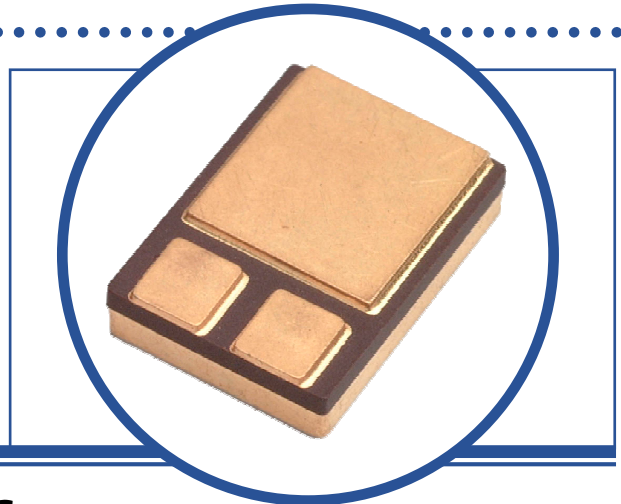


P-CHANNEL POWER MOSFET

IRFN5210

- Low $R_{DS(on)}$ Power MOSFET Transistor, Fully Avalanche Rated
- Hermetic Ceramic Surface Mount package
- Designed For Fast Switching Applications
- Screening Options Available



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

V_{DS}	Drain – Source Voltage		-100V
V_{GS}	Gate – Source Voltage		$\pm 20\text{V}$
I_D	Continuous Drain Current	$T_C = 25^\circ\text{C}$	-34A
I_D	Continuous Drain Current	$T_C = 100^\circ\text{C}$	-24A
I_{DM}	Pulsed Drain Current ⁽¹⁾		-120A
P_D	Total Power Dissipation at	$T_C = 25^\circ\text{C}$	150W
	Derate Above 25°C		1.0W/ $^\circ\text{C}$
E_{AS}	Single Pulse Avalanche Energy ⁽²⁾		780mJ
dv/dt	Peak Diode Recovery ⁽³⁾		-5.0V/ns
T_J	Junction Temperature Range		-55 to $+175^\circ\text{C}$
T_{stg}	Storage Temperature Range		-55 to $+175^\circ\text{C}$

THERMAL PROPERTIES

Symbols	Parameters	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction To Case	1.0	$^\circ\text{C/W}$

Notes

- (1) Repetitive Rating: Pulse width limited by maximum junction temperature
- (2) @ $V_{DD} = -25\text{V}$, $L = 3.1\text{mH}$, Peak $I_L = -21\text{A}$, Starting $T_J = 25^\circ\text{C}$, $R_G = 25\Omega$
- (3) @ $I_{SD} \leq -21\text{A}$, $di/dt \leq -480\text{A}/\mu\text{s}$, $V_{DD} \leq -100\text{V}$, $T_J \leq 175^\circ\text{C}$
- (4) Pulse Width $\leq 300\mu\text{s}$, $\delta \leq 2\%$

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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	-100			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C I _D = -1.0mA		-0.11		V/°C
R _{DS(on)}	Static Drain-Source On-State Resistance	V _{GS} = -10V I _D = -24A ⁽⁴⁾			0.06	Ω
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} I _D = -250μA	-2		-4	V
g _{fs}	Forward Transconductance	V _{DS} = -50V I _{DS} = -21A ⁽⁴⁾	10			S(Ω)
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} = 0 V _{DS} = -100V			-25	μA
		V _{GS} = 0 V _{DS} = -80V T _J = 150°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		2700		pF
C _{oss}	Output Capacitance	V _{DS} = 25V		790		
C _{rss}	Reverse Transfer Capacitance	f = 1.0MHz		450		
Q _g	Total Gate Charge	V _{GS} = -10V			180	nC
Q _{gs}	Gate-Source Charge	I _D = -21A			25	
Q _{gd}	Gate-Drain Charge	V _{DS} = -80V			97	
t _{d(on)}	Turn-On Delay Time	V _{DD} = -50V		17		ns
t _r	Rise Time	I _D = -21A		86		
t _{d(off)}	Turn-Off Delay Time			79		
t _f	Fall Time	R _G = 2.5Ω R _D = 2.4Ω		81		

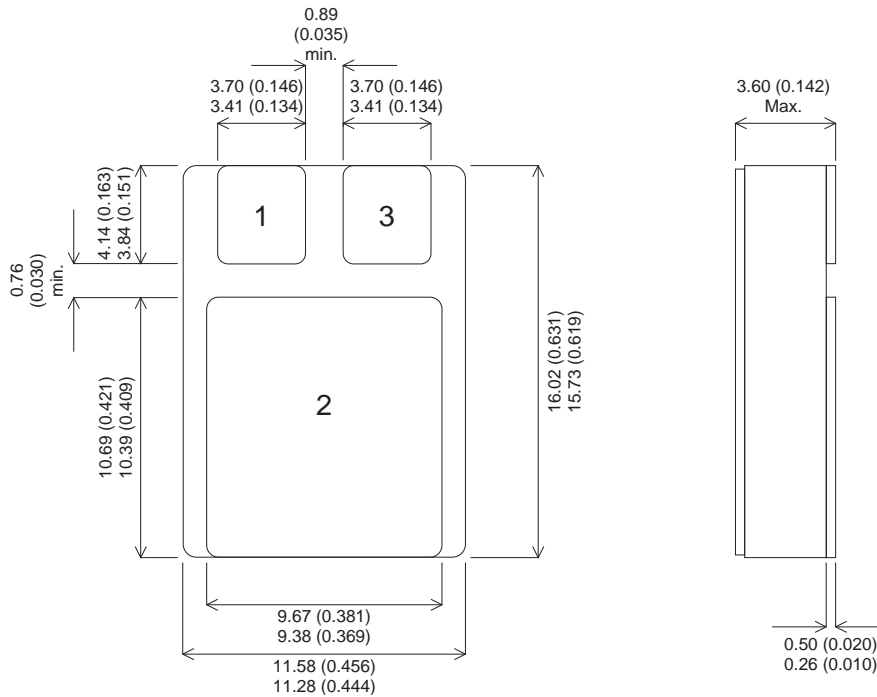
SOURCE-DRAIN DIODE CHARACTERISTICS

I _S	Continuous Source Current				-34	A
I _{SM}	Pulse Source Current ⁽¹⁾				-120	
V _{SD}	Diode Forward Voltage	I _S = -24A T _J = 25°C V _{GS} = 0			1.6	V
t _{rr}	Reverse Recovery Time	I _S = -21A T _J = 25°C		170	260	ns
Q _{rr}	Reverse Recovery Charge	V _{DD} ≤ 50V di/dt = 100A/μs ⁽⁴⁾		1.2	1.8	μC

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MECHANICAL DATA

Dimensions in mm (inches)



SMD1 (TO-276AB)

Underside View

Pad 1 – Source

Pad 2 – Drain

Pad 3 – Gate

Note

IRF5210SMD also available with pads 1 and 3 reversed.