

**Product Summary**

| $V_{(BR)DSS}$ | $R_{DS(ON)}$ Max              | $I_D$ Max<br>$T_A = +25^\circ\text{C}$ |
|---------------|-------------------------------|--|
| 30V           | 25mΩ @ $V_{GS} = 10\text{V}$  | 5.8A                                   |
|               | 35mΩ @ $V_{GS} = 4.5\text{V}$ | 4.8A                                   |

**Features and Benefits**

- Low On-Resistance
- 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)**

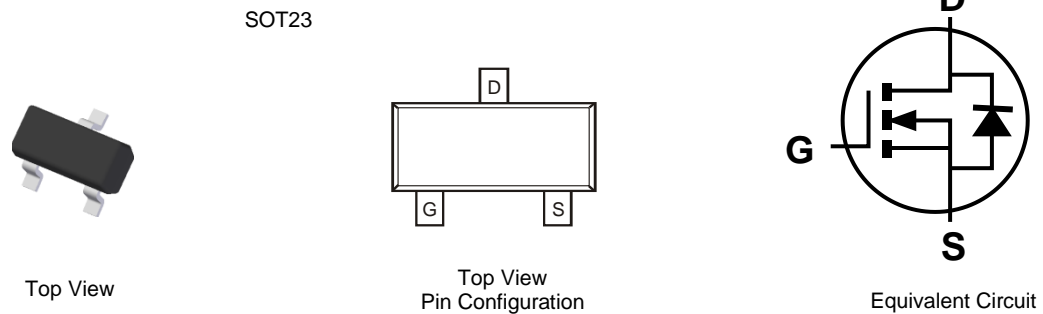
**Description and Applications**

This MOSFET has been designed to minimize the on-state resistance ( $R_{DS(ON)}$ ) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

- Battery Charging
- Power Management Functions
- DC-DC Converters
- Portable Power Adaptors

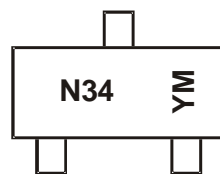
**Mechanical Data**

- Case: SOT23
- 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 Copper Leadframe. Solderable per MIL-STD-202, Method 208  $\text{e3}$
- Terminals Connections: See Diagram Below
- Weight: 0.008 grams (Approximate)

**NEW PRODUCT**

**Ordering Information** (Note 4)

| Part Number | Case  | Packaging         |
|-------------|-------|-------------------|
| DMG3404L-7  | SOT23 | 3000/Tape & Reel  |
| DMG3404L-13 | SOT23 | 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**


N34 = Product Type Marking Code  
 YM = Date Code Marking  
 Y or  $\bar{Y}$  = Year (ex: C = 2015)  
 M = Month (ex: 9 = September)

## Date Code Key

| Year | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|------|------|------|------|------|------|------|------|------|
| Code | Z    | A    | B    | C    | D    | E    | F    | G    |

| 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 5) V <sub>GS</sub> = 10V  | Steady State | T <sub>A</sub> = +25°C | I <sub>D</sub>   | 4.2   | A    |
|  |              | T <sub>A</sub> = +70°C |                  | 3.5   |      |
| Continuous Drain Current (Note 6) V <sub>GS</sub> = 10V  | Steady State | T <sub>A</sub> = +25°C | I <sub>D</sub>   | 5.8   | A    |
|  |              | T <sub>A</sub> = +70°C |                  | 4.9   |      |
| Pulsed Drain Current (Pulse Width ≤10μs, Duty Cycle ≤1%) |              |                        | I <sub>DM</sub>  | 30    | A    |

