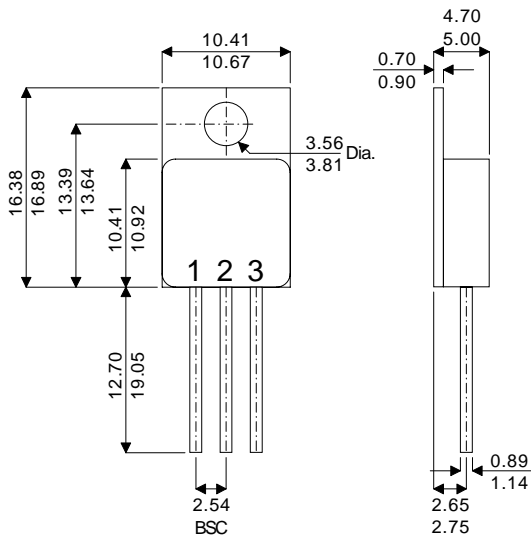


**MECHANICAL DATA**

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**  
 $R_{DS(on)}$                     **1.6Ω**

**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 <sup>1</sup>	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
<b>STATIC ELECTRICAL RATINGS</b>					
$BV_{DSS}$	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 $25^{\circ}\text{C}$ $I_D = 1\text{mA}$		0.78	$\text{V}/^{\circ}\text{C}$
$R_{DS(on)}$	Static Drain – Source On–State Resistance <sup>1</sup>	$V_{GS} = 10\text{V}$ $I_D = 2.4\text{A}$		1.6	$\Omega$
		$V_{GS} = 10\text{V}$ $I_D = 3.7\text{A}$		1.84	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$ $I_D = 250\mu\text{A}$	2	4	V
$g_{fs}$	Forward Transconductance <sup>1</sup>	$V_{DS} \geq 15\text{V}$ $I_{DS} = 2.4\text{A}$	1.5		$\text{S}(\bar{v})$
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS} = 0$ $V_{DS} = 0.8BV_{DSS}$ $T_J = 125^{\circ}\text{C}$		25	$\mu\text{A}$
				250	
$I_{GSS}$	Forward Gate – Source Leakage	$V_{GS} = 20\text{V}$		100	nA
$I_{GSS}$	Reverse Gate – Source Leakage	$V_{GS} = -20\text{V}$		-100	
<b>DYNAMIC CHARACTERISTICS</b>					
$C_{iss}$	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 <sup>1</sup>	$V_{GS} = 10\text{V}$ $I_D = 3.7\text{A}$ $V_{DS} = 0.5BV_{DSS}$	19.8	29.5	nC
$Q_{gs}$	Gate – Source Charge <sup>1</sup>	$V_{GS} = 10\text{V}$ $I_D = 3.7\text{A}$	2.2	4.6	nC
$Q_{gd}$	Gate – Drain (“Miller”) Charge <sup>1</sup>	$V_{DS} = 0.5BV_{DSS}$	5.5	19.7	
$t_{d(on)}$	Turn–On Delay Time	$V_{DD} = 250\text{V}$		35	ns
$t_r$	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	
<b>SOURCE – DRAIN DIODE CHARACTERISTICS</b>					
$I_S$	Continuous Source Current			3.7	A
$I_{SM}$	Pulse Source Current <sup>2</sup>			14	
$V_{SD}$	Diode Forward Voltage	$I_S = 3.7\text{A}$ $T_C = 25^{\circ}\text{C}$ $V_{GS} = 0$		1.4	V
$t_{rr}$	Reverse Recovery Time	$I_S = 3.7\text{A}$ $T_J = 25^{\circ}\text{C}$		900	ns
$Q_{rr}$	Reverse Recovery Charge	$d_i / d_t \leq 100\text{A}/\mu\text{s}$ $V_{DD} \leq 50\text{V}$		7.0	$\mu\text{C}$
$t_{on}$	Forward Turn–On Time		Negligible		
<b>PACKAGE CHARACTERISTICS</b>					
$L_D$	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.