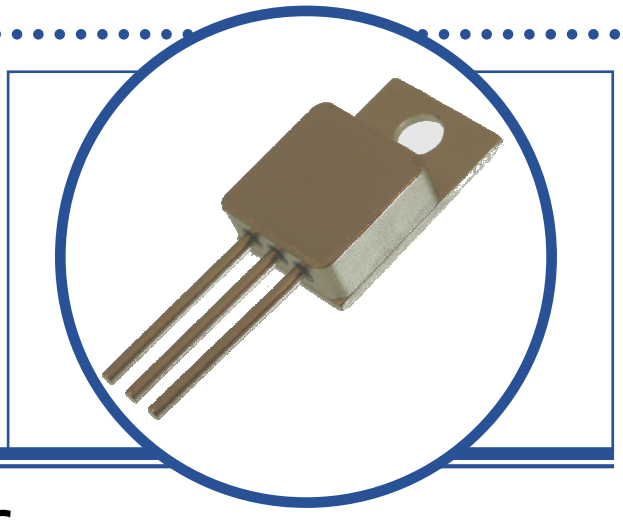
N-CHANNEL POWER MOSFET

TT electronics
Semelab Limited

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°C unless otherwise stated)

VDS	Drain – Source Voltage		200V
V_{GS}	Gate – Source Voltage		±20V
I_D	Continuous Drain Current	T_C = 25°C	12A
I_D	Continuous Drain Current	T_C = 100°C	7.8A
I_{DM}	Pulsed Drain Current (1)		48A
P_D	Total Power Dissipation at	T_C = 25°C	60W
		Derate Above 25°C	0.48W/°C
E_{AS}	Single Pulse Avalanche Energy (2)(5)		330mJ
I_{AR}	Avalanche Current (1)(5)		12A
E_{AR}	Repetative Pulse Avalanche Energy (1)(5)		6mJ
dv/dt	Peak Diode Recovery (3)(5)		5V/ns
T_J	Junction Temperature Range		-55 to +150°C
T_{stg}	Storage Temperature Range		-55 to +150°C

THERMAL PROPERTIES

Symbols	Parameters	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction To Case	2.1	°C/W

INTERNAL PACKAGE INDUCTANCE

Symbols	Parameters	Min.	Typ.	Max.	Units
L_D	Internal Drain Inductance		8.7		nH
L_S	Internal Source Inductance		8.7		

Notes

(1) Repetitive Rating: Pulse width limited by maximum junction temperature
(2) @V_{DD} = 50V, Starting T_J = 25°C, L = 4.5mH, Peak I_L = 12A, V_{GS} = 10V
(3) @ I_{SD} ≤ 12A, di/dt ≤ 150A/µs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C, Suggested R_G = 9.1Ω
(4) Pulse Width ≤ 300us, δ ≤ 2%
(5) By Design Only, Not A Production Test.

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ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise stated)

Symbols	Parameters	Test Conditions		Min.	Typ	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0	I_D = 1.0mA	200			V
$\frac{\Delta B_{VDSS}}{\Delta T_J}$	Temperature Coefficent of Breakdown Voltage	Reference to 25°C	I_D = 1.0mA		0.29		V/°C
$R_{DS(on)}$	Static Drain-Source On-State Resistance	V_{GS} = 10V	I_D = 7.8A (4)			0.19	Ω
		V_{GS} = 10V	I_D = 12A (4)			0.22	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}	I_D = 250µA	2		4	V
g_{fs}	Forward Transconductance	V_{DS} ≥ 15V	I_{DS} = 7.8A (4)	6.1			S(℧)
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS} = 0	V_{DS} = 0.8BV_{DSS}			25	µA
			T_J = 125°C			250	
I_{GSS}	Forward Gate-Source Leakage	V_{GS} = 20V				100	nA
I_{GSS}	Reverse Gate-Source Leakage	V_{GS} = -20V				-100	

