

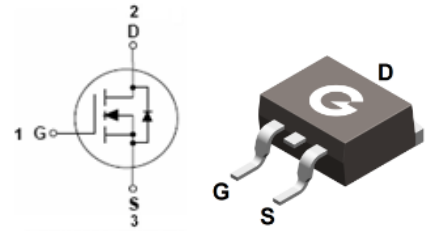
Features

- Proprietary new trench technology
- Fast recovery body diode
- Pb-free lead plating; RoHS compliant

HF

Mechanical Data

- Case: TO-263
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



TO-263

Ordering Information

| Part Number | Package | Shipping Quantity | Marking Code |
|-------------|---------|---------------------------------------|--------------|
| BL035N04HB | TO-263 | 50 pcs / Tube & 800 pcs / Tape & Reel | 035N04HB |

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

| Parameter | Symbol | Value | Unit |
|---|------------------|-------|------|
| Drain-to-Source Voltage | V _{DSS} | 40 | V |
| Gate-to-Source Voltage | V _{GSS} | ±20 | V |
| Continuous Drain Current (T _C = 25°C, Silicon limited) | I _D | 200 | A |
| Continuous Drain Current (T _C = 100°C, Silicon limited) | | 125 | A |
| Continuous Drain Current (T _C = 25°C, Package limited) | | 80 | A |
| Continuous Drain Current (T _A = 25°C, R _{θJA} =43°C/W) | | 21 | A |
| Pulsed Drain Current*1 | I _{DM} | 690 | A |
| Single Pulse Avalanche Energy *4 | E _{AS} | 600 | mJ |

Thermal Characteristics

| Parameter | Symbol | Value | Unit |
|---|------------------|------------|------|
| Power Dissipation (T _C = 25°C) | P _D | 250 | W |
| Thermal Resistance Junction-to-Air *2 | R _{θJA} | 62 | °C/W |
| Thermal Resistance Junction-to-Air *6 | R _{θJA} | 43 | °C/W |
| Thermal Resistance Junction-to-Case | R _{θJC} | 0.9 | °C/W |
| Operating Junction Temperature Range | T _J | -55 ~ +150 | °C |
| Storage Temperature Range | T _{STG} | -55 ~ +150 | °C |

Electrical Characteristics (@ T_A = 25°C unless otherwise specified)

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Unit |
|---|---|--|------|------|------|------|
| Static Characteristics | | | | | | |
| V _{DSS} | Drain-Source Breakdown Voltage | V _{GS} = 0V, I _D = 1mA | 40 | - | - | V |
| I _{DSS} | Zero Gate Voltage Drain Current | V _{DS} = 40V, V _{GS} = 0V | - | - | 1 | μA |
| I _{GSS} | Gate-Body Leakage Current | V _{GS} = ±20V, V _{DS} = 0V | - | - | ±100 | nA |
| R _{DS(ON)} | Static Drain-Source On-resistance ^{*3} | V _{GS} = 10V, I _D = 80A | - | 2.4 | 3.5 | mΩ |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} = V _{GS} , I _D = 250μA | 2 | 3 | 4 | V |
| R _G | Gate resistance | f = 1MHz | - | 2.6 | - | Ω |
| Dynamic Characteristics | | | | | | |
| C _{ISS} | Input Capacitance | V _{GS} = 0V | - | 5800 | - | pF |
| C _{OSS} | Output Capacitance | V _{DS} = 25V | - | 680 | - | |
| C _{RSS} | Reverse Transfer Capacitance | f = 1.0MHz | - | 500 | - | |
| t _{d(ON)} | Turn-on Delay Time | V _{DD} = 20V | - | 21 | - | ns |
| t _r | Turn-on Rise Time | V _{GS} = 10V | - | 22 | - | |
| t _{d(OFF)} | Turn-Off Delay Time | R _G = 2.5Ω | - | 53 | - | |
| t _f | Turn-Off Fall Time | I _D = 80A | - | 21 | - | |
| Gate charge characteristics | | | | | | |
| Q _G | Total Gate-Charge | V _{DD} = 20V | - | 95 | - | nC |
| Q _{GS} | Gate to Source Charge | I _D = 80A | - | 40 | - | |
| Q _{GD} | Gate to Drain (Miller) Charge | V _{GS} = 10V | - | 20 | - | |
| Source-Drain Diode Characteristics | | | | | | |
| V _{SD} | Diode Forward Voltage ^{*3} | I _{SD} = 80A, V _{GS} = 0V | - | 1 | 1.2 | V |
| t _{rr} | Reverse recovery time | V _R = 30V I _F = 40A, di/dt = 100A/μs, | - | 52 | - | ns |
| Q _{rr} | Reverse recovery charge | | - | 53 | - | nC |
| I _{RRM} | Reverse recovery current | | - | 1.8 | - | A |

