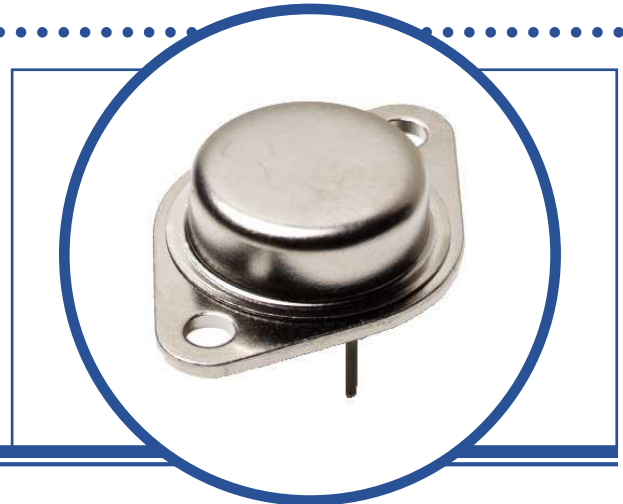


N-CHANNEL POWER MOSFET

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

V_{DS}	Drain – Source Voltage		1000V
V_{GS}	Gate – Source Voltage		$\pm 20\text{V}$
I_D	Continuous Drain Current	$T_C = 25^\circ\text{C}$	5.6A
I_D	Continuous Drain Current	$T_C = 100^\circ\text{C}$	3.5A
I_{DM}	Pulsed Drain Current ⁽¹⁾		22A
P_D	Total Power Dissipation at	$T_C = 25^\circ\text{C}$	150W
	Derate Above 25°C		1.2W/ $^\circ\text{C}$
E_{AS}	Single Pulse Avalanche Energy ⁽²⁾		860mJ
dv/dt	Peak Diode Recovery ⁽³⁾		1.0V/ns
T_J	Junction Temperature Range		-55 to $+150^\circ\text{C}$
T_{stg}	Storage Temperature Range		-55 to $+150^\circ\text{C}$

THERMAL PROPERTIES

Symbols	Parameters	Min.	Typ.	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction To Case			0.83	$^\circ\text{C/W}$

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) @ $V_{DD} = 50\text{V}$, $L = 52\text{mH}$, Peak $I_L = 5.6\text{A}$, Starting $T_J = 25^\circ\text{C}$, $R_G = 25\Omega$
- (3) @ $I_{SD} \leq 5.6\text{A}$, $di/dt \leq 120\text{A}/\mu\text{s}$, $V_{DD} \leq 600\text{V}$, $T_J \leq 150^\circ\text{C}$, Suggested $R_G = 6.2\Omega$
- (4) Pulse Width $\leq 300\mu\text{s}$, $\delta \leq 2\%$

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 IRFAG50

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} ≥ 100 I _{DS} = 3.2A ⁽⁴⁾	5.2	7.8		S(Ω)
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} = 0 V _{DS} = 0.8 × V _{DS(MAX)} T _J = 125°C			250 1000	μA
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	

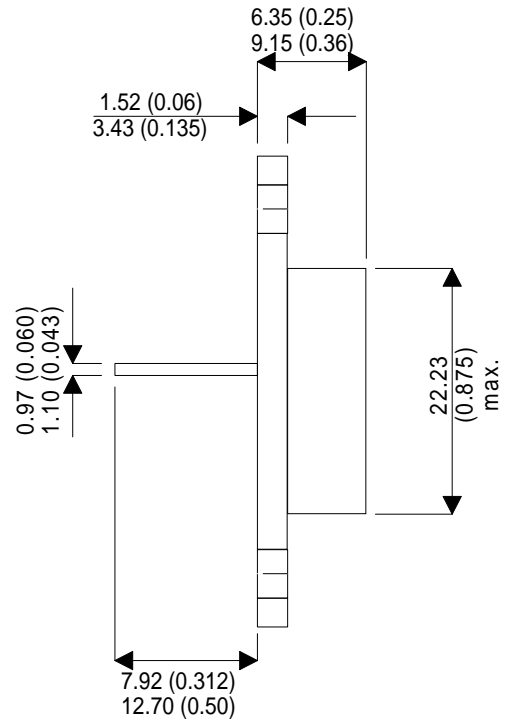
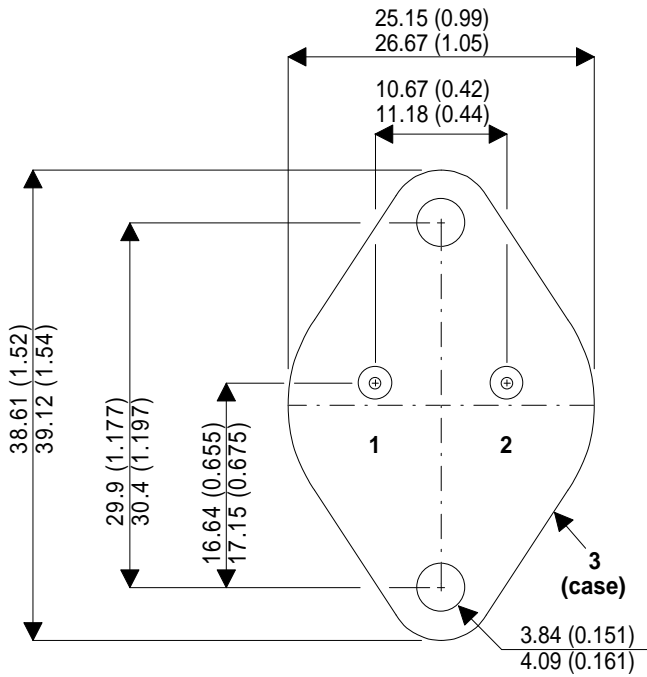
SOURCE-DRAIN DIODE CHARACTERISTICS

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

N-CHANNEL POWER MOSFET IRFAG50

MECHANICAL DATA

Dimensions in mm (inches)



TO3 (TO-204AA)

Pin 1 - Gate

Pin 2 - Source

Case - Drain