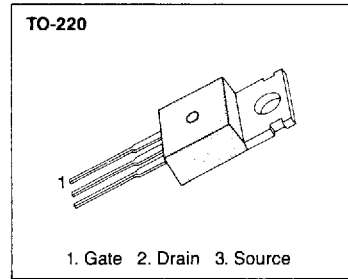


FEATURES

- Lower $R_{DS(on)}$
- Improved inductive ruggedness
- Fast switching times
- Rugged polysilicon gate cell structure
- Lower input capacitance
- Extended safe operating area
- Improved high temperature reliability



PRODUCT SUMMARY

| Part Number | V _{DS} | R _{DS(on)} | I _D |
|-------------|-----------------|---------------------|----------------|
| IRFZ34 | 60V | 0.05Ω | 30A |
| IRFZ30 | 50V | 0.05Ω | 30A |

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ABSOLUTE MAXIMUM RATINGS

| Characteristic | Symbol | IRFZ34 | IRFZ30 | Unit |
|--|-----------------------------------|-------------|--------|-----------------|
| Drain-Source Voltage (1) | V _{DS} | 60 | 50 | V _{dc} |
| Drain-Gate Voltage (R _{GS} =1.0MΩ)(1) | V _{DGR} | 60 | 50 | V _{dc} |
| Gate-Source Voltage | V _{GS} | ±20 | | V _{dc} |
| Continuous Drain Current T _C =25 °C | I _D | 30 | | A _{dc} |
| Continuous Drain Current T _C =100 °C | I _D | 21 | | A _{dc} |
| Drain Current - Pulsed (3) | I _{DM} | 120 | | A _{dc} |
| Gate Current - Pulsed | I _{GM} | ±1.5 | | A _{dc} |
| Single Pulsed Avalanche Energy (4) | E _{AS} | 19 | | mJ |
| Avalanche Current | I _{AS} | 30 | | A |
| Total Power Dissipation at T _C =25 °C | P _D | 90 | | Watts |
| Derate above 25 °C | | 0.60 | | W/°C |
| Operating and Storage Junction Temperature Range | T _J , T _{STG} | -55 to +175 | | °C |
| Maximum Lead Temp. for Soldering Purposes, 1/8" from case for 5 seconds | T _L | 300 | | °C |

Notes : (1) T_J=25°C to 175°C

(2) Pulse test : Pulse width < 300μs, Duty Cycle ≤ 2%

(3) Repetitive rating : Pulse width limited by max. junction temperature

(4) L=50μH, V_{DD}=25V, R_G=25Ω, Starting T_J=25°C

ELECTRICAL CHARACTERISTICS (T_C=25°C unless otherwise specified)

| Symbol | Characteristic | Min | Typ | Max | Units | Test Conditions |
|---------------------|--|-----|------|------|-------|--|
| BV _{DSS} | Drain-Source Breakdown Voltage | | | | | |
| | IRFZ34 | 60 | - | - | V | V _{GS} =0V, I _D =250μA |
| | IRFZ30 | 50 | - | - | V | |
| V _{GS(th)} | Gate Threshold Voltage | 2.0 | - | 4.0 | V | V _{DS} =V _{GS} , I _D =250μA |
| I _{GSS} | Gate-Source Leakage Forward | - | - | 100 | nA | V _{GS} =20V |
| I _{GSS} | Gate-Source Leakage Reverse | - | - | -100 | nA | V _{GS} =-20V |
| I _{DSS} | Zero Gate Voltage Drain Current | - | - | 250 | μA | V _{DS} =Max. Rating, V _{GS} =0V |
| | | - | - | 1000 | μA | V _{DS} =0.8 Max. Rating, V _{GS} =0V, T _C =150°C |
| R _{DS(on)} | Static Drain-Source On Resistance(2) | - | - | 0.05 | Ω | V _{GS} =10V, I _D =15A |
| g _{fs} | Forward Transconductance (2) | 9.3 | - | - | Ω | V _{DS} ≥ 50V, I _D =15A |
| C _{iss} | Input Capacitance | - | 1300 | - | pF | V _{GS} =0V, V _{DS} =25V, f=1.0MHz |
| C _{oss} | Output Capacitance | - | 650 | - | pF | |
| C _{rss} | Reverse Transfer Capacitance | - | 100 | - | pF | |
| t _{d(on)} | Turn-On Delay Time | - | - | 21 | ns | V _{DD} =0.5 BV _{DSS} , I _D =30A, Z _Θ =18Ω (MOSFET switching times are essentially independent of operating temperature) |
| t _r | Rise Time | - | - | 110 | ns | |
| t _{d(off)} | Turn-Off Delay Time | - | - | 53 | ns | |
| t _f | Fall Time | - | - | 80 | ns | |
| Q _g | Total Gate Charge (Gate-Source Plus Gate-Drain) | - | - | 49.0 | nC | V _{GS} =10V, I _D =30A, V _{DS} =0.8 Max. Rating (Gate charge is essentially independent of operating temperature) |
| Q _{gs} | Gate-Source Charge | - | 14.3 | - | nC | |
| Q _{gd} | Gate-Drain ("Miller") Charge | - | 16.3 | - | nC | |

