

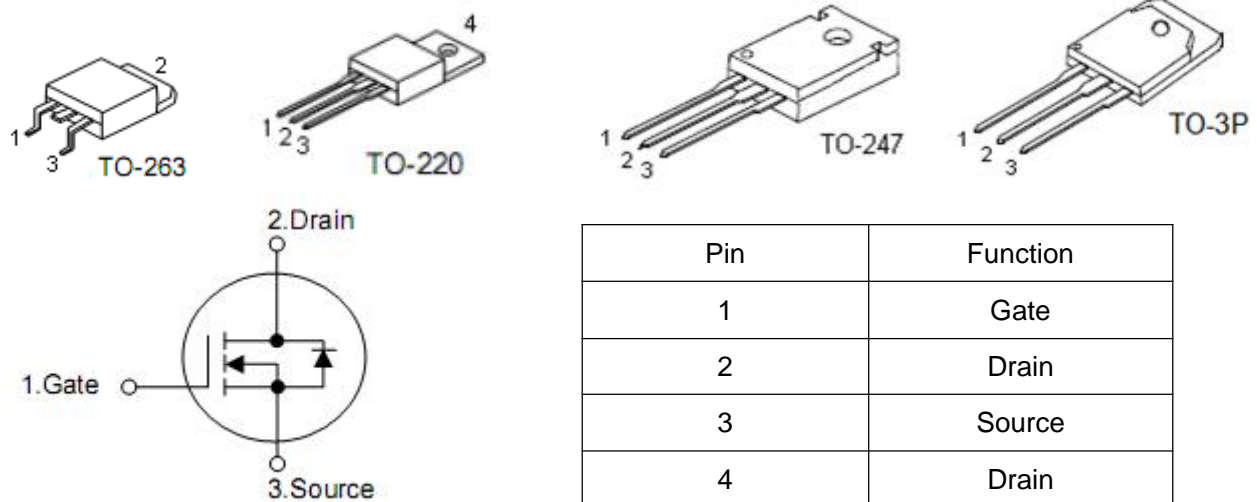
1. Features

- n $R_{DS(on)}=4.0m\Omega$ (typ.) @ $V_{GS}=10V$
- n 100% avalanche tested
- n Reliable and rugged
- n Lead free and green device available (RoHS Compliant)

2. Applications

- n Switching application
- n Power management for inverter systems

3.Symbol



4. Absolute maximum ratings

($T_A=25^{\circ}\text{C}$, unless otherwise noted)

| Parameter | Symbol | Rating | | Units | |
|----------------------------------|-----------|---------------------------|------------------|-------|---|
| | | TO-220/ TO-263 | TO-247/ TO-3P | | |
| Drain-source voltage | V_{DSS} | 80 | | V | |
| Gate-source voltage | V_{GSS} | ±25 | | V | |
| Maximum junction temperature | T_J | 175 | | °C | |
| Storage temperature range | T_{STG} | -55 to 175 | | °C | |
| Diode continuous forward current | I_S | 150 | | A | |
| Continuous drain current | I_D | $T_C=25^{\circ}\text{C}$ | | A | |
| | | $T_C=100^{\circ}\text{C}$ | | A | |
| Pulse drain current* | I_{DM} | 660** | | A | |
| Avalanche energy, single pulsed | E_{AS} | 1.1*** | | J | |
| Maximum power dissipation | P_D | $T_C=25^{\circ}\text{C}$ | 178 | 214 | W |
| | | $T_C=100^{\circ}\text{C}$ | 89 | 107 | W |

Note:* Repetitive rating; pulse width limited by junction temperature

** Drain current is limited by junction temperature

*** $V_D=64\text{V}$

5. Thermal characteristics

| Parameter | Symbol | Rating | Unit |
|--------------------------------------|-----------------|--------|------|
| Thermal resistance, Junction-ambient | $R_{\theta JA}$ | 62.5 | °C/W |
| Thermal resistance, Junction-case | $R_{\theta JC}$ | 0.7 | °C/W |

