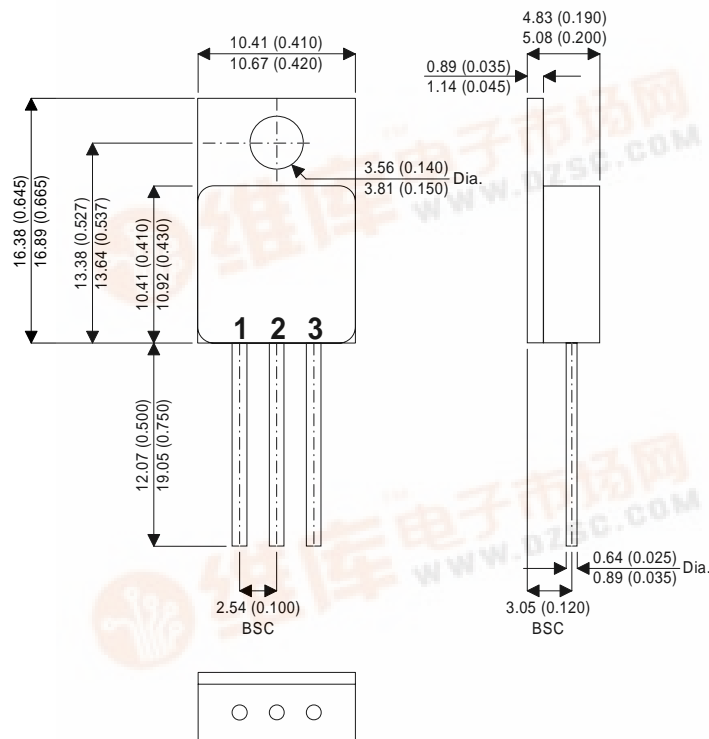


# IRFY430M-T257

## MECHANICAL DATA

Dimensions in mm (inches)



**TO257AA – Metal Package**

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

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

$V_{DSS}$                     **500V**  
 $I_{D(cont)}$                 **4.5A**  
 $R_{DS(on)}$                 **1.65Ω**

### FEATURES

- HERMETICALLY SEALED TO257 METAL PACKAGE
- SIMPLE DRIVE REQUIREMENTS
- LIGHTWEIGHT
- SCREENING OPTIONS AVAILABLE
- ALL LEADS ISOLATED FROM CASE

## ABSOLUTE MAXIMUM RATINGS (T<sub>case</sub> = 25°C unless otherwise stated)

$V_{GS}$	Gate – Source Voltage	±20V
$I_D$	Continuous Drain Current ( $V_{GS} = 10V, T_{case} = 25°C$ )	4.5A
$I_D$	Continuous Drain Current ( $V_{GS} = 10V, T_{case} = 100°C$ )	2.8A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	18A
$P_D$	Power Dissipation @ $T_{case} = 25°C$	75W
	Linear Derating Factor	0.6W/°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		
<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>	$V_{GS} = 10\text{V}$	$I_D = 2.4\text{A}$		1.65		
		$V_{GS} = 10\text{V}$	$I_D = 3.7\text{A}$		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		$\text{S}(\bar{\omega})$	
$I_{DSS}$	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.