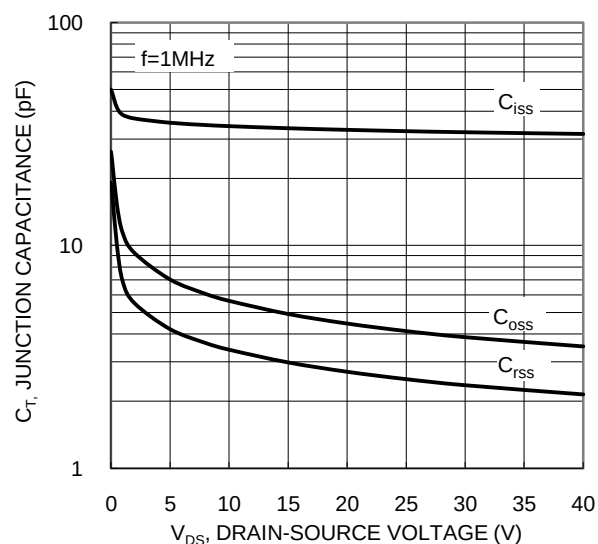
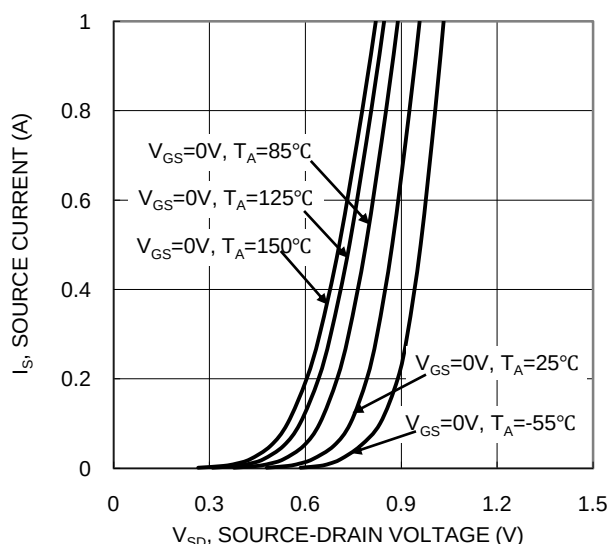
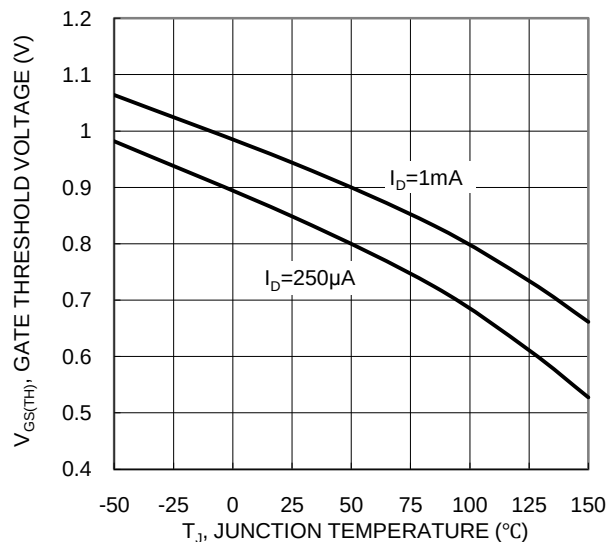
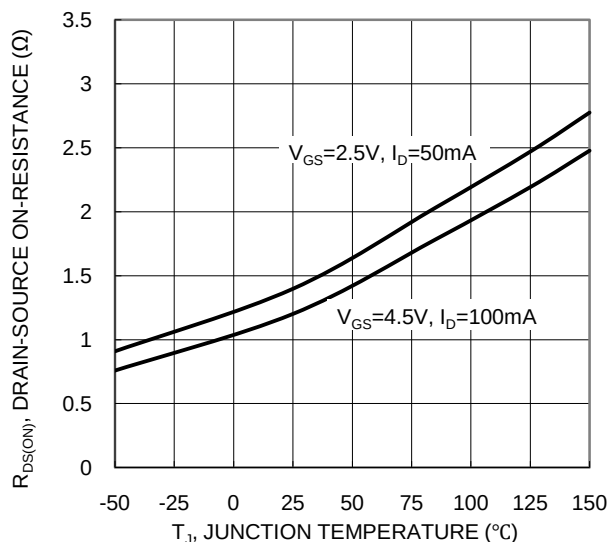


