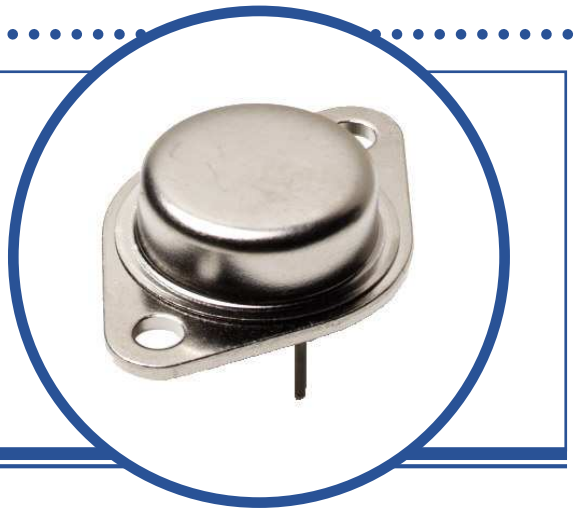
N-CHANNEL POWER MOSFET

TT electronics
Semelab Limited

IRFAG50

- Low $R_{DS(on)}$ Power MOSFET Transistor In A Hermetic Metal TO3 Package
- Designed For Switching, Power Supply, Motor Control and Amplifier Applications
- Screening Options Available



ABSOLUTE MAXIMUM RATINGS (T_C = 25°C unless otherwise stated)

V_{DS}	Drain – Source Voltage		1000V
V_{GS}	Gate – Source Voltage		±20V
I_D	Continuous Drain Current	T_C = 25°C	5.6A
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	150W
		Derate Above 25°C	1.2W/°C
E_{AS}	Single Pulse Avalanche Energy (2)		860mJ
dv/dt	Peak Diode Recovery (3)		1.0V/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			0.83	°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 = 52 mH, Peak I_L = 5.6A, Starting T_J = 25°C, R_G = 25Ω

(3) @ I_{SD} ≤ 5.6A, di/dt ≤ 120A/µs, V_{DD} ≤ 600V, T_J ≤ 150°C, Suggested R_G = 6.2Ω

(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 = 250µA	1000			V
$R_{DS(on)}$	Static Drain-Source On-State Resistance	V_{GS} = 10V I_D = 3.2A (4)		1.7	2.0	Ω
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS} I_D = 250µA	2		4	V
g_{fs}	Forward Transconductance	V_{DS} ≥ 15 I_{DS} = 3.5A (4)	5.2			S(℧)
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS} = 0 V_{DS} = 0.8 × $V_{DS(MAX)}$			250	µA
		T_J = 125°C			1000	
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		2800		pF
C_{oss}	Output Capacitance	V_{DS} = 25V		400		
C_{rss}	Reverse Transfer Capacitance	f = 1.0MHz		180		
Q_g	Total Gate Charge	V_{GS} = 10V		130	200	nC
Q_{gs}	Gate-Source Charge	I_D = 5.6A		13	20	
Q_{gd}	Gate-Drain Charge	V_{DS} = 0.4 × $V_{DS(MAX)}$		74	110	
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = 500V		20	30	ns
t_r	Rise Time	I_D = 5.6A		29	44	
$t_{d(off)}$	Turn-Off Delay Time			140	210	
t_f	Fall Time	R_G = 6.2Ω R_D = 91Ω		40	60	

SOURCE-DRAIN DIODE CHARACTERISTICS

I_S	Continuous Source Current				5.6	A
I_{SM}	Pulse Source Current (1)				22	
V_{SD}	Diode Forward Voltage	I_S = 5.6A T_J = 25°C V_{GS} = 0			1.8	V
t_{rr}	Reverse Recovery Time	I_S = 5.6A T_J = 25°C	260	580	1200	ns
Q_{rr}	Reverse Recovery Charge	V_{DD} ≤ 50V di/dt = 100A/µs (4)	1.8	3.9	8.4	µC

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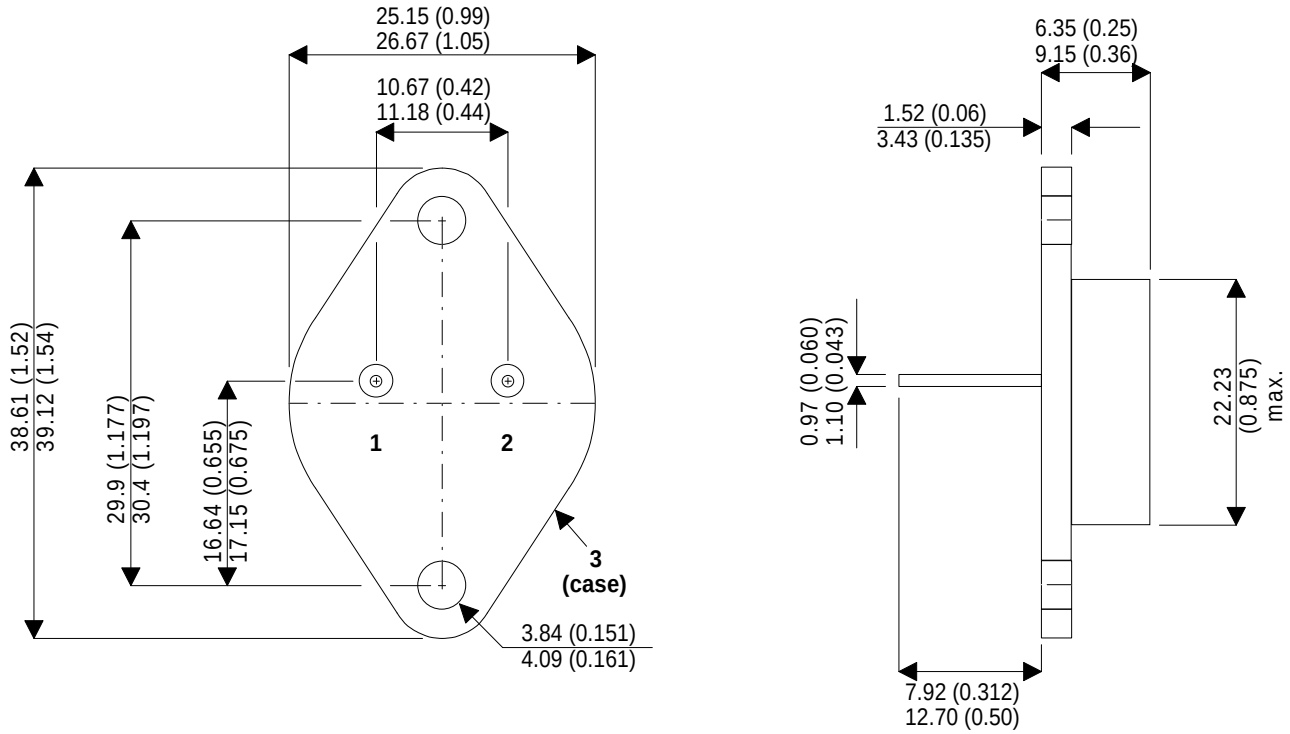
MECHANICAL DATA

Dimensions in mm (inches)



TO3 (TO-204AA)

Pin 1 - Gate Pin 2 - Source Case - Drain