

MOSFET – Power, Single P-Channel, WDFN8

-100 V, 120 mΩ, -13 A

NTTFS115P10M5

Features

- Small Footprint (3.3 x 3.3 mm) for Compact Design
- These Devices are non-ESD Protected
- These Devices are Pb-Free and are RoHS Compliant

MAXIMUM RATINGS (T_J = 25 °C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|--|--|-------------------------|-----------------------|
| Drain-to-Source Breakdown Voltage | V _{(BR)DSS} | -100 | V |
| Gate-to-Source Voltage | V _{GS} | ±20 | V |
| Continuous Drain Current R _{θJC} (Note 2) | Steady State | T _C = 25 °C | I _D -13 A |
| | | T _C = 100 °C | -8.0 |
| Power Dissipation R _{θJC} (Note 2) | Steady State | T _C = 25 °C | P _D 41 W |
| | | T _C = 100 °C | 16 |
| Continuous Drain Current R _{θJA} (Notes 1, 2) | Steady State | T _A = 25 °C | I _D -2.0 A |
| | | T _A = 100 °C | -1.1 |
| Power Dissipation R _{θJA} (Notes 1, 2) | Steady State | T _A = 25 °C | P _D 0.9 W |
| | | T _A = 100 °C | 0.3 |
| Pulsed Drain Current | T _A = 25 °C, t _p = 10 μs | I _{DM} | -137 A |
| Operating Junction and Storage Temperature Range | T _J , T _{stg} | -55 to +150 | °C |
| Source Current (Body Diode) | I _S | -34 | A |
| Single Pulse Drain-to-Source Avalanche Energy (I _{L(pk)} = -9.1 A) | E _{AS} | 41 | mJ |
| Lead Temperature Soldering Reflow for Soldering Purposes (1/8" from case for 10 s) | T _L | 260 | °C |

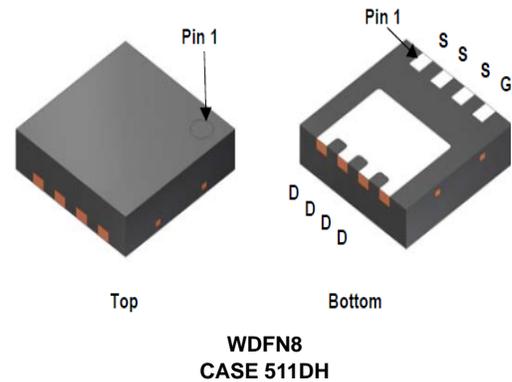
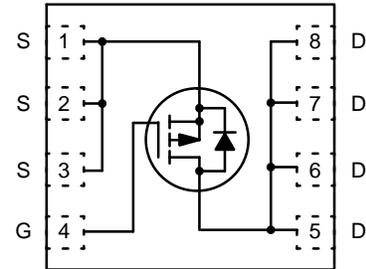
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL RESISTANCE MAXIMUM RATINGS

| Parameter | Symbol | Value | Unit |
|---|------------------|-------|------|
| Junction-to-Case – Steady State (Note 2) | R _{θJC} | 3.0 | °C/W |
| Junction-to-Ambient – Steady State (Note 2) | R _{θJA} | 134 | |

1. Surface-mounted on FR4 board using a 1 in² pad size, 1 oz Cu pad.
2. The entire application environment impacts the thermal resistance values shown, they are not constants and are only valid for the particular conditions noted.

| V _{(BR)DSS} | R _{DS(on)} MAX | I _D MAX |
|----------------------|-------------------------|--------------------|
| -100 V | 120 mΩ @ -10 V | -13 A |
| | 254 mΩ @ -6 V | |



ORDERING INFORMATION

See detailed ordering, marking and shipping information on page 5 of this data sheet.

