

Silicon N-Channel Power MOSFET

Description

The MPG50N06 uses advanced trench technology and design to provide Excellent $R_{DS(ON)}$. It can be used in a wide variety of applications.

General Features

- ① $V_{DS}=60V, I_D=50A$
 $R_{dson} \cong 14m\Omega @V_{GS}=10V$ (Typ:11.0 m Ω)
 $R_{dson} \cong 16m\Omega @V_{GS}=4.5V$ (Typ:12.5m Ω)
- ② Low ON Resistance
- ③ Low Reverse transfer capacitances
- ④ 100% Single Pulse avalanche energy Test

Application

- ① Power switching application
- ② Load switch

Electrical Characteristics

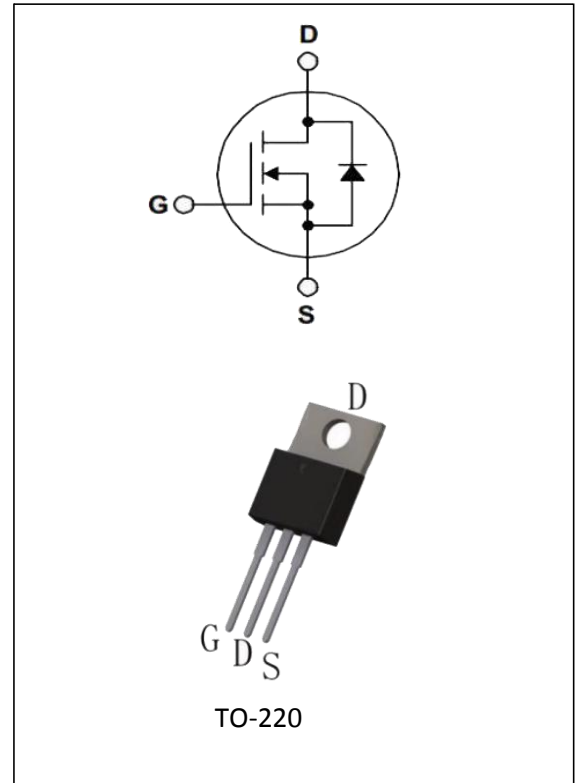
@ $T_a=25^\circ C$ (unless otherwise specified)

Package Marking And Ordering Information

Ordering Codes	Package	Product Code	Packing
MPG50N06-P	TO-220	MPG50N06P	Tube

Limited Parameters:

Symbol	Parameter	Value	Units
V_{DSS}	Drain-to-Source Breakdown Voltage	60	V
I_D	Drain Current (continuous) at $T_c=25^\circ C$	50	A
I_{DM}	Drain Current (pulsed)	200	A
V_{GS}	Gate to Source Voltage	+/-20	V
P_{tot}	Total Dissipation at $T_c=25^\circ C$	100	W
T_j	Max. Operating Junction Temperature	175	$^\circ C$
E_{as}	Single Pulse Avalanche Energy	256	mj





Electrical Parameters:

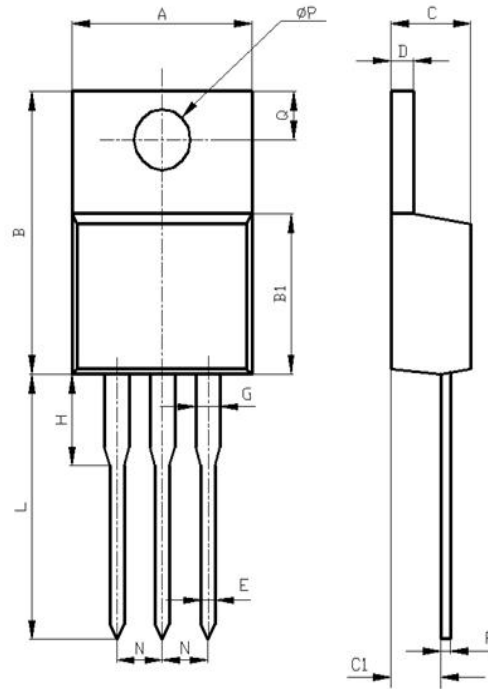
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{DS}	Drain-source Voltage	$V_{GS}=0V, I_D=250\mu A$	60	66		V
$R_{DS(on)}$	Static Drain-to-Source on-Resistance	$V_{GS}=10V, I_D=25A$		11.0	14	mΩ
		$V_{GS}=4.5V, I_D=15A$		12.5	16	mΩ
$V_{GS(th)}$	Gated Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.9	2.5	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=60V, V_{GS}=0V$			1.0	μA
$I_{GSS(F)}$	Gated Body Leakage Current	$V_{GS}=+20V,$			100	nA
$I_{GSS(R)}$	Gated Body Leakage Current	$V_{GS}=-20V,$			-100	nA
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=25V,$ $f=1.0MHz$		2200		pF
C_{oss}	Output Capacitance			225		pF
C_{rss}	Reverse Transfer Capacitance			165		pF
Q_g	Total Gate Charge	$V_{DS}=25V$ $I_D=10A$ $V_{GS}=10V$		58		nC
Q_{gs}	Gate-Source Charge			6		nC
Q_{gd}	Gate-Drain Charge			15		nC

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$t_{d(on)}$	Turn-on Delay Time	$V_{DD}=25V, I_D=10A, R_L=0.3\Omega$ $V_{GS}=10V, R_G=6.8\Omega$		20		nS
t_r	Turn-on Rise Time			90		nS
$t_{d(off)}$	Turn-off Delay Time			45		nS
t_f	Turn-off Fall Time			90		nS

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
I_{SD}	S-D Current(Body Diode)			50		A
I_{SDM}	Pulsed S-D Current(Body Diode)			200		A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V, I_{DS}=25A$			1.4	V
t_{rr}	Reverse Recovery Time	$T_J=25^\circ C, I_F=25A$ $di/dt=100A/us$		102		nS
Q_{rr}	Reverse Recovery Charge				50	
*Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$						

Symbol	Parameter	Typ	Units
$R_{\theta JC}$	Junction-to-Case	1.3	°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
ϕP	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.

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