6. Electrical characteristics

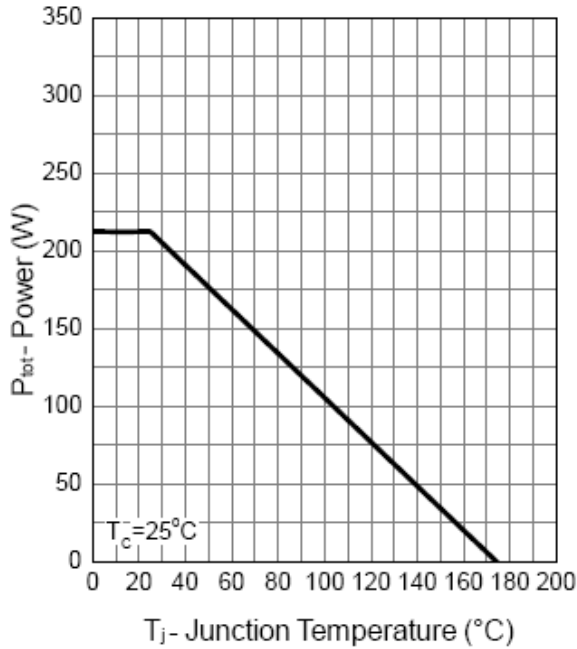
(T_A=25°C, unless otherwise noted)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Units |
|----------------------------------|-----------------------|---|-----|------|------|-------|
| Drain-source breakdown voltage | BV _{DSS} | V _{GS} =0V, I _{DS} =250μA | 80 | - | - | V |
| Zero gate voltage drain current | I _{DSS} | V _{DS} =80V, V _{GS} =0V T _J =85°C | - | - | 1 | μA |
| | | | - | - | 10 | |
| Gate threshold voltage | V _{GS(th)} | V _{DS} =V _{GS} , I _D =250μA | 2.0 | 3.0 | 4.0 | V |
| Gate leakage current | I _{GSS} | V _{GS} =±25V, V _{DS} =0V | - | - | ±100 | nA |
| Drain-source on-state resistance | R _{DS(on)} * | V _{GS} =10V, I _D =85A | - | 4.0 | 4.5 | mΩ |
| Gate resistance | R _g | V _{DS} =0V, V _{GS} =0V, f=1MHz | - | 1.8 | - | Ω |
| Diode forward voltage | V _{SD} * | I _{SD} =85A, V _{GS} =0V | - | 0.8 | 1.2 | V |
| Reverse recovery time | t _{rr} | I _{SD} =85A, dI _{SD} /dt=100A/μs | - | 30 | - | nS |
| Reverse recovery charge | Q _{rr} | | - | 52 | - | nC |
| Input capacitance | C _{iss} | V _{DS} =25V, V _{GS} =0V, f=1MHz | - | 6109 | - | pF |
| Output capacitance | C _{oss} | | - | 995 | - | |
| Reverse transfer capacitance | C _{rss} | | - | 530 | - | |
| Turn-on delay time | t _{d(on)} | V _{DD} =40V, I _{DS} =85A, R _G =6Ω, V _{GS} =10V | - | 28 | - | ns |
| Rise time | t _r | | - | 18 | - | |
| Turn-off delay time | t _{d(off)} | | - | 42 | - | |
| Fall time | t _f | | - | 54 | - | |
| Total gate charge | Q _g | V _{DS} =64V, V _{GS} =10V I _{DS} =85A | - | 152 | - | nC |
| Gate-source charge | Q _{gs} | | - | 25 | -- | |
| Gate-drain charge | Q _{gd} | | - | 53 | -- | |

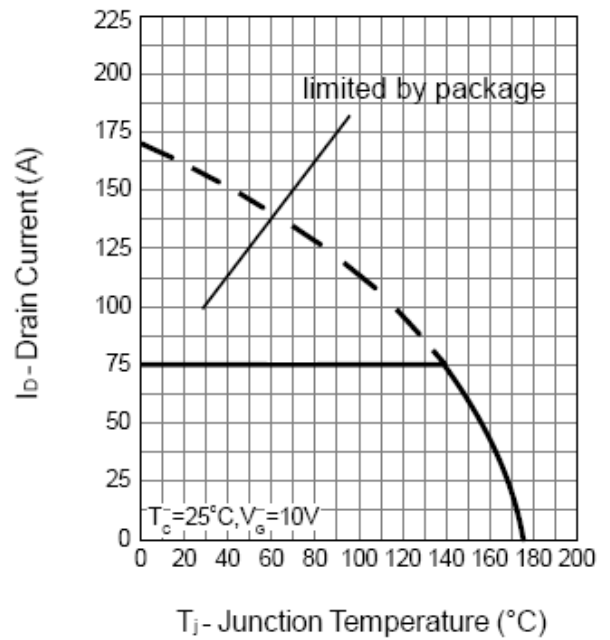
Note*: Pulse test; pulse width ≤ 300μs duty cycle ≤ 2%.

