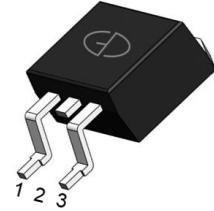


N-Channel 30V (D-S) Power MOSFET

Features

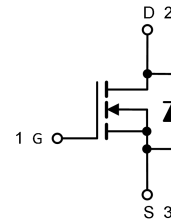
- 100% Avalanche Tested
- Extremely Low Losses with Low FOM $R_{ds(on)} \cdot Q_g$
- Halogen Free, Pb-Free
- RoHS Compliant



TO-263AB (D²PAK)

Applications

- DC/DC
- Motors, lamps
- Power switching



Absolute Maximum Ratings ($T_J=25^\circ\text{C}$ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|-----------------|-------------------------|------------------|
| Drain Source Voltage | V_{DS} | 30 | V |
| Gate Source Voltage | V_{GS} | ± 20 | V |
| Drain Current, Continuous $V_{GS}=10\text{V}$ (Note 1) | I_D | $T_C=25^\circ\text{C}$ | 120 |
| | | $T_C=100^\circ\text{C}$ | 90 |
| Drain Current, Pulsed (Note 2) | I_{DM} | 480 | A |
| Single Avalanche Energy @ $L=0.1\text{mH}$ | E_{AS} | 320 | mJ |
| Power Dissipation (Note 3) | P_D | 100 | W |
| Operating Junction/ Storage Temperature Range | T_J / T_{STG} | -55 to +150 | $^\circ\text{C}$ |

Note 1: Calculated continuous current based on maximum allowable junction temperature.

Note 2: Repetitive rating; pulse width limited by max. junction temperature.

Thermal Characteristics

| Parameter | Symbol | Max | Unit |
|--|------------|-----|--------------------|
| Thermal Resistance Junction to Case (Note 3) | R_{thJC} | 0.9 | $^\circ\text{C/W}$ |
| Junction to ambient (Note 4) | R_{thJA} | 62 | $^\circ\text{C/W}$ |
| Junction to Ambient (PCB mounted, steady-state) (Note 4) | | 40 | $^\circ\text{C/W}$ |

Note 3: The power dissipation P_D is based on max. junction temperature, using junction-to-case thermal resistance.

Note 4: The value of R_{thJA} is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$.

Electrical Characteristics (T_J =25°C unless otherwise noted)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|----------------------------------|----------------------|---|-----|------|------|------|
| Drain Source Breakdown Voltage | V _{(BR)DSS} | V _{GS} =0V, I _D =250μA | 30 | -- | -- | V |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} =30V, V _{GS} =0V | -- | -- | 1 | uA |
| Gate Threshold Voltage | V _{GS(TH)} | V _{DS} =V _{GS} , I _{DS} =250uA | 1 | -- | 3 | V |
| Gate Leakage Current | I _{GSS} | V _{GS} =±20V, V _{DS} =0V | -- | -- | ±100 | nA |
| Drain-Source On-state Resistance | R _{DS(on)} | V _{GS} =10V, I _D =30A | -- | 2.6 | 3.6 | mΩ |
| | | V _{GS} =4.5V, I _D =16A | -- | 3.2 | 5 | |
| Total Gate Charge | Q _g | V _{DS} =15V, I _D =16A, V _{GS} =5V | -- | 68 | -- | nC |
| Gate Source Charge | Q _{gs} | | -- | 19 | -- | |
| Gate Drain Charge | Q _{gd} | | -- | 25 | -- | |
| Turn-on Delay Time | t _{d(on)} | V _{GS} =10V, V _{DD} =15V, I _D =1A, R _{GEN} =6Ω | -- | 19 | -- | ns |
| Turn-on Rise Time | t _r | | -- | 18 | -- | |
| Turn-off Delay Time | t _{d(off)} | | -- | 145 | -- | |
| Turn-off Fall Time | t _f | | -- | 63 | -- | |
| Input Capacitance | C _{iss} | V _{GS} =0V, V _{DS} =15V, f=1MHz | -- | 9291 | -- | pF |
| Output Capacitance | C _{oss} | | -- | 748 | -- | |
| Reverse Transfer Capacitance | C _{rss} | | -- | 702 | -- | |

