



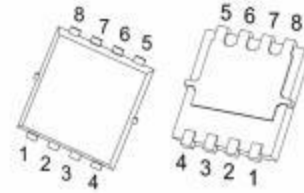
ZT35GN60D3

60V N-Channel Mosfet

FEATURES

- $R_{DS(ON)} \leq 15 \text{ m}\Omega$ (12 m Ω Typ.)
@ $V_{GS}=10\text{V}$
- $R_{DS(ON)} \leq 19 \text{ m}\Omega$ (15 m Ω Typ.)
@ $V_{GS}=4.5\text{V}$
- 100% UIS TEST

PDFNWB3.3*3.3-8L

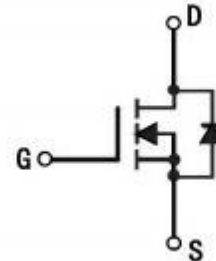


- 1: S 3: S 5: D 7: D
- 2: S 4: G 6: D 8: D

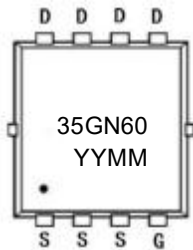
APPLICATIONS

- PWM Applications
- Load Switch
- Power Management

N-CHANNEL MOSFET



MARKING



YYMM: Date Code(year & month)

Absolute Maximum Ratings ($T_c=25\text{C}$ unless otherwise specified)

| Symbol | Parameter | Max. | Units | |
|-----------------|---|---------------------|-------|---|
| V_{DSS} | Drain-Source Voltage | 60 | V | |
| V_{GSS} | Gate-Source Voltage | ± 20 | V | |
| I_D | Continuous Drain Current @ $V_{GS}=10\text{V}$ <small>note1</small> | $T_c = 25\text{C}$ | 38 | A |
| | | $T_c = 100\text{C}$ | 24 | A |
| I_{DM} | Pulsed Drain Current <small>note2</small> | 150 | A | |
| E_{AS} | Single Pulsed Avalanche Energy <small>note3</small> | 132 | mJ | |
| P_D | Power Dissipation | $T_c = 25\text{C}$ | 35.7 | W |
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case | 3.5 | C/ W | |
| T_J, T_{STG} | Operating and Storage Temperature Range | -55 to +150 | C | |



Electrical Characteristics (T_C=25C unless otherwise specified)

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Units |
|---|---|--|------|------|------|-------|
| Off Characteristic | | | | | | |
| V _{(BR)DSS} | Drain-Source Breakdown Voltage | V _{GS} =0V, I _D =250μA | 60 | - | - | V |
| I _{DSS} | Zero Gate Voltage Drain Current | V _{DS} =60V, V _{GS} =0V, | - | - | 1.0 | μA |
| I _{GSS} | Gate to Body Leakage Current | V _{DS} =0V, V _{GS} =±20V | - | - | ±100 | nA |
| On Characteristics | | | | | | |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} =V _{GS} , I _D =250 μA | 1.0 | 1.5 | 2.5 | V |
| R _{DS(on)} | Static Drain-Source on-Resistance <small>note4</small> | V _{GS} =10V, I _D =20A | - | 12 | 15 | mΩ |
| | | V _{GS} =4.5V, I _D =10A | - | 15 | 19 | |
| Dynamic Characteristics <small>note5</small> | | | | | | |
| C _{iss} | Input Capacitance | V _{DS} =43V, V _{GS} =0V, f=1.0MHz | - | 1550 | - | pF |
| C _{oss} | Output Capacitance | | - | 262 | - | pF |
| C _{rss} | Reverse Transfer Capacitance | | - | 15 | - | pF |
| Q _g | Total Gate Charge | V _{DS} =43V, I _D =25A, V _{GS} =10V | - | 36 | - | nC |
| Q _{gs} | Gate-Source Charge | | - | 9.0 | - | nC |
| Q _{gd} | Gate-Drain("Miller") Charge | | - | 4.7 | - | nC |
| Switching Characteristics <small>note5</small> | | | | | | |
| t _{d(on)} | Turn-on Delay Time | V _{DD} =40V, I _D =25A, R _{GEN} =3Ω, V _{GS} =10V | - | 9.5 | - | ns |
| t _r | Turn-on Rise Time | | - | 6.9 | - | ns |
| t _{d(off)} | Turn-off Delay Time | | - | 29 | - | ns |
| t _f | Turn-off Fall Time | | - | 14.8 | - | ns |
| Drain-Source Diode Characteristics and Maximum Ratings | | | | | | |
| V _{SD} | Drain to Source Diode Forward Voltage | V _{GS} =0V, I _S =20A | - | - | 1.2 | V |

Notes:1. TC=25C Limited only by maximum temperature allowed. Calculated continuous current based on maximum allowable junction temperature.

