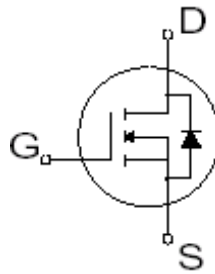


- Dynamic dv/dt Rating
- 175 °C Operating Temperature
- Fast switching
- Ease of Paralleling
- Simple Drive Requirements



$V_{DSS} = 100V$

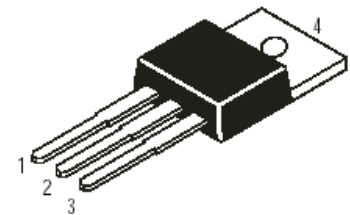
$I_{D25} = 60A$

$R_{DS(ON)} = 0.023 \Omega$

Description

Third Generation HEXFETs from International Rectifier provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

The TO-220 package is universally preferred for all commercial-industrial applications at power dissipation levels to approximately 50watts. The low thermal resistance and low package cost of the TO-220 contribute to its wide acceptance throughout the industry.



Pin1–Gate
Pin2–Drain
Pin3–Source

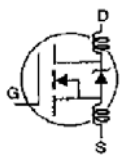
Absolute Maximum Ratings

| | Parameter | Max. | Units |
|-----------------------|---|----------------------|-------|
| $I_D@T_c=25^\circ C$ | Continuous Drain Current, $V_{GS}@10V$ | 60 | A |
| $I_D@T_c=100^\circ C$ | Continuous Drain Current, $V_{GS}@10V$ | 40 | |
| I_{DM} | Pulsed Drain Current ① | 230 | |
| $P_D@T_c=25^\circ C$ | Power Dissipation | 200 | W |
| | Linear Derating Factor | 1.3 | W/°C |
| V_{GS} | Gate-to-Source Voltage | ±20 | V |
| E_{AS} | Single Pulse Avalanche Energy ② | 20 | mJ |
| dv/dt | Peak Diode Recovery dv/dt ③ | 5.8 | V/ns |
| T_J T_{STG} | Operating Junction and Storage Temperature Range | - 55 to +175 | °C |
| | Soldering Temperature, for 10 seconds | 300(1.6mm from case) | |
| | Mounting Torque,6-32 or M3 screw | 10 lbf•in(1.1N•m) | |

Thermal Resistance

| | Parameter | Min. | Typ. | Max. | Units |
|-----------------|-------------------------------------|------|------|------|-------|
| $R_{\theta JC}$ | Junction-to-case | — | — | 0.75 | °C/W |
| $R_{\theta CS}$ | Case-to-Sink, Flat, Greased Surface | — | 0.50 | — | |
| $R_{\theta JA}$ | Junction-to-Ambient | — | — | 62 | |

Electrical Characteristics @T_J=25 °C(unless otherwise specified)

| | Parameter | Min. | Typ. | Max. | Units | Test Conditions |
|--|--------------------------------------|------|------|-------|-------|---|
| V _{(BR)DSS} | Drain-to-Source Breakdown Voltage | 100 | — | — | V | V _{GS} =0V, I _D =250μA |
| ΔV _{(BR)DSS} / ΔT _J | Breakdown Voltage Temp. Coefficient | — | 0.13 | — | V/°C | Reference to 25°C, I _D =1mA |
| R _{DS(on)} | Static Drain-to-Source On-resistance | — | — | 0.023 | Ω | V _{GS} =10V, I _D =28A ④ |
| V _{GS(th)} | Gate Threshold Voltage | 2.0 | — | 4.0 | V | V _{DS} =V _{GS} , I _D =250μA |
| g _{fs} | Forward Transconductance | 25 | — | — | S | V _{DS} =25V, I _D =28A④ |
| I _{DSS} | Drain-to-Source Leakage current | — | — | 25 | μA | V _{DS} =100V, V _{GS} =0V |
| | | — | — | 250 | | V _{DS} =80V, V _{GS} =0V, T _J =150°C |
| I _{GSS} | Gate-to-Source Forward leakage | — | — | 100 | nA | V _{GS} =20V |
| | Gate-to-Source Reverse leakage | — | — | -100 | | V _{GS} =-20V |
| Q _g | Total Gate Charge | — | — | 130 | nC | I _D =28A |
| Q _{gs} | Gate-to-Source charge | — | — | 26 | | V _{DS} =80V |
| Q _{gd} | Gate-to-Drain ("Miller") charge | — | — | 43 | | V _{GS} =10V See Fig.6 and 13④ |
| t _{d(on)} | Turn-on Delay Time | — | 12 | — | nS | V _{DD} =50V |
| t _r | Rise Time | — | 58 | — | | I _D =28A |
| t _{d(off)} | Turn-Off Delay Time | — | 45 | — | | R _G =2.5Ω |
| t _f | Fall Time | — | 47 | — | | V _{GS} =10V See Figure 10④ |
| L _D | Internal Drain Inductance | — | 4.5 | — | nH | Between lead, 6mm(0.25in.) from package and center of die contact |
| L _S | Internal Source Inductance | — | 7.5 | — | |  |
| C _{iss} | Input Capacitance | — | 3130 | — | pF | V _{GS} =0V |
| C _{oss} | Output Capacitance | — | 410 | — | | V _{DS} =25V |
| C _{rss} | Reverse Transfer Capacitance | — | 72 | — | | f=1.0MHz See Figure 5 |

Source-Drain Ratings and Characteristics

| | Parameter | Min. | Typ. | Max. | Units | Test Conditions |
|-----------------|---|---|------|------|-------|---|
| I _S | Continuous Source Current (Body Diode) | — | — | 57 | A | MOSFET symbol showing the integral reverse p-n junction diode. |
| I _{SM} | Pulsed Source Current (Body Diode) ① | — | — | 230 | | |
| V _{SD} | Diode Forward Voltage | — | — | 1.2 | V | T _J =25°C, I _S =28A, V _{GS} =0V ④ |
| t _{rr} | Reverse Recovery Time | — | 140 | 220 | nS | T _J =25°C, I _F =28A |
| Q _{rr} | Reverse Recovery Charge | — | 670 | 1010 | nC | di/dt=100A/μs ④ |
| t _{on} | Forward Turn-on Time | Intrinsic turn-on time is negligible (turn-on is dominated by L _S + L _D) | | | | |

Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature(see figure 11)
- ② V_{DD}=25V ,starting T_J=25 °C ,L=0.70mH R_G=25 Ω , I_{AS}=28A(see Figure 12)

- ③ I_{SD}≤28A, di/dt≤250A/μ S, V_{DD}≤V_{(BR)DSS}, T_J≤175 °C

- ④ Pulse width≤300 μ S; duty cycle≤2%.