

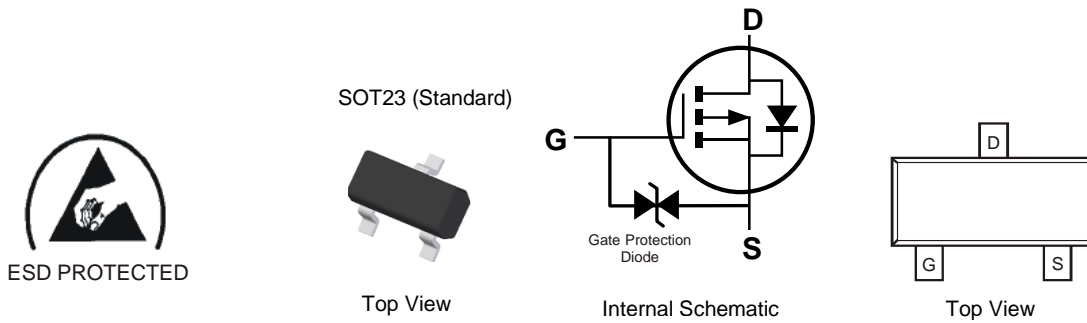
Features

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- ESD Protected
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The DMP2035UQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**

<https://www.diodes.com/quality/product-definitions/>

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 ③
- Terminal Connections: See Diagram Below
- Weight: 0.009 grams (Approximate)

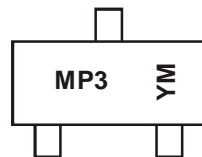


Ordering Information (Notes 4 & 5)

| Part Number | Compliance | Case | Packaging |
|-------------|------------|------------------|--------------------------|
| DMP2035U-7 | Standard | SOT23 (Standard) | 3,000 / 7" Tape & Reel |
| DMP2035UQ-7 | Automotive | SOT23 (Standard) | 3,000 / 7" Tape & Reel |
| DMP2035U-13 | Standard | SOT23 (Standard) | 10,000 / 13" 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/>.
 5. The ESD gate protection diode is only designed to protect against ESD events. No gate-source voltage greater than the maximum V_{GS} rating (given on page 2) can be applied.

Marking Information



MP3 = Product Type Marking Code
 YM = Date Code Marking
 Y or \bar{Y} = Year (ex: I = 2021)
 M = Month (ex: 9 = September)

Date Code Key

| Year | 2011 | ... | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|------|------|-----|------|------|------|------|------|------|------|------|------|------|
| Code | Y | ... | I | J | K | L | M | N | O | P | R | S |

| 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} | -20 | V | |
| Gate-Source Voltage | V _{GSS} | ±10 | V | |
| Continuous Drain Current (Note 8) V _{GS} = -4.5V | I _D | T _A = +25°C | -4.9 | A |
| | | T _A = +70°C | -4.0 | A |
| Pulsed Drain Current (Note 8) | I _{DM} | -24 | A | |
| Maximum Continuous Body Diode Forward Current (Note 7) | I _S | -1.2 | A | |
| Pulsed Body Diode Forward Current (Note 10) | I _{SM} | -24 | A | |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Total Power Dissipation (Note 6) | P _D | 0.81 | W |
| Thermal Resistance, Junction to Ambient (Note 6) | R _{θJA} | 153.5 | °C/W |
| Total Power Dissipation (Note 7) | P _D | 1.2 | W |
| Thermal Resistance, Junction to Ambient (Note 7) | R _{θJA} | 100 | °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 9) | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | -20 | — | — | V | V _{GS} = 0V, I _D = -250μA |
| Zero Gate Voltage Drain Current T _J = +25°C | I _{DSS} | — | — | -1.0 | μA | V _{DS} = -20V, V _{GS} = 0V |
| Gate-Source Leakage | I _{GSS} | — | — | ±10 | μA | V _{GS} = ±8V, V _{DS} = 0V |
| ON CHARACTERISTICS (Note 9) | | | | | | |
| Gate Threshold Voltage | V _{GS(TH)} | -0.4 | -0.7 | -1.0 | V | V _{DS} = V _{GS} , I _D = -250μA |
| Static Drain-Source On-Resistance | R _{DS(ON)} | — | 23 | 35 | mΩ | V _{GS} = -4.5V, I _D = -4.0A |
| | | | 30 | 45 | | V _{GS} = -2.5V, I _D = -4.0A |
| | | | 41 | 62 | | V _{GS} = -1.8V, I _D = -2.0A |
| Forward Transfer Admittance | Y _{FS} | — | 14 | — | s | V _{DS} = -5V, I _D = -4A |
| Diode Forward Voltage | V _{SD} | — | -0.7 | -1.0 | V | V _{GS} = 0V, I _S = -1A |
| DYNAMIC CHARACTERISTICS (Note 10) | | | | | | |
| Input Capacitance | C _{iss} | — | 1,610 | — | pF | V _{DS} = -10V, V _{GS} = 0V f = 1.0MHz |
| Output Capacitance | C _{oss} | — | 157 | — | pF | |
| Reverse Transfer Capacitance | C _{rss} | — | 145 | — | pF | |
| Gate Resistance | R _g | — | 9.45 | — | Ω | V _{DS} = 0V, V _{GS} = 0V, f = 1MHz |
| Total Gate Charge | Q _g | — | 15.4 | — | nC | V _{GS} = -4.5V, V _{DS} = -10V, I _D = -4A |
| Gate-Source Charge | Q _{gs} | — | 2.5 | — | nC | |
| Gate-Drain Charge | Q _{gd} | — | 3.3 | — | nC | |
| Turn-On Delay Time | t _{D(ON)} | — | 16.8 | — | ns | V _{DS} = -10V, V _{GS} = -4.5V, R _L = 10Ω, R _g = 6.0Ω, I _D = -1A |
| Turn-On Rise Time | t _R | — | 12.4 | — | ns | |
| Turn-Off Delay Time | t _{D(OFF)} | — | 94.1 | — | ns | |
| Turn-Off Fall Time | t _F | — | 42.4 | — | ns | |

