

Silicon N-Channel Power MOSFET

Description

The IRF1404 uses advanced technology and design to provide excellent $R_{DS(ON)}$. It can be used in a wide variety of applications.

General Features

- ① $V_{DS}=40V$, $I_D=180A$
- ② Low ON Resistance
- ③ Low Reverse transfer capacitances
- ④ 100% Single Pulse avalanche energy Test

Application

- ① Power switching application
- ② Adapter and charger

Electrical Characteristics

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

Package Marking And Ordering Information

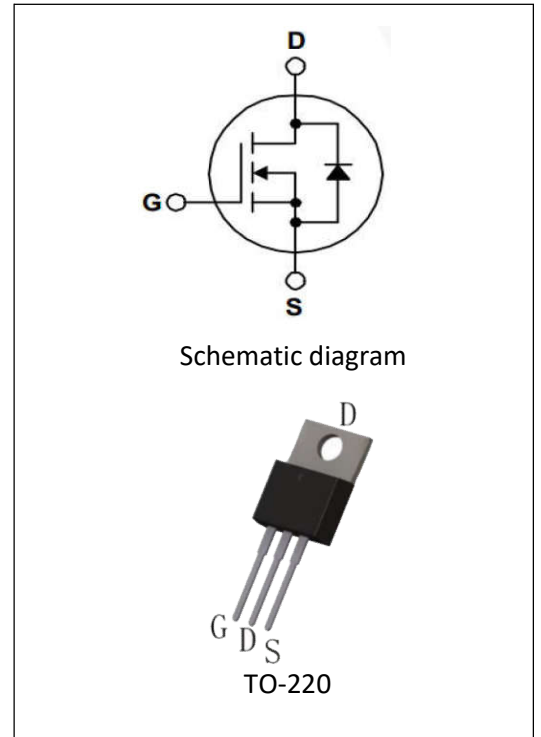
Ordering Codes	Package	Product Code	Packing
IRF1404	TO-220	IRF1404	Tube

Absolute Maximum Ratings:

Symbol	Parameter	Value	Units
V_{DSS}	Drain-to-Source Breakdown Voltage	40	V
I_D	Drain Current (continuous) at $T_c=25^{\circ}C$	180	A
I_{DM}	Drain Current (pulsed)	640	A
V_{GS}	Gate to Source Voltage	+/-30	V
P_{tot}	Total Dissipation at $T_c=25^{\circ}C$	200	W
T_j	Max. Operating Junction Temperature	175	$^{\circ}C$
E_{AS}	Single Pulse Avalanche Energy	700	mJ

Electrical Parameters:

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{DS}	Drain-source Voltage	$V_{GS}=0V$, $I_D=250\mu A$	40			V
$R_{DS(on)}$	Static Drain-to-Source on-Resistance	$V_{GS}=10V$, $I_D=50A$		2.5	3.5	m Ω





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$V_{GS(th)}$	Gated Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\ \mu A$	2.0	2.7	3.2	V
I_{DSS}	Drain to Source leakage Current	$V_{DS}=40V, V_{GS}=0V$			1.0	μA
$I_{GSS(F)}$	Gated Body Forward Leakage	$V_{GS}=+20V$			100	nA
$I_{GSS(R)}$	Gated Body Reverse Leakage	$V_{GS}=-20V$			-100	nA
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=25V,$ $f=1.0MHz$		3315		pF
C_{oss}	Output Capacitance			230		pF
C_{rss}	Reverse Transfer Capacitance			18		pF

Switching Characteristics

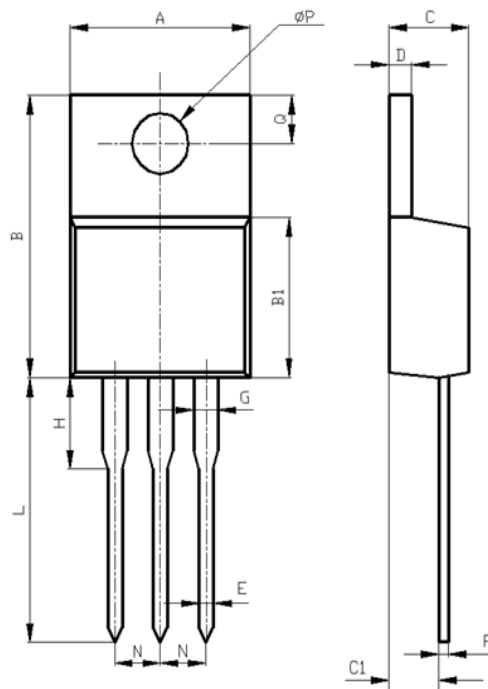
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$t_{d(on)}$	Turn-on Delay Time	$V_{DD}=20V, I_D=50A, R_G=10\Omega$		34		nS
t_r	Turn- on Rise Time			26		nS
$t_{d(off)}$	Turn-off Delay Time			72		nS
t_f	Turn-off Fall Time			39		nS
Q_g	Total Gate Charge	$V_{DS}=20\ V\ I_D=50A\ V_{GS}=10V$		47		nC
Q_{gs}	Gate-Source Charge			11.2		nC
Q_{gd}	Gate-Drain Charge			19		nC

Source-Drain Diode Characteristics

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
I _{SD}	S-D Current(Body Diode)				180	A
I _{SDM}	Pulsed S-D Current(Body Diode)				640	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _{DS} =100A			1.5	V
t _{rr}	Reverse Recovery Time	T _J =25℃, I _F =100A di/dt=100A/us			555	nS
Q _{rr}	Reverse Recovery Charge				4550	μC
	*Pulse Test: Pulse Width <= 300μs, Duty Cycle<= 2%					

Symbol	Parameter	Typ	Units
$R_{\theta JC}$	Junction-to-Case	2.5	$^\circ C/W$

Package Description



Items	Values(mm)	
	MIN	MAX
A	9.60	10.6
B	15.0	16.0
B1	8.90	9.50
C	4.30	4.80
C1	2.30	3.10
D	1.20	1.40
E	0.70	0.90
F	0.30	0.60
G	1.17	1.37
H	2.70	3.80
L	12.6	14.8
N	2.34	2.74
Q	2.40	3.00
Φ P	3.50	3.90

TO-220 Package



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NOTE:

1. Exceeding the maximum ratings of the device in performance may cause damage to the device, even the permanent failure, which may affect the dependability of the machine. Please do not exceed the absolute maximum ratings of the device when circuit designing.
2. When installing the heat sink, please pay attention to the torsional moment and the smoothness of the heat sink.
3. MOSFETs is the device which is sensitive to the static electricity, it is necessary to protect the device from being damaged by the static electricity when using it.
4. Shenzhen Minos reserves the right to make changes in this specification sheet and is subject to change without prior notice.

CONTACT:

深圳市迈诺斯科技有限公司（总部）

地址：深圳市福田区华富街道田面社区深南中路4026号田面城市大厦22B-22C

邮编：518025

电话：0755-83273777