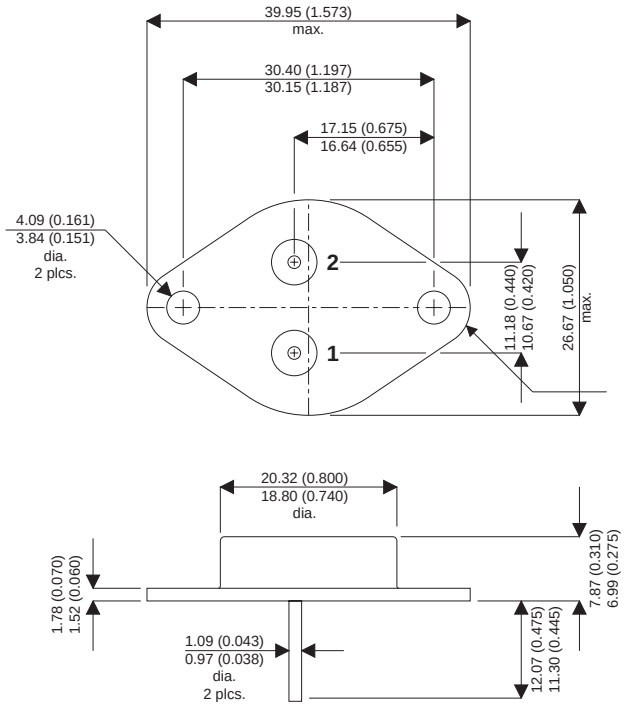
IRF9130

MECHANICAL DATA

Dimensions in mm (inches)



TO–3 Metal Package

Pin 1 – Gate Pin 2 – Source Case – Drain

P–CHANNEL POWER MOSFET

V_{DSS}	**–100V**
$I_{D(cont)}$	**–11A**
$R_{DS(on)}$	**0.2Ω**

FEATURES

- **HERMETICALLY SEALED TO–3 METAL PACKAGE**
- **SIMPLE DRIVE REQUIREMENTS**
- **SCREENING OPTIONS AVAILABLE**

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)	–11A
I_D	Continuous Drain Current	(V_{GS} = 0 , T_{case} = 100°C)	–7.0A
I_{DM}	Pulsed Drain Current [1]		–50A
P_D	Power Dissipation @ T_{case} = 25°C		75W
	Linear Derating Factor		0.6W/°C
E_{AS}	Single Pulse Avalanche Energy [2]		81mJ
I_{AR}	Avalanche Current [1]		–11A
E_{AR}	Repetitive Avalanche Energy [1]		7.5mJ
dv/dt	Peak Diode Recovery [3]		–5.5V/ns
T_J , T_{stg}	Operating and Storage Temperature Range		–55 to +150°C
T_L	Lead Temperature 1.6mm (0.63”) from case for 10 sec.		300°C

Notes

1) Repetitive Rating – Pulse width limited by maximum junction temperature.
2) @ V_{DD} = –25V , L ≥ 1.0mH , R_G = 25Ω , Peak I_L = –11A , Starting T_J = 25°C
3) @ I_{SD} ≤ –11A , di/dt ≤ –140A/µs , V_{DD} ≤ BV_{DSS} , T_J ≤ 150°C , Suggested R_G = 7.5Ω

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SEME LAB

IRF9130

ELECTRICAL CHARACTERISTICS (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} = 0 I_D = –1mA	–100			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C I_D = –1mA		–0.087		V/°C
$R_{DS(on)}$	Static Drain – Source On–State Resistance [1]	V_{GS} = –10V I_D = –7.0A			0.3	Ω
		V_{GS} = –10V I_D = –11A			0.35	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS} I_D = –250µA	–2		–4	V
g_{fs}	Forward Transconductance	V_{DS} ≥ –15V I_{DS} = –7.0A	3			S (℧)
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS} = 0 V_{DS} = 0.8 x Max			–25	µA
		T_J = 125°C			–250	
I_{GSS}	Forward Gate – Source Leakage	V_{GS} = –20V			–100	nA
I_{GSS}	Reverse Gate – Source Leakage	V_{GS} = 20V			100	
	DYNAMIC CHARACTERISTICS					
C_{DC}	Drain to Case Capacitance	V_{GS} = 0 V_{DS} = – 25V f = 1MHz		12		pF
C_{iss}	Input Capacitance			860		
C_{oss}	Output Capacitance			350		
C_{rss}	Reverse Transfer Capacitance			125		
Q_g	Total Gate Charge	V_{GS} = –10V I_D = –11A V_{DS} = 0.5 x max	15		29	nC
Q_{gs}	Gate – Source Charge		1.0		7.1	
Q_{gd}	Gate – Drain (“Miller”) Charge		2.0		21	
$t_{d(on)}$	Turn–On Delay Time	V_{DD} = –50V I_D = –11A R_G = 7.5Ω			60	ns
t_r	Rise Time				140	
$t_{d(off)}$	Turn–Off Delay Time				140	
t_f	Fall Time				140	
	SOURCE – DRAIN DIODE CHARACTERISTICS					
I_S	Continuous Source Current				–11	A
I_{SM}	Pulse Source Current [2]				–50	
V_{SD}	Diode Forward Voltage	I_S = –11A T_J = 25°C V_{GS} = 0			–4.7	V
t_{rr}	Reverse Recovery Time	I_F = –11A V_{DD} ≤ –50V			250	ns
Q_{rr}	Reverse Recovery Charge	d_i / d_t ≤ –100A/µs T_J = 25°C			3.0	µC
t_{on}	Forward Turn–On Time			Negligible		
	PACKAGE CHARACTERISTICS					
L_D	Internal Drain Inductance (measured from 6mm down drain lead to centre of die)			5.0		nH
L_S	Internal Source Inductance (from 6mm down source lead to source bond pad)			13		
	THERMAL CHARACTERISTICS					
$R_{\theta JC}$	Thermal Resistance Junction – Case			1.67		°C/W
$R_{\theta CS}$	Thermal Resistance Case – Sink			0.12		
$R_{\theta JA}$	Thermal Resistance Junction – Ambient			30		

Notes 1) Pulse Test: Pulse Width ≤ 300ms, δ ≤ 2%
2) Repetitive Rating – Pulse width limited by maximum junction temperature.

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