- Notes:
6. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
 7. Device mounted on FR-4 substrate PC board, 2oz copper, with 25mm X 25mm square copper plate.
 8. Repetitive rating, pulse width limited by junction temperature.
 9. Short duration pulse test used to minimize self-heating effect.
 10. Guaranteed by design. Not subject to product testing.

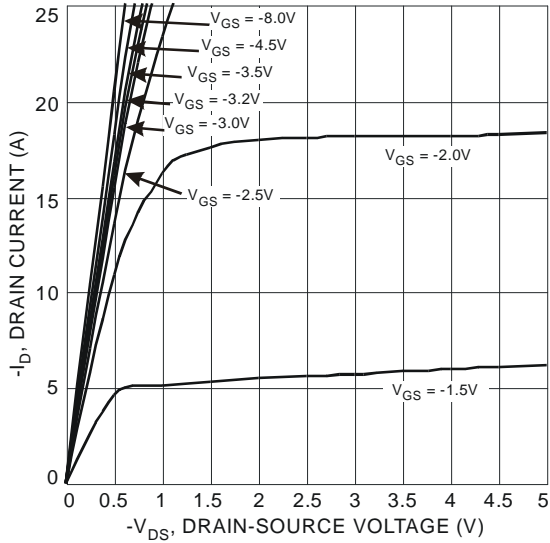


Fig. 1 Typical Output Characteristic

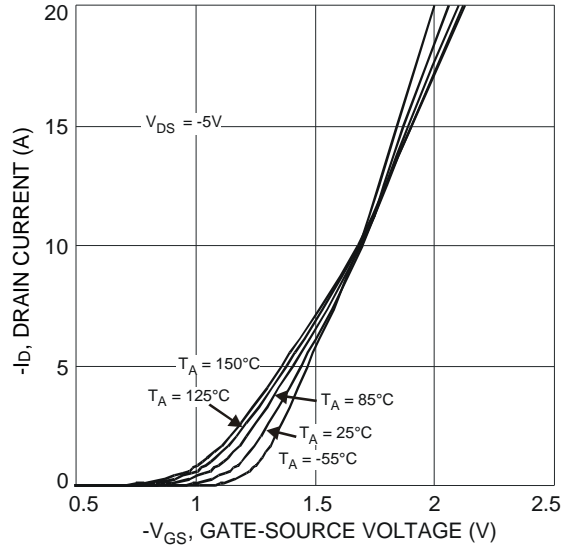


Fig. 2 Typical Transfer Characteristic