THERMAL RESISTANCE

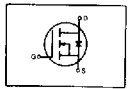
| Symbol | Characteristics | | All | Units | Remark |
|-------------------|---------------------|-----|------|-------|-----------------------|
| R _{thJC} | Junction-to-Case | MAX | 1.67 | K/W | |
| R _{thCS} | Case-to-Sink | TYP | 0.5 | K/W | Mounting surface flat |
| R _{thJA} | Junction-to-Ambient | MAX | 62.5 | K/W | Free Air Operation |

Notes : (1) T_J=25°C to 175°C

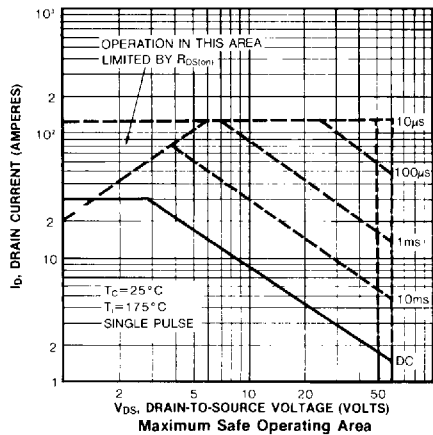
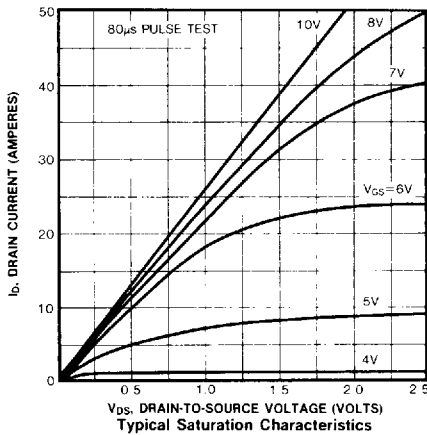
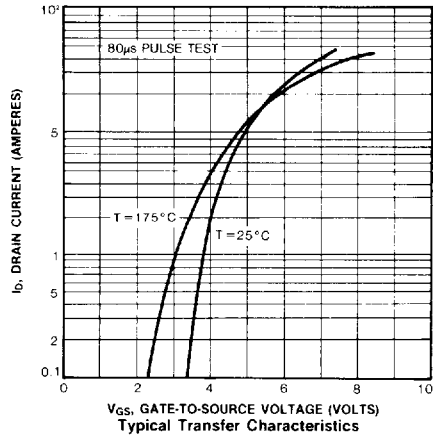
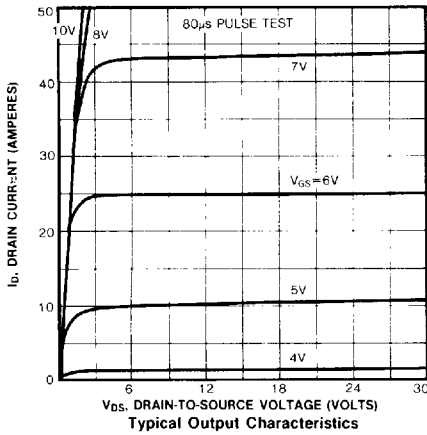
(2) Pulse test : Pulse width ≤ 300μs, Duty Cycle ≤ 2%

