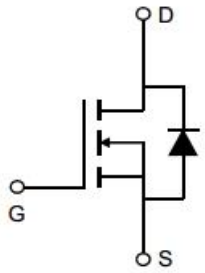
迈诺斯科技

MP50N06

Silicon N-Channel Power MOSFET

Description

The MP50N06 uses advanced trench technology and design to provide Excellent $R_{DS(ON)}$. It can be used in a wide variety of applications.



Schematic diagram

TO-220

General Features

① V_{DS}=60V,I_D=50A
R_{dson} ≦14mΩ @V_{GS}=10V (Typ:11.0 mΩ)
R_{dso}n ≦16mΩ @V_{GS}=4.5V (Typ:12.5mΩ)
② Low ON Resistance
③ Low Reverse transfer capacitances
④ 100% Single Pulse avalanche energy Test

Application

① Power switching application
② Load switch

Package Marking And Ordering Information：

Ordering Codes	Package	Product Code	Packing
MP50N06	TO-220	MP50N06P	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℃	50	A
I_{DM}	Drain Current (pulsed)	200	A
V_{GS}	Gate to Source Voltage	+/-20	V
P_{tot}	Total Dissipation at Tc=25℃	100	W
T_j	Max. Operating Junction Temperature	175	℃
Eas	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=250μA	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=250μA	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=0.3Ω V_{GS}=10V,R_G=6.8Ω		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℃,I_F=25A 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	℃/W

