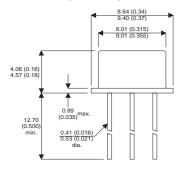
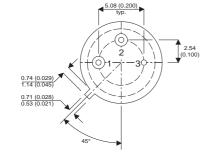


### **MECHANICAL DATA**

Dimensions in mm (inches)





TO39 - Package (TO-205AF)

**Underside View** 

Pin 1 - Source Pin 2 - Gate Pin 3 - Drain

## **N-CHANNEL ENHANCEMENT MODE POWER MOSFET**

BV<sub>DSS</sub> **500V** 

I<sub>D(cont)</sub> 2.5

 $1.5\Omega$ R<sub>DS(on)</sub>

### **FEATURES**

- AVALANCHE ENERGY RATED
- HERMETICALLY SEALED
- DYNAMIC dv/dt RATING
- SIMPLE DRIVE REQUIREMENTS

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

$\overline{V_{GS}}$	Gate – Source Voltage	±20V			
$I_{D}$	Continuous Drain Current (V <sub>GS</sub> = 10V , T <sub>case</sub> = 25°C)	2.5A			
$I_{D}$	Continuous Drain Current (V <sub>GS</sub> = 10V , T <sub>case</sub> = 100°C)	1.5A			
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	11A			
$P_{D}$	Power Dissipation @ T <sub>case</sub> = 25°C	25W			
	Linear Derating Factor	0.2W/°C			
E <sub>AS</sub>	Single Pulse Avalanche Energy <sup>2</sup>	0.35mJ			
dv/dt	Peak Diode Recovery <sup>3</sup>	3.5V/ns			
$T_J$ , $T_stg$	Operating and Storage Temperature Range	−55 to +150°C			
$R_{ heta JC}$	Thermal Resistance Junction to Case	5.0°C/W			
$R_{\theta JA}$	Thermal Resistance Junction-to-Ambient	175°C/W			

#### **Notes**

- 1) Pulse Test: Pulse Width  $\leq 300 \mu s$ ,  $\delta \leq 2\%$
- 2) @  $V_{DD} = 50V$ , Peak  $I_L = 2.5A$ , Starting  $T_J = 25^{\circ}C$
- 3) @  $I_{SD} \leq 2.5A$  , di/dt  $\leq 75A/\mu s$  ,  $V_{DD} \leq BV_{DSS}$  ,  $T_{J} \leq 150^{\circ}C$  , SUGGESTED  $R_{G}$  =  $7.5\Omega$