Notes:

1. tp=10us, duty cycle = 1% .
2. The data tested by surface mounted on suggest footprint
3. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%
4. The E_{AS} data shows Max. ratings. The test condition is V_{DD} = 30V, V_{GS} = 10V, L = 1mH, I_{AS} = 35A
5. The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation
6. Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1-inch square copper plate

Ratings and Characteristics Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

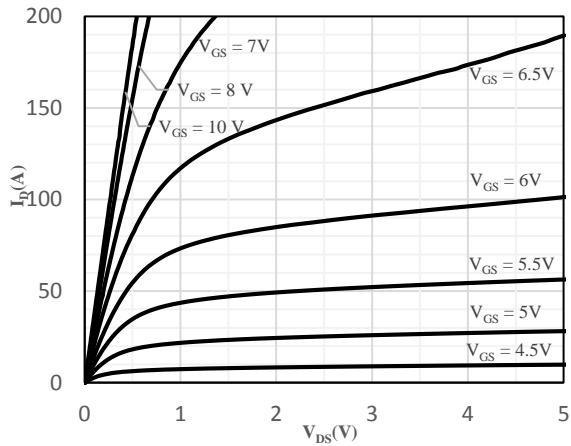


Fig 1 Typical Output Characteristics

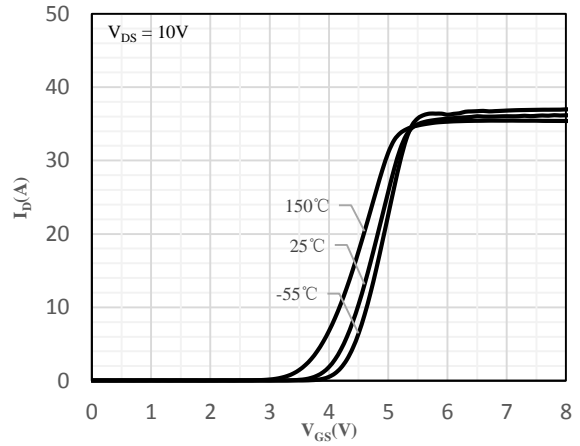


Fig 2 Transfer Characteristics

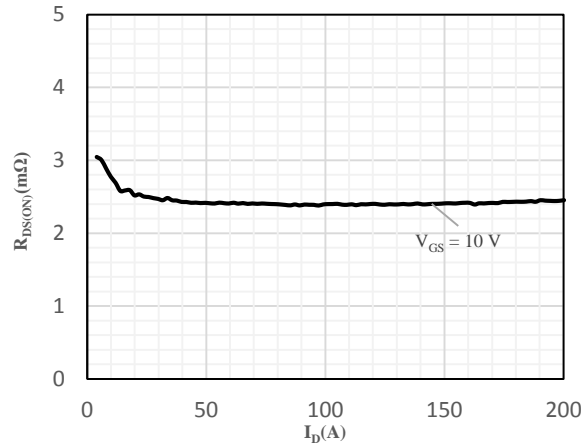


Fig 3 Drain-source on resistance

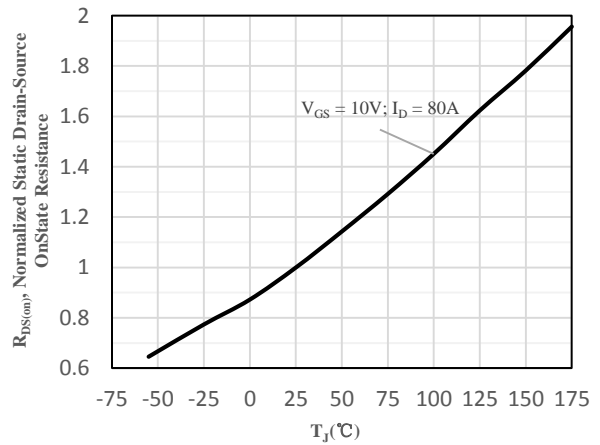