Figure 6. On-Resistance Variation with Junction Temperature



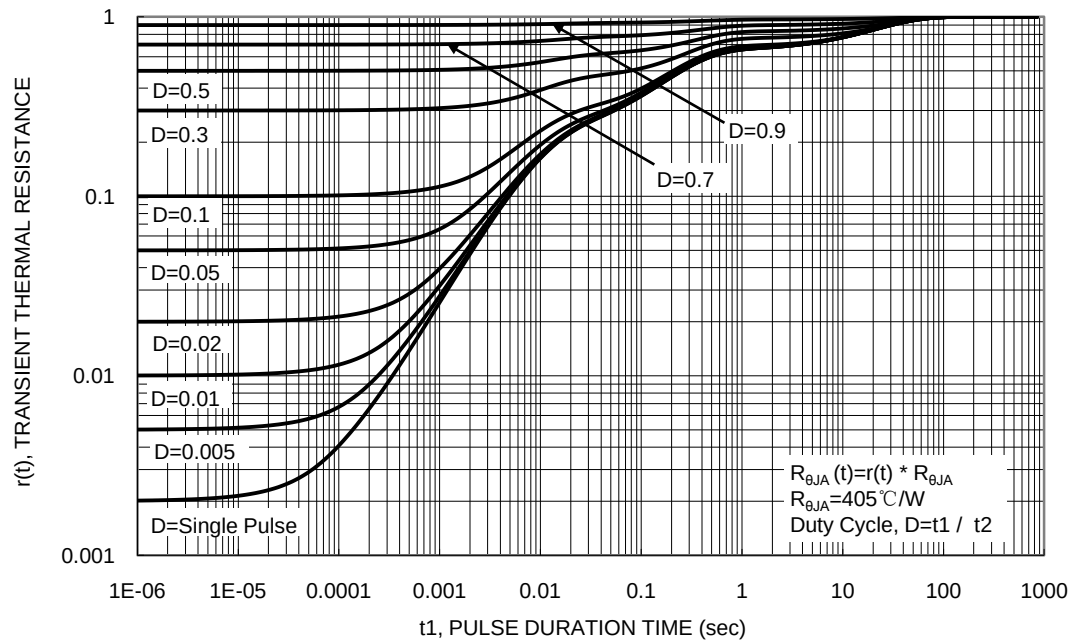
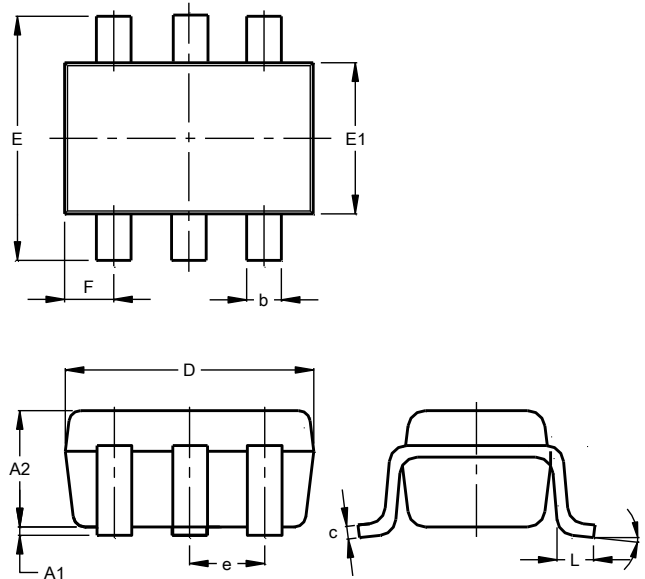


Figure 13. Transient Thermal Resistance

## Package Outline Dimensions

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

SOT363

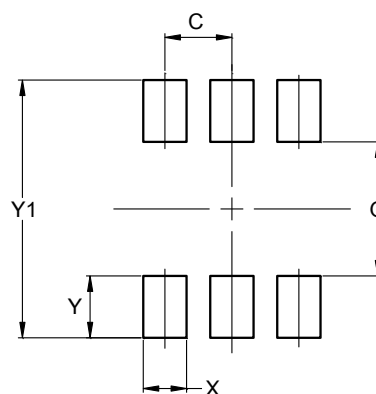


| SOT363               |           |      |       |
|----------------------|-----------|------|-------|
| Dim                  | Min       | Max  | Typ   |
| A1                   | 0.00      | 0.10 | 0.05  |
| A2                   | 0.90      | 1.00 | 1.00  |
| b                    | 0.10      | 0.30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