迈诺斯科技

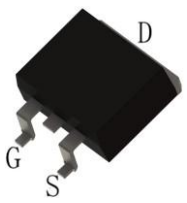
MPG100N06

Silicon N-Channel Power MOSFET

Description

The MPG100N06 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.

Schematic diagram



TO-263

TO-220

KEY CHARACTERISTICS

① V_{DS}=60V,I_D=100A $R_{DS(ON)}$<7.5mΩ@V_{GS}=10V
② Special process technology for high ESD capability
③ High density cell design forlower R_{dson}
④ Fully characterized avalanche voltage and current
⑤ Good stability and uniformity with high EAS

Application

① Power switching application.
② Hard switched and High frequency circuits
③ Uninterruptible power supply.

ORDERING INFORMATION

Ordering Codes	Package	Product Code	Packing
MPG100N06-P	TO-220	MPG100N06P	Tube
MPG100N06-S	TO-263	MPG100N06S	Reel/Tube

Electrical Characteristics @ Ta=25℃ (unless otherwise specified)

Limited Parameters:

Symbol	Parameter	Value	Units
V_{DSS}	Drain-to-Source Breakdown Voltage	60	V
I_D	Drain Current (continuous) at Tc=25℃	100	A
I_{DM}	Drain Current (pulsed)	320	A
V_{GS}	Gate to Source Voltage	±20	V
P_{tot}	Total Dissipation at Tc=25℃	107	W
T_j	Max. Operating Junction Temperature	175	℃
Eas	Single Pulse Avalanche Energy	280	mj

Electrical Parameters:

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{DS}	Drain-source Voltage	V_{GS}=0V, I_D=250μA	60			V
$R_{DS(on)}$	Static Drain-to-Source on-Resistance	V_{GS}=10V, I_D=46A		6.5	7.5	mΩ
$V_{GS(th)}$	Gated Threshold Voltage	V_{DS}=V_{GS}, $_D$=250μA	2	3	4	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}=40V f=1.0MHZ		3000		pF
C_{oss}	Output Capacitance			270		pF
C_{rss}	Reverse Transfer Capacitance			240		pF
Q_g	Total Gate Charge	V_{DS}=40V I_D=10A V_{GS}=10V		72		nC
Q_{gs}	Gate-Source Charge			21.5		nC
Q_{gd}	Gate-Drain Charge			28		nC

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=40V, I_D=40A V_{GS}=10V,R_{GEN}=3 Ω		8.5		nS
t_r	Turn-on Rise Time			7		nS
$t_{d(off)}$	Turn-off Delay Time			40		nS
t_f	Turn-off Fall Time			15		nS

Drain-Source Diode Characteristics						
Diode Forward Voltage	VSD	VGS=0V,IS=155A			1.2	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. E_{AS} condition :T_j=25℃,V_{DD}=50V,V_G=10V,L=0.5mH,Rg=1Ω
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production.

