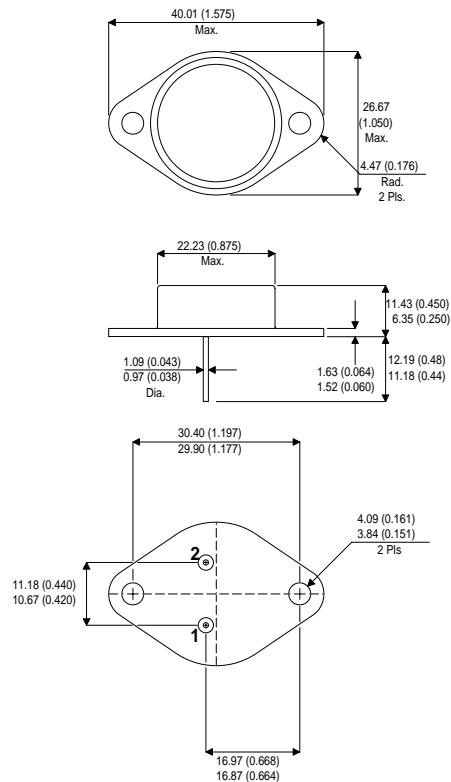


**SEME
LAB**

IRF240

MECHANICAL DATA

Dimensions in mm (inches)



TO3 METAL PACKAGE (TO204AA)

Underside View

Pin 1 = Gate Pin 2 = Source Case = Drain

N-CHANNEL POWER MOSFET FOR HI-REL APPLICATIONS

V_{DSS} **200V**
 $I_{D(\text{cont})}$ **18A**
 $R_{DS(\text{on})}$ **0.18Ω**

FEATURES

- HERMETICALLY SEALED TO3 METAL PACKAGE
- SIMPLE DRIVE REQUIREMENTS
- SCREENING OPTIONS AVAILABLE

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

V_{GS}	Gate – Source Voltage	$\pm 20\text{V}$
I_D	Continuous Drain Current @ $T_{\text{case}} = 25^\circ\text{C}$	18A
I_D	Continuous Drain Current @ $T_{\text{case}} = 100^\circ\text{C}$	11A
I_{DM}	Pulsed Drain Current	72A
P_D	Power Dissipation @ $T_{\text{case}} = 25^\circ\text{C}$	125W
	Linear Derating Factor	1.0W/ $^\circ\text{C}$
T_J, T_{stg}	Operating and Storage Temperature Range	-55 to 150 $^\circ\text{C}$
$R_{\theta\text{JC}}$	Thermal Resistance Junction to Case	1.0 $^\circ\text{C}/\text{W}$ max.
$R_{\theta\text{JA}}$	Thermal Resistance Junction to Ambient	30 $^\circ\text{C}/\text{W}$ max.

Semelab Plc 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>

Document Number 3332

Issue 1

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
STATIC ELECTRICAL RATINGS					
BV_{DSS}	Drain – Source Breakdown Voltage $V_{\text{GS}} = 0$ $I_D = 1\text{mA}$	200			V
$\Delta \text{BV}_{\text{DSS}}$	Temperature Coefficient of Breakdown Voltage Reference to 25°C $I_D = 1\text{mA}$		0.29		$\text{V}/^\circ\text{C}$
$R_{\text{DS}(\text{on})}$	Static Drain – Source On-State Resistance $V_{\text{GS}} = 10\text{V}$ $I_D = 11\text{A}^*$		0.18		Ω
	$V_{\text{GS}} = 10\text{V}$ $I_D = 18\text{A}^*$		0.21		
$V_{\text{GS}(\text{th})}$	Gate Threshold Voltage $V_{\text{DS}} = V_{\text{GS}}$ $I_D = 250\mu\text{A}$	2		4	V
g_{fs}	Forward Transconductance $V_{\text{DS}} \geq 15\text{V}$ $I_{\text{DS}} = 11\text{A}^*$	6.1			$\text{S}(\text{V})$
I_{DSS}	Zero Gate Voltage Drain Current $V_{\text{GS}} = 0$ $V_{\text{DS}} = 0.8\text{BV}_{\text{DSS}}$			25	μA
	$T_J = 125^\circ\text{C}$			250	
I_{GSS}	Forward Gate – Source Leakage $V_{\text{GS}} = 20\text{V}$			100	nA
I_{GSS}	Reverse Gate – Source Leakage $V_{\text{GS}} = -20\text{V}$			-100	
DYNAMIC CHARACTERISTICS					
C_{iss}	Input Capacitance $V_{\text{GS}} = 0$		1300		pF
C_{oss}	Output Capacitance $V_{\text{DS}} = 25\text{V}$		400		
C_{rss}	Reverse Transfer Capacitance $f = 1\text{MHz}$		130		
Q_g	Total Gate Charge $V_{\text{GS}} = 10\text{V}$ $I_D = 18\text{A}$	32		60	nC
Q_{gs}	Gate – Source Charge $V_{\text{DS}} = 0.5\text{BV}_{\text{DSS}}$	2.2		10.6	
Q_{gd}	Gate – Drain (“Miller”) Charge $V_{\text{DS}} = 0.5\text{BV}_{\text{DSS}}$	14		38	
$t_{\text{d}(\text{on})}$	Turn-On Delay Time			20	
t_r	Rise Time $V_{\text{DD}} = 100\text{V}$			152	ns
$t_{\text{d}(\text{off})}$	Turn-Off Delay Time $I_D = 18\text{A}$			58	
t_f	Fall Time $R_G = 9.1\Omega$			67	
SOURCE – DRAIN DIODE CHARACTERISTICS					
I_S	Continuous Source Current			18	A
I_{SM}	Pulse Source Current			72	
V_{SD}	Diode Forward Voltage $I_S = 18\text{A}$ $T_J = 25^\circ\text{C}$			1.5	V
V_{GS}	$V_{\text{GS}} = 0$				
t_{rr}	Reverse Recovery Time $I_S = 18\text{A}$ $T_J = 25^\circ\text{C}$			500	ns
Q_{rr}	Reverse Recovery Charge $d_i / d_t \leq 100\text{A}/\mu\text{s}$ $V_{\text{DD}} \leq 50\text{V}$			5.3	μC
PACKAGE CHARACTERISTICS					
L_D	Internal Drain Inductance (from 6mm down drain lead pad to centre of die)		5.0		nH
L_S	Internal Source Inductance (from 6mm down source lead to centre of source bond pad)		13		

* Pulse width $\leq 300\mu\text{s}$; Duty Cycle $\leq 2\%$

Semelab Plc 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.