

Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | I_D |
|---------------|-----------------|-------|
| 100V | 3.2mΩ@10V | 170A |

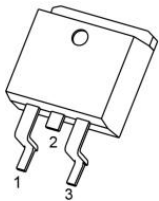
Feature

- Fast Switching
- Low Gate Charge and R_{DS(on)}
- 100% Single Pulse avalanche energy Test

Applications

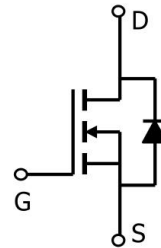
- Power switching application
- DC-DC Converter
- Power Management

Package

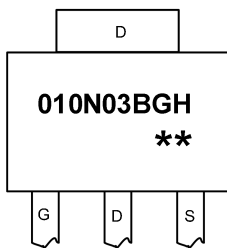


TO-263(G:1 D:2 S:3)

Circuit diagram



Marking



010N03BGH : Product code
** : Week code

Absolute maximum ratings (Ta=25°C, unless otherwise noted)

| Parameter | Symbol | Rating | Unit |
|--|-----------------|------------|------|
| Drain source voltage | V_{DS} | 100 | V |
| Gate source voltage | V_{GS} | ± 20 | V |
| Continuous drain current(Tc=25°C) | I_D | 170 | A |
| Pulsed drain current | I_{DM} | 680 | A |
| Power dissipation(Tc=25°C) | P_D | 220 | W |
| Single pulsed avalanche energy ¹⁾ | E_{AS} | 180 | mJ |
| Thermal resistance, junction-case | $R_{\theta JC}$ | 0.57 | °C/W |
| Operation and storage temperature | T_{stg}, T_j | -55 to 150 | °C |

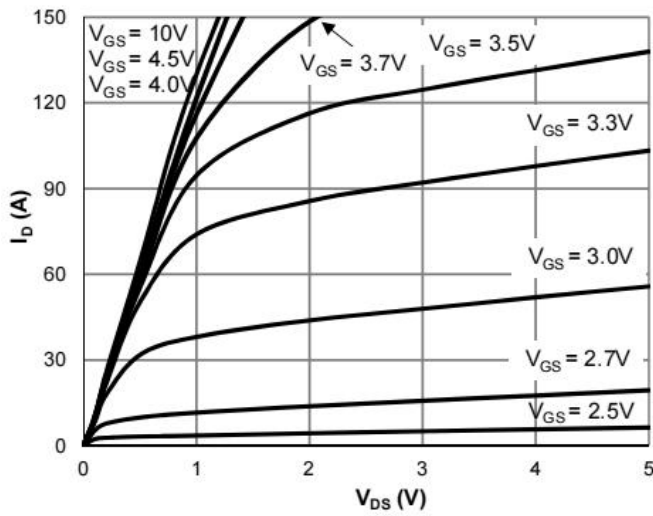
Electrical characteristics (Ta=25°C, unless otherwise noted)

| Characteristics | Symbol | Test Condition | Min | Typ | Max | Unit |
|--|--------------|--|-----|------|-----------|------------|
| Static Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $I_D = 250\mu A, V_{GS} = 0V$ | 100 | - | - | V |
| Drain Cut-Off Current | I_{DSS} | $V_{DS} = 80V, V_{GS} = 0V$ | - | - | 1 | μA |
| Gate Leakage Current | I_{GSS} | $V_{GS} = \pm 20V, V_{DS} = 0V$ | - | - | ± 0.1 | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = 250\mu A$ | 2.0 | 2.7 | 4.0 | V |
| Drain-Source ON Resistance | $R_{DS(ON)}$ | $V_{GS} = 10V, I_D = 30A$ | - | 3.2 | 4.6 | m Ω |
| Dynamic Characteristics | | | | | | |
| Input Capacitance | C_{iss} | $V_{DS} = 50V, V_{GS} = 0V, f = 1.0MHz$ | - | 6950 | - | pF |
| Output Capacitance | C_{oss} | | - | 1208 | - | |
| Reverse Transfer Capacitance | C_{rss} | | - | 34 | - | |
| Switching Characteristics | | | | | | |
| Total Gate Charge | Q_g | $V_{DS} = 50V, V_{GS} = 10V, I_D = 20A$ | - | 79 | - | nC |
| Gate-Source Charge | Q_{gs} | | - | 12 | - | |
| Gate-Drain Charge | Q_{gd} | | - | 25 | - | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{GS} = 10V, V_{DS} = 50V, R_L = 2.5\Omega, R_G = 6.0\Omega$ | - | 12 | - | ns |
| Rise Time | t_r | | - | 23 | - | |
| Turn-Off Delay Time | $t_{d(off)}$ | | - | 85 | - | |
| Fall Time | t_f | | - | 62 | - | |
| Drain-Source Body Diode Characteristics | | | | | | |
| Source-Drain Diode Forward Voltage | V_{SD} | $I_S = 1A, V_{GS} = 0V$ | - | - | 1.2 | V |

