



**THE DATASHEET OF
DMP25H18DLFDE-7**



Product Summary

| BV _{DSS} | R _{DS(ON)} Max | I _D Max T _A = +25°C |
|-------------------|-------------------------------|--|
| -250V | 14Ω @ V _{GS} = -10V | -0.26A |
| | 18Ω @ V _{GS} = -3.5V | -0.23A |

Description and Applications

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

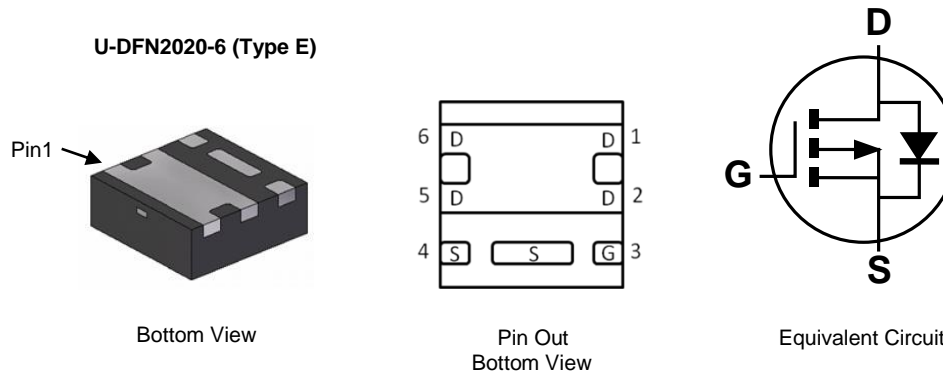
- General Purpose Interfacing Switch
- Load Switching
- Battery Management Application
- Power Management Functions

Features and Benefits

- 0.6mm Profile – Ideal for Low-Profile Applications
- PCB Footprint of 4mm²
- Low Gate Threshold Voltage
- Low On-Resistance
- **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-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](#) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

Mechanical Data

- Case: U-DFN2020-6
- Case Material: Molded Plastic, “Green” Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.0065 grams (Approximate)



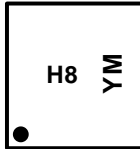
Ordering Information (Note 4)

| Part Number | Marking | Reel Size (inches) | Quantity per Reel |
|------------------|---------|--------------------|-------------------|
| DMP25H18DLFDE-7 | H8 | 7 | 3,000 |
| DMP25H18DLFDE-13 | H8 | 13 | 10,000 |

- 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

Site 1

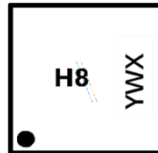


H8 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: H = 2020)
 M = Month (ex: 9 = September)

Date Code Key

| | | | | | | | | | | | | |
|--------------|------|-----|------|------|------|------|------|------|------|------|------|------|
| Year | 2014 | ... | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 |
| Code | B | ... | H | I | J | K | L | M | N | O | P | R |
| 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 |

Site 2



H8 = Product Type Marking Code
 YWX = Date Code Marking
 Y = Year (ex: 0 = 2020)
 W = Week (ex: a = Week 27; z Represents Week 52 and 53)
 X = Internal Code (ex: U = Monday)

Date Code Key

| | | | | | | | | | | | | |
|----------------------|------|-----|------|-------|------|------|------|------|------|------|------|------|
| Year | 2014 | ... | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 |
| Code | 4 | ... | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Week | 1-26 | | | 27-52 | | | | 53 | | | | |
| Code | A-Z | | | a-z | | | | z | | | | |
| Internal Code | Sun | Mon | Tue | Wed | Thu | Fri | Sat | | | | | |
| Code | T | U | V | W | X | Y | Z | | | | | |

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

| Characteristic | | | Symbol | Value | Unit |
|--|--------------|--|------------------|----------------|------|
| Drain-Source Voltage | | | V _{DSS} | -250 | V |
| Gate-Source Voltage | | | V _{GSS} | ±40 | V |
| Continuous Drain Current (Note 6) V _{GS} = -10V | Steady State | T _A = +25°C T _A = +70°C | I _D | -0.26 -0.21 | A |
| Pulsed Drain Current (10µs Pulse, Duty Cycle ≅ 1%) | | | I _{DM} | -1.0 | A |
| Maximum Body Diode Continuous Current (Note 6) | | | I _S | -0.26 | A |

