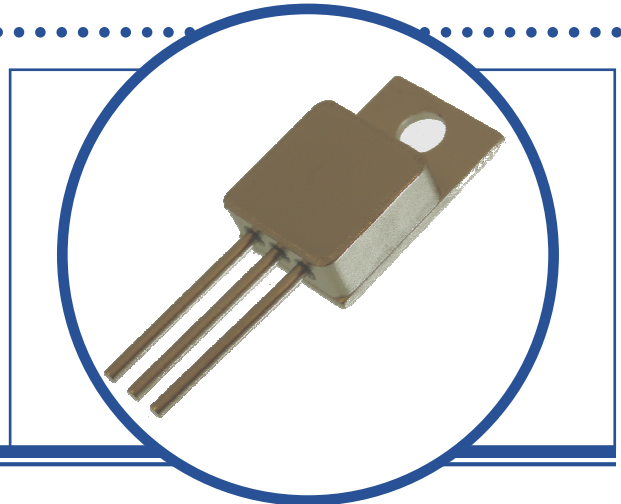


# N-CHANNEL POWER MOSFET

## IRFY240 / IRFY240M

- Low  $R_{DS(on)}$  MOSFET Transistor  
In A Hermetic Metal TO-257AB Package
- Designed For Switching, Power Supply,  
Motor Control and Amplifier Applications
- Screening Options Available



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

V <sub>DS</sub>	Drain – Source Voltage		200V
V <sub>GS</sub>	Gate – Source Voltage		±20V
I <sub>D</sub>	Continuous Drain Current	$T_C = 25^\circ\text{C}$	12A
I <sub>D</sub>	Continuous Drain Current	$T_C = 100^\circ\text{C}$	7.8A
I <sub>DM</sub>	Pulsed Drain Current <sup>(1)</sup>		48A
P <sub>D</sub>	Total Power Dissipation at	$T_C = 25^\circ\text{C}$	60W
	Derate Above 25°C		0.48W/°C
E <sub>AS</sub>	Single Pulse Avalanche Energy <sup>(2)(5)</sup>		330mJ
I <sub>AR</sub>	Avalanche Current <sup>(1)(5)</sup>		12A
E <sub>AR</sub>	Repetative Pulse Avalanche Energy <sup>(1)(5)</sup>		6mJ
dv/dt	Peak Diode Recovery <sup>(3)(5)</sup>		5V/ns
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	2.1	°C/W

### INTERNAL PACKAGE INDUCTANCE

Symbols	Parameters	Min.	Typ.	Max.	Units
L <sub>D</sub>	Internal Drain Inductance		8.7		nH
L <sub>S</sub>	Internal Source Inductance		8.7		

#### Notes

- (1) Repetitive Rating: Pulse width limited by maximum junction temperature
- (2) @V<sub>DD</sub> = 50V, Starting T<sub>J</sub> = 25°C, L = 4.5mH, Peak I<sub>L</sub> = 12A, V<sub>GS</sub> = 10V
- (3) @ I<sub>SD</sub> ≤ 12A, di/dt ≤ 150A/μs, V<sub>DD</sub> ≤ BV<sub>DSS</sub>, T<sub>J</sub> ≤ 150°C, Suggested R<sub>G</sub> = 9.1Ω
- (4) Pulse Width ≤ 300us, δ ≤ 2%
- (5) By Design Only, Not A Production Test.

Semelab Limited reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

# N-CHANNEL POWER MOSFET IRFY240 / IRFY240M

## ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise stated)

Symbols	Parameters	Test Conditions	Min.	Typ	Max.	Units
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> = 0 I <sub>D</sub> = 1.0mA	200			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C I <sub>D</sub> = 1.0mA		0.29		V/°C
R <sub>DS(on)</sub>	Static Drain-Source On-State Resistance	V <sub>GS</sub> = 10V I <sub>D</sub> = 7.8A <sup>(4)</sup>			0.19	Ω
		V <sub>GS</sub> = 10V I <sub>D</sub> = 12A <sup>(4)</sup>			0.22	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> I <sub>D</sub> = 250μA	2		4	V
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> ≥ 15V I <sub>DS</sub> = 7.8A <sup>(4)</sup>	6.1			S(Ω)
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>GS</sub> = 0 V <sub>DS</sub> = 0.8BV <sub>DSS</sub> T <sub>J</sub> = 125°C			25	μA
					250	
I <sub>GSS</sub>	Forward Gate-Source Leakage	V <sub>GS</sub> = 20V			100	nA
I <sub>GSS</sub>	Reverse Gate-Source Leakage	V <sub>GS</sub> = -20V			-100	

