

Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)MAX}$ | I_D |
|---------------|-----------------|-------|
| 150V | 6.4mΩ@10V | 140A |

Feature

- Excellent gate charge x $R_{DS(on)}$ product
- Very low on-resistance $R_{DS(on)}$

Application

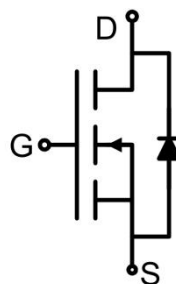
- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

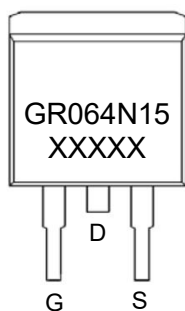


TO-263AB

Circuit diagram



Marking



Absolute Maximum Ratings (T_c=25°C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|------------------------|------------|------|
| Drain-Source Voltage | V _{DS} | 150 | V |
| Gate-Source Voltage | V _{GS} | ±20 | V |
| Continuous Drain Current | I _D | 140 | A |
| Continuous Drain Current(T _C =100°C) | I _D (100°C) | 100 | A |
| Pulsed Drain Current | I _{DM} | 560 | A |
| Power Dissipation | P _D | 320 | W |
| Thermal Resistance,Junction-to-Case | R _{θJC} | 0.47 | °C/W |
| Single pulse avalanche energy ¹⁾ | E _{AS} | 1296 | mJ |
| Junction Temperature | T _J | 175 | °C |
| Storage Temperature | T _{STG} | -55 ~ +175 | °C |

Electrical characteristics (T_c=25 °C unless otherwise noted)

| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|---|----------------------|---|------|------|------|------|
| Static Characteristics | | | | | | |
| Drain-source breakdown voltage | V _{(BR)DSS} | V _{GS} = 0V, I _D =250μA | 150 | | | V |
| Zero gate voltage drain current | I _{DSS} | V _{DS} =150V, V _{GS} = 0V | | | 1 | μA |
| Gate-body leakage current | I _{GSS} | V _{GS} =±20V, V _{DS} = 0V | | | ±100 | nA |
| Gate threshold voltage | V _{GS(th)} | V _{DS} =V _{GS} , I _D =250μA | 2 | 3 | 4 | V |
| Drain-source on-resistance | R _{DS(on)} | V _{GS} =10V, I _D =70A | | 5.6 | 6.4 | mΩ |
| Dynamic characteristics²⁾ | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} =75V, V _{GS} =0V, f =1MHz | | 6000 | | pF |
| Output Capacitance | C _{oss} | | | 690 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 24 | | |
| Total Gate Charge | Q _g | V _{DS} =75V, V _{GS} =10V, I _D =70A | | 80 | | nC |
| Gate-Source Charge | Q _{gs} | | | 32 | | |
| Gate-Drain Charge | Q _{gd} | | | 22 | | |
| Turn-on delay time | t _{d(on)} | V _{DD} =75V, V _{GS} =10V, I _D =70A, R _G =4.7Ω | | 26 | | nS |
| Turn-on rise time | t _r | | | 36 | | |
| Turn-off delay time | t _{d(off)} | | | 47 | | |
| Turn-off fall time | t _f | | | 15 | | |
| Source-Drain Diode characteristics | | | | | | |
| Diode Forward Current | I _S | | | | 140 | A |
| Diode Forward voltage | V _{SD} | V _{GS} =0V, I _F =I _S | | | 1.2 | V |
| Reverse Recovery Time | t _{rr} | T _J = 25°C, I _F =I _S di/dt = 100A/μs | | 146 | | nS |
| Reverse Recovery Charge | Q _{rr} | | | 485 | | nC |

Notes:

- 1) EAS condition : T_J=25°C, V_{DD}=50V, V_G=10V, L=0.5mH, R_g=25Ω.
- 2) Guaranteed by design, not subject to production testing.

