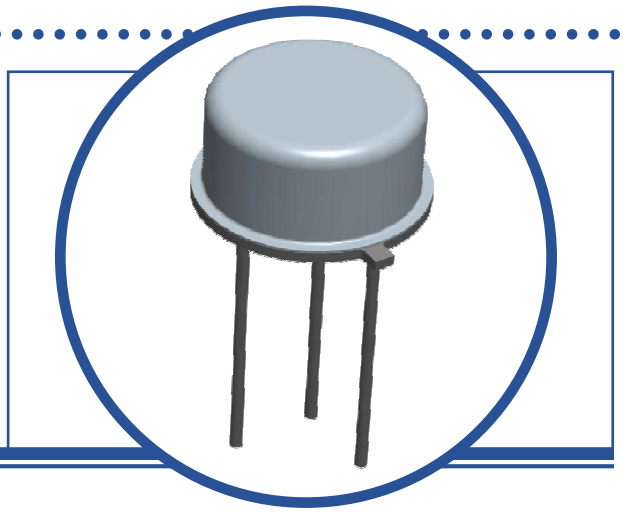
P-CHANNEL POWER MOSFET

TT electronics
Semelab Limited

IRFF9130 / 2N6849



- MOSFET Transistor In A Hermetic Metal TO-205AF Package
- Single Pulse Avalanche Energy Rated
- 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		-100V
V_{DG}	Drain – Gate Voltage	R_{GS} = 20KΩ	-100V
V_{GS}	Gate – Source Voltage		±20V
I_D	Continuous Drain Current	T_C = 25°C	-6.5A
I_D	Continuous Drain Current	T_C = 100°C	-4.1A
I_{DM}	Pulsed Drain Current (1)		-25A
P_D	Total Power Dissipation at	T_C = 25°C	25W
		Derate Above 25°C	0.2W/°C
E_{AS}	Single Pulse Avalanche Energy (2)(4)		500mJ
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	5	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction To Ambient	175	°C/W

INTERNAL PACKAGE INDUCTANCE

Symbols	Parameters	Typ.	Units
$L_S + L_D$	Total Inductance	7	nH

Notes
(1) Repetitive Rating: Pulse width limited by maximum junction temperature
(2) @V_{DD} = -25V, Starting T_J = 25°C, L = 17.25mH, Peak I_L = -6.5A, V_{GS} = -10V
(3) Pulse Width ≤ 300us, δ ≤ 2%
(4) 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	-100			V
$\frac{\Delta B_{VDSS}}{\Delta T_J}$	Temperature Coefficent of Breakdown Voltage	Reference to 25°C	I_D = -1.0mA		-0.1		V/°C
$R_{DS(on)}$	Static Drain-Source On-State Resistance	V_{GS} = -10V	I_D = -4.1A (3)			0.3	Ω
			T_J = 125°C			0.54	
		V_{GS} = -10V	I_D = -6.5A (3)			0.32	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}	I_D = -250µA	-2		-4	V
			T_J = 125°C	-1.0			
			T_J = -55°C			-5	
g_{fs}	Forward Transconductance	V_{DS} ≥ -5V	I_{DS} = -4.1A (3)	2.5	3.5	7.5	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
			T_J = 125°C			200	
I_{GSS}	Reverse Gate-Source Leakage	V_{GS} = -20V				-100	
			T_J = 125°C			-200	

DYNAMIC CHARACTERISTICS

C_{iss}	Input Capacitance	V_{GS} = 0		800		pF
C_{oss}	Output Capacitance	V_{DS} = -25V		350		
C_{rss}	Reverse Transfer Capacitance	f = 1.0MHz		125		
Q_g (4)	Total Gate Charge	V_{GS} = -10V			34.8	nC
Q_{gs} (4)	Gate-Source Charge	I_D = -6.5A			6.8	
Q_{gd} (4)	Gate-Drain Charge	V_{DS} = 0.5BV_{DSS}			23.1	
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = -40V			60	ns
t_r	Rise Time	I_D = -4.1A			140	
$t_{d(off)}$	Turn-Off Delay Time				140	
t_f	Fall Time	R_G = 7.5Ω			140	

SOURCE-DRAIN DIODE CHARACTERISTICS

I_S	Continuous Source Current				-6.5	A
I_{SM}	Pulse Source Current (1)				-25	
V_{SD}	Diode Forward Voltage	I_S = -6.5A V_{GS} = 0 (4)	T_J = 25°C		-4.3	V
t_{rr}	Reverse Recovery Time	I_S = -6.5A	T_J = 25°C		250	ns
Q_{rr}	Reverse Recovery Charge	V_{DD} ≤ -50V	di/dt = 100A/µs (3)		3	µC

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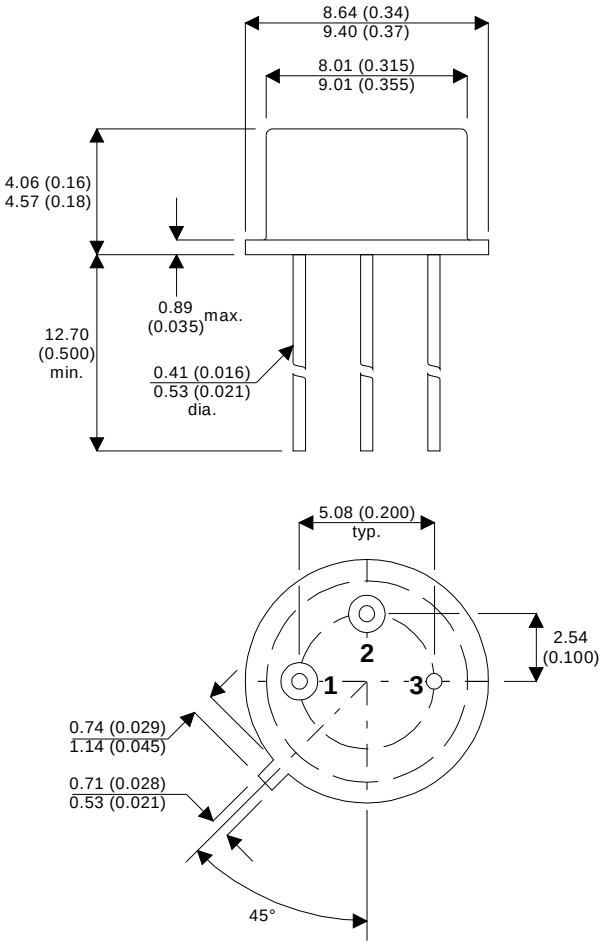
MECHANICAL DATA

Dimensions in mm (inches)



TO-39 (TO-205AF)

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