

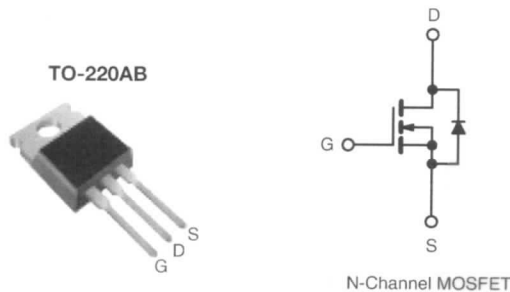
IRFZ34

Power MOSFET

| PRODUCT SUMMARY | | |
|---------------------------|-----------------|-------|
| V_{DS} (V) | 60 | |
| $R_{DS(on)}$ (Ω) | $V_{GS} = 10$ V | 0.050 |
| Q_g (Max.) (nC) | 46 | |
| Q_{gs} (nC) | 11 | |
| Q_{gd} (nC) | 22 | |
| Configuration | Single | |

FEATURES

- Dynamic dV/dt Rating
- 175 °C Operating Temperature
- Fast Switching
- Ease of Paralleling
- Simple Drive Requirements



| ABSOLUTE MAXIMUM RATINGS ($T_C = 25$ °C, unless otherwise noted) | | | | | |
|---|------------------|----------------|------------------|----------|---|
| PARAMETER | | SYMBOL | LIMIT | UNIT | |
| Drain-Source Voltage | | V_{DS} | 60 | V | |
| Gate-Source Voltage | | V_{GS} | ± 20 | | |
| Continuous Drain Current | V_{GS} at 10 V | I_D | $T_C = 25$ °C | 30 | A |
| | | | $T_C = 100$ °C | 21 | |
| Pulsed Drain Current ^a | | I_{DM} | 120 | | |
| Linear Derating Factor | | | 0.59 | W/°C | |
| Single Pulse Avalanche Energy ^b | | E_{AS} | 200 | mJ | |
| Maximum Power Dissipation | $T_C = 25$ °C | P_D | 88 | W | |
| Peak Diode Recovery dV/dt^c | | dV/dt | 4.5 | V/ns | |
| Operating Junction and Storage Temperature Range | | T_J, T_{stg} | - 55 to + 175 | °C | |
| Soldering Recommendations (Peak Temperature) | for 10 s | | 300 ^d | | |
| Mounting Torque | 6-32 or M3 screw | | 10 | lbf · in | |
| | | | 1.1 | N · m | |


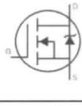
Notes

- Repetitive rating; pulse width limited by maximum junction temperature (see fig. 11).
- $V_{DD} = 25$ V, starting $T_J = 25$ °C, $L = 259$ μ H, $R_g = 25$ Ω , $I_{AS} = 30$ A (see fig. 12).
- $I_{SD} \leq 30$ A, $dI/dt \leq 200$ A/ μ s, $V_{DD} \leq V_{DS}$, $T_J \leq 175$ °C.
- 1.6 mm from case.

NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.



| THERMAL RESISTANCE RATINGS | | | | |
|-------------------------------------|------------|------|------|------|
| PARAMETER | SYMBOL | TYP. | MAX. | UNIT |
| Maximum Junction-to-Ambient | R_{thJA} | - | 62 | °C/W |
| Case-to-Sink, Flat, Greased Surface | R_{thCS} | 0.50 | - | |
| Maximum Junction-to-Case (Drain) | R_{thJC} | - | 1.7 | |

| SPECIFICATIONS ($T_J = 25\text{ }^\circ\text{C}$, unless otherwise noted) | | | | | | |
|---|---------------------|--|------|-------|-----------|---------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | MIN. | TYP. | MAX. | UNIT |
| Static | | | | | | |
| Drain-Source Breakdown Voltage | V_{DS} | $V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$ | 60 | - | - | V |
| V_{DS} Temperature Coefficient | $\Delta V_{DS}/T_J$ | Reference to $25\text{ }^\circ\text{C}$, $I_D = 1\text{ mA}$ | - | 0.065 | - | V/°C |
| Gate-Source Threshold Voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$ | 2.0 | - | 4.0 | V |
| Gate-Source Leakage | I_{GSS} | $V_{GS} = \pm 20\text{ V}$ | - | - | ± 100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS} = 60\text{ V}, V_{GS} = 0\text{ V}$ | - | - | 25 | μA |
| | | $V_{DS} = 48\text{ V}, V_{GS} = 0\text{ V}, T_J = 150\text{ }^\circ\text{C}$ | - | - | 250 | |
| Drain-Source On-State Resistance | $R_{DS(on)}$ | $V_{GS} = 10\text{ V}, I_D = 18\text{ A}^b$ | - | - | 0.050 | Ω |
| Forward Transconductance | g_{fs} | $V_{DS} = 25\text{ V}, I_D = 18\text{ A}$ | 9.3 | - | - | S |
| Dynamic | | | | | | |
| Input Capacitance | C_{iss} | $V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1.0\text{ MHz}$, see fig. 5 | - | 1200 | - | pF |
| Output Capacitance | C_{oss} | | - | 600 | - | |
| Reverse Transfer Capacitance | C_{rss} | | - | 100 | - | |
| Total Gate Charge | Q_g | $V_{GS} = 10\text{ V}, I_D = 30\text{ A}, V_{DS} = 48\text{ V}$, see fig. 6 and 13 ^b | - | - | 46 | nC |
| Gate-Source Charge | Q_{gs} | | - | - | 11 | |
| Gate-Drain Charge | Q_{gd} | | - | - | 22 | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD} = 30\text{ V}, I_D = 30\text{ A}, R_g = 12\text{ }\Omega, R_D = 1.0\text{ }\Omega$, see fig. 10 ^b | - | 13 | - | ns |
| Rise Time | t_r | | - | 100 | - | |
| Turn-Off Delay Time | $t_{d(off)}$ | | - | 29 | - | |
| Fall Time | t_f | | - | 52 | - | |
| Internal Drain Inductance | L_D | Between lead, 6 mm (0.25") from package and center of die contact  | - | 4.5 | - | nH |
| Internal Source Inductance | L_S | | - | 7.5 | - | |
| Drain-Source Body Diode Characteristics | | | | | | |
| Continuous Source-Drain Diode Current | I_S | MOSFET symbol showing the integral reverse p - n junction diode  | - | - | 30 | A |
| Pulsed Diode Forward Current ^a | I_{SM} | | - | - | 120 | |
| Body Diode Voltage | V_{SD} | $T_J = 25\text{ }^\circ\text{C}, I_S = 30\text{ A}, V_{GS} = 0\text{ V}^b$ | - | - | 1.6 | V |
| Body Diode Reverse Recovery Time | t_{rr} | $T_J = 25\text{ }^\circ\text{C}, I_F = 30\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$ | - | 120 | 230 | ns |
| Body Diode Reverse Recovery Charge | Q_{rr} | | - | 0.7 | 1.4 | nC |
| Forward Turn-On Time | t_{on} | Intrinsic turn-on time is negligible (turn-on is dominated by L_S and L_D) | | | | |

Notes

- a. Repetitive rating; pulse width limited by maximum junction temperature (see fig. 11).
b. Pulse width $\leq 300\text{ }\mu\text{s}$; duty cycle $\leq 2\%$.