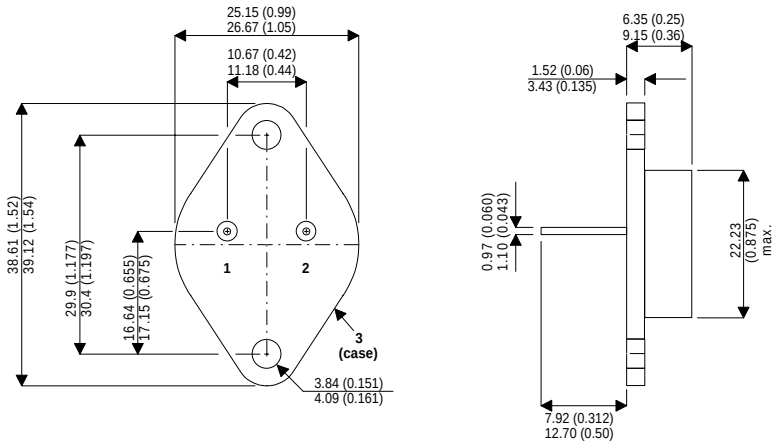
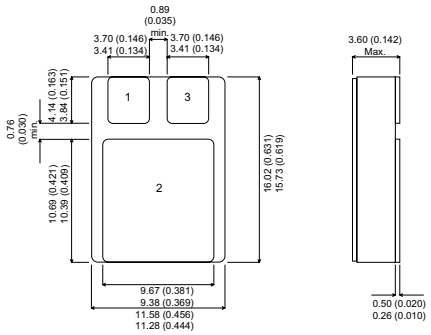
IRF9240
IRF9240–SMD

MECHANICAL DATA



TO–3 Package

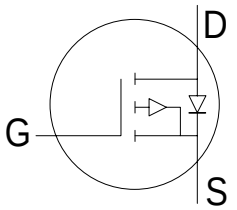
Pin 1 – Gate Pin 2 – Source Pin 3 – Drain



SMD1

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

P–CHANNEL POWER MOSFET



FEATURES

- **P–CHANNEL POWER MOSFET**
- **HIGH VOLTAGE**
- **INTEGRAL PROTECTION DIODE**
- **AVAILABLE IN TO-3 (TO-204AA) AND CERAMIC SURFACE MOUNT PACKAGES**

Note: IRFNxxxx also available with pins 1 and 3 reversed.

TO–3 — TO–3 (TO–204AA) Metal Package
TO–220 SM — TO–220 Ceramic Surface Mount Package

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

V_{DSS}	Drain – Source Voltage		–200V
V_{DGR}	Drain – Gate Voltage (R_{GS} = 20KΩ)		–200V
V_{GS}	Gate – Source Voltage		±20V
I_D	Continuous Drain Current	@ T_{case} = 25°C	–11A
		@ T_{case} = 100°C	–7.0A
I_{DM}	Pulsed Drain Current		–44A
P_D	Max. Power Dissipation	@ T_{case} = 25°C	125W
	Linear Derating Factor	(TO 3 package only)	1W / °C
I_{LM}	Inductive Current , Clamped		–44A
T_j	Operating Junction and	(TO 3 package only)	–55 to 150°C
T_{stg}	Storage Temperature Range		

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IRF9240
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ELECTRICAL RATINGS (T_{case} = 25°C unless otherwise stated)

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
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 Current (forward)	V_{GS} = –20V			–100	nA
	Gate – Source Leakage Current (reverse)	V_{GS} = 20V			100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = Max. Rating , V_{GS} = 0V			–250	µA
		V_{DS} = 0.8 x Max. Rating V_{GS} = 0V , T_{case} = 125°C			–1000	µA
$I_{D(ON)}$	On State Drain Current [1]	V_{DS} > $I_{D(ON)}$ x $R_{DS(ON)}$ Max V_{GS} = –10V	–11			A
$R_{DS(ON)}$	Static Drain – Source On-State Resistance	V_{GS} = –10V , I_D = –6A		0.35	0.5	Ω
g_{fs}	Forward Transconductance [1]	V_{DS} > $I_{D(ON)}$ x $R_{DS(ON)}$ Max I_D = –6A	4	6		S
C_{iss}	Input capacitance	V_{GS} = 0V V_{DS} = –25V f = 1MHz		1100	1300	pF
C_{oss}	Output capacitance			375	450	
C_{rss}	Reverse transfer capacitance			150	250	
Q_g	Total Gate Charge	V_{GS} = –15V I_D = –22A V_{DS} = 0.8 x Max. Rating		70	90	nC
Q_{gs}	Gate – Source Charge			55		
Q_{gd}	Gate – Drain (“Miller”) Charge			15		
$t_{d(on)}$	Turn–on Delay Time	V_{DD} = 0.5 x BV_{DSS} I_D = –6A Z_O = 4.7Ω		20	30	ns
t_r	Rise Time			10	15	
$t_{d(off)}$	Turn-off Delay Time			12	18	
t_f	Fall Time			8	12	
L_D	Internal Drain Inductance			5.0		nH
L_S	Internal Source Inductance			12.5		nH

THERMAL CHARACTERISTICS

	Characteristic		Min.	Typ.	Max.	Unit
$R_{\theta JC}$	Junction to Case	(TO-3 package only)			1.0	°C/W
$R_{\theta CS}$	Case to Sink	(TO-3 package only)		0.1		°C/W
$R_{\theta JA}$	Junction to Ambient				30	°C/W
T_L	Max. Lead Temperature 0.063” from case for 10 sec.	(TO-3 package only)		300		°C

SOURCE – DRAIN DIODE RATINGS AND CHARACTERISTICS

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current (Body Diode)				–11	A
I_{SM}	Pulsed Source Current [1] (Body Diode)				–44	
V_{SD}	Diode Forward Voltage [2]	V_{GS} = 0V , I_S = – 11A T_{case} = 25°C			–4.6	V
t_{rr}	Reverse Recovery Time	I_F = –11A , dI_F / dt = 100A/µs T_j = 150°C		270		ns
Q_{rr}	Reverse Recovery Charge	I_F = –11A , dI_F / dt = 100A/µs T_j = 150°C		2.0		µC

1) Pulse Test: Pulse Width < 300µS , Duty Cycle ≤ 2%

2) Repetitive Rating: Pulse Width limited by maximum junction temperature.

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