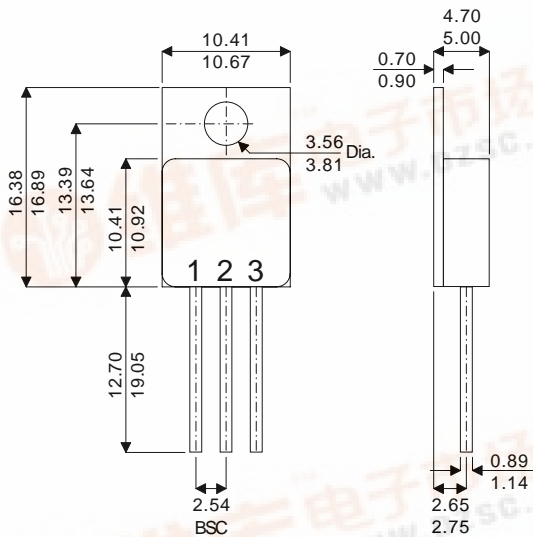


IRFY430
IRFY430M

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°C unless otherwise stated)

V _{GS}	Gate – Source Voltage	±20V
I _D	Continuous Drain Current (V _{GS} = 0, T _{case} = 25°C)	3.7A
I _D	Continuous Drain Current (V _{GS} = 0, T _{case} = 100°C)	2.4A
I _{DM}	Pulsed Drain Current ¹	14A
P _D	Power Dissipation @ T _{case} = 25°C	45W
	Linear Derating Factor	0.36W/°C
T _J , T _{stg}	Operating and Storage Temperature Range	-55 to 150°C
T _L	Package Mounting Surface Temperature (for 5 sec)	300°C
R _{θJC}	Thermal Resistance Junction to Case	1.67°C/W max.

Notes

¹ Pulse Test: Pulse Width ≤ 300ms, δ ≤ 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	V	
g_{fs}	Forward Transconductance ¹	$V_{DS} \geq 15\text{V}$	$I_{DS} = 2.4\text{A}$	1.5		$\text{S}(\bar{\omega})$	
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS} = 0$	$V_{DS} = 0.8BV_{DSS}$		25	μA	
			$T_J = 125^{\circ}\text{C}$		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		
DYNAMIC CHARACTERISTICS							
C_{iss}	Input Capacitance	$V_{GS} = 0$			610	pF	
C_{oss}	Output Capacitance	$V_{DS} = 25\text{V}$			135		
C_{riss}	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	nC
		$V_{DS} = 0.5BV_{DSS}$					
Q_{gs}	Gate – Source Charge ¹	$V_{GS} = 10\text{V}$	$I_D = 3.7\text{A}$	2.2		4.6	nC
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	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	
SOURCE – DRAIN DIODE CHARACTERISTICS							
I_S	Continuous Source Current					3.7	A
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	V
		$V_{GS} = 0$					
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	μC
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.