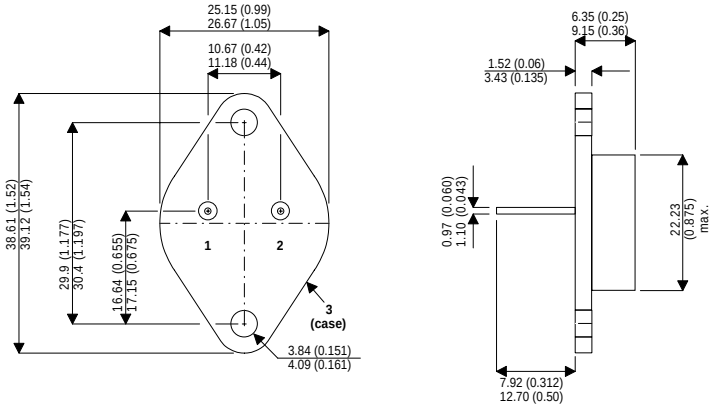
IRF230

TO–3 (TO–204AA) Package Outline.

Dimensions in mm (inches)



Pin 1 – Gate **Pin 2 – Source** **Case – Drain**

N–CHANNEL ENHANCEMENT MODE HIGH VOLTAGE POWER MOSFET

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C unless otherwise stated)

V_{DS}	Drain – Source Voltage[1]	200	V
V_{DGR}	Drain - Gate Voltage (R_{GS} = 20KΩ)[1]	200	V
I_D	Continuous Drain Current@ T_{case} = 25°C	9.0	A
I_D	Continuous Drain Current@ T_{case} = 100°C	6.0	A
I_{DM}	Pulsed Drain Current [3]	36	A
V_{GS}	Gate – Source Voltage	±20	V
P_D	Maximum Power Dissipation @ T_{case} = 25°C	75	W
	Derate Linearly	0.6	W/°C
I_{LM}	Inductive Current Clamped	36	A
E_{AS*}	Single Pulse Avalanche energy Rating [4]	150	mj
T_J , T_{STG}	Operating and Storage Junction Temperature Range	–55 to 150	°C
T_L	Lead Temperature : 0.063” from Case for 10 Sec.	300	°C

THERMAL CHARACTERISTICS

	Characteristic	Min.	Typ.	Max.	Unit
$R_{\theta JC}$	Junction to Case			1.67	°C/W
$R_{\theta CS}$	Case to Sink (Mounting Surface flat, smooth and greased.		0.1		
$R_{\theta JA}$	Junction to Ambient (Free air operation)			30	

NOTES

1 T_J = +25°C to + 150°C

2 Pulse Test PUlse Width ≤ 300µs. Duty Cycle ≤ 2%

3 Repetitive Ration Pulse Width Limited by Maximum Junction Temperature.

4 V_{DD} = 20V starting TJ = +25°C , L = 3.37mH, R_{GS} = 50Ω, I_{PEAK} = 9A

Semelab plc. Telephone +44(0)1455 556565. Fax +44(0)1455 552612.
E-mail: sales@semelab.co.uk Website: http://www.semelab.co.uk

Prelim. 6/00

SEME LAB

IRF230

ELECTRICAL (T_{case} = 25°C unless otherwise stated)

	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
	STATIC ELECTRICAL RATINGS					
BV_{DSS}	Drain–Source Breakdown Voltage	V_{GS} = 0V , I_D = 250µA	200			V
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS} = V_{GS} , I_D = 250µA	2		4	V
I_{GSS}	Gate Source Leakage forward	V_{GS} = 20V			100	nA
I_{GSS}	Gate Source Leakage Reverse	V_{GS} = -20V			-100	
		V_{DS} = Max rating V_{GS}=0V			250	µA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = Max rating x0.8, V_{GS}=0V T_J = +125°C			1000	
$I_{D(ON)}$[2]	On-State Drain Current	V_{DS}> $I_{D(ON)}$ x$r_{DS(ON)}$ Max. V_{GS} = 10V	9			A
$r_{DS(ON)}$[2]	Static Drain–Source On State Resistance	V_{GS} = 10V , I_{DS} = 5.0A		0.25	0.4	Ω
g_{ts}[2]	Forward Transconductance	V_{DS}> 50V I_D =5.0A	3.0	4.8		S(Ω)
	DYNAMIC CHARACTERISTICS					
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 25V f = 1MHz		600		pF
C_{oss}	Output Capacitance			250		
C_{rss}	Reverse Transfer Capacitance			80		
Q_g	Total Gate Charge	V_{GS} = 10V I_D = 9A V_{DS} = 0.8 V_{Max}		19	30	nC
Q_{gs}	Gate – Source Charge			10		
Q_{gd}	Gate – Drain (“Miller”) Charge			9.0		
$t_{d(ON)}$	Turn–On Delay Time	V_{DD}≃100V, I_D = 5.0A, R_G = 7.5Ω			35	ns
t_r	Rise Time				80	
$t_{d(OFF)}$	Turn-off Delay Time				60	
t_f	Fall Time				40	
	SOURCE – DRAIN DIODE CHARACTERISTICS					
I_S	Continuous Source Current (Body Diode)	Modified MOSFET symbol showing the integral reverse P-N junc. rectifier.			9.0	A
I_{SM}	Pulsed Source Current[1] (Body Diode)				36	
V_{SD}	Diode Forward Voltage[2]	T_J = +25°C , I_S = 9A V_{GS} = 0V			2.0	V
t_{rr}	Reverse Recovery Time	T_J = +150°C , I_S = 9A V_{GS} = 0V dI_F/dt = 100A/µs		450		ns
Q_{rr}	Reverse Recovery Charge	T_J = +150°C , I_S = 9A V_{GS} = 0V dI_F/dt = 100A/µs		3.0		µC
t_{ON}	Forward Turn-on Time		NEGLIGIBLE			
	PACKAGE CHARACTERISTICS					
L_D	Internal Drain Inductance			5.0		nH
L_S	Internal Source Inductance (from 6mm down source lead to source bond pad)			12.5		

Semelab plc. Telephone +44(0)1455 556565. Fax +44(0)1455 552612.
E-mail: sales@semelab.co.uk Website: http://www.semelab.co.uk