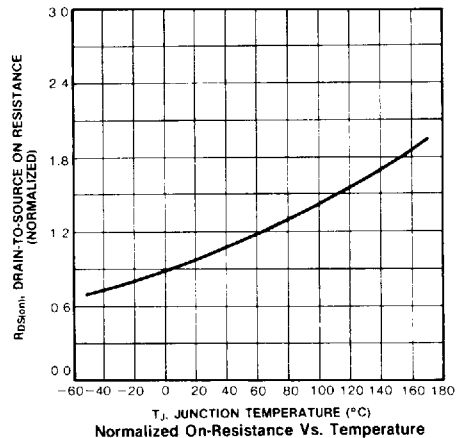
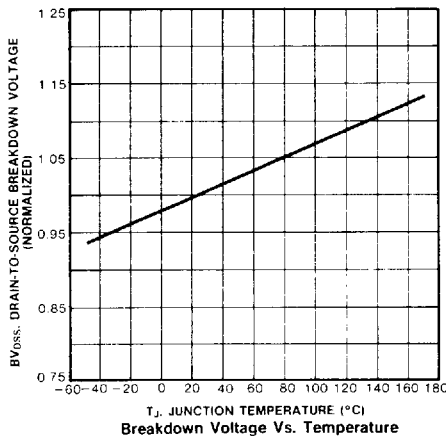
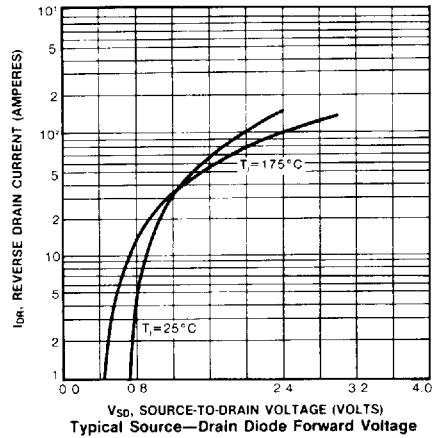
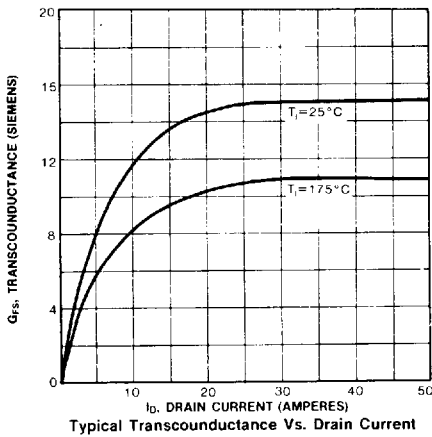
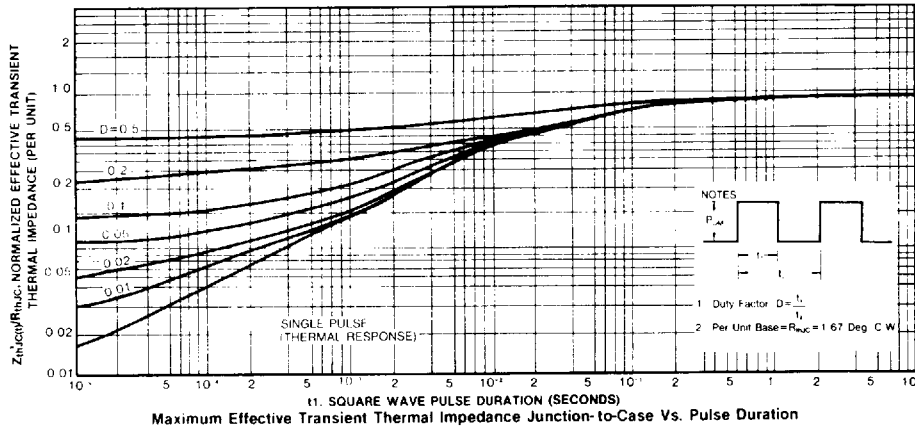
(3) Repetitive rating : Pulse width limited by max. junction temperature