Typical Characteristics

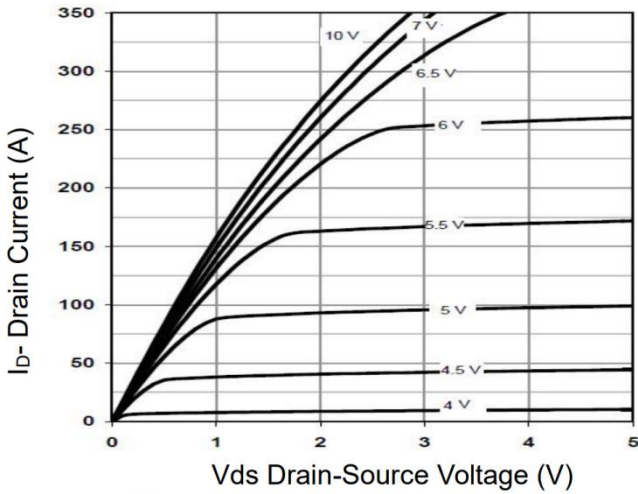


Figure 1 Output Characteristics

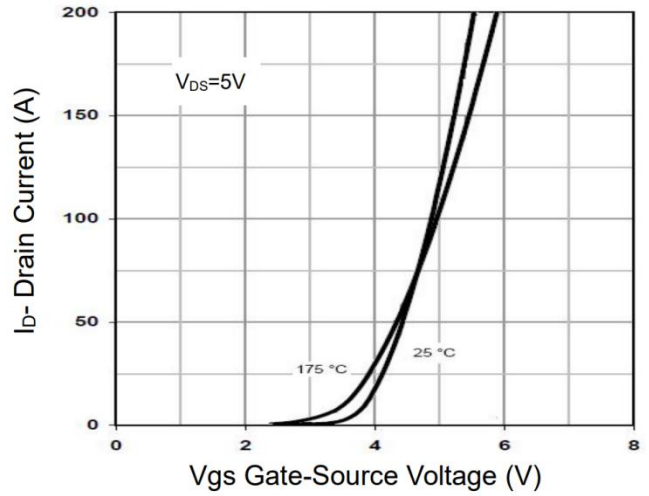


Figure 2 Transfer Characteristics

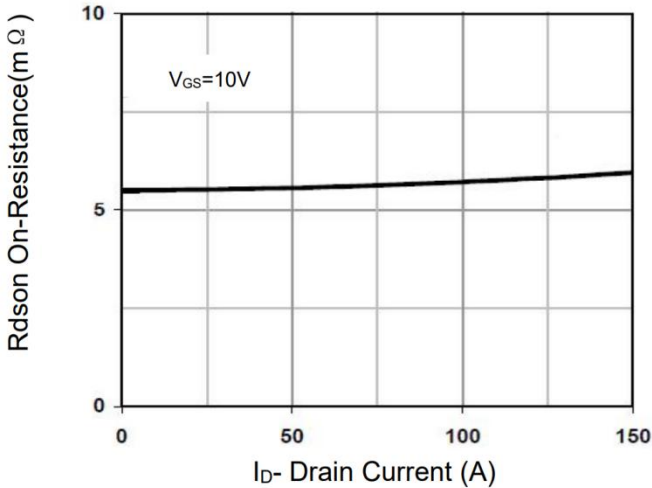


Figure 3 Rdson- Drain Current

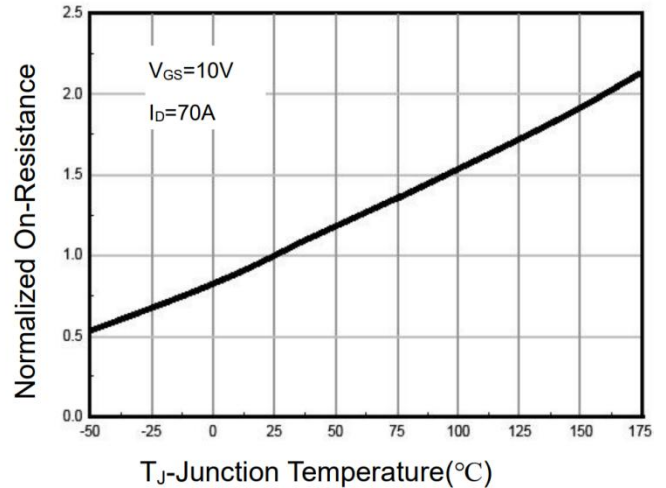


Figure 4 Rdson-Junction Temperature

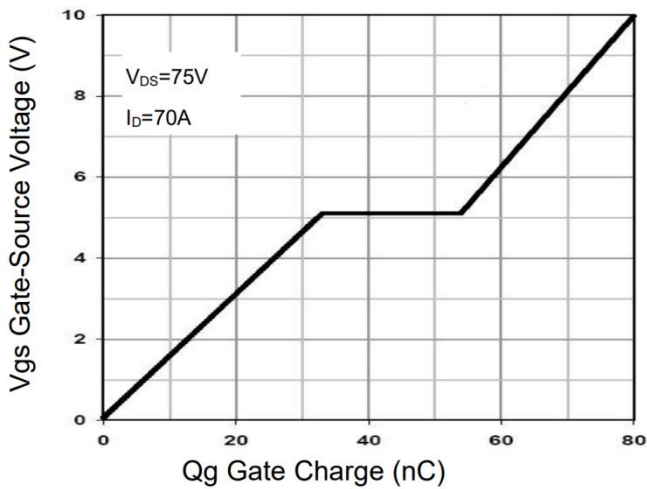


Figure 5 Gate Charge

