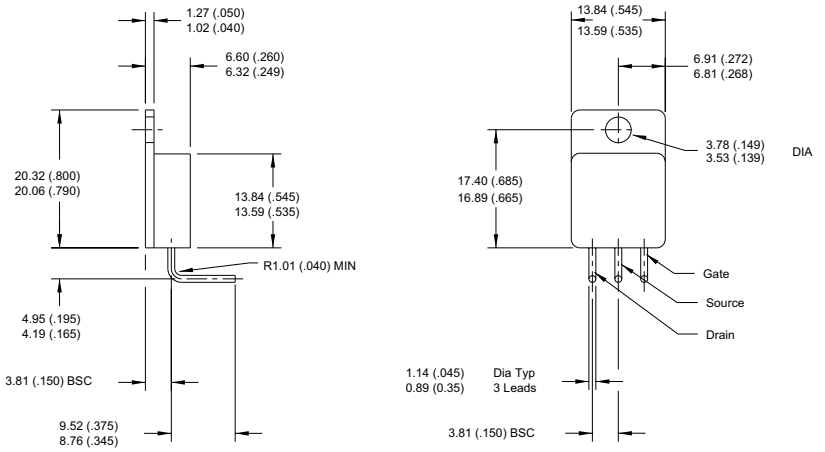
SEME LAB

IRFM

MECHANICAL DATA
Dimensions in mm (inches)



N–CHANNEL POWER MOSFET

V_{DSS}	200V
$I_{D(cont)}$	27.4A
$R_{DS(on)}$	0.100Ω

FEATURES

- **N–CHANNEL MOSFET**
- **HIGH VOLTAGE**
- **INTEGRAL PROTECTION DIODE**
- **HERMETIC ISOLATED TO-254 PAC**
- **CERAMIC SURFACE MOUNT PACK OPTION**

TO–254 Metal Package

Pin 1 – Drain Pin 2 – Source Pin 3 – Gate

ABSOLUTE MAXIMUM RATINGS (T_C = 25°C unless otherwise stated)

V_{GS}	Gate – Source Voltage		±20V
I_D	Continuous Drain Current	@ V_{GS} = 10V , T_C = 25°C	27.4A
		@ V_{GS} = 10V , T_C = 100°C	17A
I_{DM}	Pulsed Drain Current		110A
P_D	Max. Power Dissipation	@ T_C = 25°C	150W
	Linear Derating Factor		1.2W / °C
I_L	Avalanche Current , Clamped [1]		27.4A
dv / dt	Peak Diode Recovery [2]		5.5V / ns
$R_{\theta JC}$	Thermal Resistance Junction – Case		0.83°C / W
$R_{\theta JA}$	Thermal Resistance Junction – Ambient		48°C / W
$R_{\theta CS}$	Thermal Resistance Case – Sink		0.21°C / W typ.
T_J , T_{STG}	Operating Junction and Storage Temperature Range		–55 to 150°C
T_L	Lead Temperature (1.6mm from case for 10s)		300°C

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ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise stated)

	Parameter	Test Conditions		Min.	Typ.	Max
	STATIC ELECTRICAL RATINGS					
BV_{DSS}	Drain – Source Breakdown Voltage	V_{GS} = 0	I_D = 1mA	200		
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C I_D = 1mA			0.28	
$R_{DS(on)}$	Static Drain – Source On–State Resistance [2]	V_{GS} = 10V	I_D = 17A			0.100
		V_{GS} = 10V	I_D = 27.4A			0.105
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}	I_D = 250µA	2		4
g_{fs}	Forward Transconductance [2]	V_{DS} ≥ 15V	I_{DS} = 27.4A	9		
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS} = 0	V_{DS} = 0.8BV_{DSS}			25
			T_J = 125°C			250
I_{GSS}	Forward Gate – Source Leakage	V_{GS} = 20V				100
I_{GSS}	Reverse Gate – Source Leakage	V_{GS} = –20V				–100
	DYNAMIC CHARACTERISTICS					
C_{iss}	Input Capacitance	V_{GS} = 0 V_{DS} = 25V f = 1MHz			3500	
C_{oss}	Output Capacitance				700	
C_{rss}	Reverse Transfer Capacitance				110	
C_{DC}	Drain – Case Capacitance				12	
Q_g	Total Gate Charge	V_{GS} = 10V		55		115
Q_{gs}	Gate – Source Charge	I_D = 27.4A		8		22
Q_{gd}	Gate – Drain (“Miller”) Charge	V_{DS} = 0.5BV_{DSS}		30		60
$t_{d(on)}$	Turn– On Delay Time	V_{DD} = 100V I_D = 27.4A R_G = 2.35Ω				35
t_r	Rise Time					190
$t_{d(off)}$	Turn–Off Delay Time					170
t_f	Fall Time					130
	SOURCE – DRAIN DIODE CHARACTERISTICS					
I_S	Continuous Source Current					27.4
I_{SM}	Pulse Source Current [1]					110
V_{SD}	Diode Forward Voltage [2]	I_S = 27.4A V_{GS} = 0	T_J = 25°C			1.9
t_{rr}	Reverse Recovery Time [2]	I_F = 27.4A	T_J = 25°C			950
Q_{rr}	Reverse Recovery Charge [2]	d_i / d_t ≤ 100A/µs	V_{DD} ≤ 50V			9.0
t_{on}	Forward Turn–On Time				Negligible	
	PACKAGE CHARACTERISTICS					
L_D	Internal Drain Inductance Measured from 6mm down drain lead to centre of die				8.7	
L_S	Internal Source Inductance Measured from 6mm down source lead to source bond pad				8.7	