Reverse Diode Characteristics (T_J =25°C unless otherwise noted)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--|-----------------|--|-----|------|-----|------|
| Continuous Source Current (Body Diode) | I _S | T _C =25°C | -- | -- | 110 | A |
| Pulsed Source Current (Body Diode) | I _{SM} | | -- | -- | 440 | |
| Diode Forward Voltage | V _{SD} | I _S =50A, V _{GS} =0V | -- | 0.85 | 1.3 | V |
| Reverse Recovery Time | T _{rr} | I _F =32A, di/dt = 100 A/μs | -- | 20 | -- | ns |
| Reverse Recovery Charge | Q _{rr} | | -- | 7.8 | -- | nC |

Typical Characteristics Curves ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Fig.1 - Typical Output Characteristics

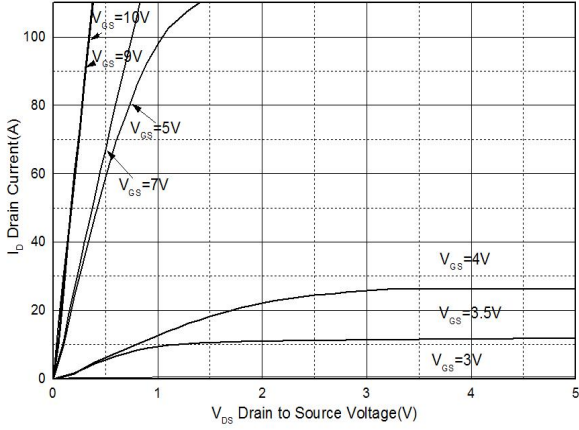


Fig.2 - Typical Transfer Characteristics

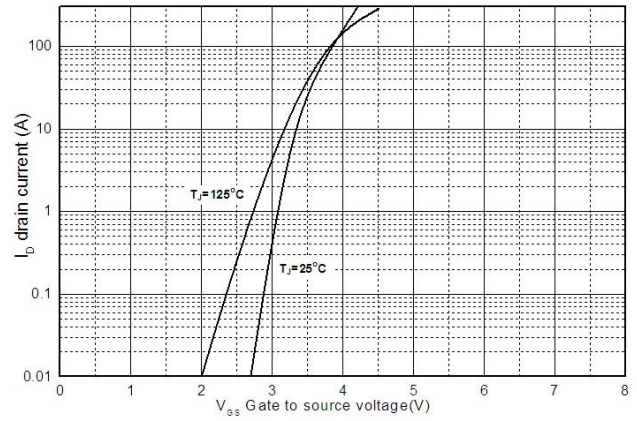


Fig.3 - On-Resistance vs. Gate-Source Voltage

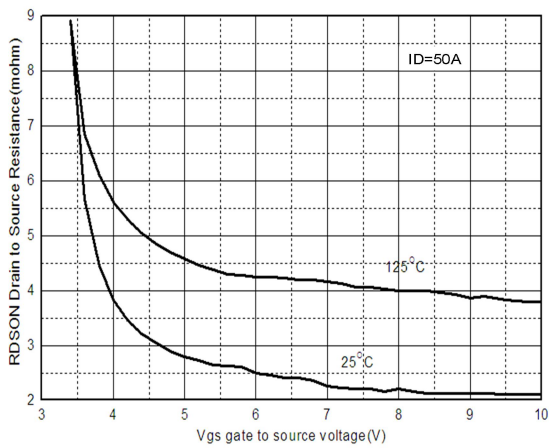


Fig.4 - Body-Diode Characteristics

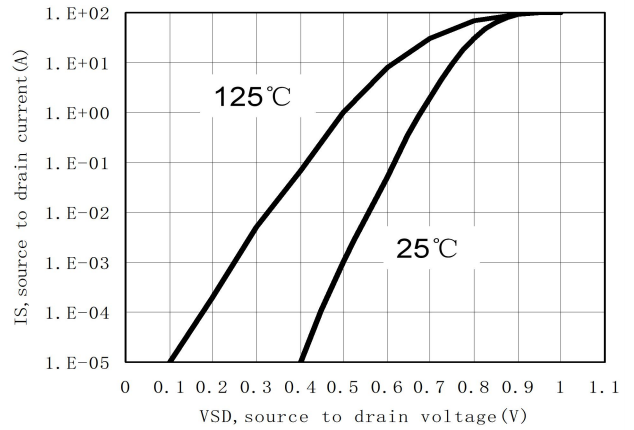


Fig.5 - Gate-Charge Characteristics

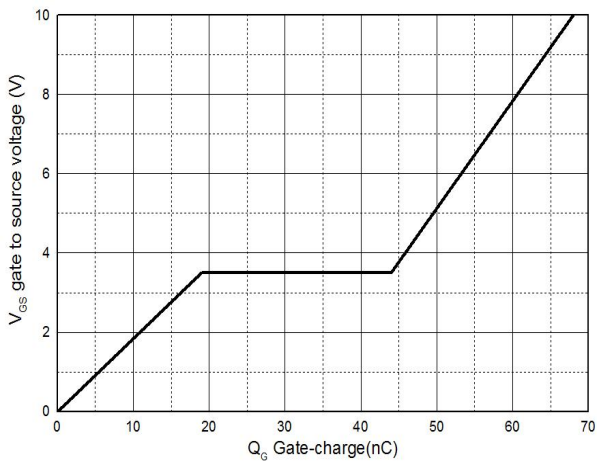
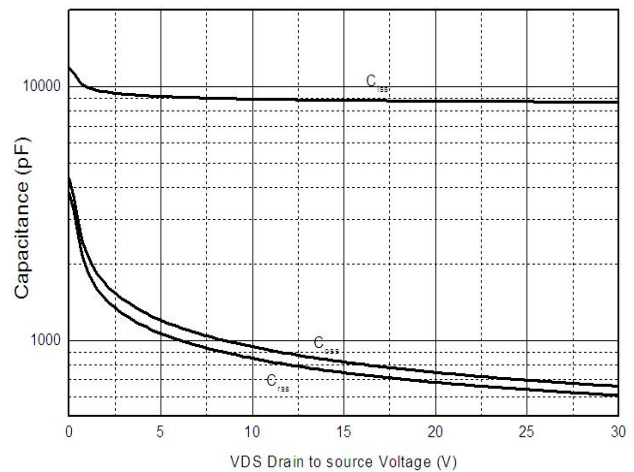
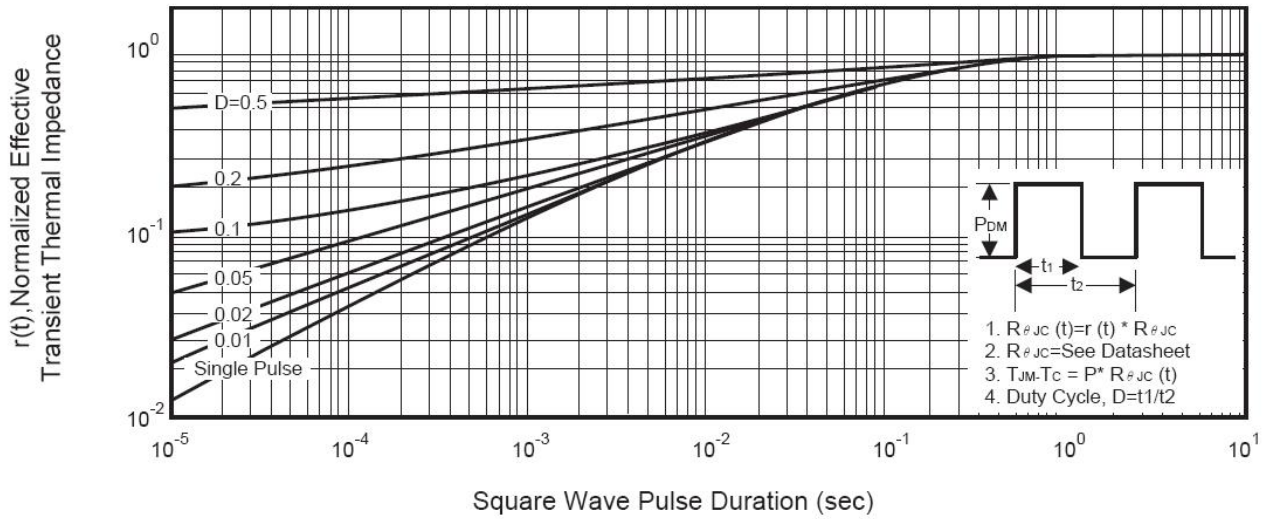


