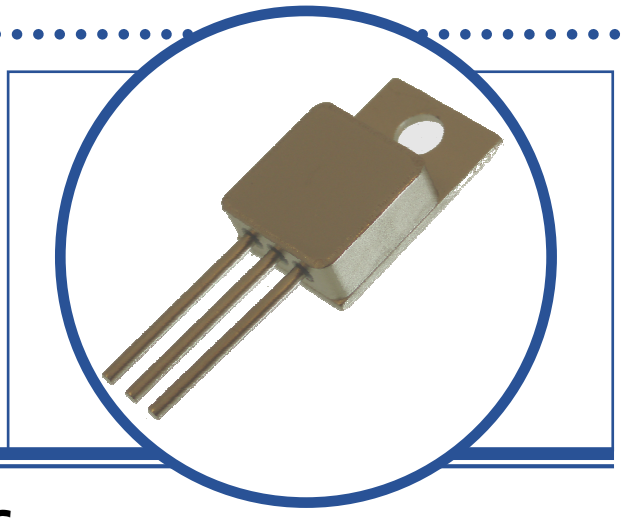
N-CHANNEL POWER MOSFET

TT electronics
Semelab Limited

IRFY330

- BV_{DSS} = 400V, 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		400V
V_{GS}	Gate – Source Voltage		±20V
I_D	Continuous Drain Current	T_C = 25°C	5.5A
I_D	Continuous Drain Current	T_C = 100°C	3.5A
I_{DM}	Pulsed Drain Current (1)		22A
P_D	Total Power Dissipation at	T_C = 25°C	75W
		Derate Above 25°C	0.6W/°C
E_{AS}	Single Pulse Avalanche Energy (2)(5)		1.7mJ
I_{AR}	Avalanche Current (1)(5)		5.5A
dv/dt	Peak Diode Recovery (3)(5)		4V/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	1.67	°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, Peak I_L = 5.5A,
(3) @ I_{SD} ≤ 5.5A, di/dt ≤ 90A/µs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C, Suggested R_G = 7.5Ω
(4) Pulse Width ≤ 380us, 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 = 250µA	400			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}	I_D = 250µA	2		4	V
I_{GSS}	Forward Gate-Source Leakage	V_{GS} = 20V				100	nA
I_{GSS}	Reverse Gate-Source Leakage	V_{GS} = -20V				-100	
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS} = 0	V_{DS} = 400V			250	µA
$I_{D(on)}$	On-State Drain Current	V_{GS} = 10V	V_{DS} ≥ 10V	5.5			A
$R_{DS(on)}$	Static Drain-Source On-State Resistance	V_{GS} = 10V	I_D = 3A (4)			1.0	Ω
g_{fs}	Forward Transconductance	V_{DS} ≥ 10V	I_{DS} = 3A (4)	3			S(℧)

DYNAMIC CHARACTERISTICS

C_{iss}	Input Capacitance	V_{GS} = 0		620		pF
C_{oss}	Output Capacitance	V_{DS} = 25V		200		
C_{rss}	Reverse Transfer Capacitance	f = 1.0MHz		75		
Q_g (5)	Total Gate Charge	V_{GS} = 10V			39	nC
Q_{gs} (5)	Gate-Source Charge	I_D = 5.5A			6	
Q_{gd} (5)	Gate-Drain Charge	V_{DS} = 0.5BV_{DSS}			20	
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = 200V			30	ns
t_r	Rise Time	I_D = 5.5A			40	
$t_{d(off)}$	Turn-Off Delay Time				80	
t_f	Fall Time	R_G = 7.5Ω			35	

SOURCE-DRAIN DIODE CHARACTERISTICS

I_S	Continuous Source Current					5.5	A
I_{SM}	Pulse Source Current (1)					22	
V_{SD}	Diode Forward Voltage	I_S = 5.5A V_{GS} = 0 (4)	T_J = 25°C			1.6	V
t_{rr}	Reverse Recovery Time	I_S = 5.5A	T_J = 25°C		600		ns
Q_{rr}	Reverse Recovery Charge	V_{DD} ≤ 50V	di/dt = 100A/µs (4)		4		µC

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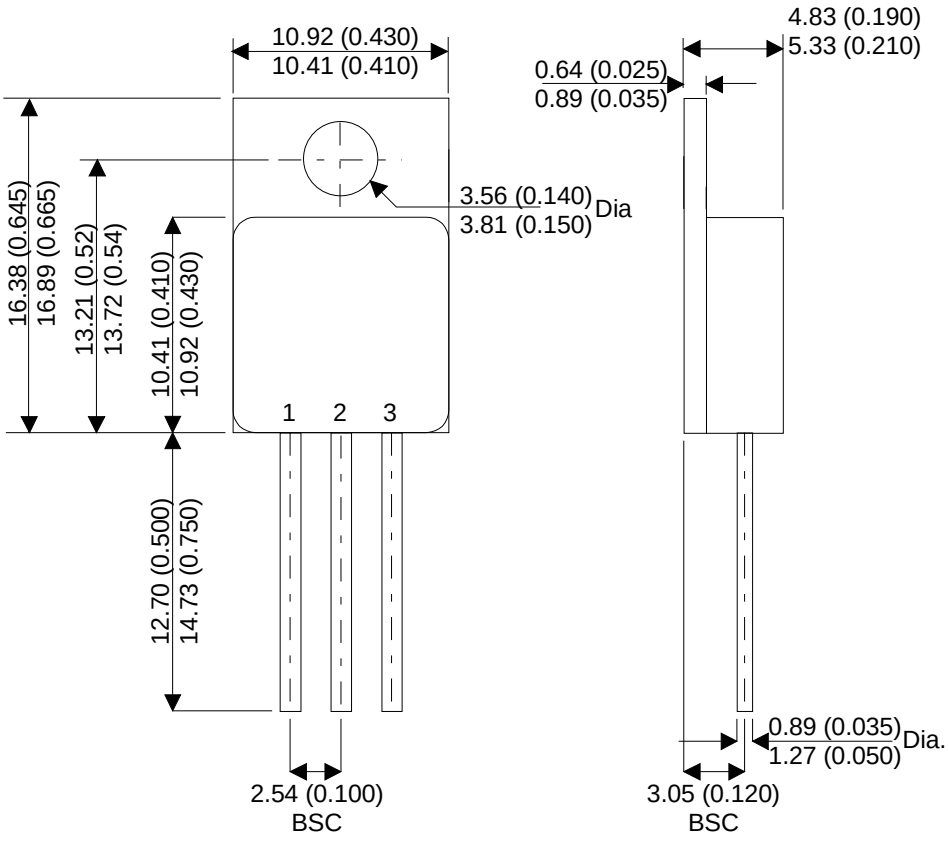
MECHANICAL DATA

Dimensions in mm (inches)



TO220M (TO-257AB)

Pin 1 - Gate Pin 2 - Drain Pin 3 - Source