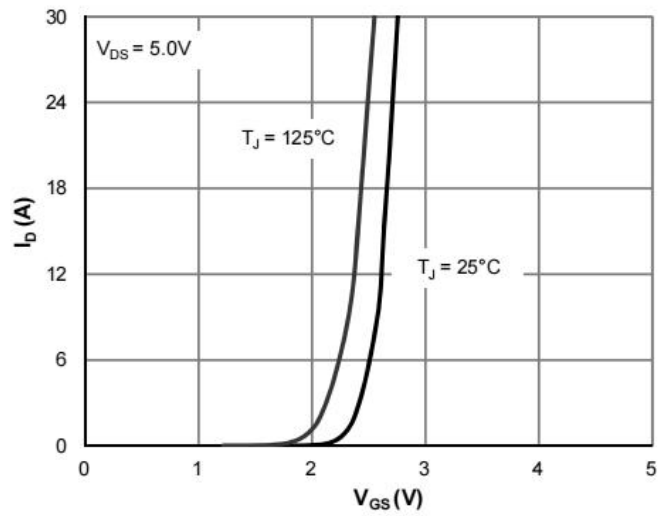
Note:

- E_{AS} is tested at starting $T_j = 25^\circ C, V_{DD} = 50V, V_{GS} = 10V, L = 0.1mH, R_g = 25m\Omega$;