NTTFS115P10M5

ELECTRICAL CHARACTERISTICS ($T_J = 25\text{ }^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|---|-------------------|--|-----------------------------------|-----|-----------|----------------------|
| OFF CHARACTERISTICS | | | | | | |
| Drain-to-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$ | -100 | | | V |
| Drain-to-Source Breakdown Voltage Temperature Coefficient | $V_{(BR)DSS}/T_J$ | $I_D = 250\text{ }\mu\text{A}$, ref to $25\text{ }^\circ\text{C}$ | | -67 | | mV/ $^\circ\text{C}$ |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{GS} = 0\text{ V}, V_{DS} = -80\text{ V}$ | $T_J = 25\text{ }^\circ\text{C}$ | | -1 | μA |
| | | | $T_J = 125\text{ }^\circ\text{C}$ | | -100 | |
| Gate-to-Source Leakage Current | I_{GSS} | $V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$ | | | ± 100 | nA |

ON CHARACTERISTICS (Note 3)

| | | | | | | |
|--|------------------|--|------|------|------|----------------------|
| Gate Threshold Voltage | $V_{GS(TH)}$ | $V_{GS} = V_{DS}, I_D = -45\text{ }\mu\text{A}$ | -2.0 | -3.0 | -4.0 | V |
| Negative Threshold Temperature Coefficient | $V_{GS(TH)}/T_J$ | $I_D = 250\text{ }\mu\text{A}$, ref to $25\text{ }^\circ\text{C}$ | | 6.2 | | mV/ $^\circ\text{C}$ |
| Drain-to-Source On Resistance | $R_{DS(on)}$ | $V_{GS} = -10\text{ V}, I_D = -2.4\text{ A}$ | | 97 | 120 | m Ω |
| | | $V_{GS} = -6\text{ V}, I_D = -1.6\text{ A}$ | | 127 | 254 | |
| Forward Transconductance | g_{FS} | $V_{DS} = -10\text{ V}, I_D = -2.1\text{ A}$ | | 5.5 | | S |
| Gate-Resistance | R_G | $T_A = 25\text{ }^\circ\text{C}$ | | 3.5 | | Ω |

CHARGES & CAPACITANCES

| | | | | | | |
|------------------------------|--------------|---|--|------|--|----|
| Input Capacitance | C_{ISS} | $V_{GS} = 0\text{ V}, f = 1\text{ MHz}, V_{DS} = -50\text{ V}$ | | 637 | | pF |
| Output Capacitance | C_{OSS} | | | 93.5 | | |
| Reverse Transfer Capacitance | C_{RSS} | | | 4.5 | | |
| Total Gate Charge | $Q_{G(TOT)}$ | $V_{GS} = -6\text{ V}, V_{DS} = -50\text{ V}, I_D = -2.4\text{ A}$ | | 5.7 | | nC |
| Total Gate Charge | $Q_{G(TOT)}$ | $V_{GS} = -10\text{ V}, V_{DS} = -50\text{ V}, I_D = -2.4\text{ A}$ | | 9.2 | | |
| Gate-to-Source Charge | Q_{GS} | | | 3.0 | | |
| Gate-to-Drain Charge | Q_{GD} | | | 1.3 | | |
| Plateau Voltage | V_{GP} | | | 4.4 | | |

SWITCHING CHARACTERISTICS (Note 3)

| | | | | | | |
|---------------------|--------------|--|--|------|--|----|
| Turn-On Delay Time | $t_{d(ON)}$ | $V_{GS} = -10\text{ V}, V_{DS} = -50\text{ V}, I_D = -2.4\text{ A}, R_G = 2.5\text{ }\Omega$ | | 8.7 | | ns |
| Rise Time | t_r | | | 2.1 | | |
| Turn-Off Delay Time | $t_{d(OFF)}$ | | | 13.4 | | |
| Fall Time | t_f | | | 4.1 | | |

DRAIN-SOURCE DIODE CHARACTERISTICS

| | | | | | | | |
|-------------------------|----------|--|-----------------------------------|------|------|-----|---|
| Forward Diode Voltage | V_{SD} | $V_{GS} = 0\text{ V}, I_S = -2.4\text{ A}$ | $T_J = 25\text{ }^\circ\text{C}$ | | 0.84 | 1.2 | V |
| | | | $T_J = 125\text{ }^\circ\text{C}$ | | 0.71 | | |
| Reverse Recovery Time | t_{RR} | $V_{GS} = 0\text{ V}, di/dt = 300\text{ A}/\mu\text{s}, I_S = -1.2\text{ A}$ | | 28.7 | | ns | |
| Reverse Recovery Charge | Q_{RR} | | | 87.6 | | nC | |
| Charge Time | t_a | | | 18.4 | | ns | |
| Discharge Charge | t_b | | | 10.4 | | ns | |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

- Switching characteristics are independent of operating junction temperatures.
- Pulse Test: Pulse Width < 300 μs . Duty Cycle < 2%.
- Maximum current for pulses as long as 1s is higher but is independent on pulse duration or duty cycles.