Characteristics Curves

Figure 1 Output Characteristics

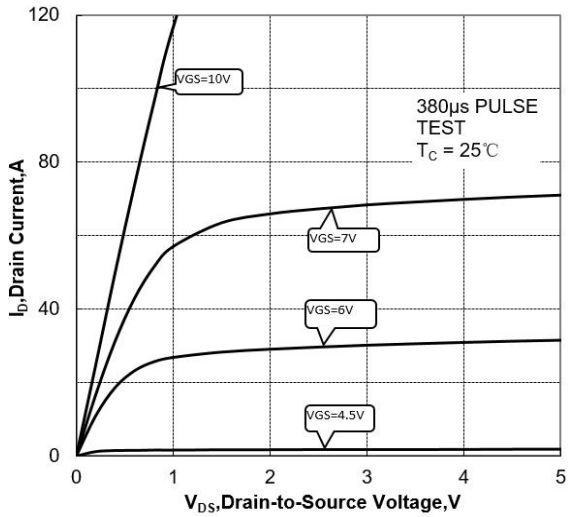


Figure 2 Transfer Characteristics

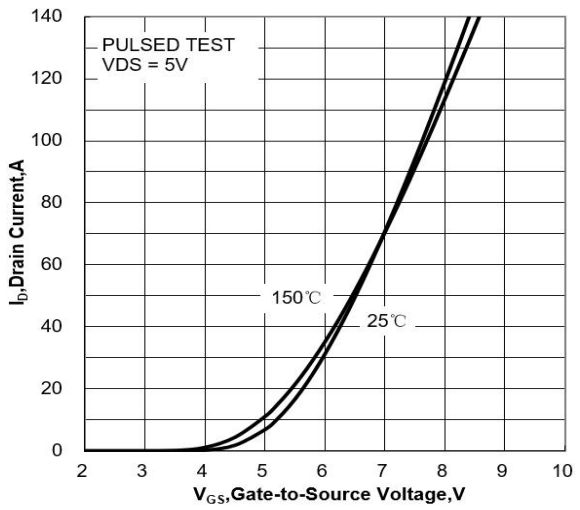


Figure 3 On-Resistance vs. I_D and V_{GS}

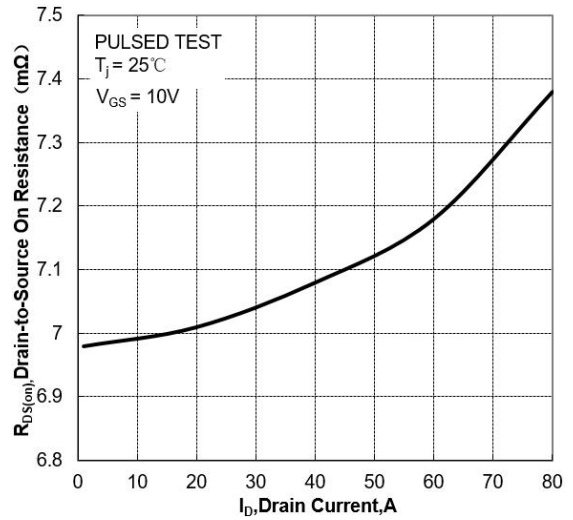


Figure 4 On-Resistance vs. Junction Temperature

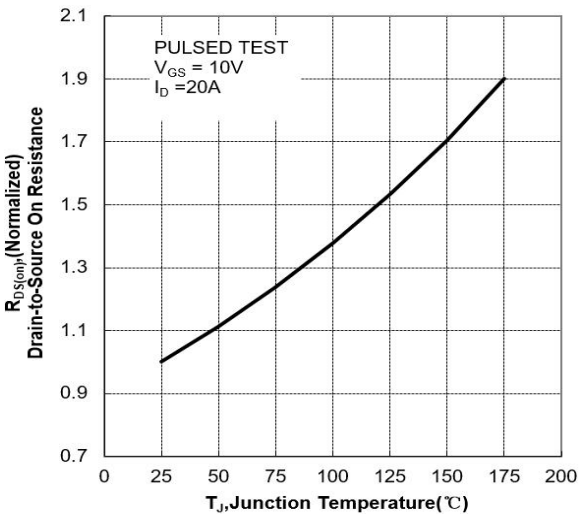


Figure 5 On-Resistance vs. V_{GS}

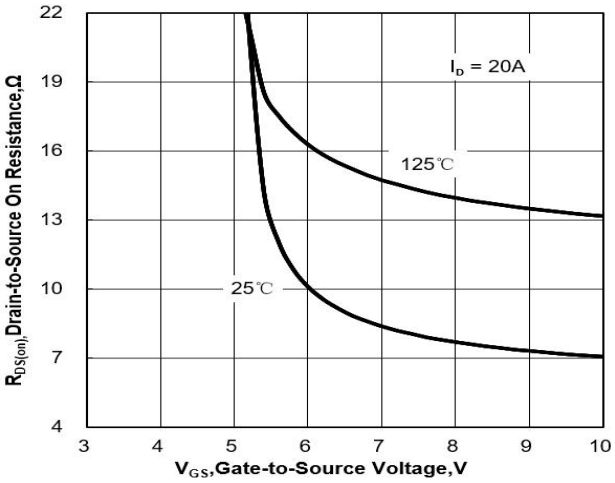


Figure 6 Body Diode Forward Voltage

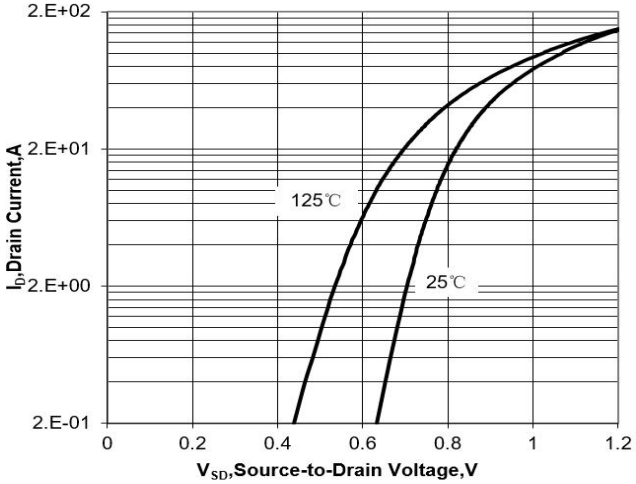