2. PW≤10μs, Duty cycle≤1%

3. EAS condition: T_J=25C, V_{DD}=20V, V_G=10V, L=0.5mH, I_{AS}=23A

4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

5. Guaranteed by design, not subject to production testing

Typical Performance Characteristics

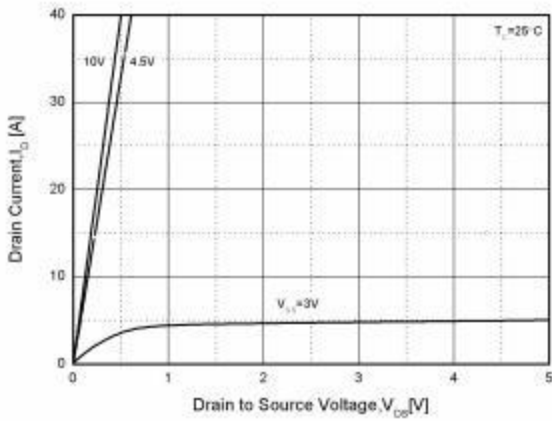


Figure1. Output Characteristics

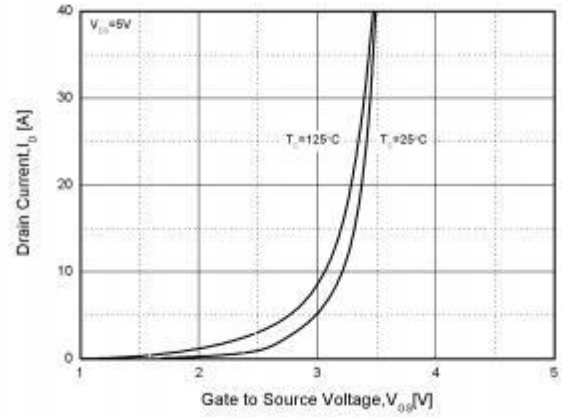


Figure2. Transfer Characteristics

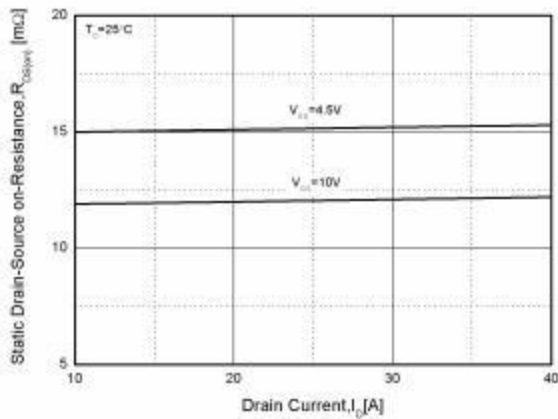


Figure3. Rdson-Drain Current

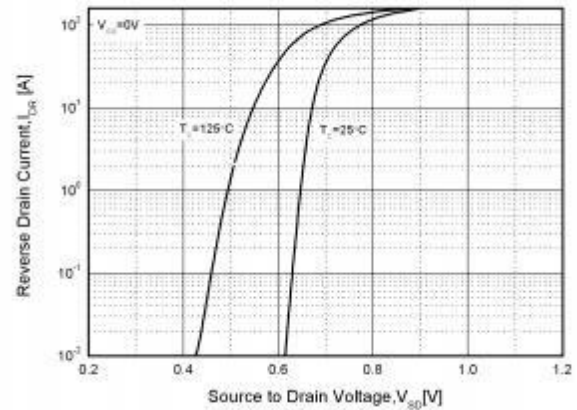


Figure4. Typical Source-Drain Diode Forward Voltage

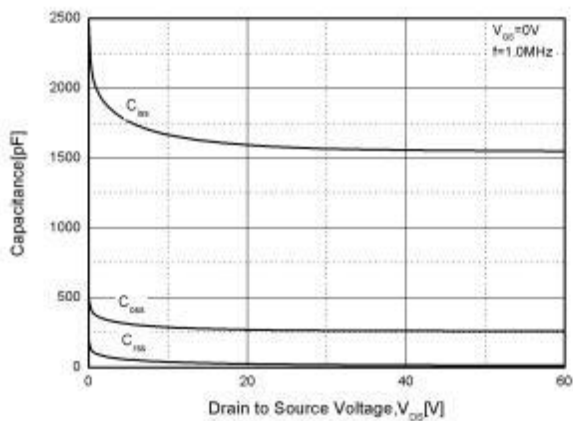


Figure5. Capacitance Characteristics

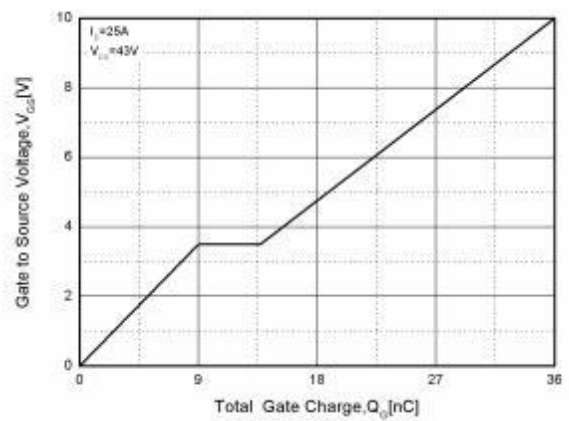


Figure6. Gate Charge

Typical Performance Characteristics (cont.)