TYPICAL CHARACTERISTICS

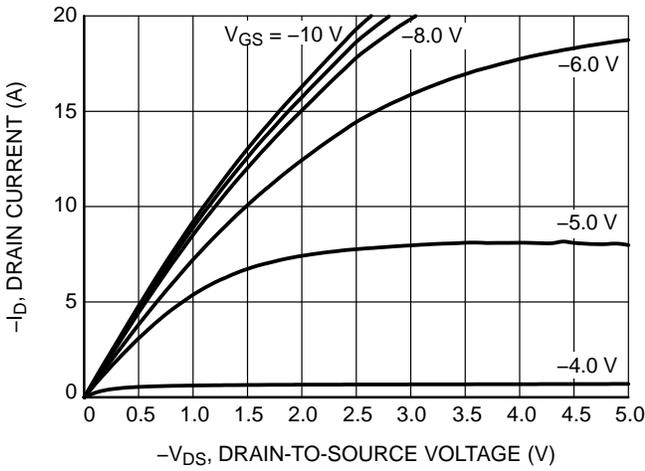


Figure 1. On-Region Characteristics

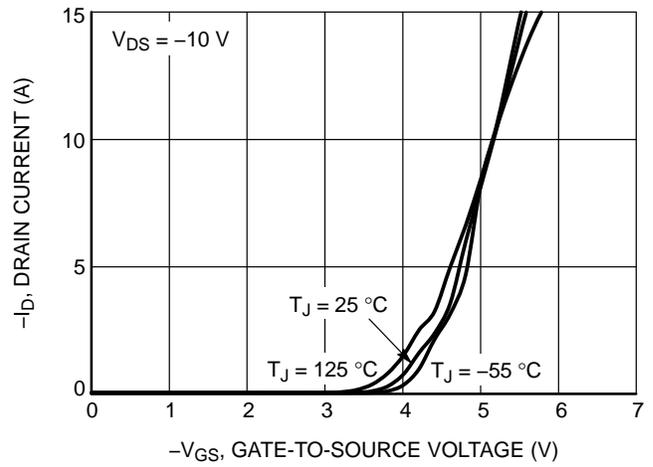


Figure 2. Transfer Characteristics

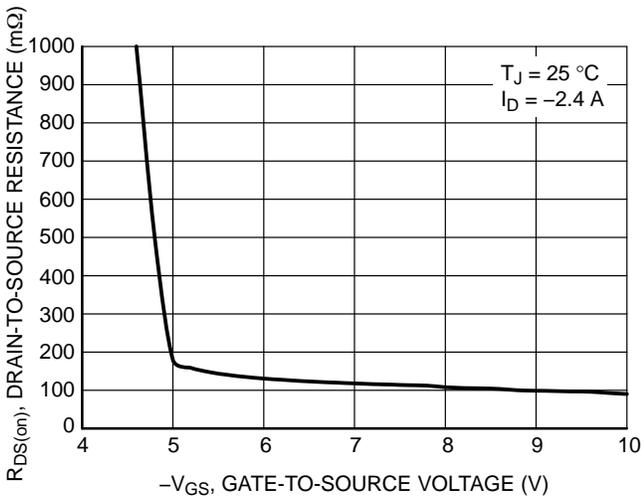


Figure 3. On-Resistance vs. Gate-to-Source Voltage

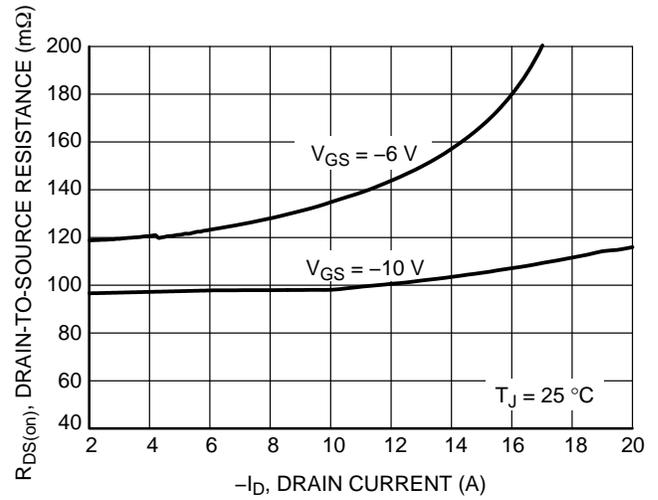


Figure 4. On-Resistance vs. Drain Current and Gate Voltage

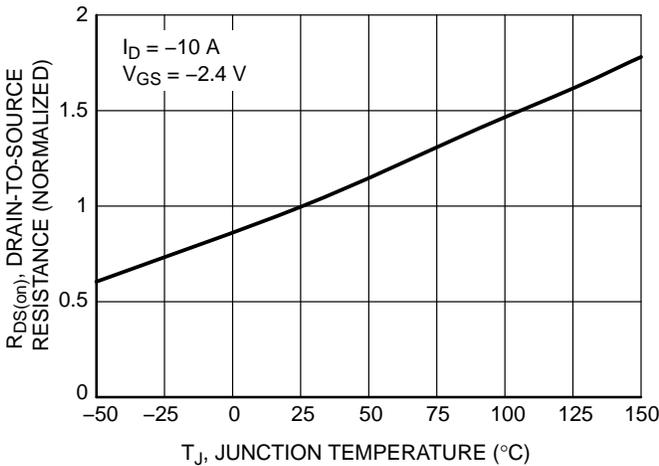