## DYNAMIC CHARACTERISTICS

C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> = 0		1300		pF
C <sub>oss</sub>	Output Capacitance	V <sub>DS</sub> = 25V		400		
C <sub>rss</sub>	Reverse Transfer Capacitance	f = 1.0MHz		130		
Q <sub>g</sub> <sup>(5)</sup>	Total Gate Charge	V <sub>GS</sub> = 10V			60	nC
Q <sub>gs</sub> <sup>(5)</sup>	Gate-Source Charge	I <sub>D</sub> = 12A			10.6	
Q <sub>gd</sub> <sup>(5)</sup>	Gate-Drain Charge	V <sub>DS</sub> = 0.5BV <sub>DSS</sub>			37.6	
t <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> = 100V			20	ns
t <sub>r</sub>	Rise Time	I <sub>D</sub> = 12A			152	
t <sub>d(off)</sub>	Turn-Off Delay Time				58	
t <sub>f</sub>	Fall Time	R <sub>G</sub> = 9.1Ω			67	

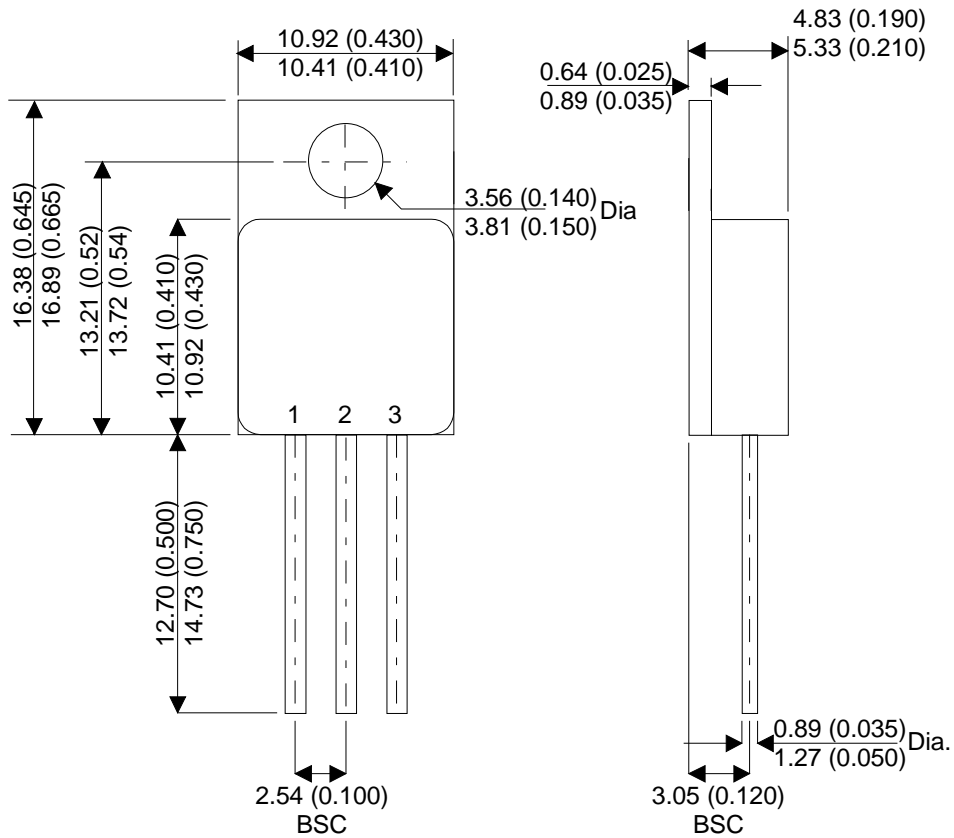
## SOURCE-DRAIN DIODE CHARACTERISTICS

I <sub>S</sub>	Continuous Source Current				12	A
I <sub>SM</sub>	Pulse Source Current <sup>(1)</sup>				48	
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> = 12A V <sub>GS</sub> = 0 <sup>(4)</sup>	T <sub>J</sub> = 25°C		1.5	V
t <sub>rr</sub>	Reverse Recovery Time	I <sub>S</sub> = 12A	T <sub>J</sub> = 25°C		500	ns
Q <sub>rr</sub>	Reverse Recovery Charge	V <sub>DD</sub> ≤ 50V	di/dt = 100A/μs <sup>(4)</sup>		5.3	μC

# N-CHANNEL POWER MOSFET IRFY240 / IRFY240M

## MECHANICAL DATA

Dimensions in mm (inches)



## TO220M (TO-257AB)

Part No.	Pin 1	Pin 2	Pin 3
IRFY240	Gate	Drain	Source
IRFY240M	Drain	Source	Gate