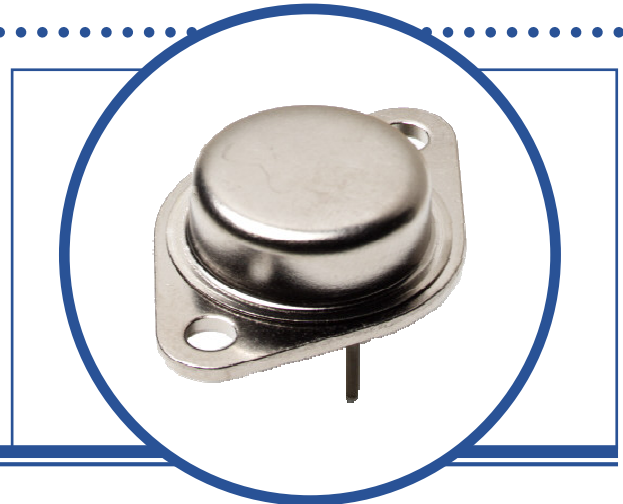


# N-CHANNEL POWER MOSFET

## IRF450

- Hermetically Sealed TO-3 Metal Package
- Simple Drive Requirements
- Screening Options Available



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

V <sub>DS</sub>	Drain – Source Voltage		500V
V <sub>GS</sub>	Gate – Source Voltage		±20V
I <sub>D</sub>	Continuous Drain Current	$T_C = 25^\circ\text{C}$	13A
I <sub>D</sub>	Continuous Drain Current	$T_C = 100^\circ\text{C}$	8A
I <sub>DM</sub>	Pulsed Drain Current <sup>(2)</sup>		52A
P <sub>D</sub>	Total Power Dissipation at	$T_C = 25^\circ\text{C}$	150W
		Derate Above $25^\circ\text{C}$	1.2W/°C
T <sub>J</sub>	Junction Temperature Range		-55 to +150°C
T <sub>stg</sub>	Storage Temperature Range		-55 to +150°C

### THERMAL PROPERTIES

Symbols	Parameters	Max.	Units
R <sub>θJC</sub>	Thermal Resistance, Junction To Case	0.83	°C/W
R <sub>θJA</sub>	Thermal Resistance, Junction To Ambient	30	

### INTERNAL PACKAGE INDUCTANCE

Symbols	Parameters	Typ.	Units
L <sub>D</sub>	Internal Drain Inductance	5	nH
L <sub>S</sub>	Internal Source Inductance	13	

#### Notes

- (1) Pulse Width ≤ 300us, δ ≤ 2%  
 (2) Repetitive Rating: Pulse Width limited by max. junction temperature.

# N-CHANNEL POWER MOSFET IRF450

## ELECTRICAL CHARACTERISTICS ( $T_C = 25^\circ\text{C}$ unless otherwise stated)

Symbols	Parameters	Test Conditions	Min.	Typ.	Max.	Units
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0$ $I_D = 250 \mu\text{A}$	500			V
$R_{DS(on)}^{(1)}$	Static Drain-Source On-State Resistance	$V_{GS} = 10\text{V}$ $I_D = 7\text{A}$			0.4	$\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$ $I_D = 250\mu\text{A}$	2		4	V
$g_{fs}^{(1)}$	Forward Transconductance	$V_{DS} \geq 15\text{V}$ $I_D = 7\text{A}$	6			S( $\Omega$ )
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = 500\text{V}$ $V_{GS} = 0$			250	$\mu\text{A}$
		$V_{DS} = 400\text{V}$ $T_C = 125^\circ\text{C}$			1000	
$I_{GSS}$	Forward Gate-Source Leakage	$V_{GS} = 20\text{V}$			100	nA
$I_{GSS}$	Reverse Gate-Source Leakage	$V_{GS} = -20\text{V}$			-100	

## DYNAMIC CHARACTERISTICS

$C_{iss}$	Input Capacitance	$V_{GS} = 0$		2700		$\mu\text{F}$
$C_{oss}$	Output Capacitance	$V_{DS} = 25\text{V}$		600		
$C_{rss}$	Reverse Transfer Capacitance	$f = 1.0\text{MHz}$		240		
$Q_g$	Total Gate Charge	$V_{GS} = 10\text{V}$		82		nC
$Q_{gs}$	Gate-Source Charge	$I_D = 16\text{A}$		40		
$Q_{gd}$	Gate-Drain Charge	$V_{DS} = 0.8 BV_{DSS}$		42		
$t_{d(on)}$	Turn-On Delay Time	$V_{DD} = 250\text{V}$			35	ns
$t_r$	Rise Time	$I_D = 12\text{A}$			190	
$t_{d(off)}$	Turn-Off Delay Time				170	
$t_f$	Fall Time	$R_G = 2.35\Omega$			130	

