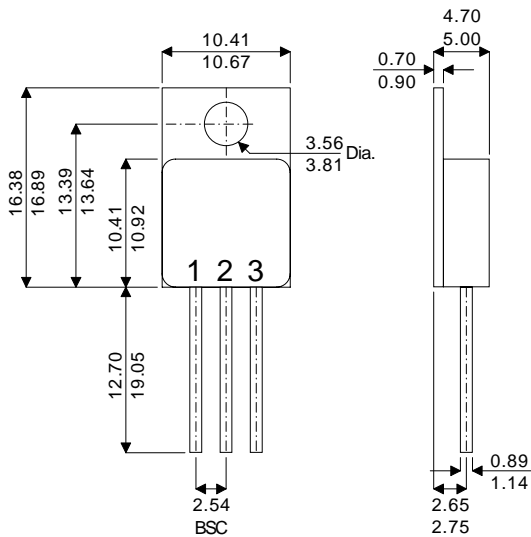


MECHANICAL DATA

Dimensions in mm (inches)



TO-220M – Metal Package

IRFY430

Pin 1 – Gate Pin 2 – Drain Pin 3 – Source

IRFY430M

Pin 1 – Drain Pin 2 – Source Pin 3 – Gate

**N-CHANNEL
POWER MOSFET
FOR HI-REL
APPLICATIONS**

V_{DSS} 500V
 $I_{D(cont)}$ 3.7A
 $R_{DS(on)}$ 1.6 Ω

FEATURES

- HERMETICALLY SEALED TO-220 METAL PACKAGE
- SIMPLE DRIVE REQUIREMENTS
- LIGHTWEIGHT
- SCREENING OPTIONS AVAILABLE
- ALL LEADS ISOLATED FROM CASE

ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^{\circ}C$ unless otherwise stated)

| | | |
|-----------------|--|-------------------------|
| V_{GS} | Gate – Source Voltage | $\pm 20V$ |
| I_D | Continuous Drain Current ($V_{GS} = 0, T_{case} = 25^{\circ}C$) | 3.7A |
| I_D | Continuous Drain Current ($V_{GS} = 0, T_{case} = 100^{\circ}C$) | 2.4A |
| I_{DM} | Pulsed Drain Current ¹ | 14A |
| P_D | Power Dissipation @ $T_{case} = 25^{\circ}C$ | 45W |
| | Linear Derating Factor | 0.36W/ $^{\circ}C$ |
| T_J, T_{stg} | Operating and Storage Temperature Range | -55 to 150 $^{\circ}C$ |
| T_L | Package Mounting Surface Temperature (for 5 sec) | 300 $^{\circ}C$ |
| $R_{\theta JC}$ | Thermal Resistance Junction to Case | 1.67 $^{\circ}C/W$ max. |

Notes

1) Pulse Test: Pulse Width $\leq 300ms, \delta \leq 2\%$

ELECTRICAL CHARACTERISTICS ($T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

| Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|--|---|-----------------------------|--------------------------|-----------------------------|
| STATIC ELECTRICAL RATINGS | | | | | |
| BV_{DSS} | Drain – Source Breakdown Voltage | $V_{GS} = 0$ | $I_D = 1\text{mA}$ | 500 | V |
| $\frac{\Delta BV_{DSS}}{\Delta T_J}$ | Temperature Coefficient of Breakdown Voltage | Reference to 25°C $I_D = 1\text{mA}$ | | 0.78 | $\text{V}/^{\circ}\text{C}$ |
| $R_{DS(on)}$ | Static Drain – Source On–State Resistance ¹ | $V_{GS} = 10\text{V}$ | $I_D = 2.4\text{A}$ | | 1.6 |
| | | $V_{GS} = 10\text{V}$ | $I_D = 3.7\text{A}$ | | 1.84 |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS} = V_{GS}$ | $I_D = 250\mu\text{A}$ | 2 | 4 |
| g_{fs} | Forward Transconductance ¹ | $V_{DS} \geq 15\text{V}$ | $I_{DS} = 2.4\text{A}$ | 1.5 | $\text{S}(\bar{v})$ |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{GS} = 0$ | $V_{DS} = 0.8BV_{DSS}$ | | 25 |
| | | | $T_J = 125^{\circ}\text{C}$ | | 250 |
| I_{GSS} | Forward Gate – Source Leakage | $V_{GS} = 20\text{V}$ | | | 100 |
| I_{GSS} | Reverse Gate – Source Leakage | $V_{GS} = -20\text{V}$ | | | -100 |
| DYNAMIC CHARACTERISTICS | | | | | |
| C_{iss} | Input Capacitance | $V_{GS} = 0$ | | 610 | pF |
| C_{oss} | Output Capacitance | $V_{DS} = 25\text{V}$ | | 135 | |
| C_{rss} | Reverse Transfer Capacitance | $f = 1\text{MHz}$ | | 65 | |
| Q_g | Total Gate Charge ¹ | $V_{GS} = 10\text{V}$ | $I_D = 3.7\text{A}$ | 19.8 | 29.5 |
| Q_{gs} | Gate – Source Charge ¹ | $V_{GS} = 10\text{V}$ | $I_D = 3.7\text{A}$ | 2.2 | 4.6 |
| Q_{gd} | Gate – Drain (“Miller”) Charge ¹ | $V_{DS} = 0.5BV_{DSS}$ | | 5.5 | 19.7 |
| $t_{d(on)}$ | Turn–On Delay Time | $V_{DD} = 250\text{V}$ | | | 35 |
| t_r | Rise Time | $I_D = 3.7\text{A}$ | | | 30 |
| $t_{d(off)}$ | Turn–Off Delay Time | $R_G = 7.5\Omega$ | | | 55 |
| t_f | Fall Time | $V_{GS} = 10\text{V}$ | | | 30 |
| SOURCE – DRAIN DIODE CHARACTERISTICS | | | | | |
| I_S | Continuous Source Current | | | | 3.7 |
| I_{SM} | Pulse Source Current ² | | | | 14 |
| V_{SD} | Diode Forward Voltage | $I_S = 3.7\text{A}$ | $T_C = 25^{\circ}\text{C}$ | | 1.4 |
| t_{rr} | Reverse Recovery Time | $I_S = 3.7\text{A}$ | $T_J = 25^{\circ}\text{C}$ | | 900 |
| Q_{rr} | Reverse Recovery Charge | $d_i / d_t \leq 100\text{A}/\mu\text{s}$ | | $V_{DD} \leq 50\text{V}$ | 7.0 |
| t_{on} | Forward Turn–On Time | Negligible | | | |
| PACKAGE CHARACTERISTICS | | | | | |
| L_D | Internal Drain Inductance (6mm down drain lead to centre of die) | | | 8.7 | nH |
| L_S | Internal Source Inductance (6mm down source lead to centre of source bond pad) | | | 8.7 | |

Notes

- 1) Pulse Test: Pulse Width $\leq 300\text{ms}$, $\delta \leq 2\%$
- 2) Repetitive Rating – Pulse width limited by maximum junction temperature.



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