Semelab PIc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

**Semelab plc.** Telephone +44(0)1455 556565. Fax +44(0)1455 552612.

E-mail: sales@semelab.co.uk Website: http://www.semelab.co.uk



### 2N6802 **IRFF430**

# **ELECTRICAL CHARACTERISTICS** (T<sub>amb</sub> = 25°C unless otherwise stated)

$ \begin{array}{c c} BV_{DSS} & D \\ \hline \Delta BV_{DSS} & T_{I} \\ \hline \Delta T_{J} & B \\ \\ R_{DS(on)} & R \end{array} $	STATIC ELECTRICAL RATINGS Drain – Source Breakdown Voltage Temperature Coefficient of Breakdown Voltage Static Drain – Source On–State Resistance State Threshold Voltage	$V_{GS} = 0$ Reference to 25 $I_D = 1 \text{mA}$ $V_{GS} = 10 \text{V}$ $V_{GS} = 10 \text{V}$	I <sub>D</sub> = 1mA 5°C I <sub>D</sub> = 1.5A	500	0.43		V V/°C	
$\frac{\Delta BV_{DSS}}{\Delta T_{J}} \frac{T_{O}}{B}$ $R_{DS(on)} \frac{S}{R}$	Femperature Coefficient of Breakdown Voltage Static Drain – Source On–State Resistance	Reference to 25 $I_D = 1 \text{mA}$ $V_{GS} = 10 \text{V}$	2,c	500	0.43			
$ \frac{\Delta T_{J}}{\Delta T_{J}} B $ $ R_{DS(on)} R$	Breakdown Voltage Static Drain – Source On–State Resistance	$I_D = 1mA$ $V_{GS} = 10V$			0.43		V/°C	
R <sub>DS(on)</sub> S	Static Drain – Source On–State Resistance	V <sub>GS</sub> = 10V	I <sub>D</sub> = 1.5A		0.43		1 // (-)	
R <sub>DS(on)</sub> R	Resistance		I <sub>D</sub> = 1.5A				\( \sigma \)	
		$V_{GS} = 10V$				1.5	Ω	
	Gate Threshold Voltage		I <sub>D</sub> = 2.5A			1.725		
V <sub>GS(th)</sub> G		$V_{DS} = V_{GS}$	I <sub>D</sub> = 250μA	2		4	V	
g <sub>fs</sub> F	orward Transconductance	V <sub>DS</sub> > 15V	I <sub>DS</sub> = 1.5A	1.5			S(Ω)	
1 7	Zero Gate Voltage Drain Current	V <sub>GS</sub> = 0	$V_{DS} = 0.8BV_{DSS}$			25	μΑ	
I <sub>DSS</sub> Z			T <sub>J</sub> = 125°C			250		
I <sub>GSS</sub> F	orward Gate – Source Leakage	V <sub>GS</sub> = 20V				100	nA	
I <sub>GSS</sub> R	Reverse Gate – Source Leakage	$V_{GS} = -20V$				-100		
D	OYNAMIC CHARACTERISTICS		•		'			
C <sub>iss</sub> In	nput Capacitance	$V_{GS} = 0$			610		pF	
C <sub>oss</sub> O	Output Capacitance	$V_{DS} = 25V$			135			
C <sub>rss</sub> R	Reverse Transfer Capacitance	f = 1MHz			65			
Q <sub>g</sub> To	otal Gate Charge	V <sub>GS</sub> = 10V		19.8		29.5		
Q <sub>gs</sub> G	Sate – Source Charge	$V_DS = 0.5 BV_DS$		2.2		4.6	nC	
Q <sub>gd</sub> G	Sate – Drain ("Miller") Charge	$I_{D} = 2.5A$		5.5		19.7		
t <sub>d(on)</sub> T	urn-On Delay Time	I <sub>D</sub> =2.5A				30		
t <sub>r</sub> R	Rise Time	$V_{DS} = 0.5BV_{DS}$ $R_G = 7.5\Omega$				30	ns	
t <sub>d(off)</sub> T	urn-Off Delay Time					55		
t <sub>f</sub> F	all Time					30		
S	SOURCE – DRAIN DIODE CHARACT	TERISTICS	•					
I <sub>S</sub> C	Continuous Source Current					2.5	A	
I <sub>SM</sub> P	Pulse Source Current <sup>2</sup>	I <sub>S</sub> = 2.5A	$V_{GS} = 0$			11		
V <sub>SD</sub> D	Diode Forward Voltage	I <sub>F</sub> = 1.5A	$T_J = 25^{\circ}C$			1.4	V	
t <sub>rr</sub> R	Reverse Recovery Time	I <sub>F</sub> = 2.5A	$T_J = 25^{\circ}C$			900	ns	
Q <sub>rr</sub> R	Reverse Recovery Charge	$d_i / d_t \le 100A/\mu s$	$V_{DD} \le 50V$			7.0	μС	
t <sub>on</sub> F	orward Turn-On Time				Negligible			

**Notes** 

- 1) Pulse Test: Pulse Width  $\leq 300 \mu s$ ,  $\delta \leq 2\%$
- 2) Repetitive Rating Pulse width limited by maximum junction temperature.

Semelab PIc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

**Semelab plc.** Telephone +44(0)1455) 556565. Fax +44(0)1455) 552612.

Website http://www.semelab.co.uk

Document Number 5357

Issue: 1