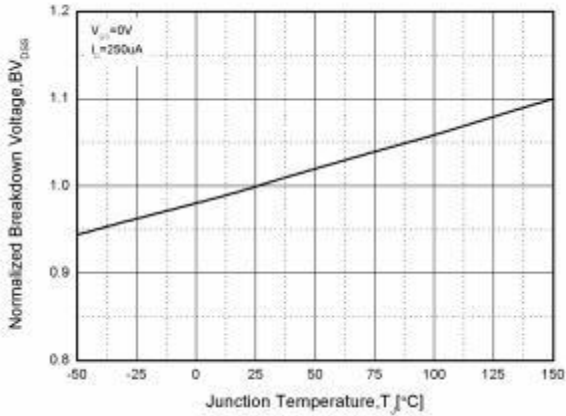


Figure7. Normalized Breakdown Voltage vs. Temperature

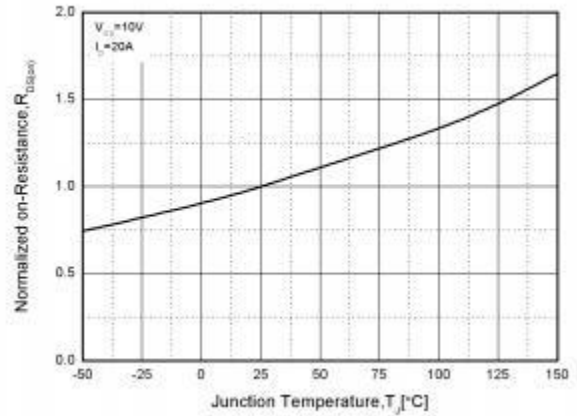


Figure8. Normalized on Resistance vs. Temperature

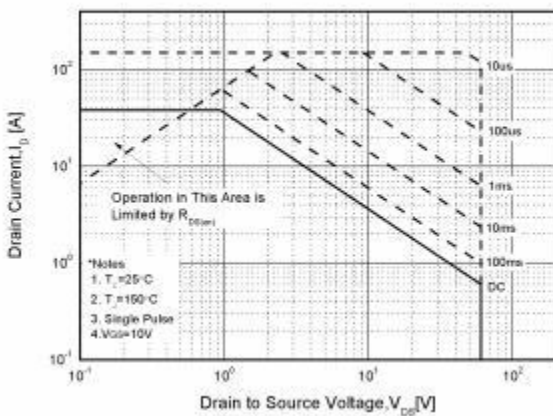


Figure9. Safe Operation Area

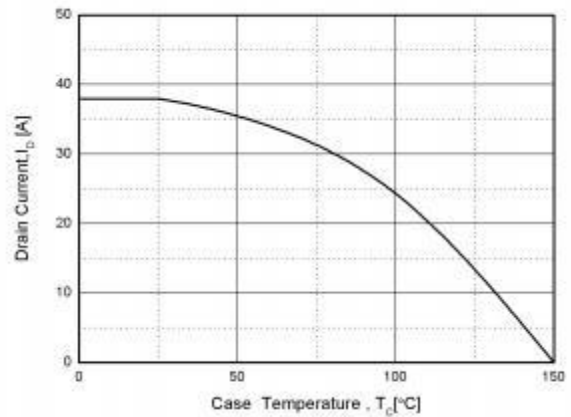


Figure10. Drain Current vs. Case Temperature

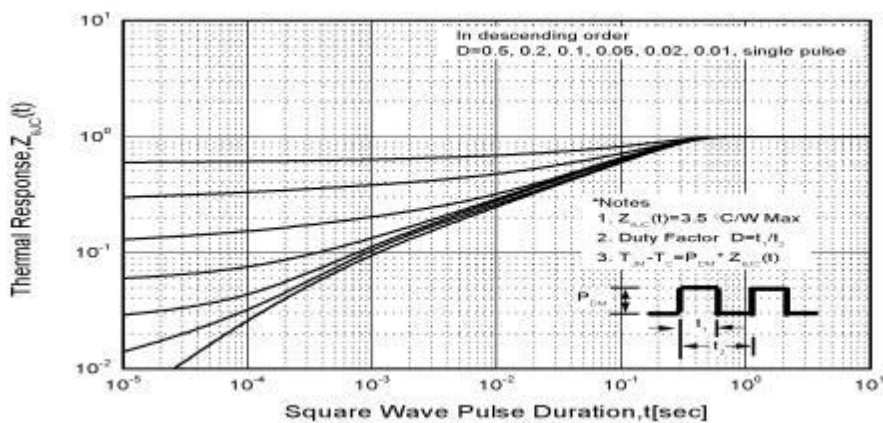
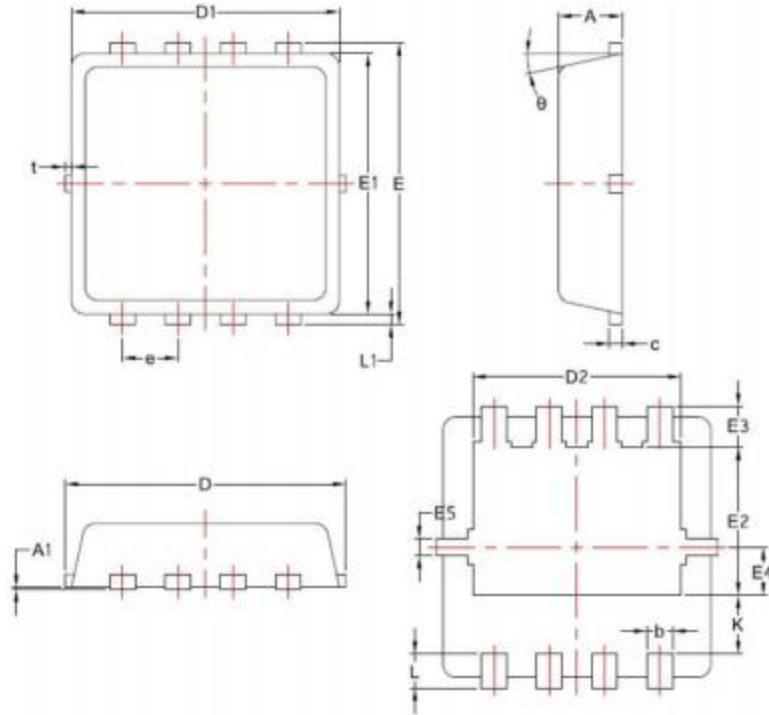


Figure11. Transient Thermal Response Curve

PDFNWB3.3*3.3-8L Package Outline Dimensions



| Symbols | Dimensions | | | | | |
|---------|-------------|-------|-------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min . | Typ . | Max . | Min . | Typ . | Max . |
| A | 0.70 | 0.75 | 0.85 | 0.028 | 0.030 | 0.033 |
| A1 | --- | --- | 0.05 | --- | --- | 0.002 |
| b | 0.20 | 0.30 | 0.40 | 0.008 | 0.012 | 0.016 |