Figure 5. On-Resistance Variation with Temperature

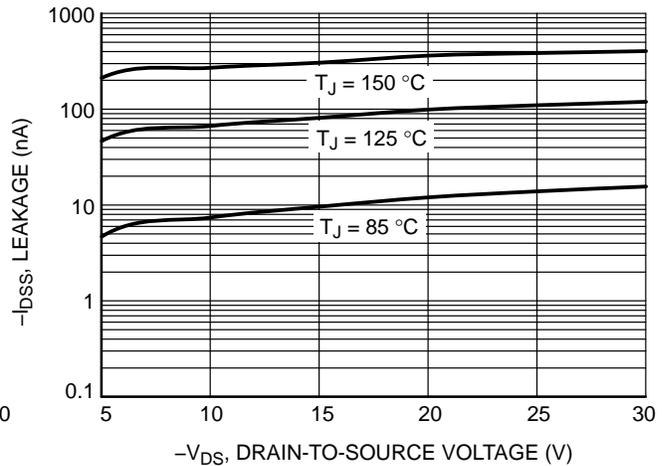


Figure 6. Drain-to-Source Leakage Current vs. Voltage

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TYPICAL CHARACTERISTICS

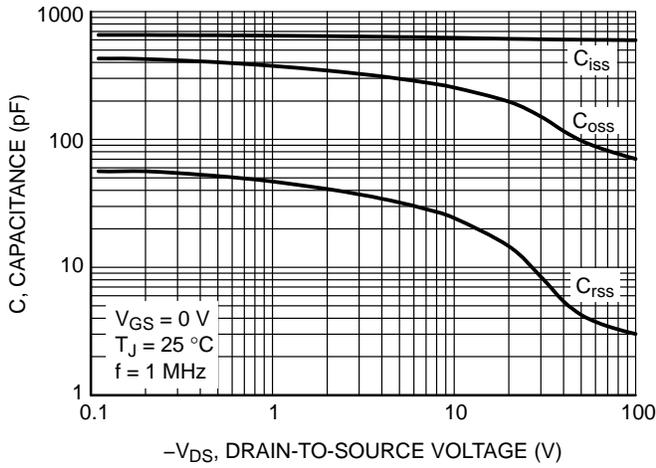


Figure 7. Capacitance Variation

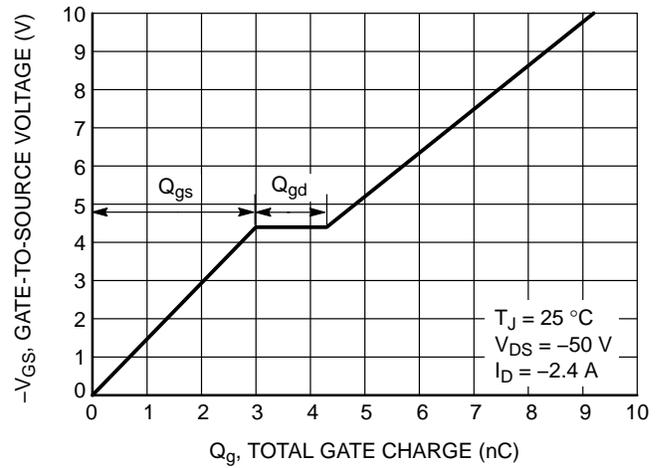


Figure 8. Gate-to-Source vs. Total Charge

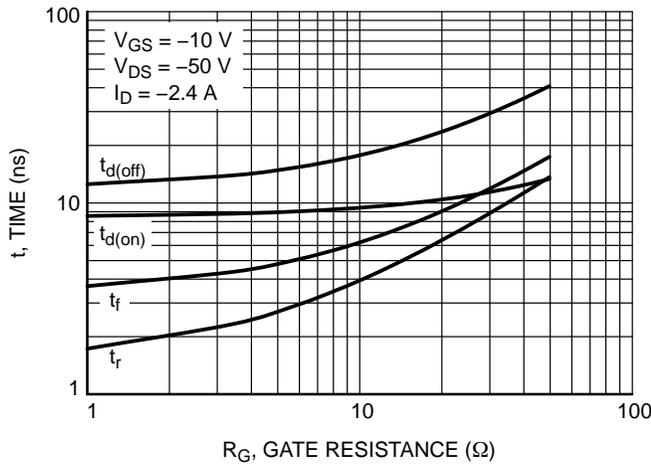