DYNAMIC CHARACTERISTICS

C_{iss}	Input Capacitance	V_{GS} = 0		1300		pF
C_{oss}	Output Capacitance	V_{DS} = 25V		400		
C_{rss}	Reverse Transfer Capacitance	f = 1.0MHz		130		
Q_g (5)	Total Gate Charge	V_{GS} = 10V			60	nC
Q_{gs} (5)	Gate-Source Charge	I_D = 12A			10.6	
Q_{gd} (5)	Gate-Drain Charge	V_{DS} = 0.5BV_{DSS}			37.6	
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = 100V			20	ns
t_r	Rise Time	I_D = 12A			152	
$t_{d(off)}$	Turn-Off Delay Time				58	
t_f	Fall Time	R_G = 9.1Ω			67	

SOURCE-DRAIN DIODE CHARACTERISTICS

I_S	Continuous Source Current				12	A
I_{SM}	Pulse Source Current (1)				48	
V_{SD}	Diode Forward Voltage	I_S = 12A V_{GS} = 0 (4)	T_J = 25°C		1.5	V
t_{rr}	Reverse Recovery Time	I_S = 12A	T_J = 25°C		500	ns
Q_{rr}	Reverse Recovery Charge	V_{DD} ≤ 50V	di/dt = 100A/µs (4)		5.3	µC

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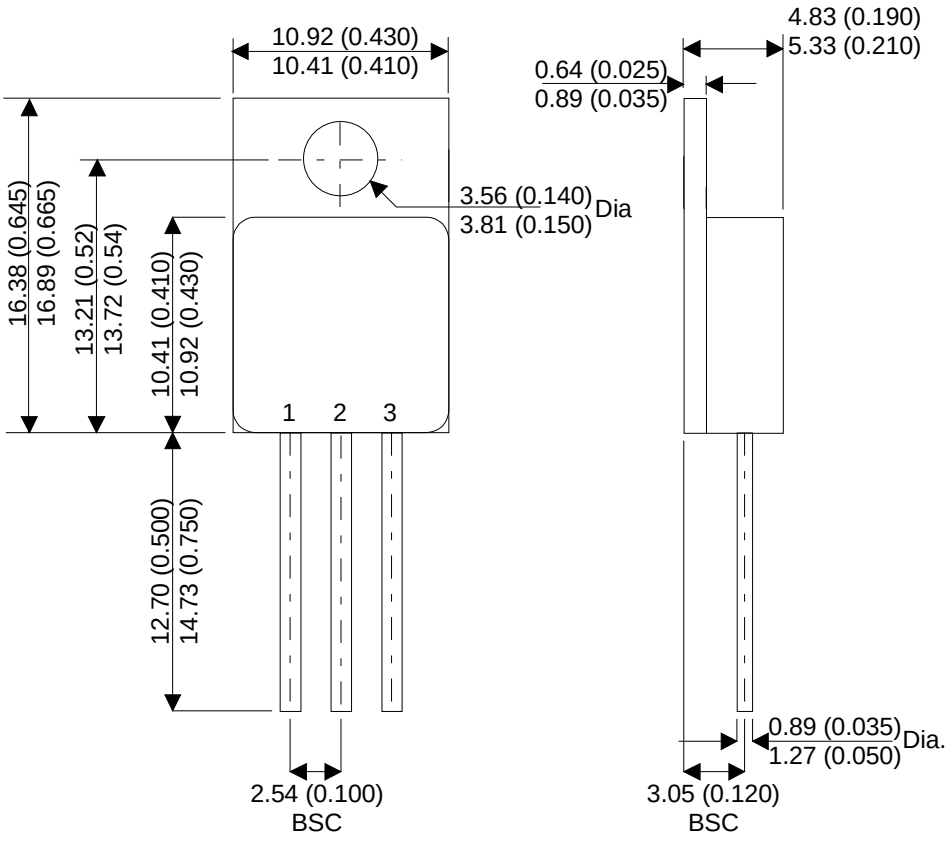
MECHANICAL DATA

Dimensions in mm (inches)



TO220M (TO-257AB)

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