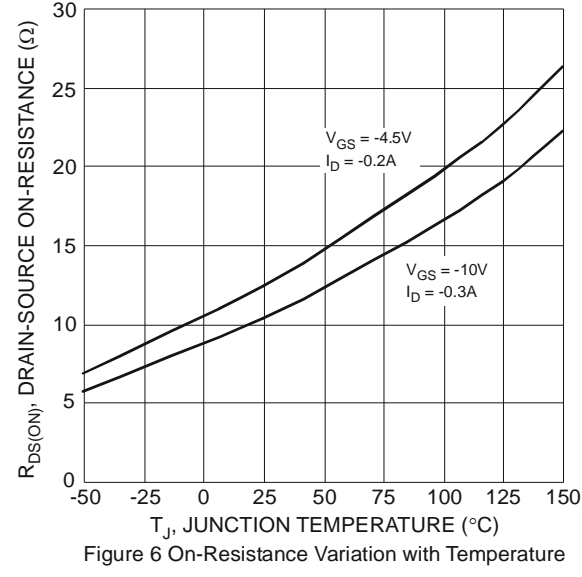
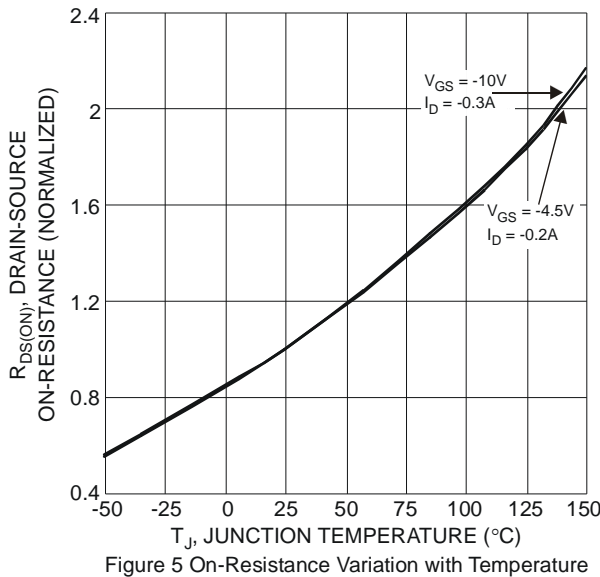
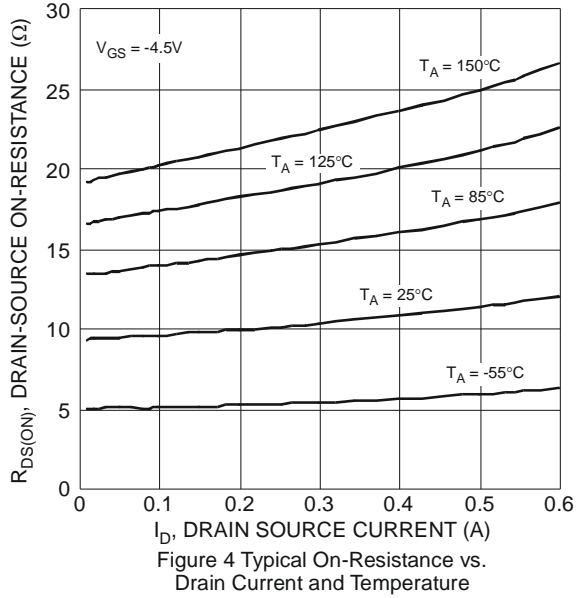
