

Silicon N-Channel Power MOSFET

Description

The MPG4227 uses advanced trench technology and design to provide Excellent RDS(ON) . It can be used in a wide variety of applications.

General Features

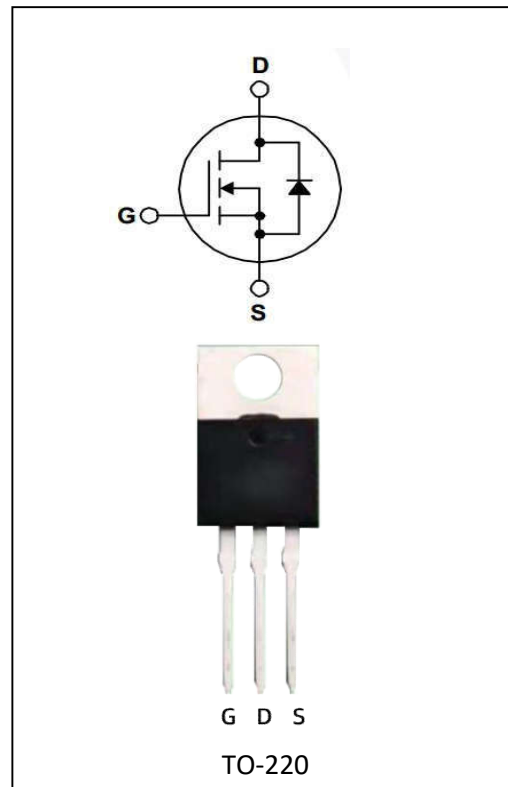
- ① $V_{DS}=200V, I_D=65A$
 $R_{ds(on)} \leq 20m\Omega @ V_{GS}=10V$ (Typ:20m Ω)
 $R_{ds(on)} \leq 25m\Omega @ V_{GS}=4.5V$ (Typ:25m Ω)
- ② Low ON Resistance
- ③ Low Reverse transfer capacitances
- ④ 100% Single Pulse avalanche energy Test

Application

- ① Power switching application
- ② Load switch

Electrical Characteristics

@ Ta=25°C (unless otherwise specified)



Limited Parameters:

Symbol	Parameter	Value	Units
V_{DSS}	Drain-to-Source Breakdown Voltage	200	V
I_D	Drain Current (continuous) at Tc=25°C	65	A
I_{DM}	Drain Current (pulsed)	300	A
V_{GS}	Gate to Source Voltage	+/-20	V
P_{tot}	Total Dissipation at Tc=25°C	150	W
T_j	Max. Operating Junction Temperature	175	°C
E_{as}	Single Pulse Avalanche Energy	256	mj

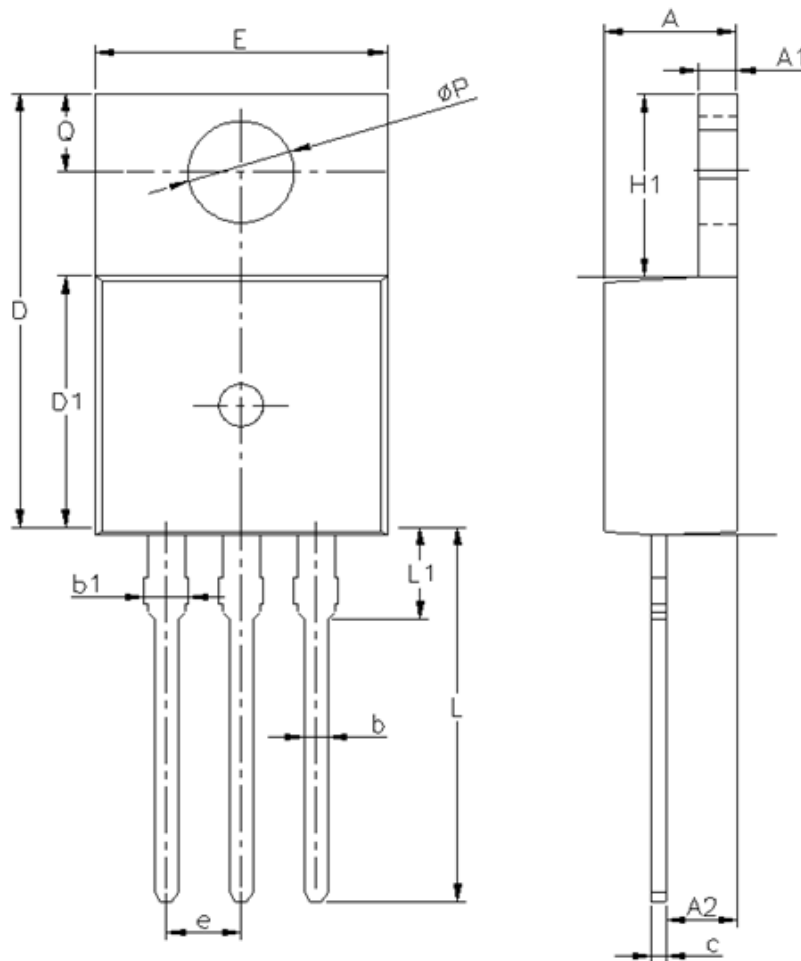
Electrical Parameters:

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{DS}	Drain-source Voltage	$V_{GS}=0V, I_D=250\mu A$	200	220		V
$R_{DS(on)}$	Static Drain-to-Source on-Resistance	$V_{GS}=10V, I_D=46A$		20	25	mΩ
		$V_{GS}=4.5V, I_D=46A$		25	30	mΩ
$V_{GS(th)}$	Gated Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	3.0	3.9	5.0	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=200V, V_{GS}=0V$			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	$V_{DS}=25V, I_D=46A, V_{GS}=10V$		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	$V_{DD}=25V, I_D=46A, R_L=0.3\Omega$ $V_{GS}=10V, R_G=6.8\Omega$		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)			65		A
I _{SDM}	Pulsed S-D Current(Body Diode)			300		A
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _{DS} =46A			1.4	V
t _{rr}	Reverse Recovery Time	T _J =25℃, I _F =46A di/dt=100A/us		102		nS
Q _{rr}	Reverse Recovery Charge			50		nC
	*Pulse Test: Pulse Width <= 300μs, Duty Cycle< =2%					

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



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

TO-220EW PACKAGE



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MPG4227

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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