Typical Characteristics T_J = 25℃, unless otherwise noted

Figure 1.Output Characteristics（TJ=25℃）

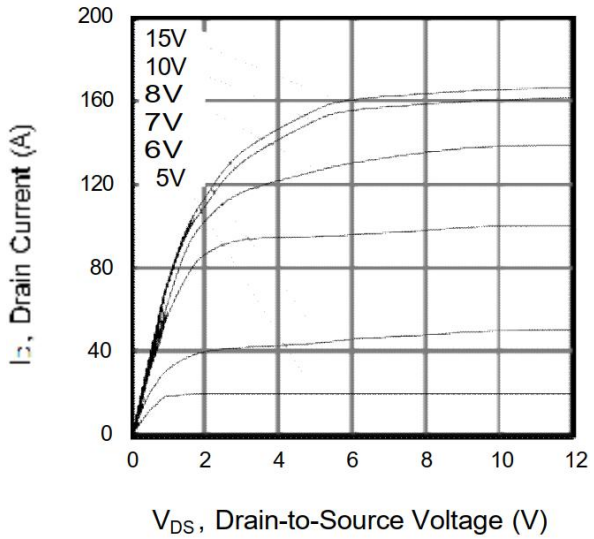


Figure 2.Body Diode Forward Voltage

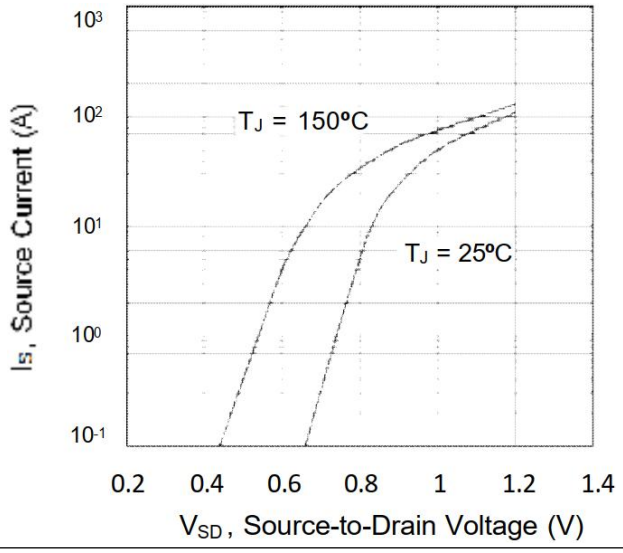


Figure 3.Drain Current vs. Temperature

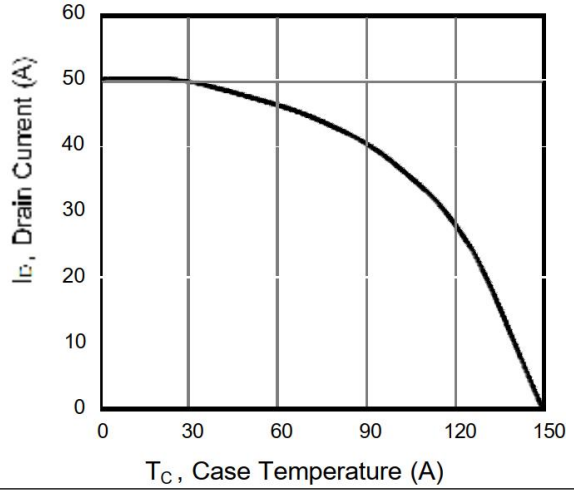


Figure 4.BVDSS Variation vs. Temperature

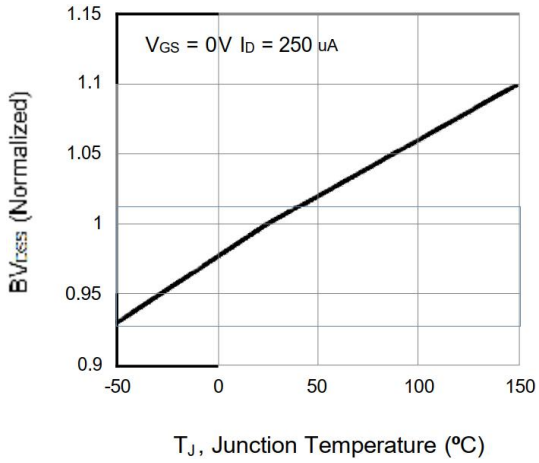


Figure 5.Transfer Characteristics

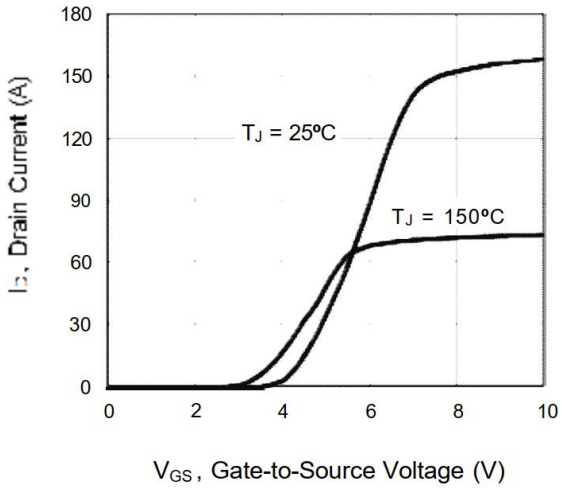
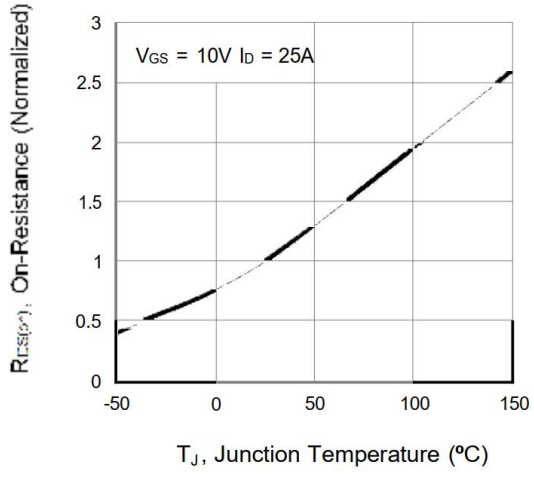