**Thermal Characteristics**

| Characteristic                                   | Symbol                            | Value       | Unit |
|--|-----------------------------------|-------------|------|
| Power Dissipation (Note 5)                       | P <sub>D</sub>                    | 0.78        | W    |
| Thermal Resistance, Junction to Ambient (Note 5) | R <sub>θJA</sub>                  | 164         | °C/W |
| Power Dissipation (Note 6)                       | P <sub>D</sub>                    | 1.33        | W    |
| Thermal Resistance, Junction to Ambient (Note 6) | R <sub>θJA</sub>                  | 96          | °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 T <sub>J</sub> = +25°C | I <sub>DSS</sub>    | —   | —    | 1.0  | μA   | V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V  |
| Gate-Source Leakage                                    | I <sub>GSS</sub>    | —   | —    | ±100 | nA   | V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V   |
| <b>ON CHARACTERISTICS (Note 7)</b>                     |                     |     |      |      |      |  |
| Gate Threshold Voltage                                 | V <sub>GS(TH)</sub> | 1.0 | 1.5  | 2.0  | V    | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA                                   |
| Static Drain-Source On-Resistance                      | R <sub>DS(ON)</sub> | —   | 21   | 25   | mΩ   | V <sub>GS</sub> = 10V, I <sub>D</sub> = 5.8A   |
|  |                     | —   | 24   | 35   |      | V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 4.8A  |
| Diode Forward Voltage                                  | V <sub>SD</sub>     | —   | 0.75 | 1.0  | V    | V <sub>GS</sub> = 0V, I <sub>S</sub> = 1A  |
| <b>DYNAMIC CHARACTERISTICS (Note 8)</b>                |                     |     |      |      |      |  |
| Input Capacitance                                      | C <sub>iss</sub>    | —   | 641  | —    | pF   | V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0V,<br>f = 1.0MHz                                   |
| Output Capacitance                                     | C <sub>oss</sub>    | —   | 66   | —    | pF   |  |
| Reverse Transfer Capacitance                           | C <sub>rss</sub>    | —   | 51   | —    | pF   |  |
| Gate Resistance  | R <sub>g</sub>      | —   | 2.2  | —    | Ω    | V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz   |
| Total Gate Charge                                      | Q <sub>g</sub>      | —   | 13.2 | —    | nC   | V <sub>GS</sub> = 10V, V <sub>DS</sub> = 15V, I <sub>D</sub> = 5.8A                          |
| Gate-Source Charge                                     | Q <sub>gs</sub>     | —   | 1.7  | —    | nC   |  |
| Gate-Drain Charge                                      | Q <sub>gd</sub>     | —   | 2.2  | —    | nC   |  |
| Turn-On Delay Time                                     | t <sub>d(ON)</sub>  | —   | 3.3  | —    | ns   |  |
| Turn-On Rise Time                                      | t <sub>R</sub>      | —   | 4.4  | —    | ns   | V <sub>DD</sub> = 15V, V <sub>GS</sub> = 10V,<br>R <sub>L</sub> = 1.25Ω, R <sub>G</sub> = 3Ω |
| Turn-Off Delay Time                                    | t <sub>d(OFF)</sub> | —   | 22   | —    | ns   |  |
| Turn-Off Fall Time                                     | t <sub>F</sub>      | —   | 5.2  | —    | ns   |  |