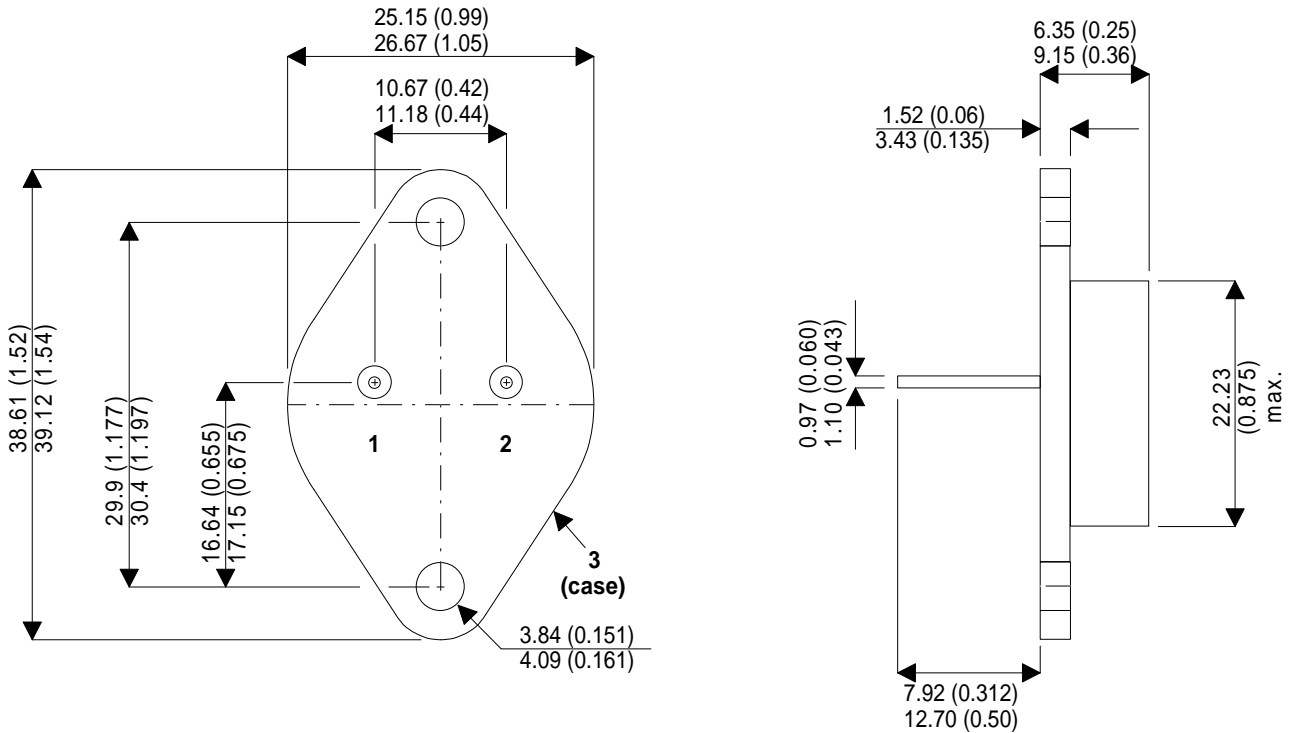
## SOURCE-DRAIN DIODE CHARACTERISTICS

$I_S$	Continuous Source Current				13	A
$I_{SM}^{(1)}$	Pulse Source Current				52	
$V_{SD}^{(1)}$	Diode Forward Voltage	$I_S = 13\text{A}$ $T_J = 25^\circ\text{C}$ $V_{GS} = 0$			1.4	V
$T_{rr}$	Reverse Recovery Time	$I_S = 13\text{A}$ $T_J = 150^\circ\text{C}$		1300		ns
$Q_{rr}^{(1)}$	Reverse Recovery Charge	$V_{DD} \leq 50\text{V}$ $di/dt = 100\text{A}/\mu\text{s}$		7.4		$\mu\text{C}$

# N-CHANNEL POWER MOSFET IRF450

## MECHANICAL DATA

Dimensions in mm (inches)



## TO3 (TO204-AA)

Pin 1 - Gate

Pin 2 - Source

Case - Drain