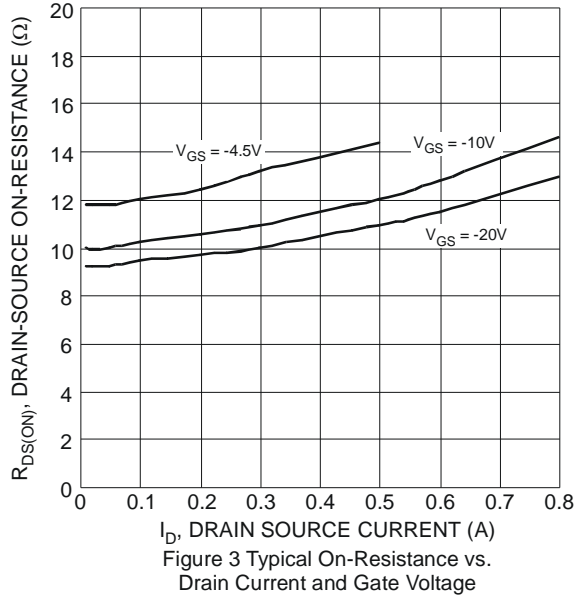
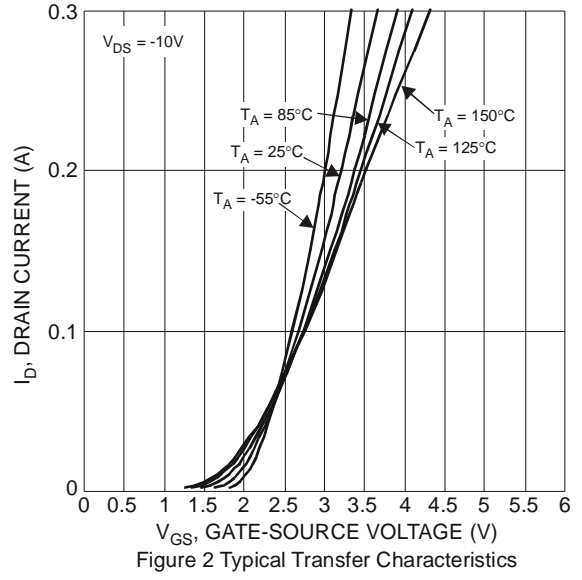
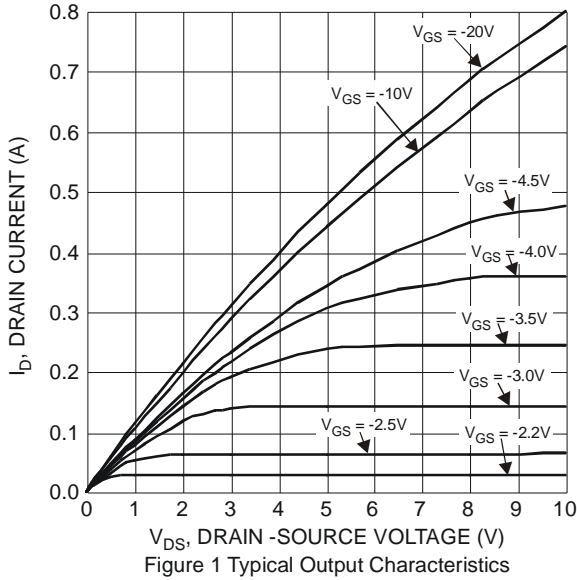
Thermal Characteristics