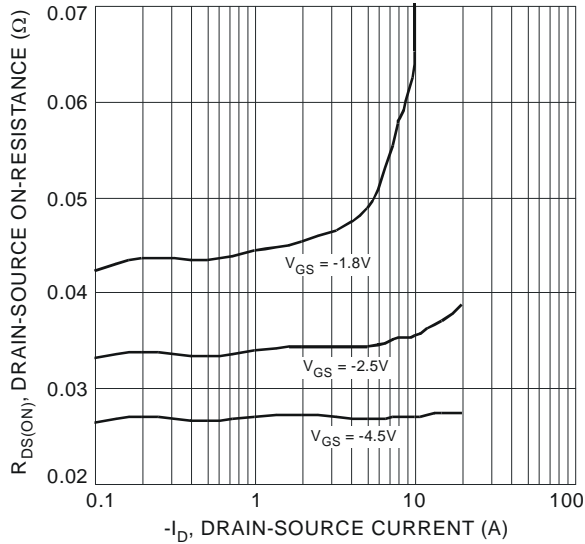


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

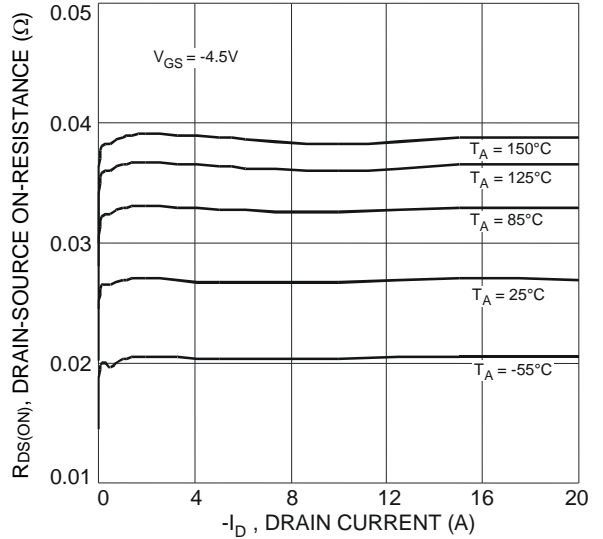


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

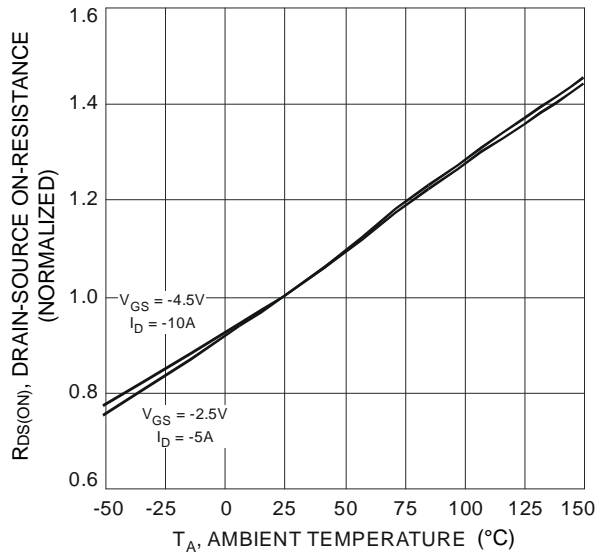


Fig. 5 On-Resistance Variation with Temperature

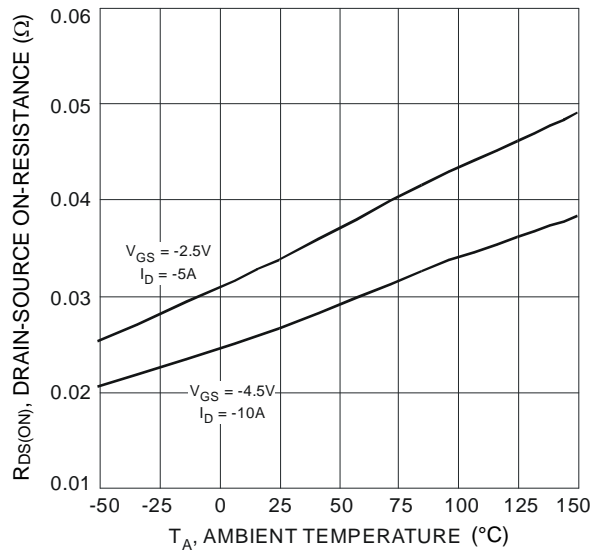


Fig. 6 On-Resistance Variation with Temperature

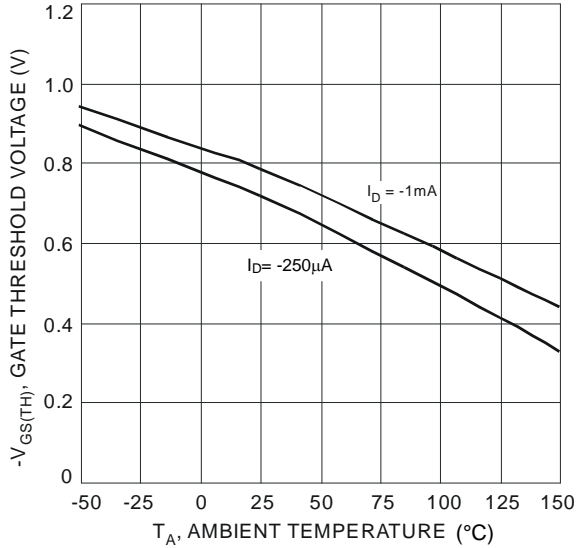


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

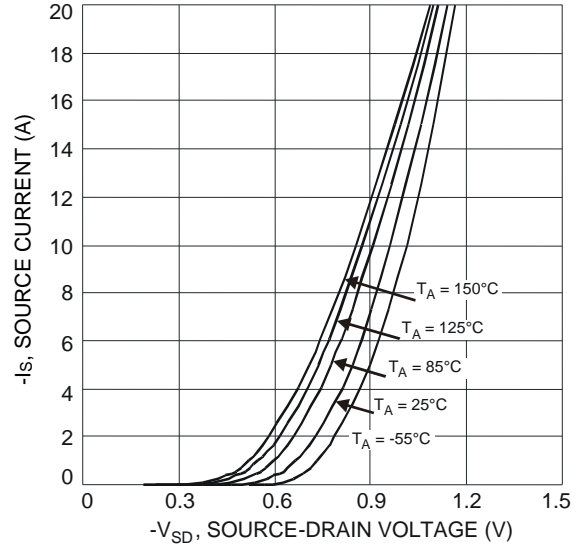