Fig 4 On-Resistance vs. Junction Temperature

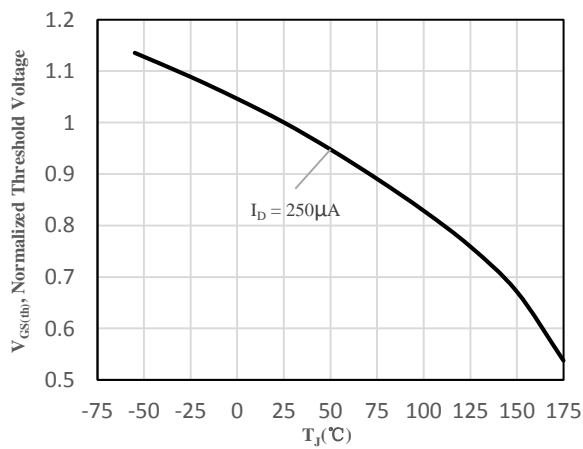


Fig 5 Gate Voltage vs. Junction Temp

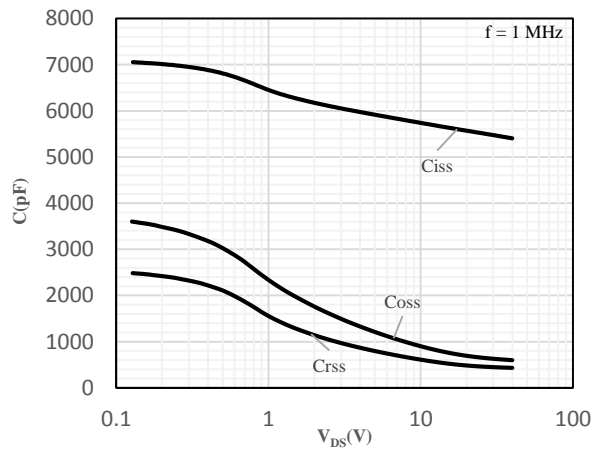


Fig 6 Capacitance Characteristics

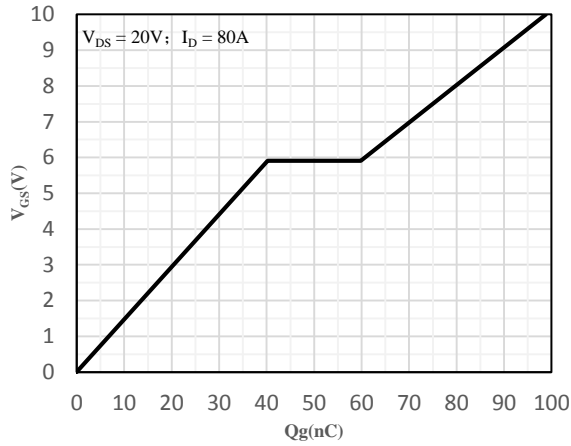


Fig 7 Gate-Charge Characteristics

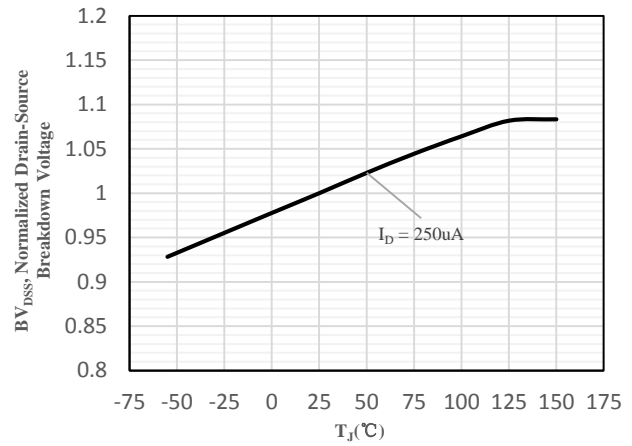


Fig 8 Drain-Source breakdown voltage

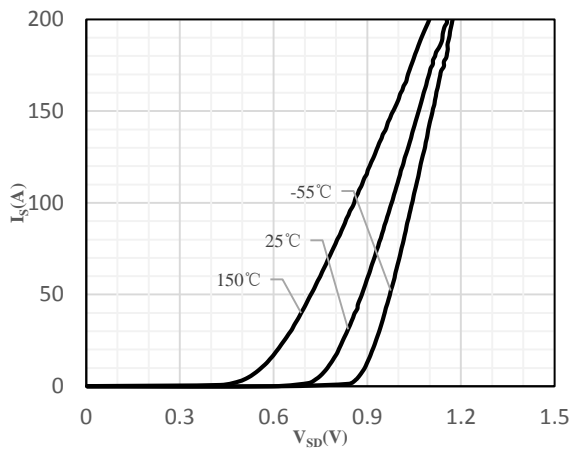