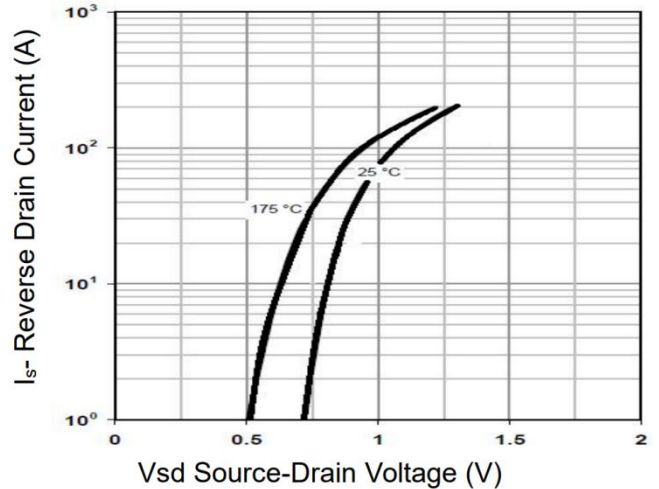


Figure 6 Source- Drain Diode Forward

Typical Characteristics

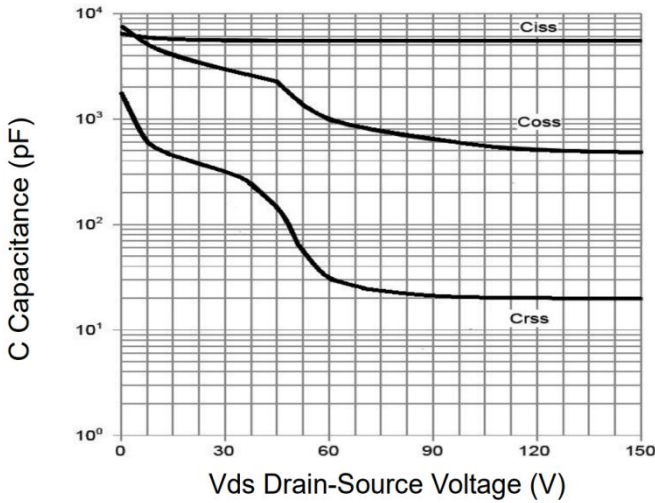


Figure 7 Capacitance vs Vds

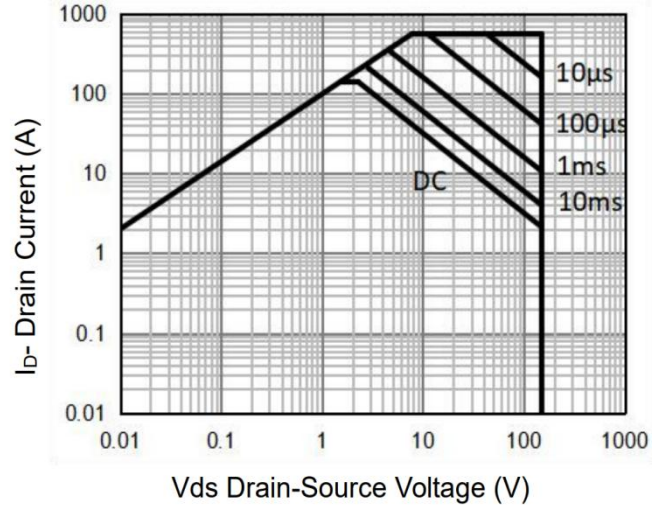


Figure 8 Safe Operation Area

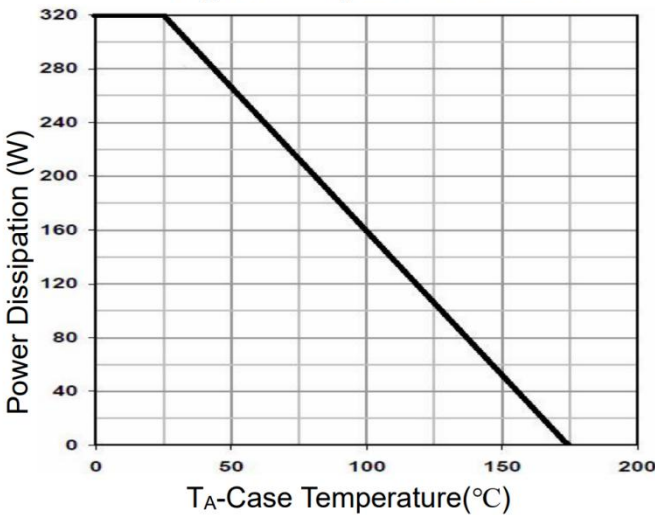


Figure 9 Power De-rating

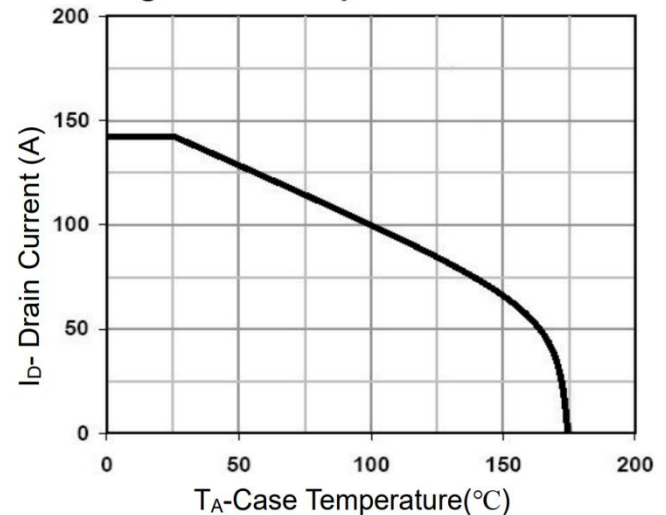


Figure 10 Current De-rating

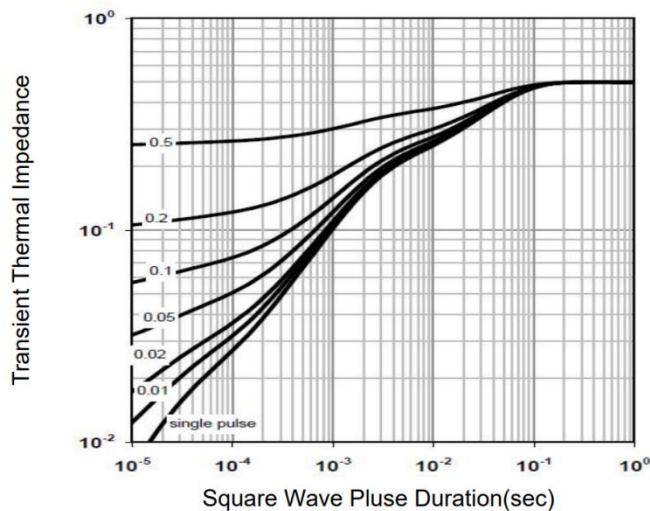
