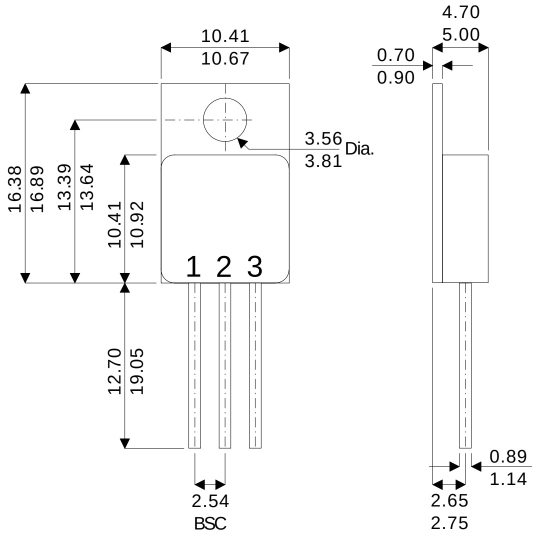
SEME
LAB

IRFY120

MECHANICAL DATA
Dimensions in mm (inches)



TO–220M – Metal Package

Pad 1 – Gate Pad 2 – Drain Pad 3 – Source

N–CHANNEL POWER MOSFET FOR HI–REL APPLICATIONS

V_{DSS}	**100V**
$I_{D(cont)}$	**7.3A**
$R_{DS(on)}$	**0.31Ω**

FEATURES

- **HERMETICALLY SEALED TO–220 METAL PACKAGE**
- **SIMPLE DRIVE REQUIREMENTS**
- **LIGHTWEIGHT**
- **SCREENING OPTIONS AVAILABLE**
- **ALL LEADS ISOLATED FROM CASE**

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

V_{GS}	Gate – Source Voltage	±20V
I_D	Continuous Drain Current @ T_{case} = 25°C	7.3A
I_D	Continuous Drain Current @ T_{case} = 100°C	4.6A
I_{DM}	Pulsed Drain Current	29A
P_D	Power Dissipation @ T_{case} = 25°C	30W
	Linear Derating Factor	0.24W/°C
T_J , T_{stg}	Operating and Storage Temperature Range	–55 to 150°C
$R_{\theta JC}$	Thermal Resistance Junction to Case	4.1°C/W max.
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	80°C/W max.

Prelim. 9/95

ELECTRICAL CHARACTERISTICS (T_C = 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			0.1		V/°C
$R_{DS(on)}$	Static Drain – Source On–State Resistance	V_{GS} = 10V	I_D = 4.6A			0.31	Ω
		V_{GS} = 10V	I_D = 7.3A			0.36	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}	I_D = 250µA	2		4	V
g_{fs}	Forward Transconductance	V_{DS} ≥ 15V	I_{DS} = 4.6A	1.5			S(℧)
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS} = 0	V_{DS} = $0.8BV_{DSS}$			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_{iss}	Input Capacitance	V_{GS} = 0			350		pF
C_{oss}	Output Capacitance	V_{DS} = 25V			150		
C_{rss}	Reverse Transfer Capacitance	f = 1MHz			24		
Q_g	Total Gate Charge	V_{GS} = 10V V_{DS} = $0.5BV_{DSS}$	I_D = 7.3A	7.7		17	nC
Q_{gs}	Gate – Source Charge	I_D = 7.3A		0.7		4	nC
Q_{gd}	Gate – Drain (“Miller”) Charge	V_{DS} = $0.5BV_{DSS}$		2		8	
$t_{d(on)}$	Turn–On Delay Time	V_{DD} = 50V I_D = 7.3A R_G = 7.5Ω				15	ns
t_r	Rise Time					70	
$t_{d(off)}$	Turn–Off Delay Time					40	
t_f	Fall Time					70	
	SOURCE – DRAIN DIODE CHARACTERISTICS						
I_S	Continuous Source Current					7.3	A
I_{SM}	Pulse Source Current					29	
V_{SD}	Diode Forward Voltage	I_S = 7.3A V_{GS} = 0	T_J = 25°C			1.8	V
t_{rr}	Reverse Recovery Time	I_S = 7.3A	T_J = 25°C			240	ns
Q_{rr}	Reverse Recovery Charge	d_i / d_t ≤ 100A/µs	V_{DD} ≤ 50V			2	µC
	PACKAGE CHARACTERISTICS						
L_D	Internal Drain Inductance	(from 6mm down drain lead pad to centre of die)			8.7		nH
L_S	Internal Source Inductance	(from 6mm down source lead to centre of source bond pad)			8.7		