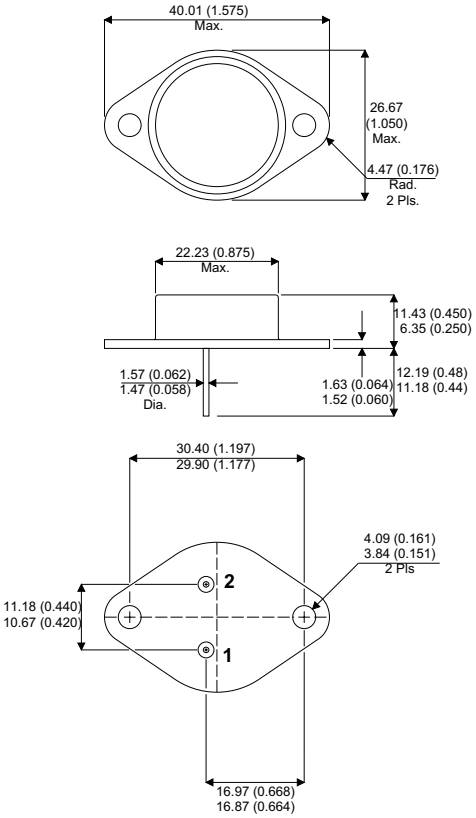
IRF5210

MECHANICAL DATA

Dimensions in mm (inches)



TO–3 Metal Package

Pin 1 – Gate Pin 2 – Source Case – Drain

P–CHANNEL MOSFET IN A TO3 FOR HIGH RELIABILITY APPLICATIONS.

V_{DSS}	100V
I_D	40A
$R_{DS(on)}$	0.07Ω

FEATURES

- **FAST SWITCHING**
- **SCREENING OPTIONS AVAILABLE**

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C unless otherwise stated)

V_{GS}	Gate – Source Voltage		±20V
I_D	Continuous Drain Current	(T_{case} = 25°C)	40A
I_D	Continuous Drain Current	(T_{case} = 100°C)	29A
I_{DM}	Pulsed Drain Current [1]		140A
P_D	Power Dissipation		200W
	Linear Derating Factor		1.3W/°C
E_{AS}	Single Pulse Avalanche Energy [2]		780mJ
E_{AR}	Repetitive Avalanche Energy [1]		21mJ
T_J , T_{stg}	Operating Junction and Storage Temperature Range		–55 to +150°C
$R_{\theta JC}$	Junction – Case Thermal Resistance		0.75°C/W
$R_{\theta JA}$	Junction – Ambient Thermal Resistance		62°C/W

Notes

1) Repetitive rating; pulse width limited by max. junction temperature.
2) V_{DD} = –25V , L = 3.5mH , R_G = 25Ω , I_{AS} = –21A , Starting T_J = 25°C

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SEME LAB

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ELECTRICAL CHARACTERISTICS (T_{case} = 25°C unless otherwise stated)

	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
	STATIC ELECTRICAL RATINGS						
$V_{(BR)DSS}$	Drain – Source Breakdown Voltage	V_{GS} = 0V	I_D = –250μA	–100			V
$R_{DS(on)}$	Static Drain to Source On Resistance [4]	V_{GS} = –10V	I_D = –24A			0.07	Ω
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}	I_D = –250μA	– 2.0		–4.0	V
g_{fs}	Forward Transconductance	V_{DS} = –8V	I_D = –20A	14			S
I_{DSS}	Drain to Source Leakage Current	V_{DS} = 100V	V_{GS} = 0V			–25	μA
		V_{DS} = 100V	V_{GS} = 0V T_J = 125°C			–250	
I_{GSS}	Gate to Source Forward Leakage	V_{GS} = 20V				100	nA
I_{GSS}	Gate to Source Reverse Leakage	V_{GS} = -20V				–100	
	DYNAMIC CHARACTERISTICS						
C_{iss}	Input Capacitance	V_{GS} = 0V			2700		pF
C_{oss}	Output Capacitance	V_{DS} = –25V			790		
C_{rss}	Reverse Transfer Capacitance	f = 1MHz			450		
Q_g	Total Gate Charge[4]	I_D = –21A				180	nC
Q_{gs}	Gate – Source Charge[4]	V_{DS} = –80V	V_{GS} = –10V			25	
Q_{gd}	Gate – Drain (“Miller”) Charge[4]					97	
$t_{d(on)}$	Turn–On Delay Time[4]	V_{DD} = –50V			17		ns
t_r	Rise Time[4]	I_D = –21A			86		
$t_{d(off)}$	Turn–Off Delay Time[4]	R_G = 2.5Ω			79		
t_f	Fall Time[4]	R_G = 2.4Ω			81		
	SOURCE – DRAIN CHARACTERISTICS						
I_S	Continuous Source Current	MOSFET symbol showing the				–40	A
I_{SM}	Pulse Source Current [1]	integral reverse p-n junction				–140	
V_{SD}	Diode Forward Voltage [4]	T_J = 25°C, I_S = 21A, V_{GS} = 0V				–1.6	V
t_{rr}	Reverse Recovery Time [4]	d_i / d_t ≤ –100A/μs			170	260	ns
Q_{rr}	Reverse Recovery Charge [4]	T_J = 25°C, I_F = -21A			1.2	1.8	μC
t_{on}	Forward Turn–On Time	negligible					—
	PACKAGE CHARACTERISTICS						
L_D	Internal Drain	Between lead, 6mm(0.25in.) from				4.5	nH
L_S	Internal Source Inductance	package and center of die contact				7.5	

Notes

1) Repetitive rating; pulse width limited by max. junction temperature.
2) V_{DD} = –25V , L = 3.5mH , R_G = 25Ω , I_{AS} = –21A , Starting T_J = 25°C
3) I_{SD} ≤ –6.5A , di/dt ≤ –100A/μs , V_{DD} ≤ BV_{DSS} , T_J ≤ 150°C , Suggested R_G = 7.5Ω
4) Pulse Test: Pulse Width ≤ 300ms, δ ≤ 2%

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