Fig. 8 Diode Forward Voltage vs. Current

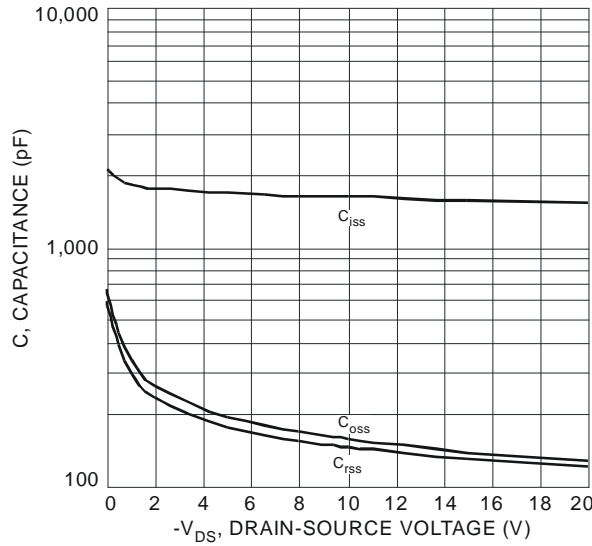


Fig. 9 Typical Total Capacitance

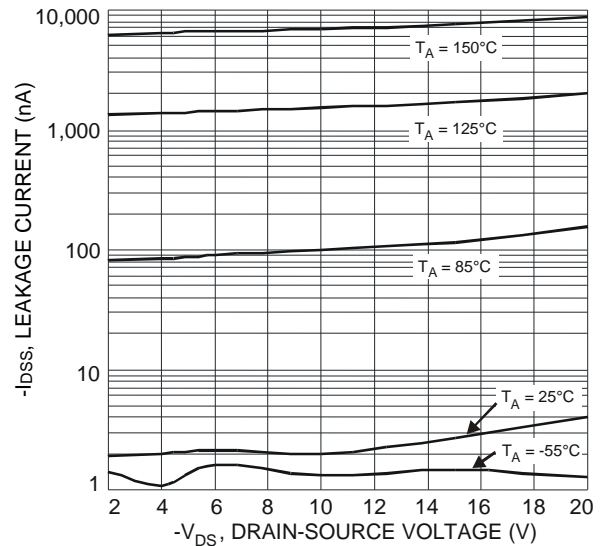


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

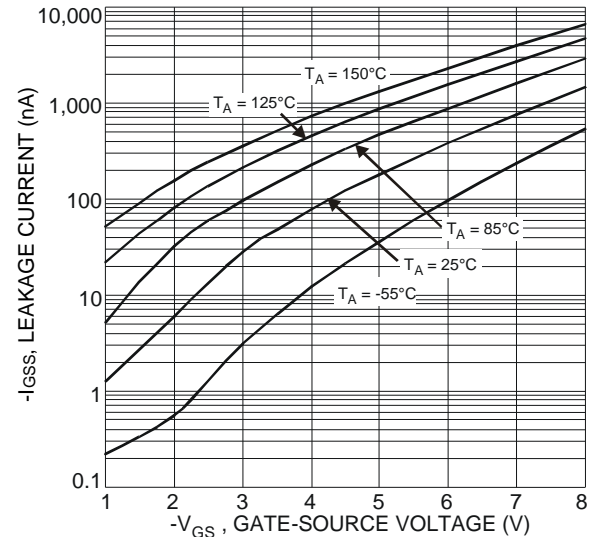


Fig. 11 Gate-Source Leakage Current vs. Voltage

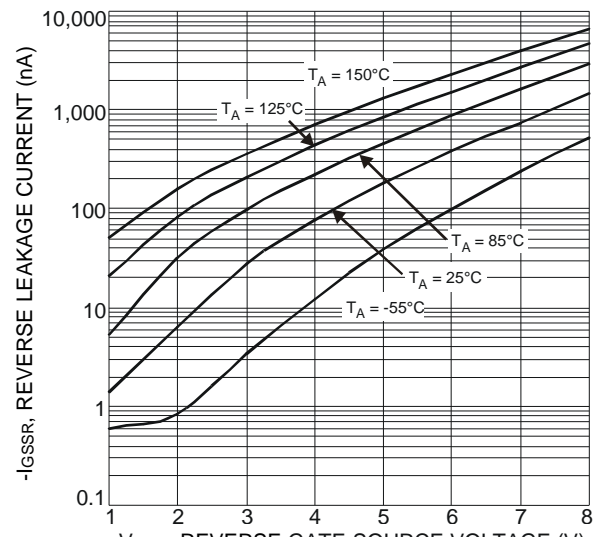


Fig. 12 Reverse Gate-Source Leakage Current vs. Voltage

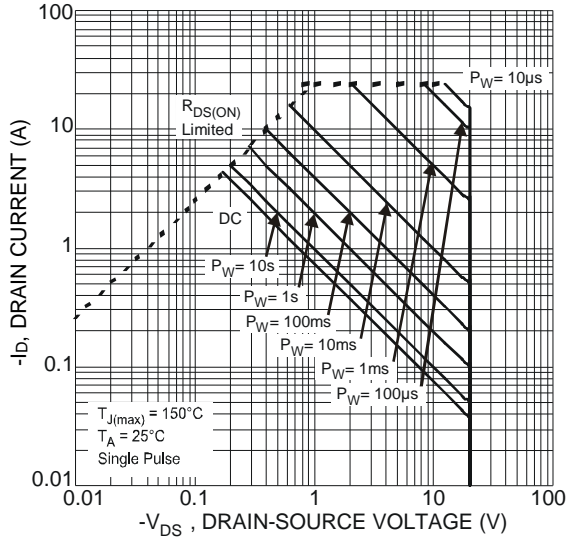


Fig. 13 SOA, Safe Operation Area