| Characteristic | | Symbol | Value | Unit |
|---|----------|-----------------------------------|-------------|------|
| Total Power Dissipation | (Note 5) | P _D | 0.6 | W |
| | (Note 6) | | 1.4 | |
| Thermal Resistance, Junction to Ambient | (Note 5) | R _{θJA} | 191 | °C/W |
| | (Note 6) | | 86 | |
| Thermal Resistance, Junction to Case | (Note 6) | R _{θJC} | 17 | |
| 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 7) | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | -250 | — | — | V | V _{GS} = 0V, I _D = -1mA |
| Zero Gate Voltage Drain Current T _J = +25°C | I _{DSS} | — | — | -1 | µA | V _{DS} = -250V, V _{GS} = 0V |
| Gate-Source Leakage | I _{GSS} | — | — | ±100 | nA | V _{GS} = ±40V, V _{DS} = 0V |
| ON CHARACTERISTICS (Note 7) | | | | | | |
| Gate Threshold Voltage | V _{GS(TH)} | -0.5 | -1.7 | -2.5 | V | V _{DS} = V _{GS} , I _D = -1mA |
| Static Drain-Source On-Resistance | R _{DS(ON)} | — | 10 | 14 | Ω | V _{GS} = -10V, I _D = -200mA |
| | | | 13 | 18 | | V _{GS} = -3.5V, I _D = -100mA |
| Diode Forward Voltage | V _{SD} | — | -0.8 | -1.2 | V | V _{GS} = 0V, I _S = -200mA |
| DYNAMIC CHARACTERISTICS (Note 8) | | | | | | |
| Input Capacitance | C _{ISS} | — | 81 | — | pF | V _{DS} = -25V, V _{GS} = 0V, f = 1.0MHz |
| Output Capacitance | C _{OSS} | — | 14 | — | pF | |
| Reverse Transfer Capacitance | C _{RSS} | — | 4 | — | pF | |
| Gate Resistance | R _G | — | 13 | — | Ω | V _{DS} = 0V, V _{GS} = 0V, f = 1MHz |
| Total Gate Charge (V _{GS} = -10V) | Q _G | — | 2.8 | — | nC | V _{DS} = -25V, I _D = -200mA |
| Gate-Source Charge | Q _{GS} | — | 0.3 | — | nC | |
| Gate-Drain Charge | Q _{GD} | — | 0.6 | — | nC | |
| Turn-On Delay Time | t _{D(ON)} | — | 7.5 | — | ns | V _{DS} = -30V, I _D = -200mA V _{GS} = -10V, R _G = 50Ω |
| Turn-On Rise Time | t _R | — | 25 | — | ns | |
| Turn-Off Delay Time | t _{D(OFF)} | — | 124 | — | ns | |
| Turn-Off Fall Time | t _F | — | 95 | — | ns | |
| Reverse Recovery Time | t _{RR} | — | 85 | — | ns | |
| Reverse Recovery Charge | Q _{RR} | — | 294 | — | µC | I _F = -1.0A, di/dt = 100A/µs |

