

Silicon N-Channel Power MOSFET

Description

The MP5N50 uses advanced technology and design to provide excellent $R_{DS(ON)}$. It can be used in a wide variety of applications.

General Features

- ① $V_{DS}=500V, I_D=5A$
- ② Low ON Resistance
- ③ Low Reverse transfer capacitances
- ④ 100% Single Pulse avalanche energy Test

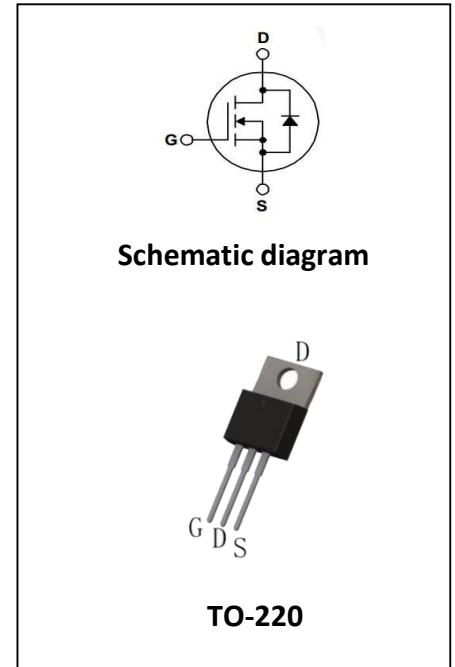
Application

- 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
MP5N50	TO-220	5N50	Tube



Absolute Maximum Ratings:

Symbol	Parameter	Value	Units
V_{DSS}	Drain-to-Source Breakdown Voltage	500	V
I_D	Drain Current (continuous) at $T_c=25^{\circ}C$	5	A
I_{DM}	Drain Current (pulsed)	20	A
V_{GS}	Gate to Source Voltage	+/-30	V
P_{tot}	Total Dissipation at $T_c=25^{\circ}C$	38	W
T_j	Max. Operating Junction Temperature	-55~150	$^{\circ}C$
E_{AS}	Single Pulse Avalanche Energy	88	mJ

Electrical Parameters:

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{DS}	Drain-source Voltage	$V_{GS}=0V, I_D=250\mu A$	500			V

$R_{DS(on)}$	Static Drain-to-Source on-Resistance	$V_{GS} = 10V, I_D = 2.5A$		1.25	1.50	Ω
$V_{GS(th)}$	Gated Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	3.3	4.0	V
I_{DSS}	Drain to Source leakage Current	$V_{DS} = 500V, V_{GS} = 0V$			1.0	μA
$I_{GSS(F)}$	Gated Body Forward Leakage	$V_{GS} = +30V$			100	nA
$I_{GSS(R)}$	Gated Body Reverse Leakage	$V_{GS} = -30V$			-100	nA
C_{iss}	Input Capacitance	$V_{GS} = 0V, V_{DS} = 25V, f = 1.0MHz$		657		pF
C_{oss}	Output Capacitance			57		pF
C_{rss}	Reverse Transfer Capacitance			13		pF

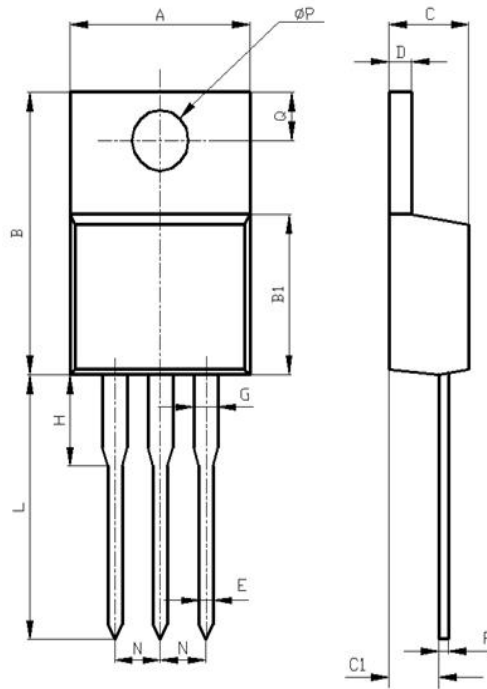
Switching Characteristics

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$t_{d(off)}$	Turn-on Delay Time	$V_{DD} = 250V, I_D = 5A, R_G = 25\Omega$		20		nS
Q_g	Total Gate Charge	$V_{DS} = 400V$ $I_D = 5A$ $V_{GS} = 10V$		26		nC
Q_{gs}	Gate-Source Charge			4		nC
Q_{gd}	Gate-Drain Charge			15		nC

Source-Drain Diode Characteristics

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
I_{SD}	S-D Current(Body Diode)				5	A
t_{rr}	Reverse Recovery Time	$T_J = 25^\circ C, I_F = 5A$ $di/dt = 100A/\mu s$		220		nS
Q_{rr}	Reverse Recovery Charge			1		μC

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



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

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