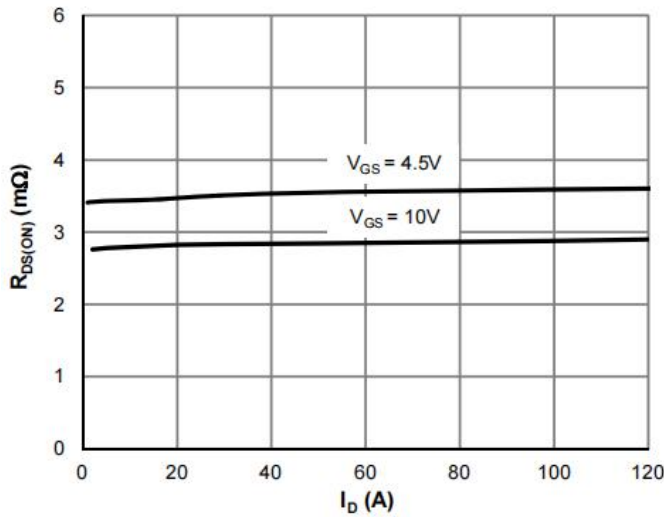
Typical Characteristics



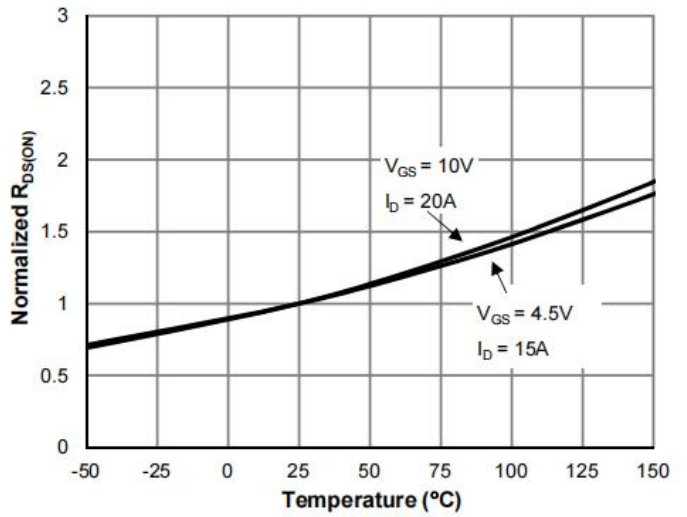
Typical Output Characteristics



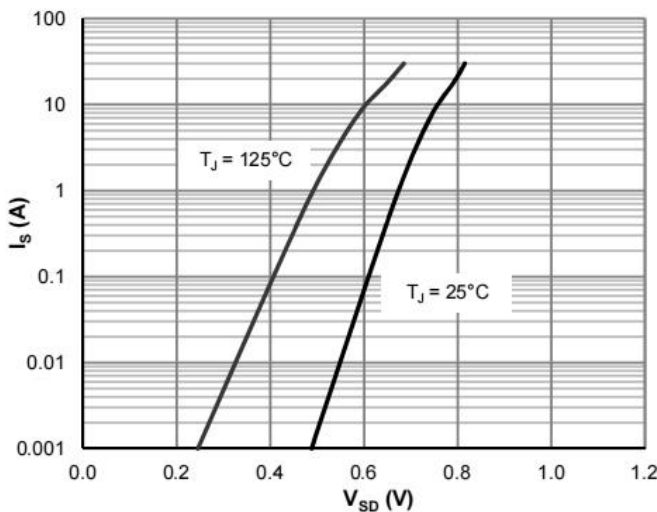
Transfer Characteristics



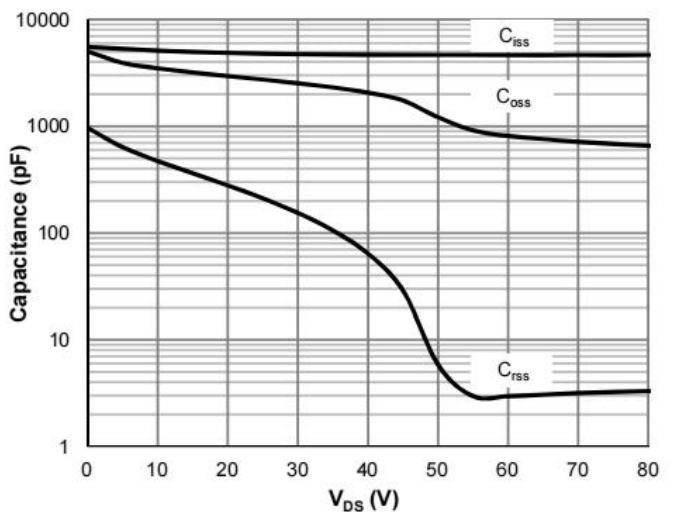
On-Resistance vs. Drain Current



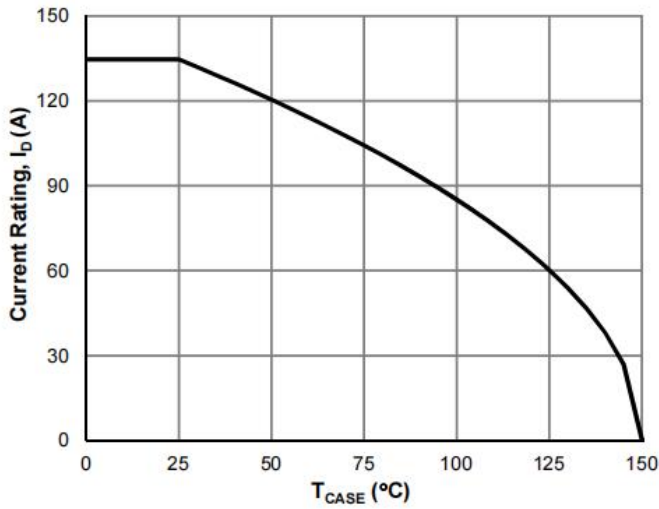
On-Resistance vs. Junction Temperature



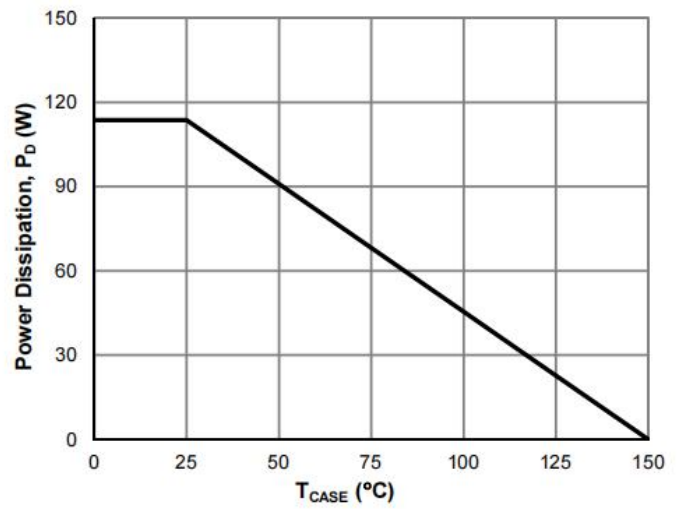
Body-Diode Characteristics



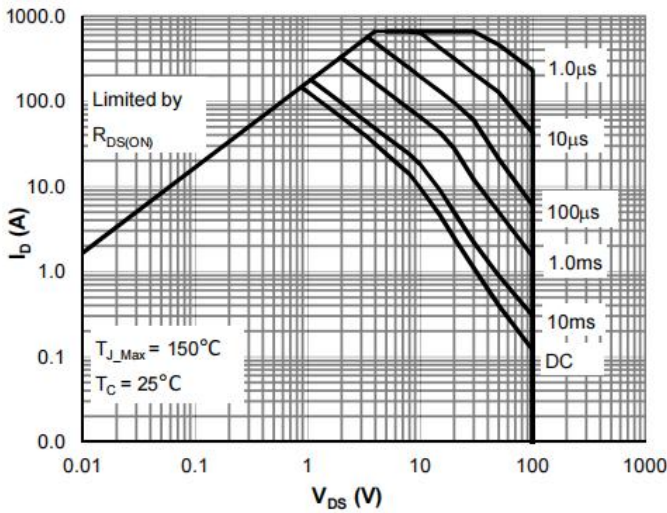
Capacitance Characteristics



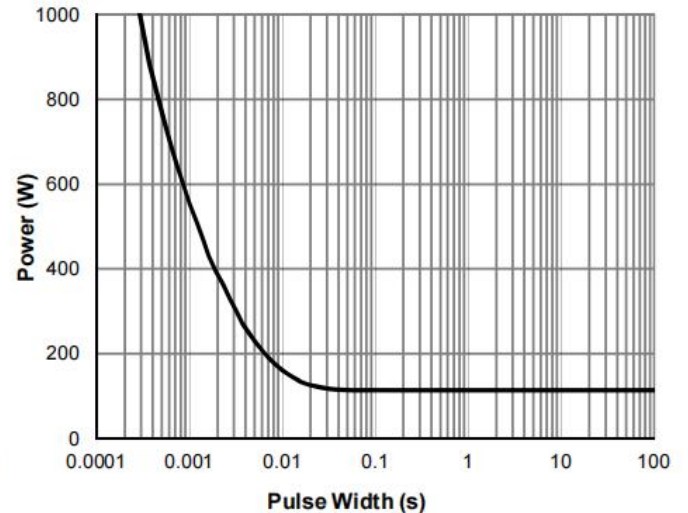