Figure 6.On-Resistance vs. Temperature



Typical Characteristics T_J = 25℃,unless otherwise noted

Figure 7.Capacitance

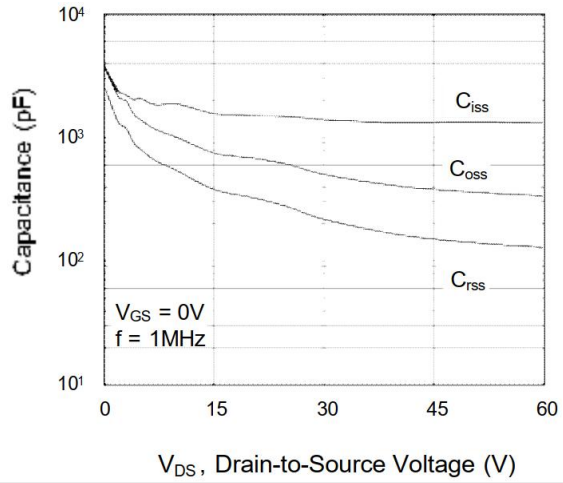


Figure 8.Gate Charge

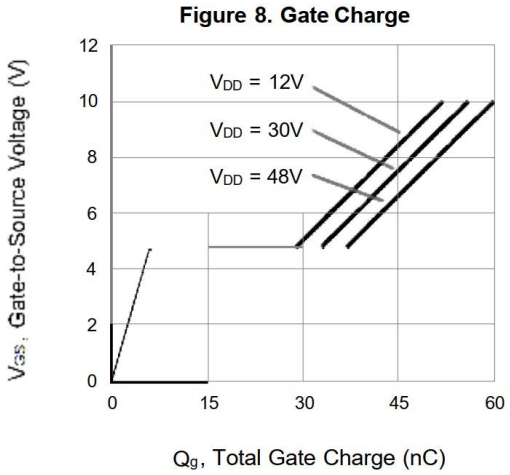


Figure 9.Transient Thermal Impedance

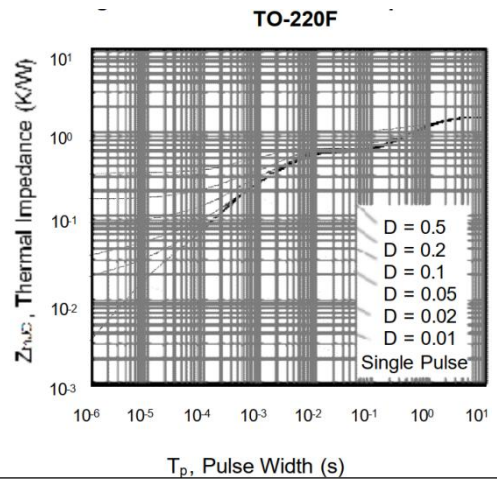


Figure 10.Transient Thermal Impedance

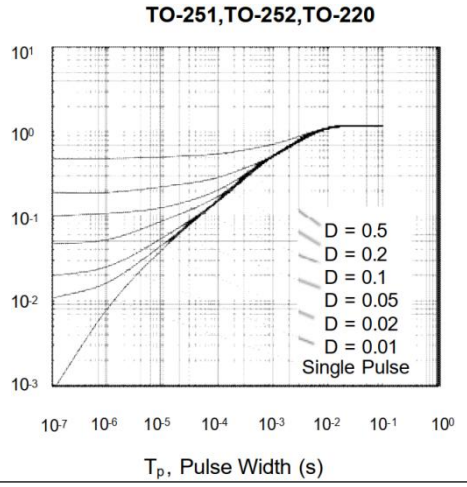