Figure 9. Resistive Switching Time Variation vs. Gate Resistance

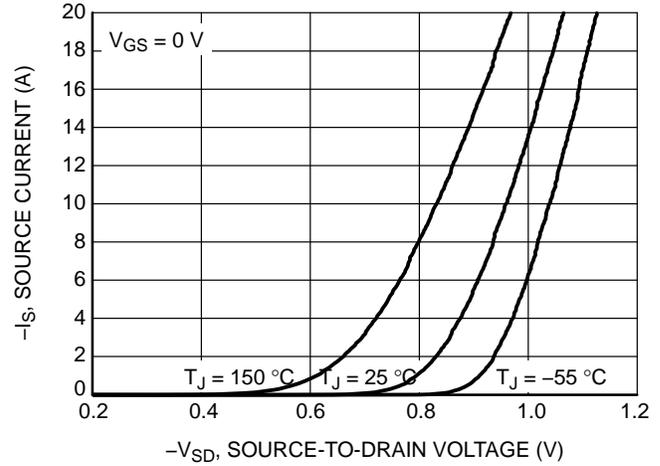


Figure 10. Diode Forward Voltage vs. Current

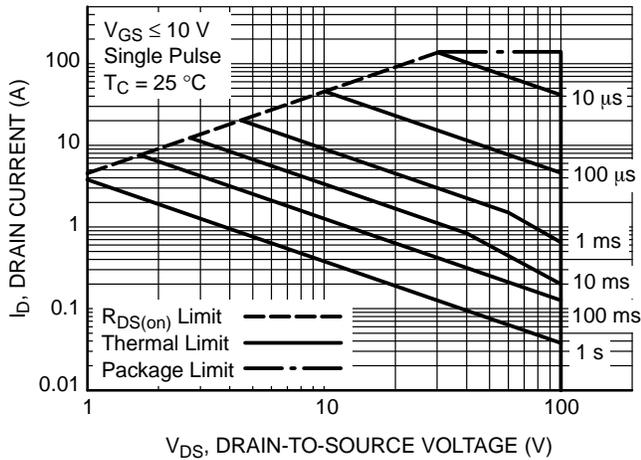


Figure 11. Maximum Rated Forward Biased Safe Operating Area

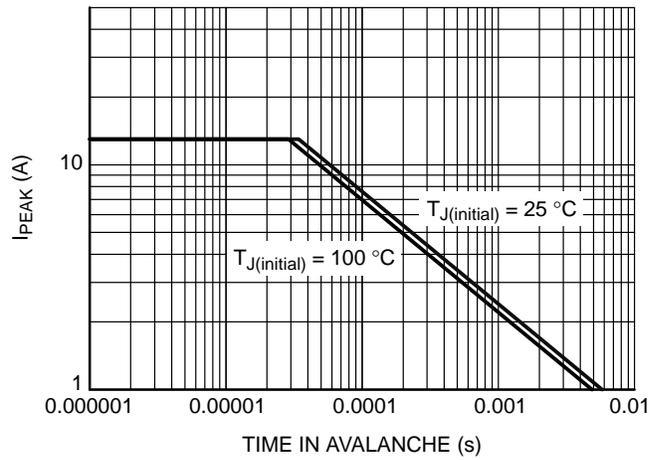


Figure 12. I_{PEAK} vs. Time in Avalanche

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TYPICAL CHARACTERISTICS

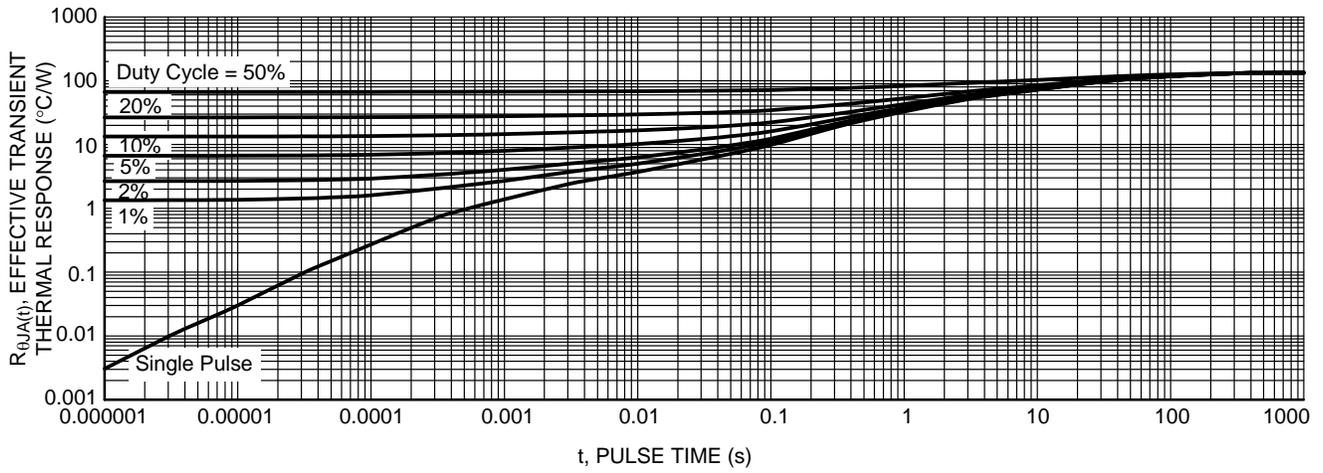


Figure 13. Thermal Response

DEVICE ORDERING AND MARKING INFORMATION

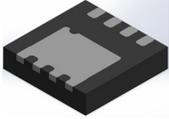
| Device | Device Marking | Package | Reel Size | Tape Width | Shipping† |
|---------------|----------------|--------------------|-----------|------------|--------------------|
| NTTFS115P10M5 | 115P10M5 | WDFN8 (Pb-Free) | 13" | 12 mm | 3000 / Tape & Reel |

† For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, [BRD8011/D](#).