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

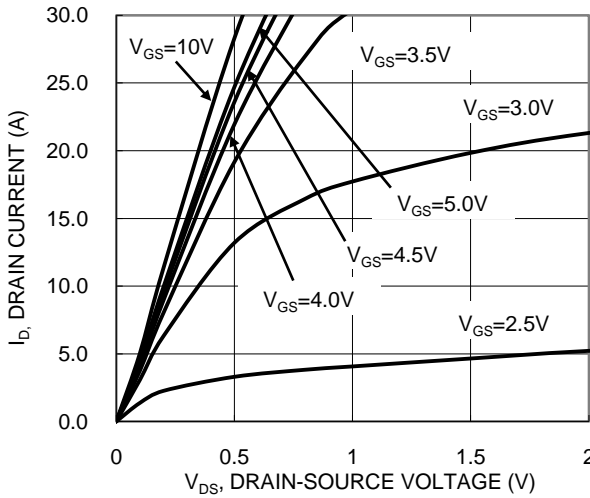


Figure 1. Typical Output Characteristic

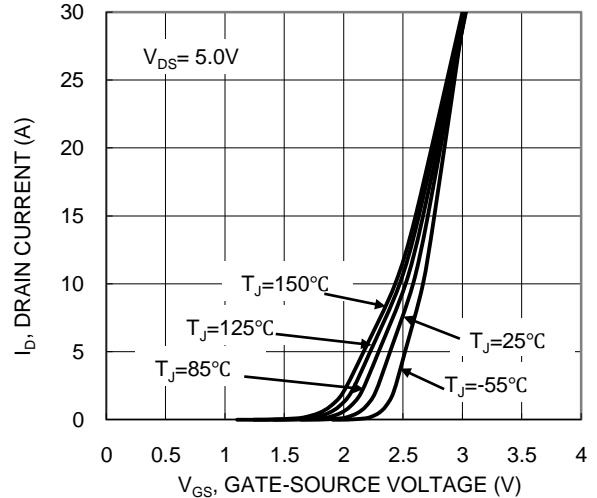


Figure 2. Typical Transfer Characteristic

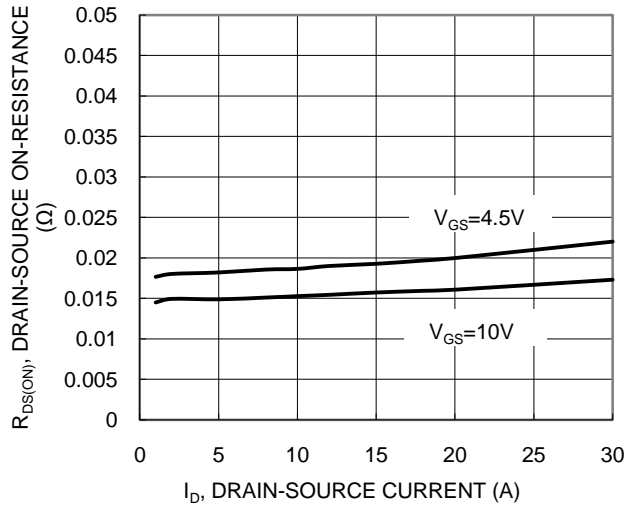


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

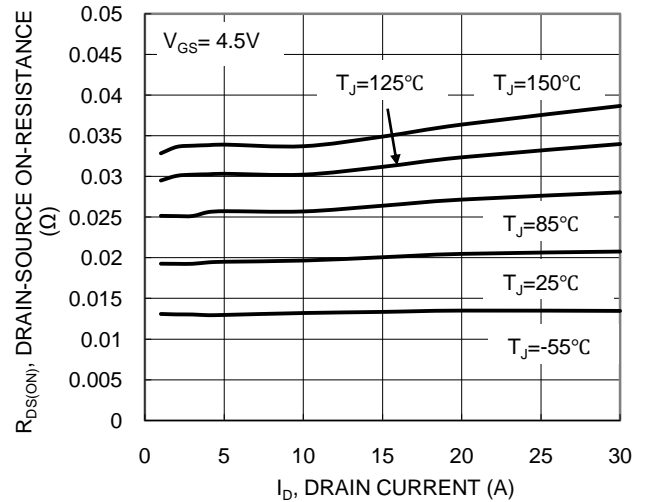


Figure 4. Typical On-Resistance vs. Drain Current and Temperature

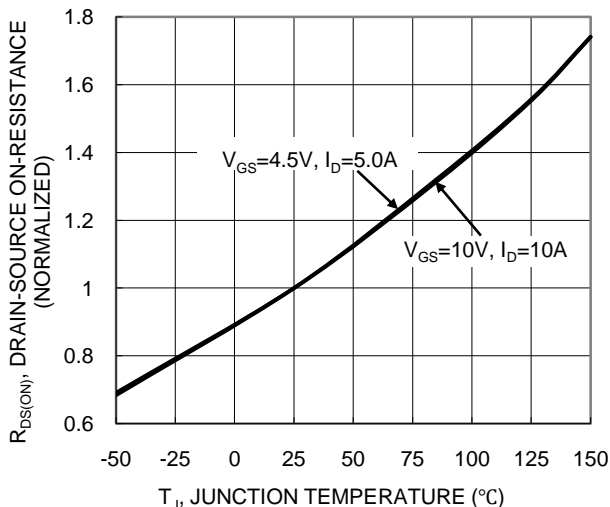


Figure 5. On-Resistance Variation with Temperature

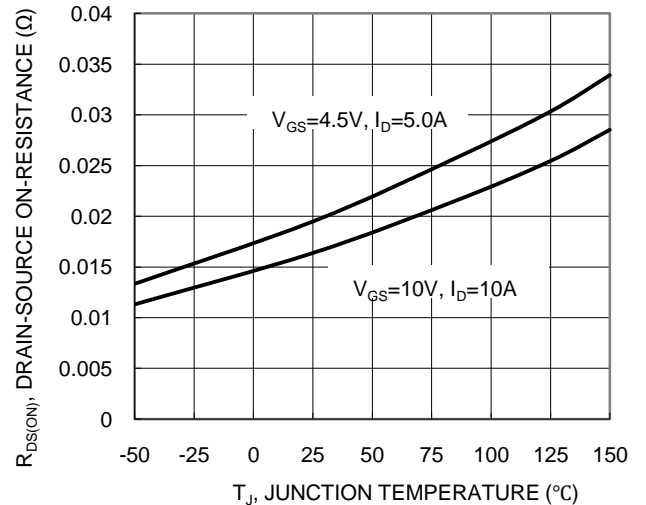


Figure 6. On-Resistance Variation with Temperature