Current De-rating



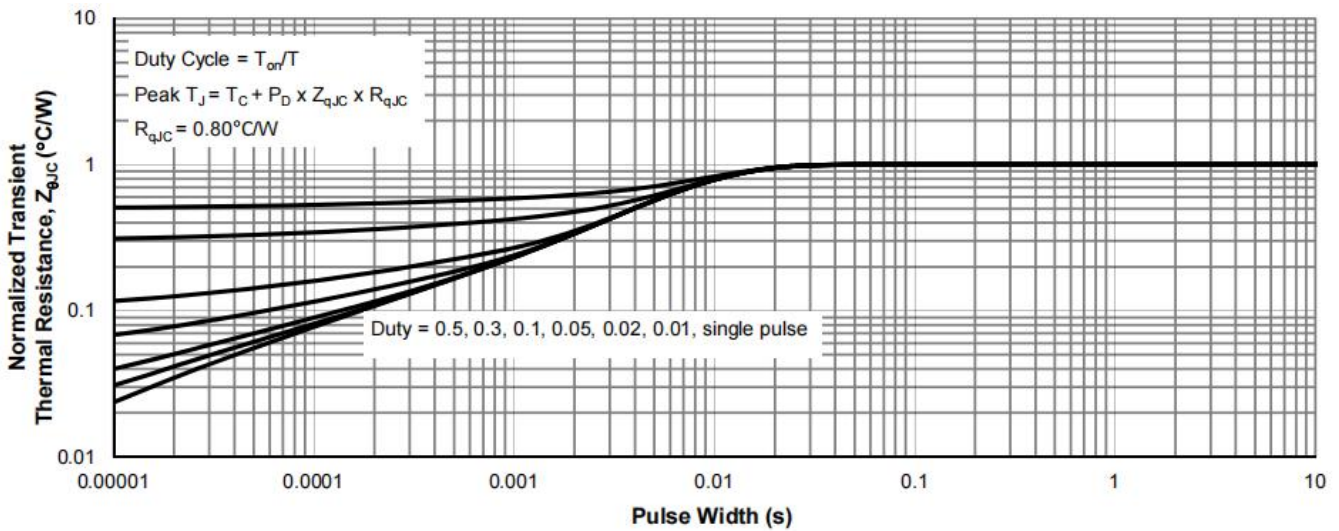
Power De-rating



Maximum Safe Operating Area

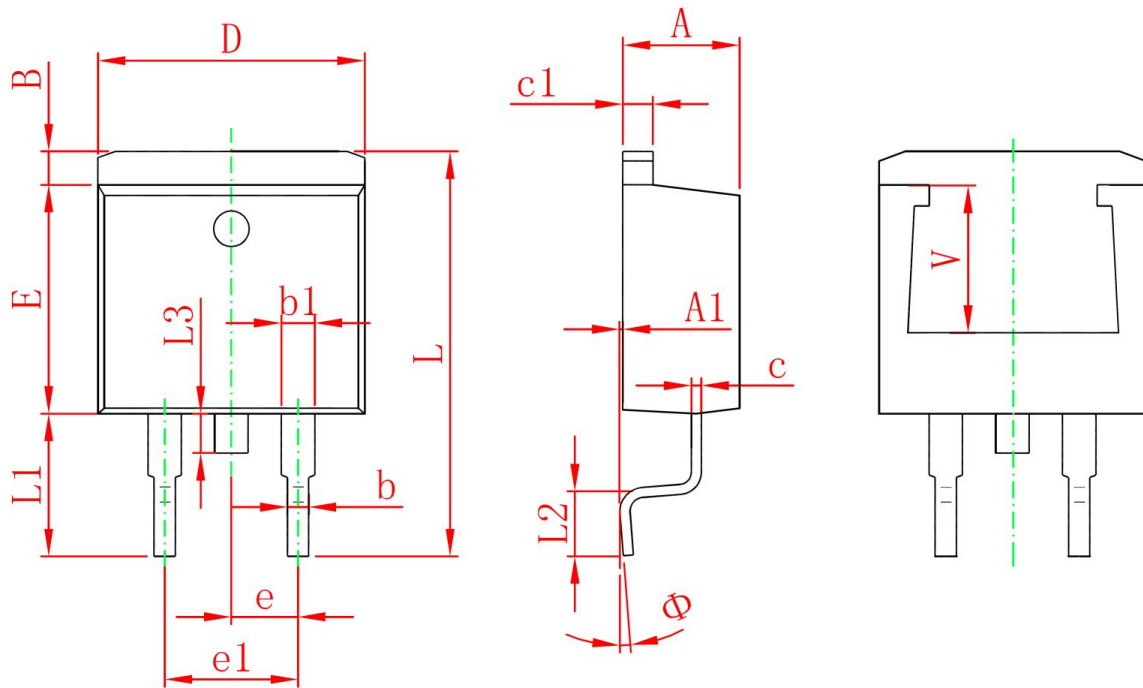


Single Pulse Power Rating, Junction-to-Case



Normalized Maximum Transient Thermal Impedance

TO-263 Package Information



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|--------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 4.470 | 4.670 | 0.176 | 0.184 |
| A1 | 0.000 | 0.150 | 0.000 | 0.006 |
| B | 1.120 | 1.420 | 0.044 | 0.056 |
| b | 0.710 | 0.910 | 0.028 | 0.036 |
| b1 | 1.170 | 1.370 | 0.046 | 0.054 |
| c | 0.310 | 0.530 | 0.012 | 0.021 |
| c1 | 1.170 | 1.370 | 0.046 | 0.054 |
| D | 10.010 | 10.310 | 0.394 | 0.406 |
| E | 8.500 | 8.900 | 0.335 | 0.350 |
| e | 2.540 TYP. | | 0.100 TYP. | |
| e1 | 4.980 | 5.180 | 0.196 | 0.204 |
| L | 14.940 | 15.500 | 0.588 | 0.610 |
| L1 | 4.950 | 5.450 | 0.195 | 0.215 |
| L2 | 2.340 | 2.740 | 0.092 | 0.108 |
| L3 | 1.300 | 1.700 | 0.051 | 0.067 |
| Φ | 0° | 8° | 0° | 8° |
| V | 5.600 REF. | | 0.220 REF. | |

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