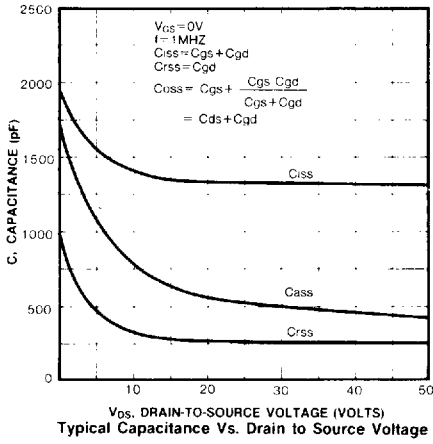
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

| Symbol | Characteristic | Min | Typ | Max | Units | Test Conditions |
|-----------------|---|-----|-----|-----|-------|---|
| I _S | Continuous Source Current (Body Diode) | - | - | 30 | A | Modified MOSFET symbol showing the integral reverse P-N junction rectifier  |
| I _{SM} | Pulse Source Current (Body Diode) (3) | - | - | 120 | A | |
| V _{SD} | Diode Forward Voltage (2) | - | - | 1.6 | V | T _J =25°C, I _S =30A, V _{GS} =0V |
| t _{rr} | Reverse Recovery Time | - | - | 220 | ns | T _J =25°C, I _F =30A, dI _F /dt=100A/μS |

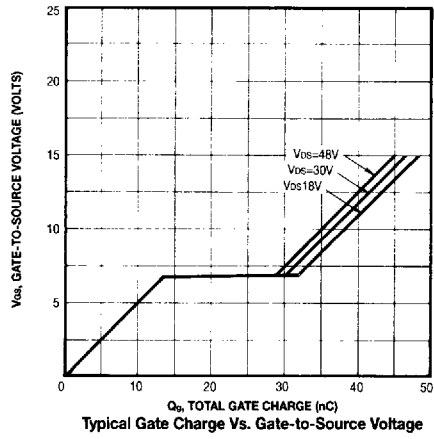
- Notes : (1) T_J=25°C to 175°C
 (2) Pulse test : Pulse width ≤ 300μs, Duty Cycle ≤ 2%
 (3) Repetitive rating : Pulse width limited by max. junction temperature



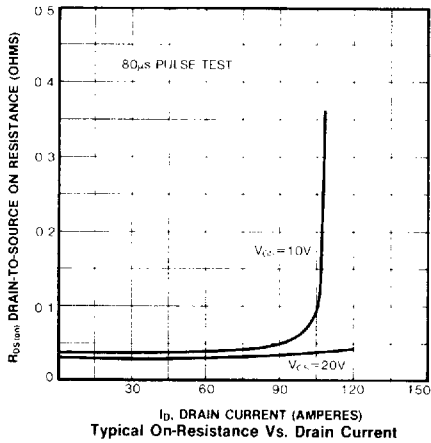




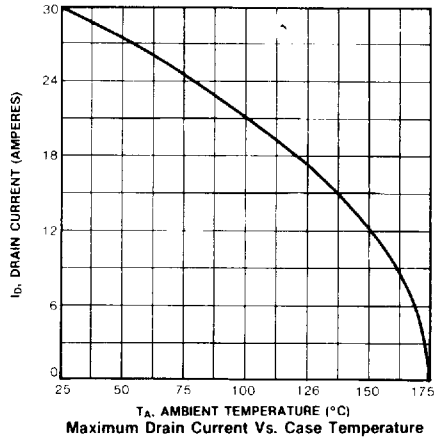
Typical Capacitance Vs. Drain to Source Voltage



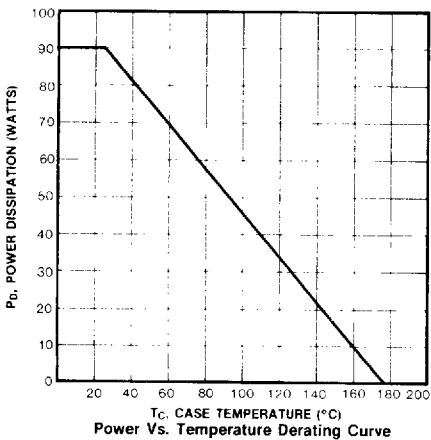
Typical Gate Charge Vs. Gate-to-Source Voltage



Typical On-Resistance Vs. Drain Current



Maximum Drain Current Vs. Case Temperature



Power Vs. Temperature Derating Curve

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