- Notes:
- Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.
 - Device mounted on FR-4 substrate PC board, 2oz copper, with thermal vias 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.



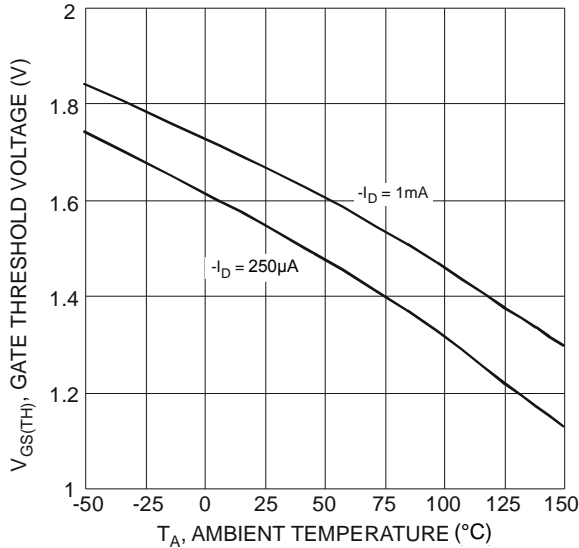


Figure 7 Gate Threshold Variation vs. Ambient Temperature

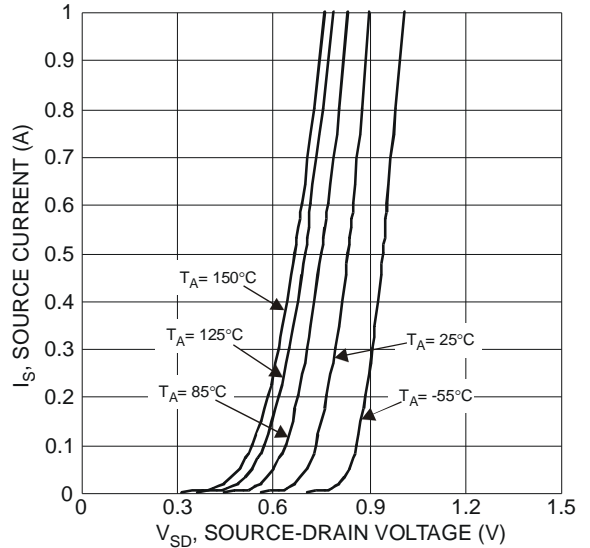


Figure 8 Diode Forward Voltage vs. Current

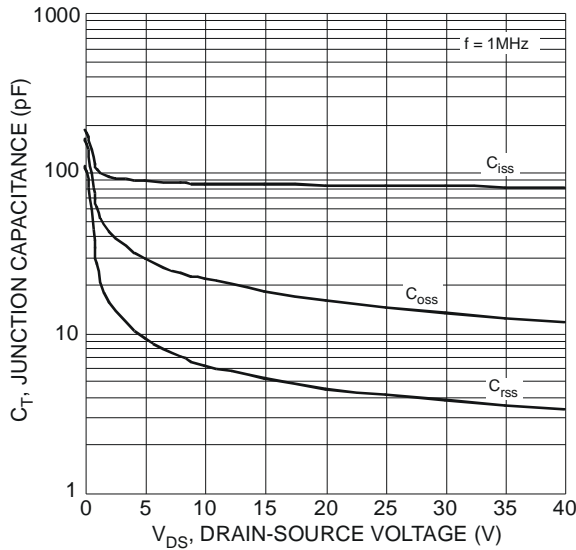


Figure 9 Typical Junction Capacitance

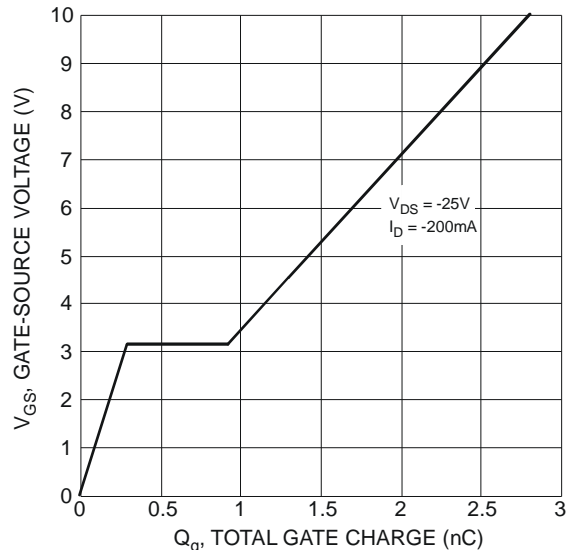


Figure 10 Gate-Charge Characteristics

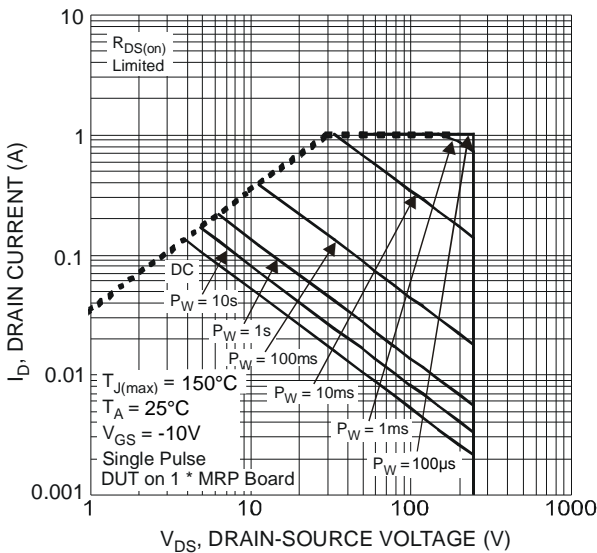


Figure 11 SOA, Safe Operation Area

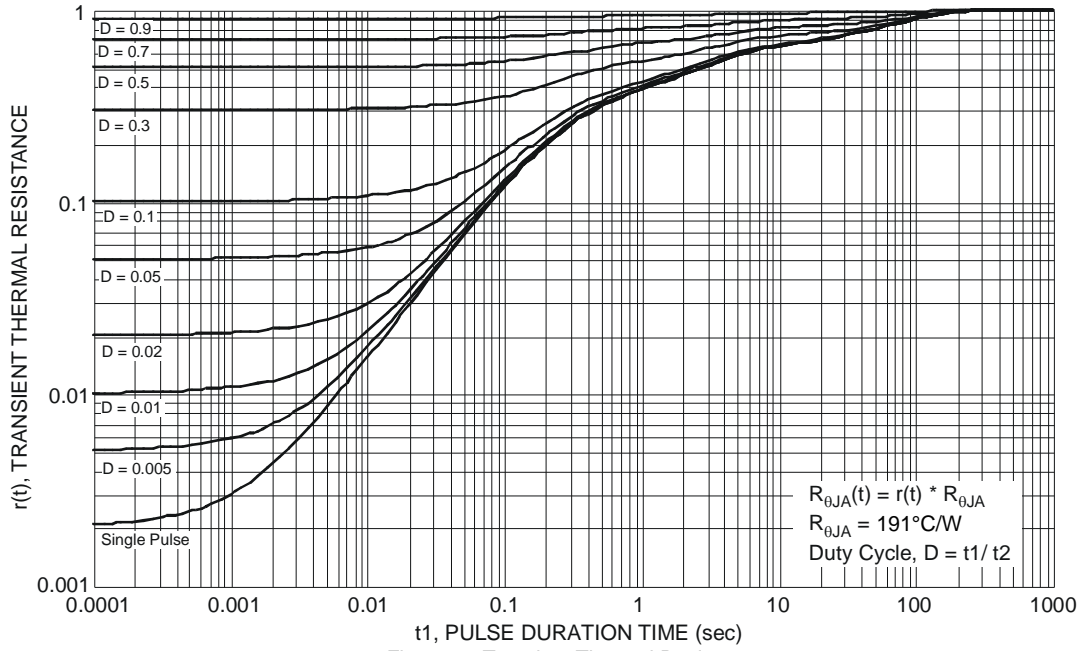
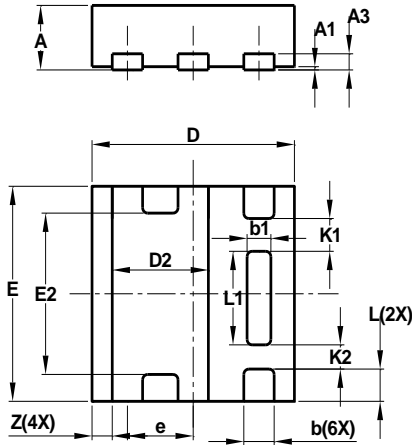


Figure 12 Transient Thermal Resistance

Package Outline Dimensions

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

U-DFN2020-6 (Type E)