Fig 9 Forward characteristics of reverse diode

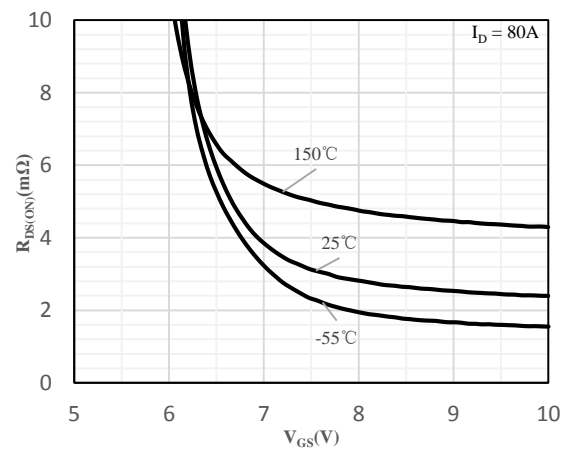


Fig 10 Gate-Source On Resistance

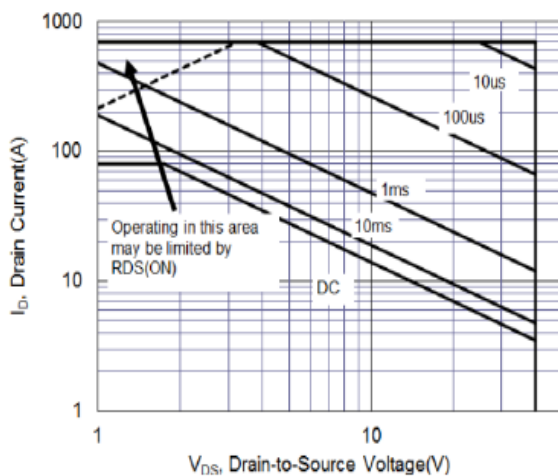
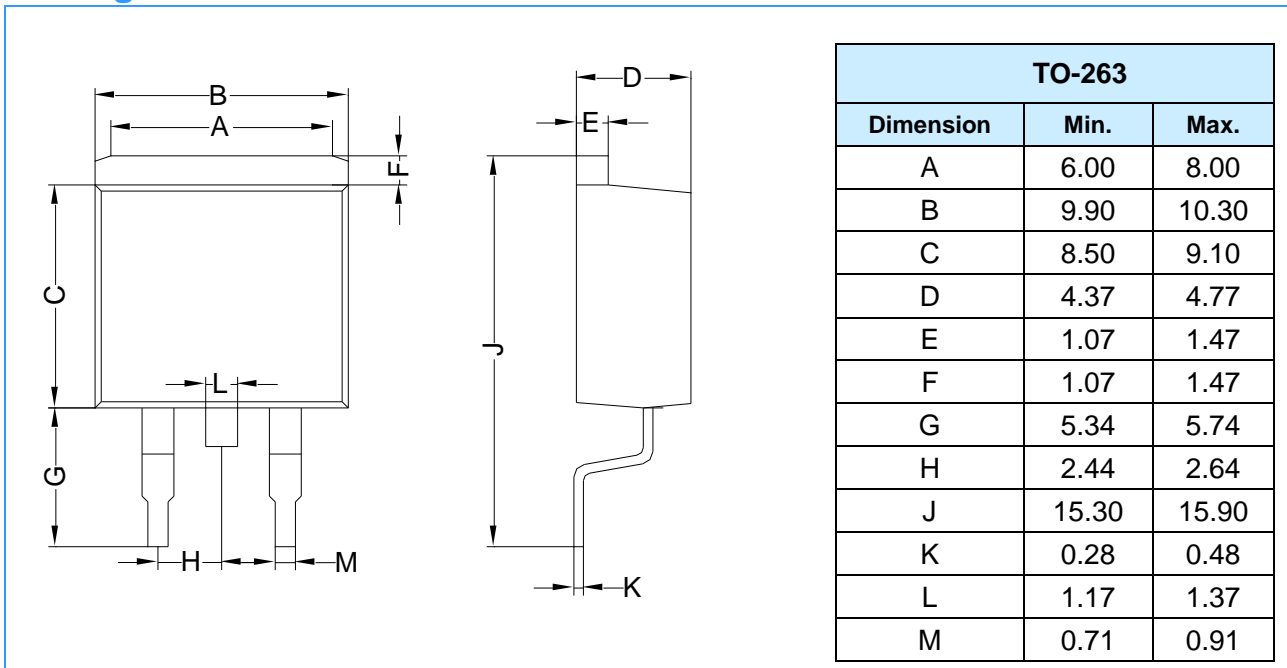
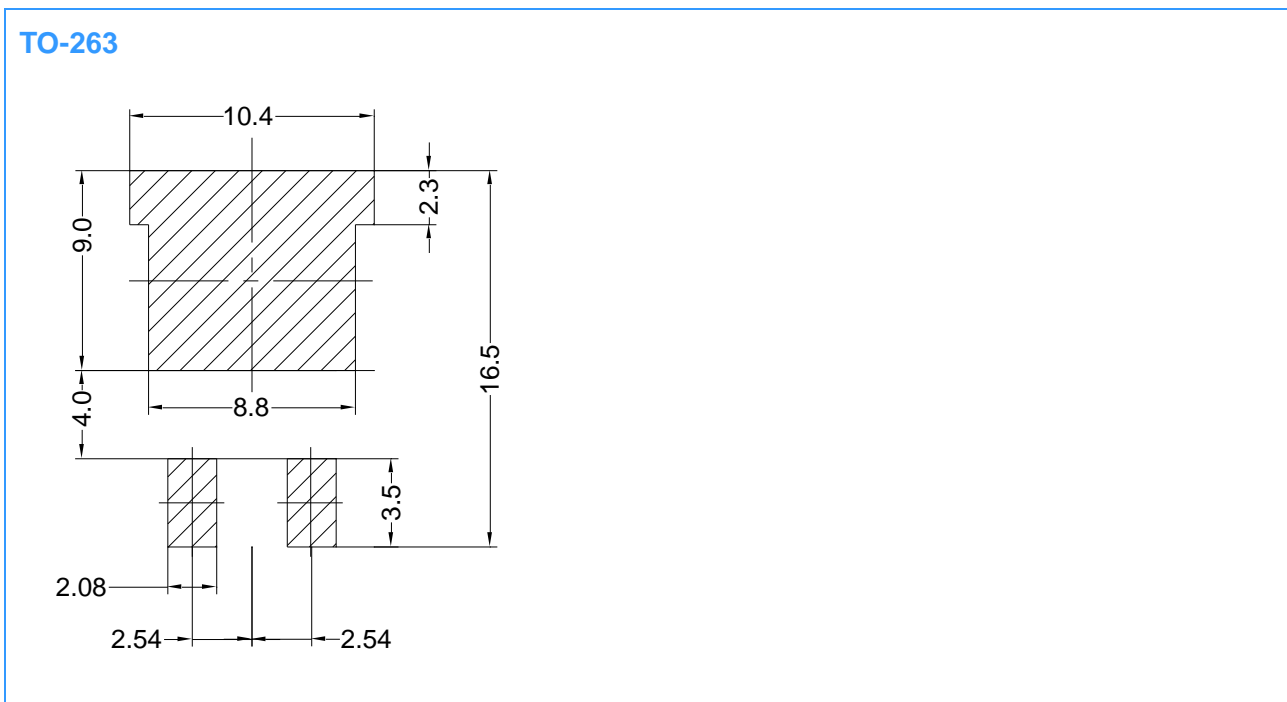


Fig 11 Safe operating area

Package Outline Dimensions (Unit: mm)



Mounting Pad Layout (Unit: mm)



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