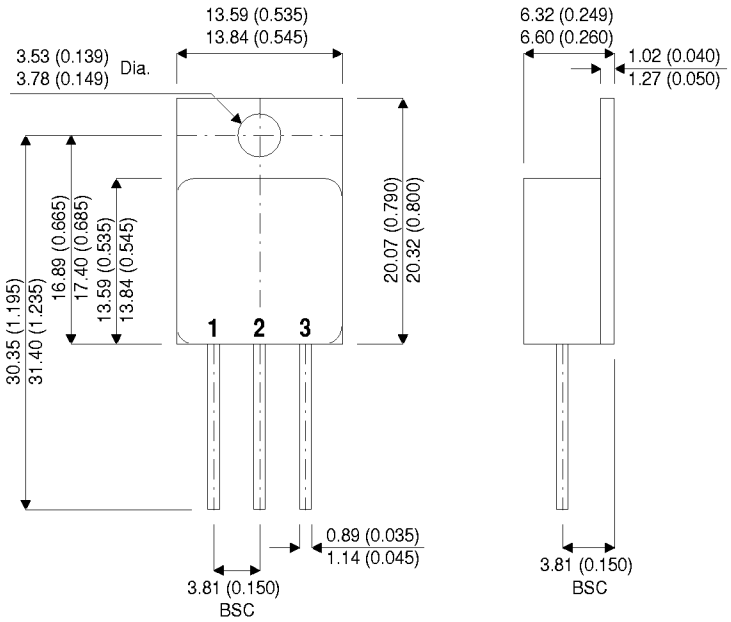
IRFM150

MECHANICAL DATA
Dimensions in mm (inches)



TO–254AA – Isolated Metal Package

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

N–CHANNEL POWER MOSFET

V_{DSS}	100V
$I_{D(cont)}$	34A
$R_{DS(on)}$	0.070Ω

FEATURES

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

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	34A
		@ V_{GS} = 10V , T_C = 100°C	21A
I_{DM}	Pulsed Drain Current		136A
P_D	Max. Power Dissipation	@ T_C = 25°C	150W
	Linear Derating Factor		1.2W / °C
I_L	Avalanche Current , Clamped [1]		34A
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

1) V_{DD} = 25V , Starting T_J = 25°C , L ≥ 200µH , R_G = 25Ω , Peak I_L = 34A

2) I_{SD} ≤ 34A , di/dt ≤ 70A / µS , V_{DD} ≤ BV_{DSS} , T_J ≤ 150°C , Suggested R_G = 2.35Ω

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Prelim. 9/95

SEME LAB

IRFM150

ELECTRICAL CHARACTERISTICS (T_J = 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			0.13		V/°C
$R_{DS(on)}$	Static Drain – Source On–State Resistance [2]	V_{GS} = 10V	I_D = 21A			0.070	Ω
		V_{GS} = 10V	I_D = 34A			0.081	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}	I_D = 250µA	2		4	V
g_{fs}	Forward Transconductance [2]	V_{DS} ≥ 15V	I_{DS} = 21A	9			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 V_{DS} = 25V f = 1MHz			3700		pF
C_{oss}	Output Capacitance				1100		
C_{rss}	Reverse Transfer Capacitance				200		
C_{DC}	Drain – Case Capacitance				12		
Q_g	Total Gate Charge	V_{GS} = 10V I_D = 34A V_{DS} = 0.5BV_{DSS}		50		125	nC
Q_{gs}	Gate – Source Charge			8		22	
Q_{gd}	Gate – Drain (“Miller”) Charge			15		65	
$t_{d(on)}$	Turn– On Delay Time	V_{DD} = 50V I_D = 34A R_G = 2.35Ω				35	ns
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					34	A
I_{SM}	Pulse Source Current [1]					136	
V_{SD}	Diode Forward Voltage [2]	I_S = 34A V_{GS} = 0	T_J = 25°C			1.8	V
t_{rr}	Reverse Recovery Time [2]	I_F = 34A	T_J = 25°C			500	ns
Q_{rr}	Reverse Recovery Charge [2]	d_i / d_t ≤ 100A/µs	V_{DD} ≤ 50V			2.9	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				8.7		nH
L_S	Internal Source Inductance Measured from 6mm down source lead to source bond pad				8.7		

Notes

1) Repetitive Rating – Pulse width limited by Maximum Junction Temperature

2) Pulse Test: Pulse Width ≤ 300µs, δ ≤ 2%.

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