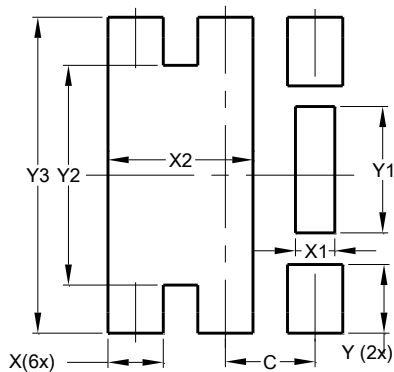


| U-DFN2020-6 Type E | | | |
|-----------------------|-------|-------|-------|
| Dim | Min | Max | Typ |
| A | 0.57 | 0.63 | 0.60 |
| A1 | 0 | 0.05 | 0.03 |
| A3 | — | — | 0.15 |
| b | 0.25 | 0.35 | 0.30 |
| b1 | 0.185 | 0.285 | 0.235 |
| D | 1.95 | 2.05 | 2.00 |
| D2 | 0.85 | 1.05 | 0.95 |
| E | 1.95 | 2.05 | 2.00 |
| E2 | 1.40 | 1.60 | 1.50 |
| e | — | — | 0.65 |
| L | 0.25 | 0.35 | 0.30 |
| L1 | 0.82 | 0.92 | 0.87 |
| K1 | — | — | 0.305 |
| K2 | — | — | 0.225 |
| Z | — | — | 0.20 |
| All Dimensions in mm | | | |

Suggested Pad Layout

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

U-DFN2020-6 (Type E)



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 0.650 |
| X | 0.400 |
| X1 | 0.285 |
| X2 | 1.050 |
| Y | 0.500 |
| Y1 | 0.920 |
| Y2 | 1.600 |
| Y3 | 2.300 |

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