7. Test circuits and waveforms

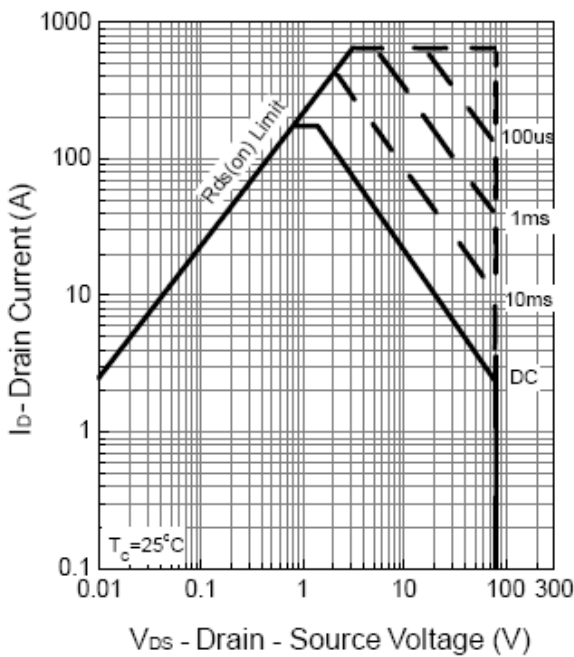
Power Dissipation



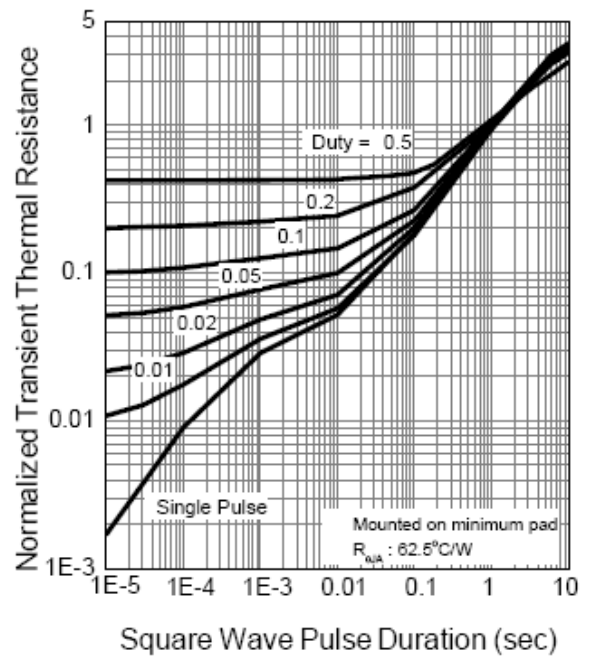
Drain Current



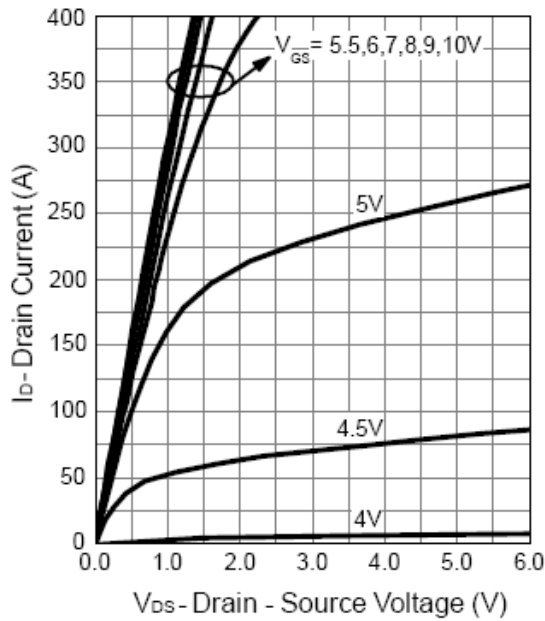
Safe Operation Area



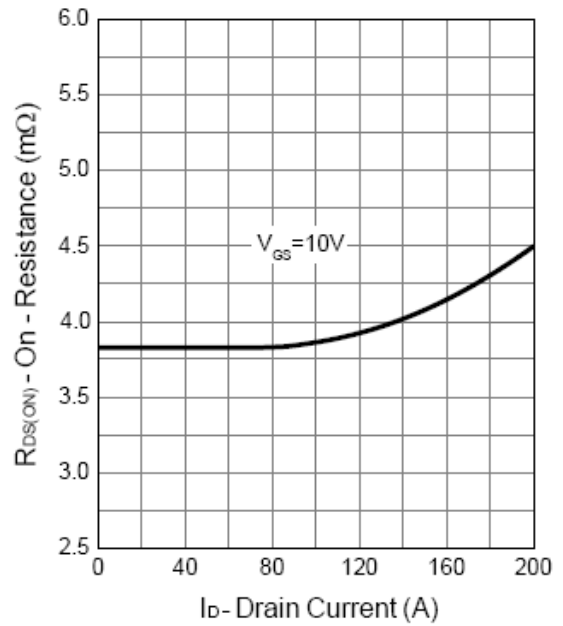