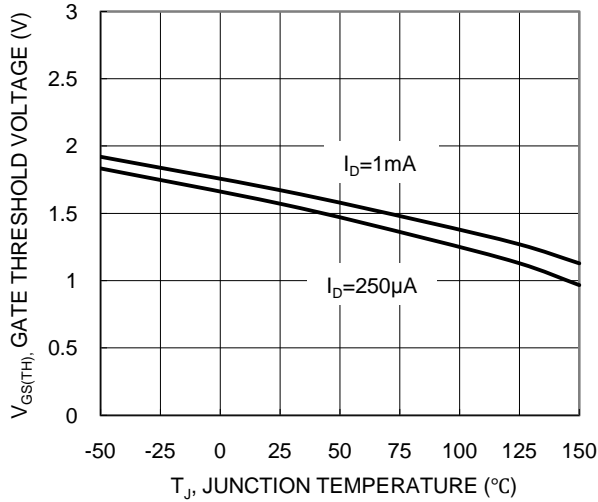


Figure 7. Gate Threshold Variation vs. Junction Temperature

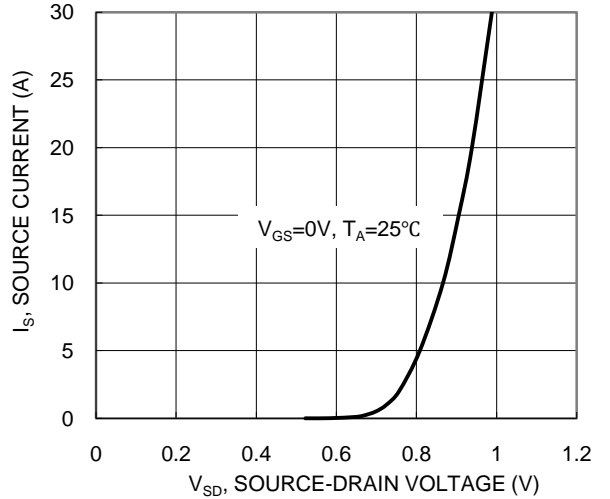


Figure 8. Diode Forward Voltage vs. Current

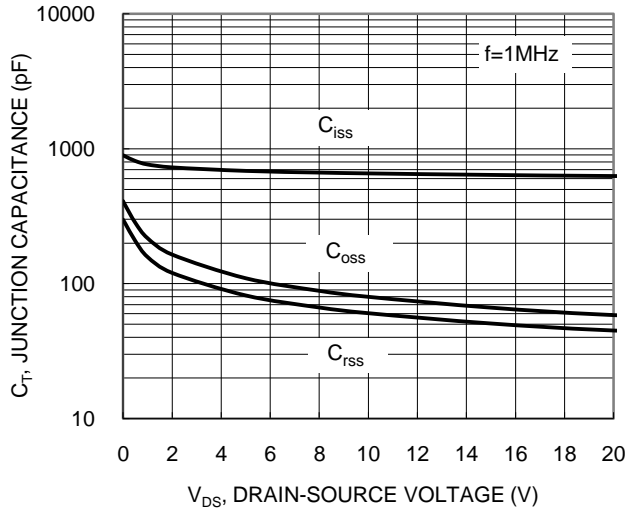


Figure 9. Typical Junction Capacitance

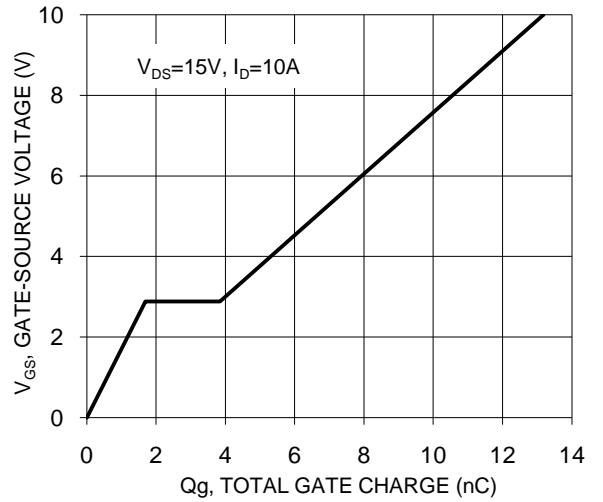


Figure 10. Gate Charge

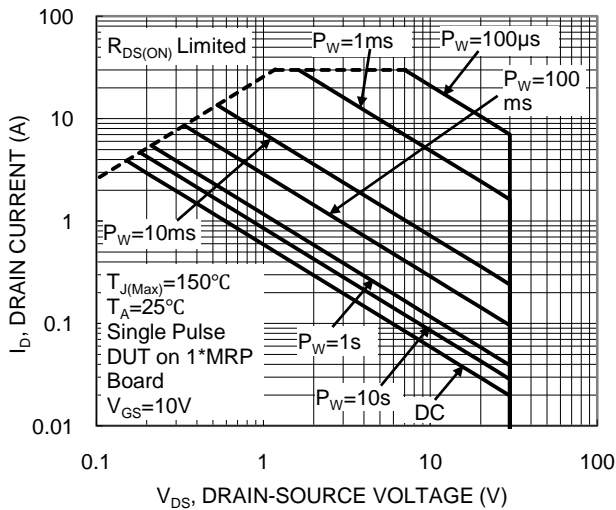


Figure 11. SOA, Safe Operation Area

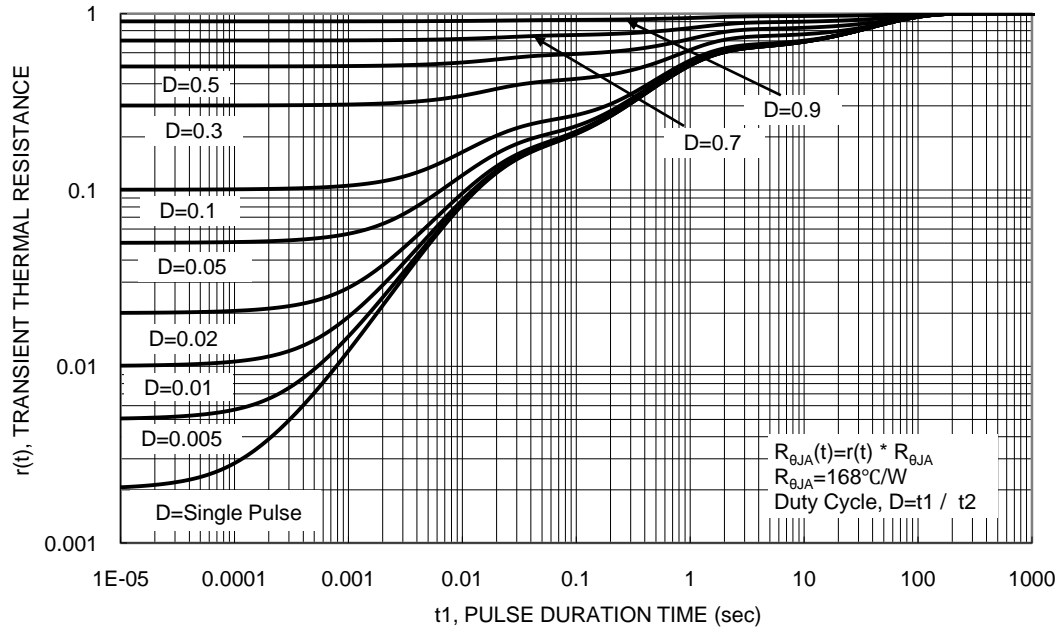
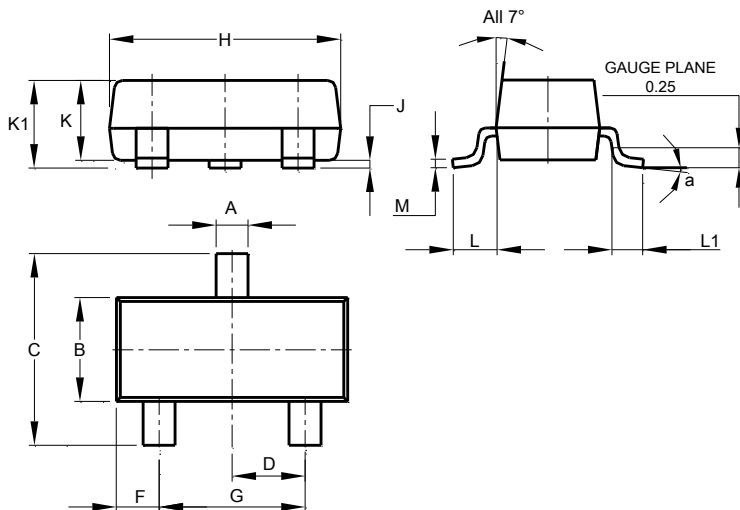


Figure 12. Transient Thermal Resistance

**Package Outline Dimensions**

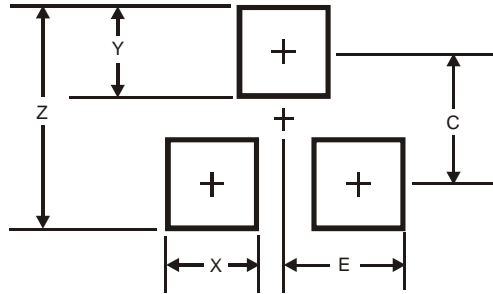
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



| SOT23                |       |       |       |
|----------------------|-------|-------|-------|
| Dim                  | Min   | Max   | Typ   |
| A                    | 0.37  | 0.51  | 0.40  |
| B                    | 1.20  | 1.40  | 1.30  |
| C                    | 2.30  | 2.50  | 2.40  |
| D                    | 0.89  | 1.03  | 0.915 |
| F                    | 0.45  | 0.60  | 0.535 |
| G                    | 1.78  | 2.05  | 1.83  |
| H                    | 2.80  | 3.00  | 2.90  |
| J                    | 0.013 | 0.10  | 0.05  |
| K                    | 0.890 | 1.00  | 0.975 |
| K1                   | 0.903 | 1.10  | 1.025 |
| L                    | 0.45  | 0.61  | 0.55  |
| L1                   | 0.25  | 0.55  | 0.40  |
| M                    | 0.085 | 0.150 | 0.110 |
| a                    | 8°    |       |       |
| All Dimensions in mm |       |       |       |

## Suggested Pad Layout

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



| Dimensions | Value (in mm) |
|------------|---------------|
| Z          | 2.9           |
| X          | 0.8           |
| Y          | 0.9           |
| C          | 2.0           |
| E          | 1.35          |

**NEW PRODUCT**

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