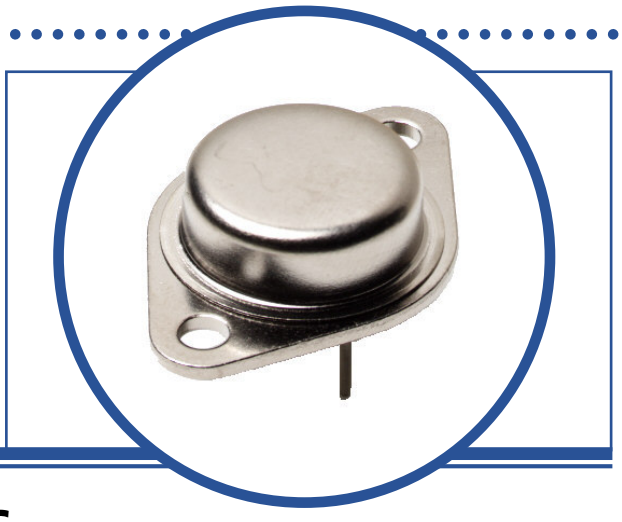
N-CHANNEL POWER MOSFET

TT electronics
Semelab Limited

IRF240

- Low $R_{DS(on)}$ MOSFET Transistor In A Hermetic Metal 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	18A
I_D	Continuous Drain Current	T_C = 100°C	11A
I_{DM}	Pulsed Drain Current (1)		72A
P_D	Total Power Dissipation at	T_C = 25°C	125W
		Derate Above 25°C	1.0W/°C
E_{AS}	Single Pulse Avalanche Energy (2)		12.5mJ
dv/dt	Peak Diode Recovery (3)		5V/ns
T_J	Junction Temperature Range		-55 to +150°C
T_{stg}	Storage Temperature Range		-55 to +150°C

THERMAL PROPERTIES

Symbols	Parameters	Min.	Typ.	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction To Case			1.0	°C/W

INTERNAL PACKAGE INDUCTANCE

Symbols	Parameters	Min.	Typ.	Max.	Units
L_D	Internal Drain Inductance		5		nH
L_S	Internal Source Inductance		13		

Notes

(1) Repetitive Rating: Pulse width limited by maximum junction temperature

(2) @V_{DD} = 50V, L ≥ 2.1mH, Peak I_L = 18A, Starting T_J = 25°C

(3) @ I_{SD} ≤ 18A, di/dt ≤ 160A/µs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C, Suggested R_G = 9.1Ω

(4) Pulse Width ≤ 300us, δ ≤ 2%

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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 = 11A (4)			0.18	Ω
		V_{GS} = 10V	I_D = 18A (4)			0.21	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}	I_D = 250µA	2		4	V
g_{fs}	Forward Transconductance	V_{DS} ≥ 15V	I_{DS} = 11A (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	Total Gate Charge	V_{GS} = 10V		32	60	nC
Q_{gs}	Gate-Source Charge	I_D = 18A		2.2	10.6	
Q_{gd}	Gate-Drain Charge	V_{DS} = 0.5BV_{DSS}		14	38	
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = 100V			20	ns
t_r	Rise Time	I_D = 18A			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				18	A
I_{SM}	Pulse Source Current (1)				72	
V_{SD}	Diode Forward Voltage	I_S = 18A V_{GS} = 0 (4)	T_J = 25°C		1.5	V
t_{rr}	Reverse Recovery Time	I_S = 18A	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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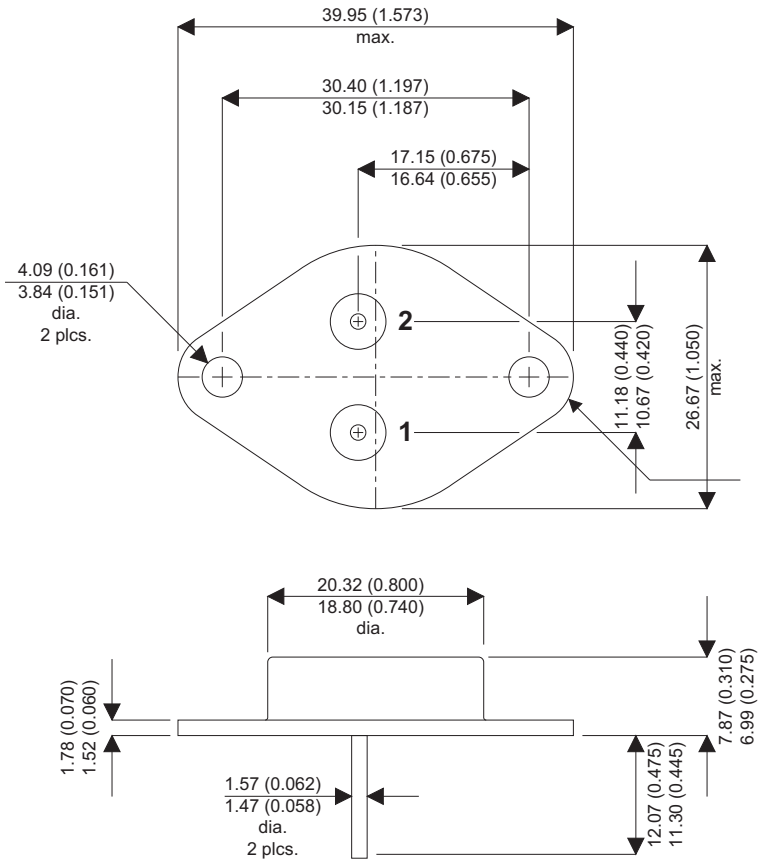
MECHANICAL DATA

Dimensions in mm (inches)



TO3 (TO-204AE)

Pin 1 - Gate Pin 2 - Source Case - Drain