Thermal Transient Impedance



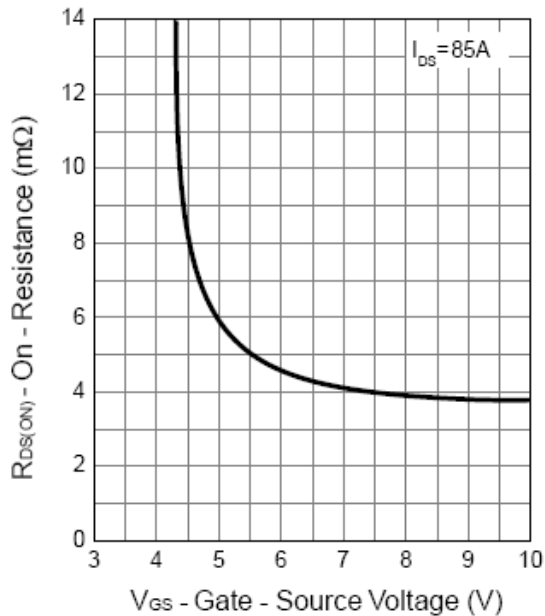
Output Characteristics



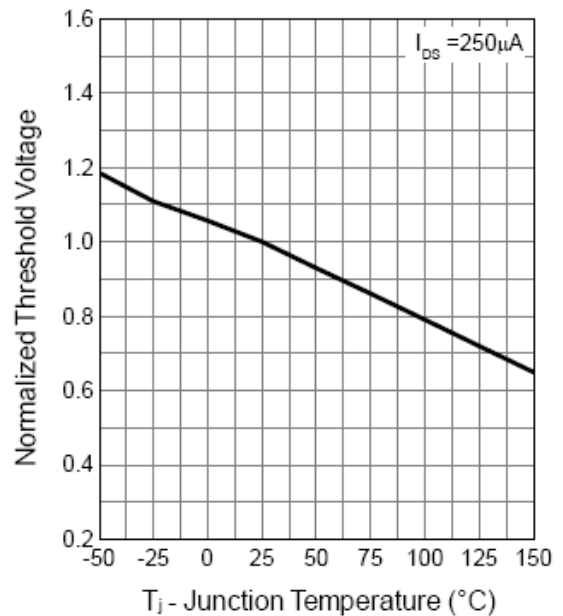
Drain-Source On Resistance



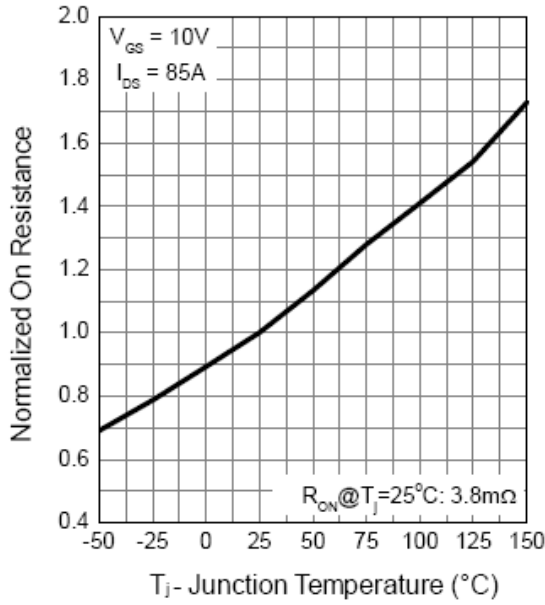
Gate-Source On Resistance



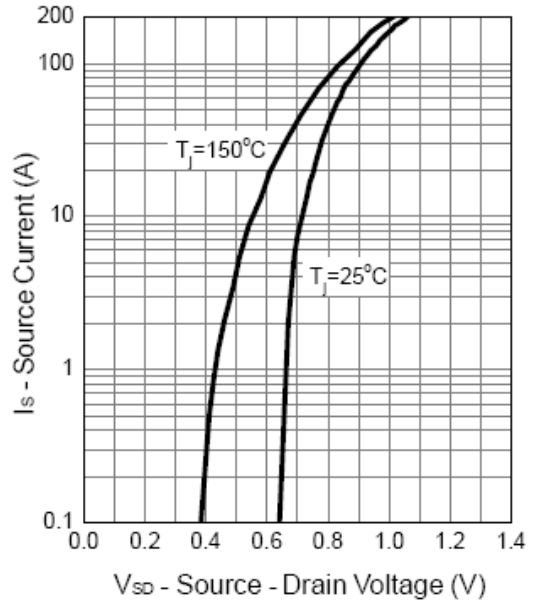