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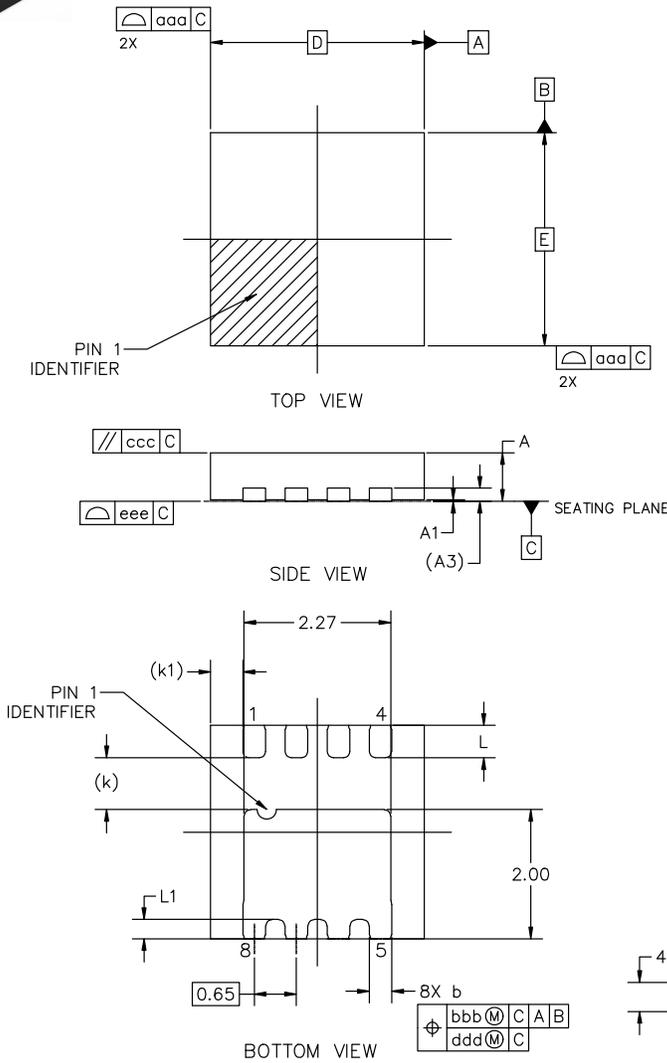
REVISION HISTORY

| Revision | Description of Changes | Date |
|----------|---|------------|
| 0 | Initial Production Data Sheet release. | 4/6/2020 |
| 1 | Rebranded the Data Sheet to onsemi format. | 10/20/2025 |



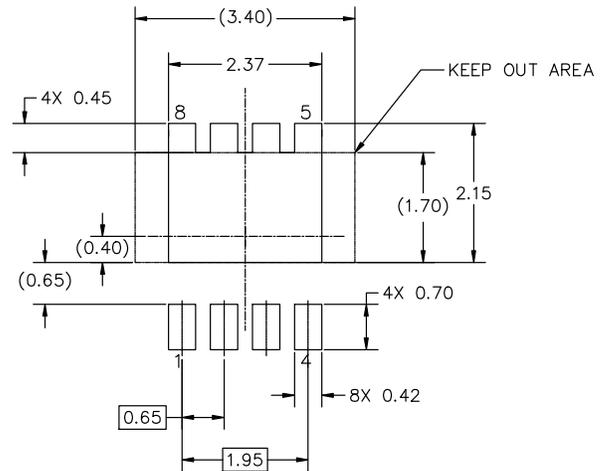
WDFN-8 3.30x3.30x0.75, 0.65P
CASE 511DH
ISSUE A

DATE 04 DEC 2025



- NOTES:
1. DIMENSIONING AND TOLERANCING AS PER ASME Y14.5M, 2018.
 2. CONTROLLING DIMENSION: MILLIMETERS.

| MILLIMETERS | | | |
|---------------------------|----------|-------|------|
| DIM | MIN | NOM | MAX |
| A | 0.70 | 0.75 | 0.80 |
| A1 | 0.00 | 0.025 | 0.05 |
| A3 | 0.20 REF | | |
| b | 0.30 | 0.35 | 0.40 |
| D | 3.30 BSC | | |
| D2 | 2.22 | 2.27 | 2.32 |
| E | 3.30 BSC | | |
| E2 | 1.95 | 2.00 | 2.05 |
| e | 0.65 BSC | | |
| k | 0.80 REF | | |
| k1 | 0.50 REF | | |
| L | 0.45 | 0.50 | 0.55 |
| L1 | 0.25 | 0.30 | 0.35 |
| TOLERANCE FORM & POSITION | | | |
| aaa | 0.05 | | |
| bbb | 0.10 | | |
| ccc | 0.10 | | |
| ddd | 0.05 | | |
| eee | 0.08 | | |



GENERIC MARKING DIAGRAM*



XXXX = Specific Device Code
A = Assembly Location
Y = Year
WW = Work Week

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "•", may or may not be present. Some products may not follow the Generic Marking.

RECOMMENDED MOUNTING FOOTPRINT

* For additional information on our Pb-Free strategy and soldering details, please download the onsemi Soldering and Mounting Techniques reference manual, SOLDERRM/D.

| | | |
|-------------------------|-------------------------------------|--|
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| DESCRIPTION: | WDFN-8 3.30x3.30x0.75, 0.65P | PAGE 1 OF 1 |

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