

Silicon N-Channel Power MOSFET

Description

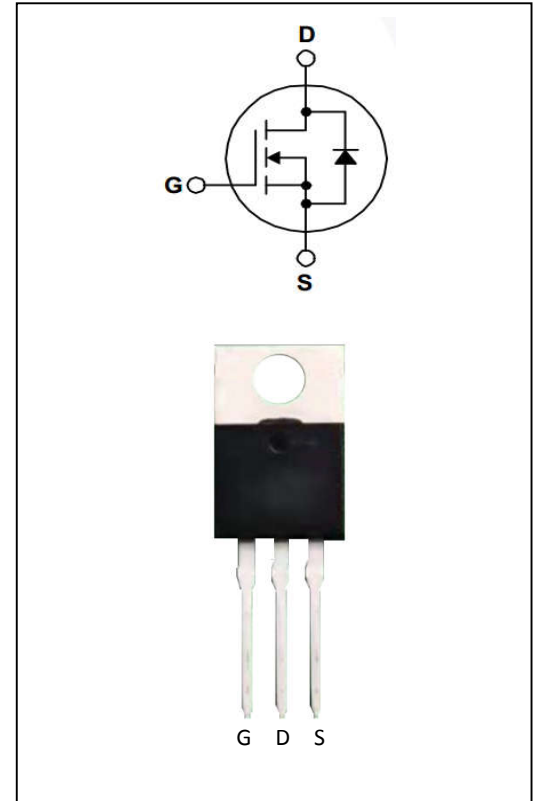
The MPG50N06 uses advanced trench technology and design to provide Excellent $R_{DS(ON)}$. It can be used in a wide variety of applications.

General Features

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

Application

- Power switching application
- Load switch



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

a) 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	$^\circ C$
Eas	Single Pulse Avalanche Energy	256	mj

b) Electrical Parameters:

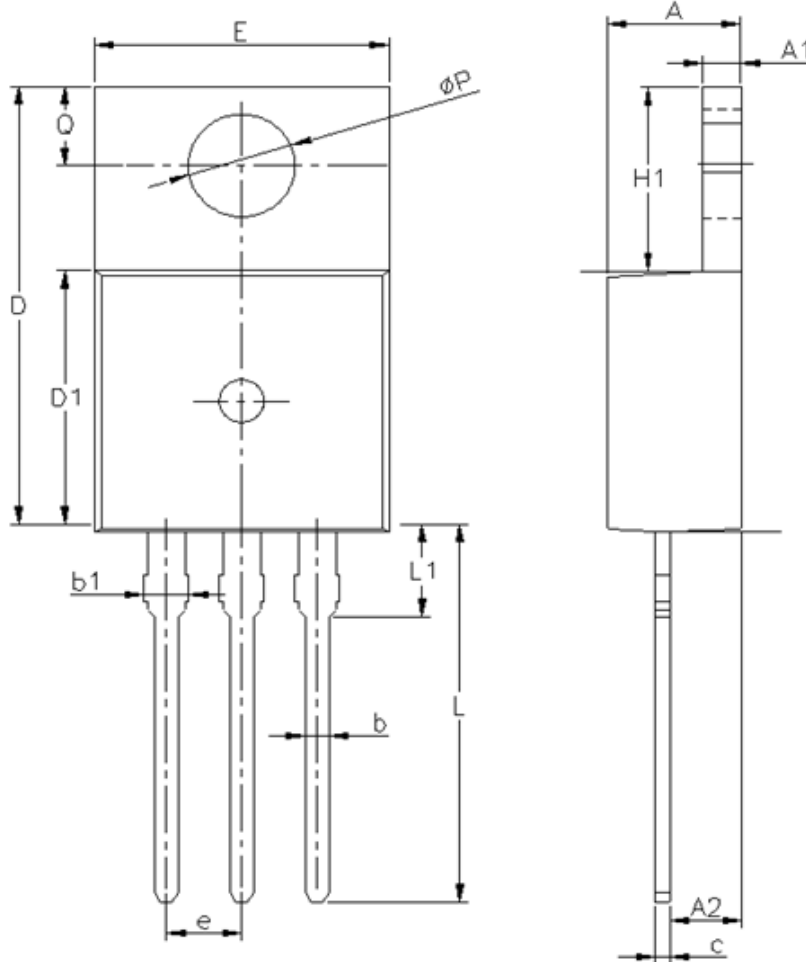
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{DS}	Drain-source Voltage	$V_{GS}=0V, I_D=250\mu A$	60	66		V
$R_{DS(on)}$	Static Drain-to-Source on-Resistance	$V_{GS}=10V, I_D=25A$		11.0	14	m Ω
		$V_{GS}=4.5V, I_D=15A$		12.5	16	m Ω
$V_{GS(th)}$	Gated Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	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	$V_{GS}=0V,$		2200		pF
C_{oss}	Output Capacitance	$V_{DS}=25V,$		225		pF
C_{rss}	Reverse Transfer Capacitance	$f=1.0MHz$		165		pF
Q_g	Total Gate Charge	$V_{DS}=25V$		58		nC
Q_{GS}	Gate-Source Charge	$I_D=10A$		6		nC
Q_{GD}	Gate-Drain Charge	$V_{GS}=10V$		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		nC
*Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$						

Symbol	Parameter	Typ	Units
$R_{\theta JC}$	Junction-to-Case	1.3	$^\circ C/W$

TO-220EW PACKAGE



SYMBOL	MIN	NOM	MAX
A	4.30	4.50	4.77
A1	1.25	1.27	1.42
A2	1.80	2.50	2.89
b	0.70	0.80	0.96
b1	1.22	1.33	1.50
c	0.33	0.38	0.48
D	15.10	15.70	16.10
D1	8.80	9.15	9.40
E	9.60	10.20	10.40
e	2.54 BSC		
H1	6.10	6.50	7.00
L	12.60	13.10	14.30
L1	—	—	3.50
Q	2.54	—	2.94
ϕP	3.66	3.86	4.06