Fig.6 - Capacitance Characteristics



Typical Characteristics Curves ($T_J = 25^\circ\text{C}$ unless otherwise noted)

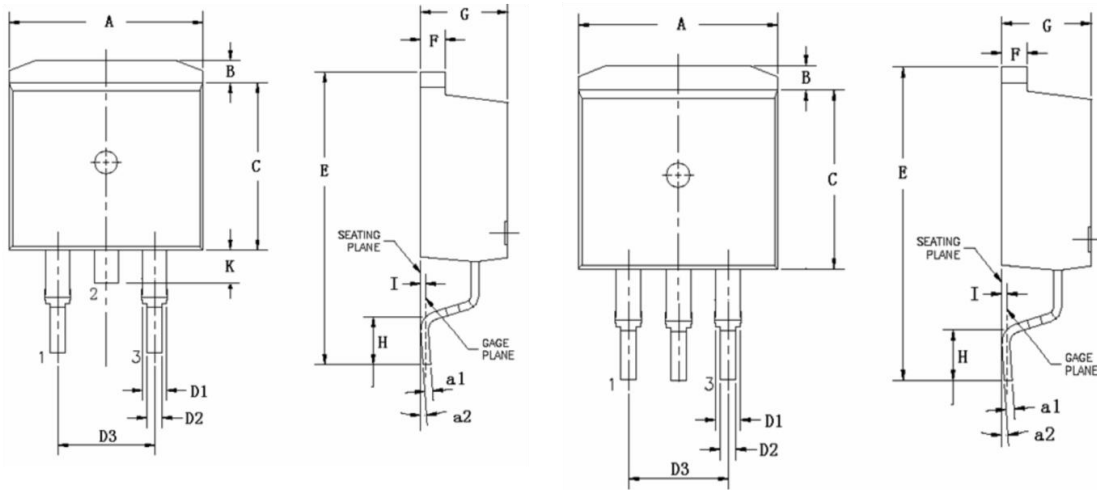
Fig.7 - Normalized Thermal Transient Impedance Curve



Package Outline Dimensions (Unit: millimeters)

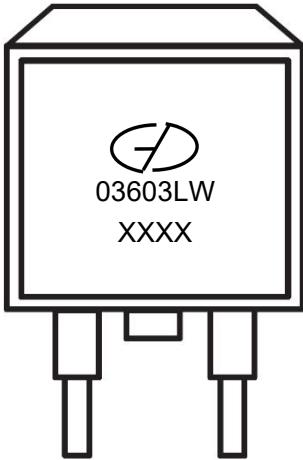
TO-263

D2PAK PACKAGE OUTLINE DIMENSION




| Symbol | Dimension In Millimeters | | Dimension In Inches | |
|--------|--------------------------|----------------|---------------------|----------------|
| | Min | Max | Min | Max |
| A | 9.660 | 10.280 | 0.380 | 0.405 |
| B | 1.020 | 1.320 | 0.040 | 0.052 |
| C | 8.590 | 9.400 | 0.338 | 0.370 |
| D1 | 1.140 | 1.400 | 0.045 | 0.055 |
| D2 | 0.700 | 0.950 | 0.028 | 0.037 |
| D3 | 5.080 (TYP) | | 0.200 (TYP) | |
| E | 15.090 | 15.390 | 0.594 | 0.606 |
| F | 1.150 | 1.400 | 0.045 | 0.055 |
| G | 4.300 | 4.700 | 0.169 | 0.185 |
| H | 2.290 | 2.790 | 0.090 | 0.110 |
| I | 0.250 (TYP) | | 0.010 (TYP) | |
| K | 1.300 | 1.600 | 0.051 | 0.063 |
| a1 | 0.450 | 0.650 | 0.018 | 0.026 |
| a2 | 0 ⁰ | 8 ⁰ | 1 ⁰ | 8 ⁰ |

Marking Outline



Part Name: GMN03603LW

1. Logo Mark: 
2. P/N Mark: 03603LW
3. Date Code: XXXX

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