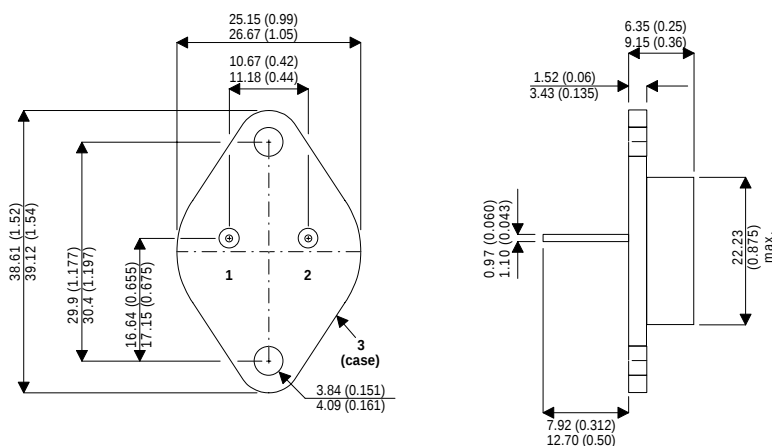
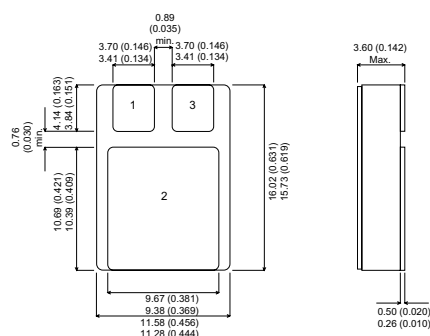


MECHANICAL DATA

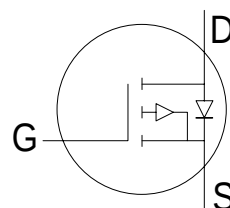


TO-3 Package
Pin 1 – Gate Pin 2 – Source Pin 3 – Drain



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 ($T_{case} = 25^{\circ}C$ unless otherwise stated)

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

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)} × 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)} × R _{DS(ON)} Max I _D = –6A	4	6		S
C _{iss}	Input capacitance	V _{GS} = 0V		1100	1300	pF
C _{oss}	Output capacitance	V _{DS} = –25V		375	450	
C _{rss}	Reverse transfer capacitance	f = 1MHz		150	250	
Q _g	Total Gate Charge	V _{GS} = –15V		70	90	nC
Q _{gs}	Gate – Source Charge	I _D = –22A		55		
Q _{gd}	Gate – Drain (“Miller”) Charge	V _{DS} = 0.8 x Max. Rating		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 _{θJC}	Junction to Case (TO-3 package only)			1.0	°C/W
R _{θCS}	Case to Sink (TO-3 package only)		0.1		°C/W
R _{θJA}	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.