Gate Threshold Voltage



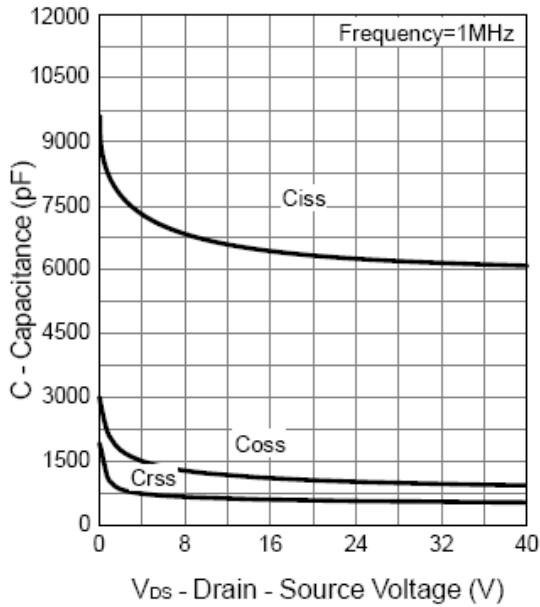
Drain-Source On Resistance



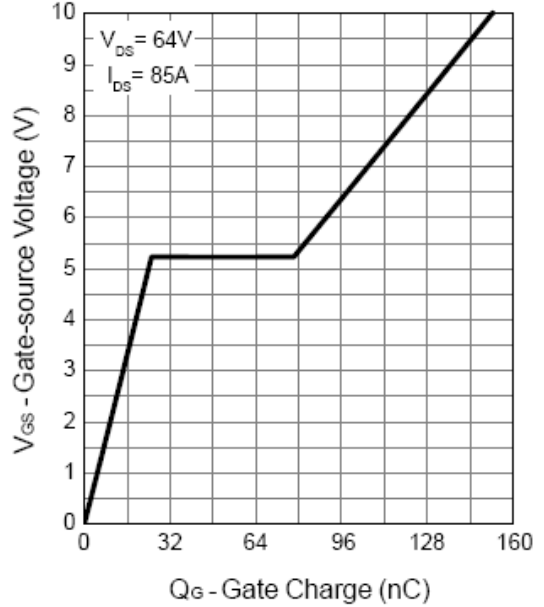
Source-Drain Diode Forward



Capacitance



Gate Charge



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