

Silicon N-Channel Power MOSFET

Description

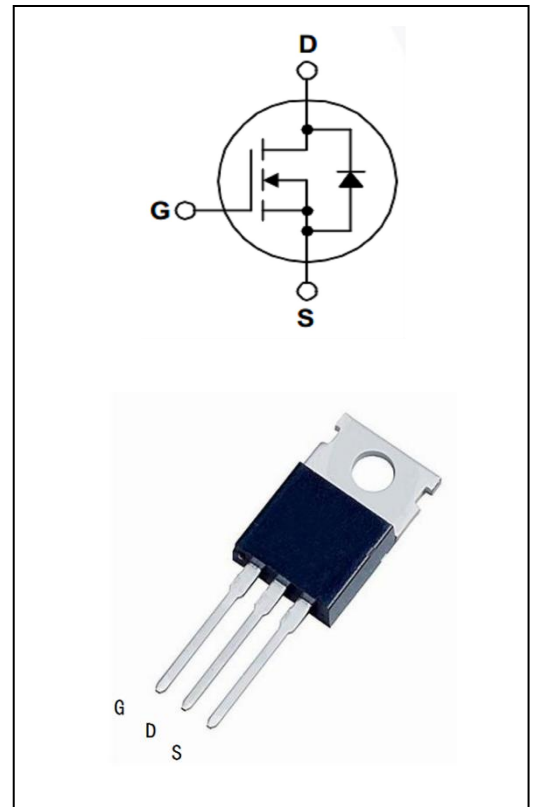
The IRF3205 uses advanced technology and design to provide excellent $R_{DS(ON)}$. It can be used in a wide variety of applications.

General Features

- $V_{DS}=60V, I_D=120A$
- Low ON Resistance
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

Application

- Power switching application
- Adapter and charger



Electrical Characteristics @ $T_a=25^\circ\text{C}$ (unless otherwise specified)

a) Absolute Maximum Ratings:

Symbol	Parameter	Value	Units
V_{DSS}	Drain-to-Source Breakdown Voltage	60	V
I_D	Drain Current (continuous) at $T_c=25^\circ\text{C}$	120	A
I_{DM}	Drain Current (pulsed)	480	A
V_{GS}	Gate to Source Voltage	+/-20	V
P_{tot}	Total Dissipation at $T_c=25^\circ\text{C}$	75	W
T_j	Max. Operating Junction Temperature	175	$^\circ\text{C}$
E_{AS}	Single Pulse Avalanche Energy	1300	mJ

b) Electrical Parameters:

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{DS}	Drain-source Voltage	$V_{GS}=0V, I_D=250\mu A$	60			V
$R_{DS(on)}$	Static Drain-to-Source on-Resistance	$V_{GS}=10V, I_D=30A$		6.2	8.0	m Ω
$V_{GS(th)}$	Gated Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	3.1	4.0	V
I_{DSS}	Drain to Source leakage Current	$V_{DS}=60V, V_{GS}=0V$			1.0	μA
$I_{GSS(F)}$	Gated to Source Foward Leakage	$V_{GS}=+20V$			100	nA
$I_{GSS(R)}$	Gated to Source Reverse Leakage	$V_{GS}=-20V$			-100	nA
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=25V,$ $f=1.0MHZ$		4000		pF
C_{oss}	Output Capacitance			750		pF
C_{rss}	Reverse Transfer Capacitance			75		pF

c) Switching Characteristics

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$t_{d(on)}$	Turn-on Delay Time	$V_{DD}=30V, I_D=50A,$ $R_G=3.6\Omega$		17		nS
t_r	Turn-on Rise Time			82		nS
$t_{d(off)}$	Turn-off Delay Time			58		nS
t_f	Turn-off Fall Time			30		nS
Q_g	Total Gate Charge	$V_{DS}=30V$		75		nC
Q_{gs}	Gate-Source Charge	$I_D=50A$		18		nC
Q_{gd}	Gate-Drain Charge	$V_{GS}=10V$		26		nC

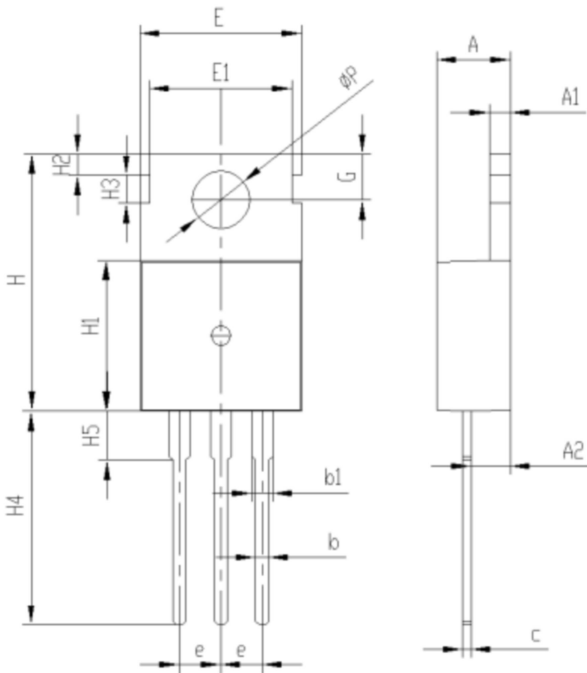
d) Source-Drain Diode Characteristics

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
I_{SD}	S-D Current(Body Diode)				120	A
I_{SDM}	Pulsed S-D Current(Body Diode)				480	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V, I_{DS}=50A$			1.5	V
t_{rr}	Reverse Recovery Time	$T_J=25^\circ C, I_F=50A$ $di/dt=100A/us$		135		nS
Q_{rr}	Reverse Recovery Charge			360		μC
*Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$						

Symbol	Parameter	Typ	Units
$R_{\theta JC}$	Junction-to-Case	2.0	$^\circ C/W$

Package Information

TO-220C PACKAGE



Symbol	Dimensions (millimeters)	
	Min.	Max.
A	4.30	4.70
A1	1.17	1.37
A2	2.20	2.60
b	0.60	1.00
b1	1.17	1.37
b2	1.90	2.30
c	0.30	0.70
e	2.34	2.74
E	9.70	10.1
E1	8.50	8.90
H	15.5	15.9
H1	9.00	9.40
H2	1.10	1.50
H3	1.50	1.90
H4	12.58	13.58
H5	2.80	3.20
G	2.60	3.00
ΦP	3.40	3.80

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