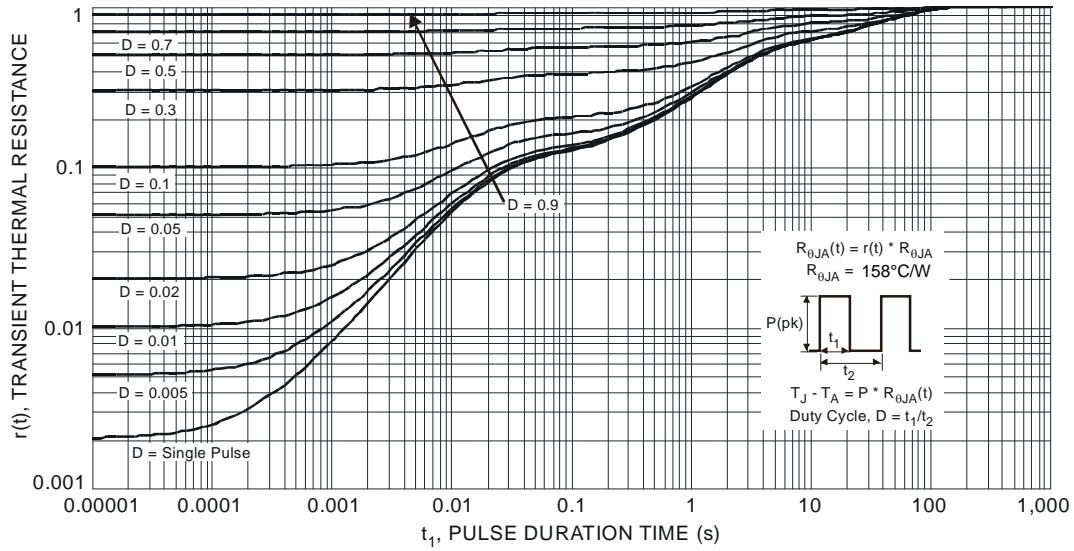
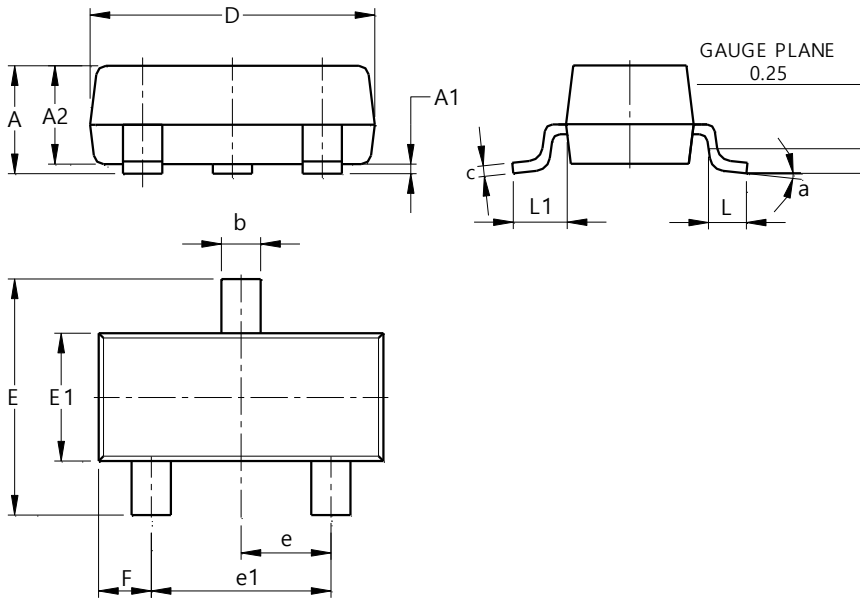


Fig. 14 Transient Thermal Response

Package Outline Dimensions

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

SOT23 (Standard)

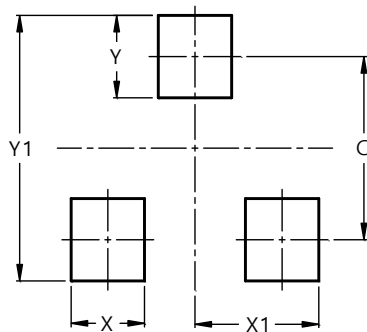


| SOT23 (Standard) | | | |
|----------------------|-------|-------|-------|
| Dim | Min | Max | Typ |
| A | 0.90 | 1.15 | 1.025 |
| A1 | 0.00 | 0.10 | 0.05 |
| A2 | 0.85 | 1.10 | 0.975 |
| b | 0.30 | 0.51 | 0.40 |
| c | 0.080 | 0.202 | 0.11 |
| D | 2.80 | 3.00 | 2.90 |
| E | 2.25 | 2.55 | 2.40 |
| E1 | 1.20 | 1.40 | 1.30 |
| e | 0.89 | 1.03 | 0.915 |
| e1 | 1.78 | 2.05 | 1.83 |
| F | 0.40 | 0.60 | 0.535 |
| L1 | 0.45 | 0.61 | 0.55 |
| L | 0.25 | 0.55 | 0.40 |
| a | 0° | 8° | -- |
| All Dimensions in mm | | | |

Suggested Pad Layout

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

SOT23 (Standard)



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 2.0 |
| X | 0.8 |
| X1 | 1.35 |
| Y | 0.9 |
| Y1 | 2.9 |

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