Figure 7 Gate-Charge Characteristics

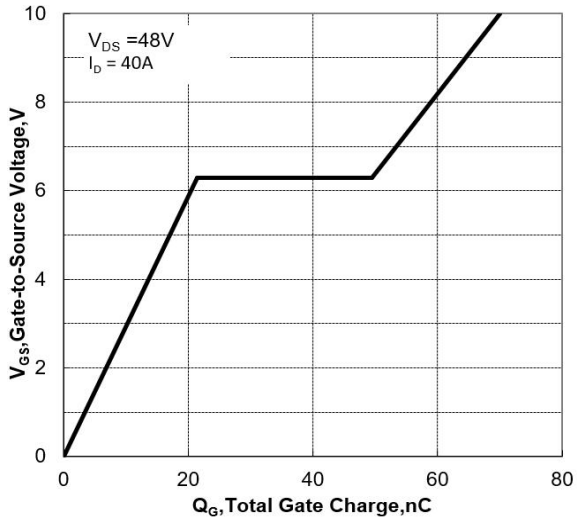


Figure 8 Capacitance Characteristics

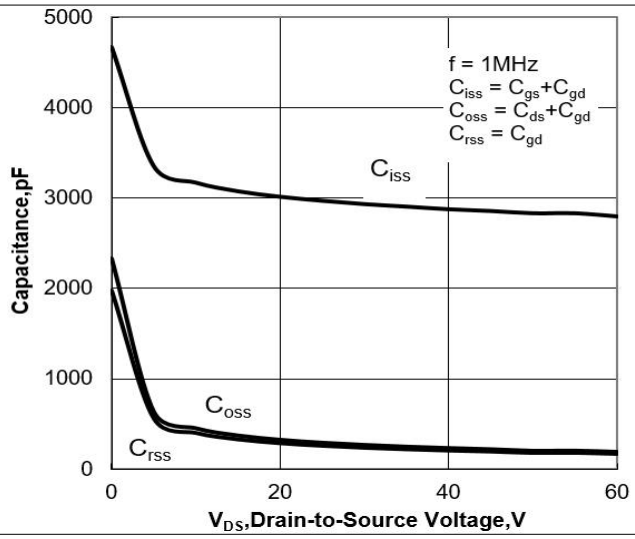


Figure 9 Maximum Forward Biased Safe Operation Area

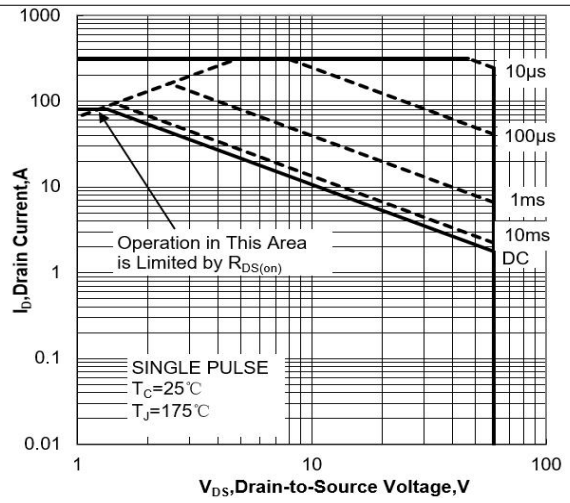


Figure 10 Single Pulse Power Rating Junction-to-Ambient

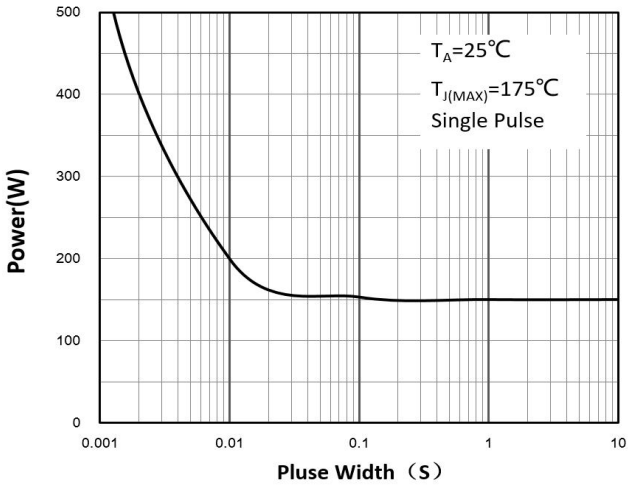
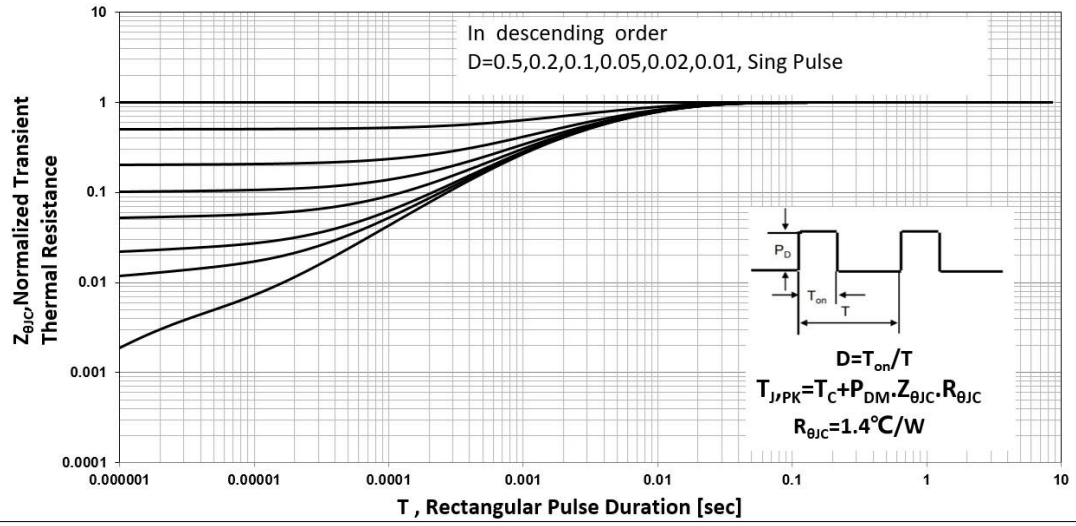
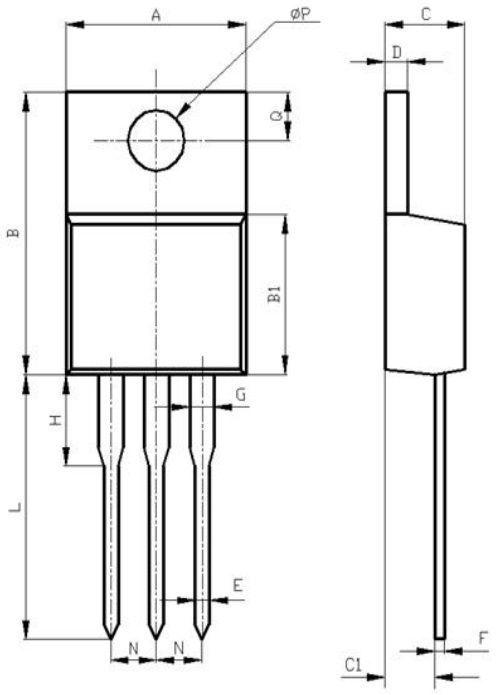


Figure 11 Normalized Maximum Transient Thermal Impedance

