

POWER MOSFET P CHANNEL

Devices

IRF9150

**25 AMPERE
100 VOLTS
0.15 W**

- REPETITIVE AVALANCHE RATINGS
- LOW $R_{DS(ON)}$
- LOW DRIVE REQUIREMENT
- DYNAMIC dv/dt RATING

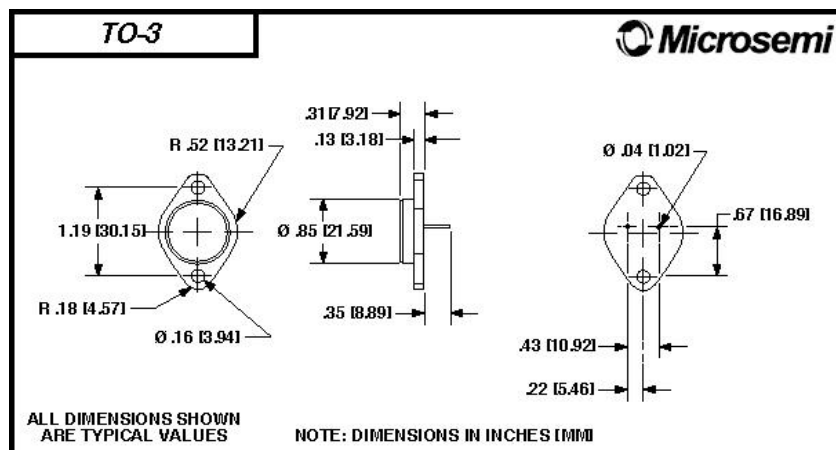
ABSOLUTE MAXIMUM RATINGS ($T_C = 25^{\circ}C$ unless otherwise noted)

Parameters / Test Conditions	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	-100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	-25	A
Pulsed Drain Current (1)	I_{DM}	-100	A
Power Dissipation	P_D	150	W
Operating Junction & Storage Temperature Range	T_J, T_{stg}	-55 to +150	$^{\circ}C$
Lead Temperature (1/16" from case for 10 secs.)	T_L	300	$^{\circ}C$

THERMAL RESISTANCE RATINGS

Thermal Resistance	Symbol	Typ.	Max.	Units
Junction-to-Case	R_{thJC}		0.83	$^{\circ}C/W$
Junction-to-Ambient	R_{thJA}		30	$^{\circ}C/W$
Case-to-Sink	R_{thCS}	0.1		$^{\circ}C/W$

(1)Pulse width limited by maximum junction temperature



ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

PARAMETERS / TEST CONDITIONS		SYMBOL	MIN.	TYP.	MAX.	UNITS
Drain-Source Breakdown Voltage $V_{GS} = 0\text{ V}, I_D = -250\ \mu\text{A}$		$V_{(BR)DSS}$	-100			V
Gate Threshold Voltage $V_{DS} = 0\text{ V}, V_{GS}, I_D = 250\ \mu\text{A}$		$V_{GS(th)}$				V
Gate-Body Leakage $V_{GS} = \text{At Rated } V_{GS}$		I_{GSS}			± 100	nA
Zero Gate Voltage Drain Current $V_{DS} = \text{max Rating}, V_{GS} = 0\text{ V}$		I_{DSS}			-250	μA
Zero Gate Voltage Drain Current $V_{DS} = 80\% \text{ max } V_{(BR)DSS}, V_{GS} = 0\text{ V}, T_J = 125^\circ\text{C}$		I_{DSS}			-1000	μA
Drain-Source On-State Resistance (2) $V_{GS} = 10\text{ V}, I_D = 10\text{ A}$		$r_{DS(on)}$			0.15	Ω
Forward Transconductance (2) $V_{DS} = 10\text{ V}, I_D = 12.5\text{ A}$		g_{fs}	4			S(Ω)
Input Capacitance	$V_{GS} = 0\text{ V}$	C_{iss}		2400		pF
Output Capacitance	$V_{DS} = -25\text{ V}$	C_{oss}		850		
Reverse Transfer Capacitance	$f = 1.0\text{ MHz}$	C_{rss}		400		
Total Gate Charge	$V_{DS} = V_{(BR)DSS} * 0.8$ $V_{GS} = 10\text{ V}, I_D = .25\text{ A}$ (Gate charge is essentially independent of operating temperature.)	Q_g			120	nC
Gate-Source Charge		Q_{gs}		14		
Gate -Drain Charge		Q_{gd}		42		
Turn-On Delay Time	$V_{dd} = -50\text{ V},$ $I_D = -25\text{ A},$ $R_G = 6.8\ \Omega$ (Switching time is essentially independent of operating temperature.)	$t_{d(on)}$			24	ns
Rise Time		t_r			160	
Turn-Off Delay Time		$t_{d(off)}$			100	
Fall Time		t_f			70	

SOURCE-DRAIN DIODE RATINGS & CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

PARAMETERS / TEST CONDITIONS		SYMBOL	MIN.	TYP.	MAX.	UNITS
Continuous Current		I_S			-25	A
Pulsed Current (1)		I_{SM}			-100	A
Forward Voltage (2) $I_F = I_S, V_{GS} = 0\text{ V}$		V_{SD}			1.5	V
Reverse Recovery Time $I_F = I_S, dI/dt = 100\text{ A}/\mu\text{S}$		t_{rr}			300	ns
Reverse Recovered Charge $I_F = I_S, dI/dt = 100\text{ A}/\mu\text{S}$		Q_{rr}	0.3		1.5	μC

(1) Pulsed width limited by maximum junction temperature.

(2) Pulse Test: Pulse width < 300 μsec . Duty cycle $\leq 2\%$.