Figure A: Gate Charge Test Circuit and Waveform

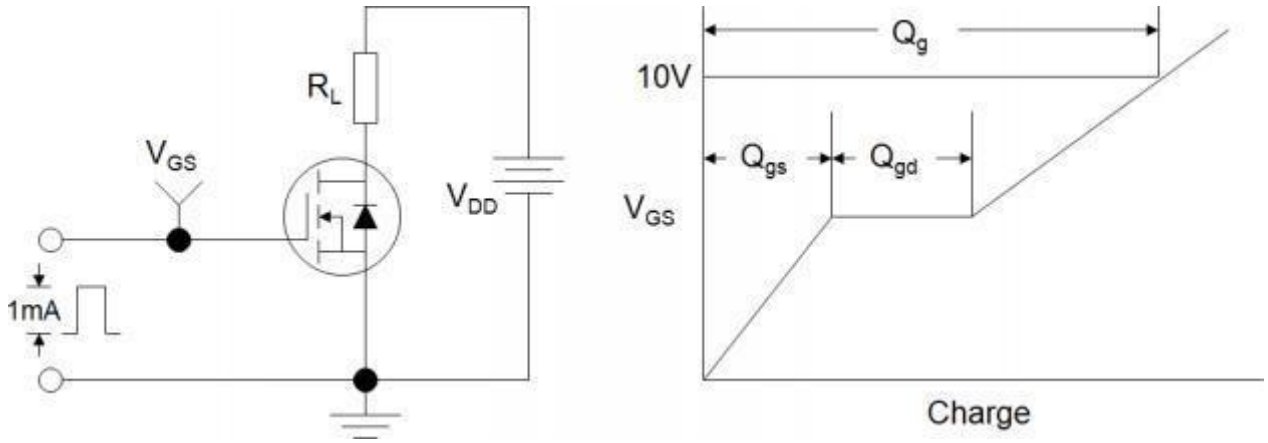


Figure B: Resistive Switching Test Circuit and Waveform

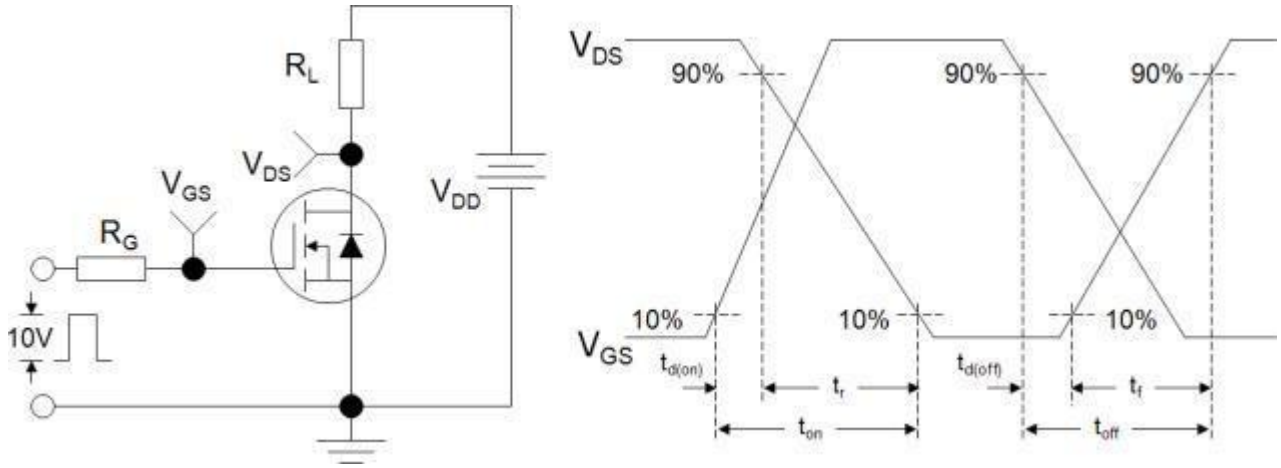
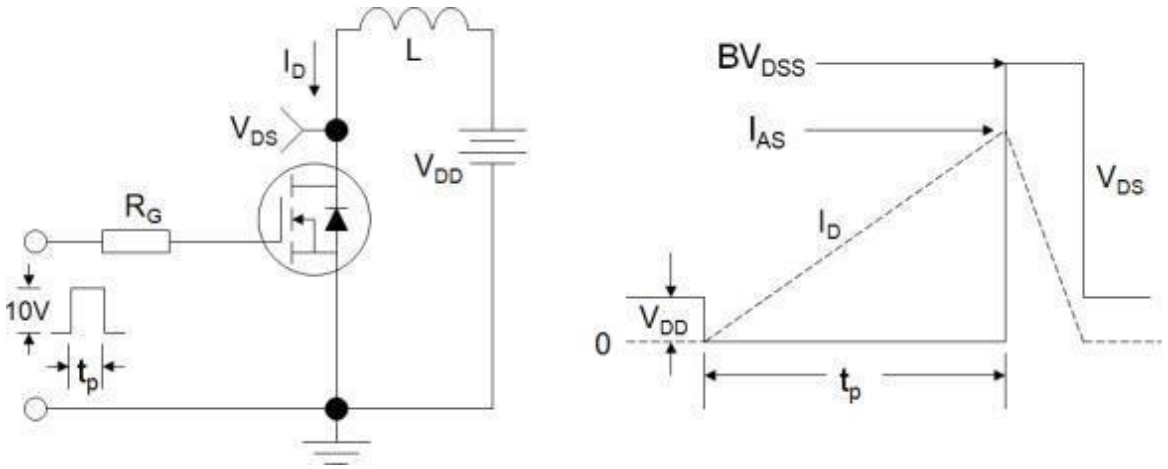


Figure C: Unclamped Inductive Switching Test Circuit and Waveform



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.

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