| c | 0.10 | 0.152 | 0.25 | 0.004 | 0.152 | 0.010 |
| D | 3.15 | 3.30 | 3.45 | 0.124 | 0.130 | 0.136 |
| D1 | 3.00 | 3.15 | 3.25 | 0.118 | 0.124 | 0.128 |
| D2 | 2.29 | 2.45 | 2.65 | 0.090 | 0.096 | 0.104 |
| E | 3.15 | 3.30 | 3.45 | 0.124 | 0.130 | 0.136 |
| E1 | 2.90 | 3.05 | 3.20 | 0.114 | 0.120 | 0.126 |
| E2 | 1.54 | 1.74 | 1.94 | 0.060 | 0.069 | 0.076 |
| E3 | 0.28 | 0.48 | 0.65 | 0.011 | 0.019 | 0.026 |
| E4 | 0.37 | 0.57 | 0.77 | 0.015 | 0.022 | 0.030 |
| E5 | 0.10 | 0.20 | 0.30 | 0.004 | 0.008 | 0.012 |
| e | 0.60 | 0.65 | 0.70 | 0.024 | 0.026 | 0.028 |
| K | 0.59 | 0.69 | 0.89 | 0.023 | 0.027 | 0.035 |
| L | 0.30 | 0.40 | 0.50 | 0.012 | 0.016 | 0.020 |
| L1 | 0.06 | 0.125 | 0.20 | 0.002 | 0.005 | 0.008 |
| t | 0 | 0.075 | 0.13 | 0 | 0.003 | 0.005 |
| θ | 10° | 12° | 14° | 10° | 12° | 14° |