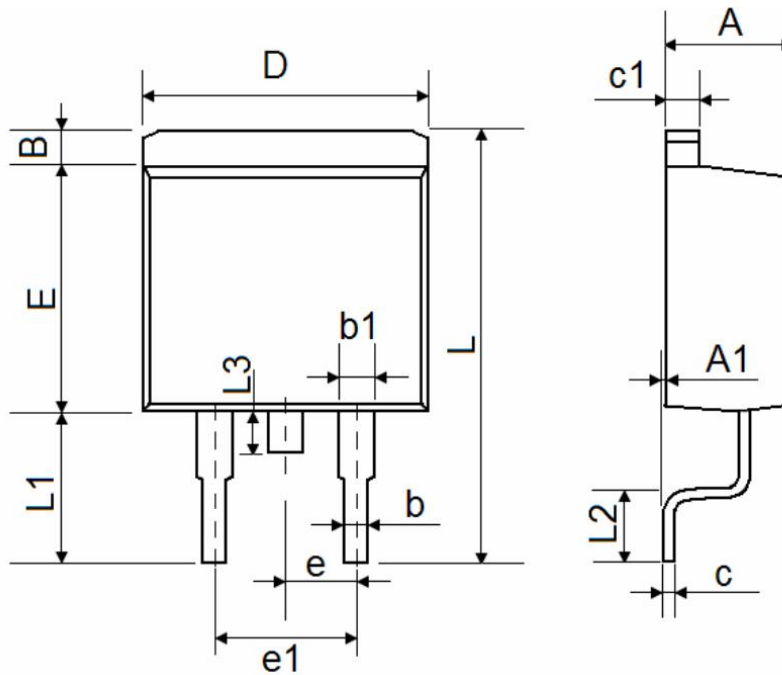


Figure 11 Normalized Maximum Transient Thermal Impedance

TO-263AB Package Information



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|--------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 4.200 | 4.670 | 0.165 | 0.184 |
| A1 | 0.000 | 0.250 | 0.000 | 0.010 |
| B | 1.360 REF. | | 0.054 REF. | |
| b | 0.700 | 0.910 | 0.028 | 0.036 |
| b1 | 1.170 | 1.750 | 0.046 | 0.069 |
| c | 0.310 | 0.600 | 0.012 | 0.024 |
| c1 | 1.150 | 1.400 | 0.045 | 0.055 |
| D | 9.800 | 10.360 | 0.386 | 0.408 |
| E | 8.500 | 9.300 | 0.335 | 0.366 |
| e | 2.540 BSC. | | 0.100 BSC. | |
| e1 | 5.080 BSC. | | 0.200 BSC. | |
| L | 14.610 | 15.880 | 0.575 | 0.625 |
| L1 | 4.400 | 6.000 | 0.173 | 0.236 |
| L2 | 1.780 | 2.790 | 0.070 | 0.110 |
| L3 | 1.500 REF. | | 0.059 REF. | |