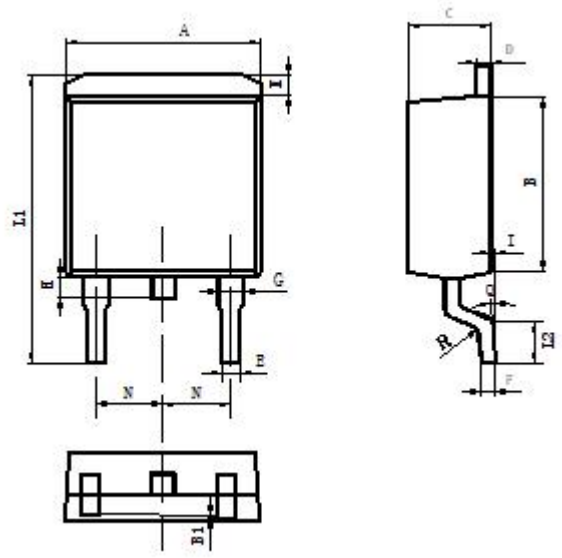


Package Description



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



Items	Values(mm)	
	MIN	MAX
A	9.80	10.40
B	8.90	9.50
B1	0	0.10
C	4.40	4.80
D	1.16	1.37
E	0.70	0.95
F	0.30	0.60
G	1.07	1.47
H	1.30	1.80
K	0.95	1.37
L1	14.50	16.50
L2	1.60	2.30
I	0	0.2
Q	0°	8°
R	0.4	
N	2.39	2.69

TO-263 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 withoutprior notice.

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