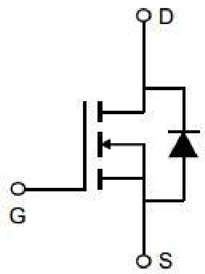
Minos 迈诺斯科技

MPG100N08

80V N-Channel Power MOSFET

DESCRIPTION

The MPG100N08 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-220

Feature Description

① V_{DS} = 80V,I_D = 100A.
  $R_{DS(ON)}$ = 5.8mΩ (typ.) @ V_{GS} = 10V.
  $R_{DS(ON)}$ = 8.6mΩ (Max.) @ V_{GS} = 10V.
② Uses CRM(CQ) advanced Trench technology.
③ Extremely low on-resistance RDS(on).
④ Excellent Qg x RDS(on) product(FOM).
⑤ Qualified according to JEDEC criteria.

Applications

① Motor control and drive.
② Battery management.
③ UPS (Uninterrupible Power Supplies).
④ 100% DVDS Tested.
⑤ 100% Avalanche Tested.

Package Marking And Ordering Information

Ordering Codes	Package	Product Code	Packing
MPG100N08-P	TO-220	MPG100N08P	Tube

Absolute Maximum Ratings

Symbol	Parameter		Value	Unit
V_{DSS}	Drain-to-Source Voltage		80	V
I_D	Continuous Drain Curren	TC=25℃	100	A
		TC=100℃	56	
$I_{D\ pulse}$	Pulsed Drain Current at (TC=25℃， tp limited by Tjmax)		352	
E_{AS}	Single Pulse Avalanche Energy (RG=25Ω, L=0.5mH)		169	mJ
V_{GS}	Gate-Source voltage		±25	V
P_{tot}	Power Dissipation (TC=25℃)		117	W
T_j & T_{stg}	Operating junction and Storage Temperature		-55 to 150	℃

Thermal Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit
R_{thJC}	Thermal Resistance, Junction-to-Case	-	-	1.07	℃/W
R_{thJA}	Thermal Resistance, Junction-to-Ambient(min. footprint)	-	-	80	℃/W

Electrical Characteristics (at Tj = 25 °C, unless otherwise specified)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
Static Characteristics							
BV_{DSS}	Drain-to-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA		80	-	-	V
$V_{GS(th)}$	Gate threshold voltage	V_{DS} = V_{GS}, I_D = 250μA		2.4	3	3.6	V
I_{DSS}	Zero gate voltage drain current	V_{DS} = 80V, V_{GS} = 0V	T_j = 25℃	-	0.05	1	μA
			T_j = 125℃	-	-	5	
I_{GSS}	Gate-to-Source Leakage Current	V_{GS} = 25V, V_{DS} = 0V		-	10	100	nA
$R_{DS(on)}$	Drain-source on-state resistance	V_{GS} = 10V, I_D = 40A,	T_j = 25°C	-	5.8	8.6	mΩ
			T_j = 150°C	-	11.4	15	
g_{fs}	Transconductance	V_{DS} = 5V,I_D = 40A		-	41	-	S

Electrical Characteristics (at Tj = 25 °C, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 40V, f = 1.0MHz	-	6533	-	pF
C_{oss}	Output Capacitance		-	338	-	
C_{rss}	Reverse Transfer Capacitance		-	165	-	
Q_g	Gate Total Charge	V_{GS} = 10V, V_{DS} = 40V, I_D= 40A, f = 1.0MHz	-	119	-	nC
Q_{gs}	Gate -Source Charge		-	42	-	
Q_{gd}	Gate Drain Charge		-	33	-	
$t_{d(on)}$	Turn-on Delay Time	V_{DD} = 40V, V_{GS} = 10V, R_G = 2.7Ω	-	23	-	ns
t_r	Rise Time		-	84	-	
$t_{d(off)}$	Turn-off Delay Time		-	48	-	
t_f	Fall Time		-	64	-	
R_G	Gate resistance	V_{GS} = 0V, V_{DS} = 0V, f = 1.0MHz	-	0.8	-	Ω
V_{SD}	Body Diode Forward Voltage	I_{SD} = 40A, V_{GS} = 0V	-	0.9	1.4	V
t_{rr}	Body Diode Reverse Recovery Time	I_f = 40A, di/dt = 100A/μs	-	38	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	63	-	nC

Typical Operating Characteristics

Fig 1: Output Characteristics

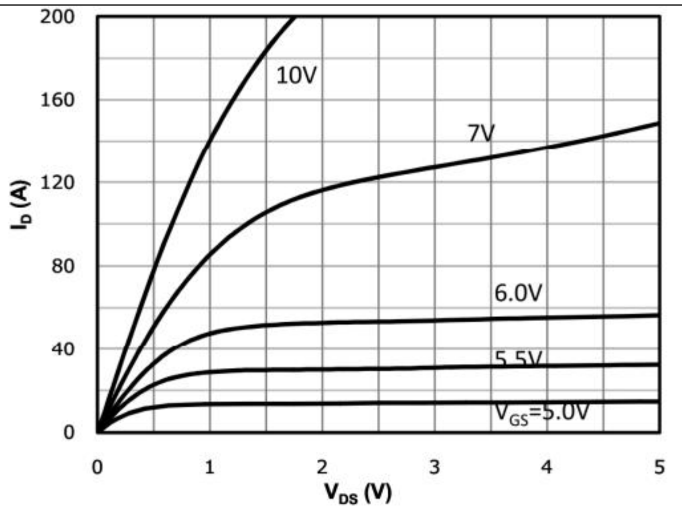


Fig 2: Transfer Characteristics

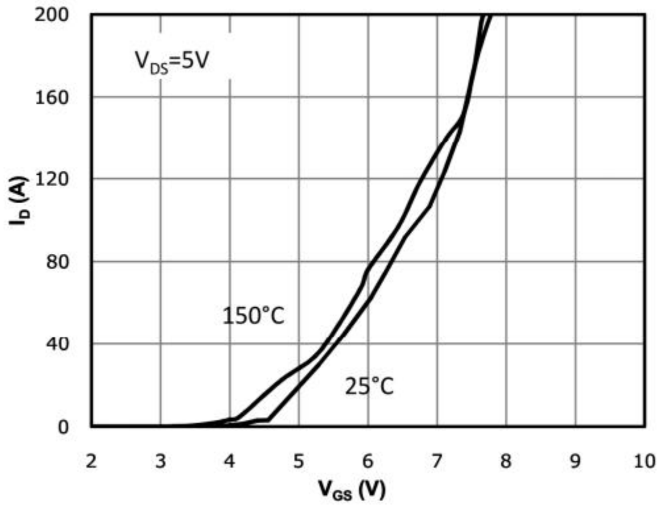


Fig 3: Rds(on) vs Drain Current and Gate Voltage

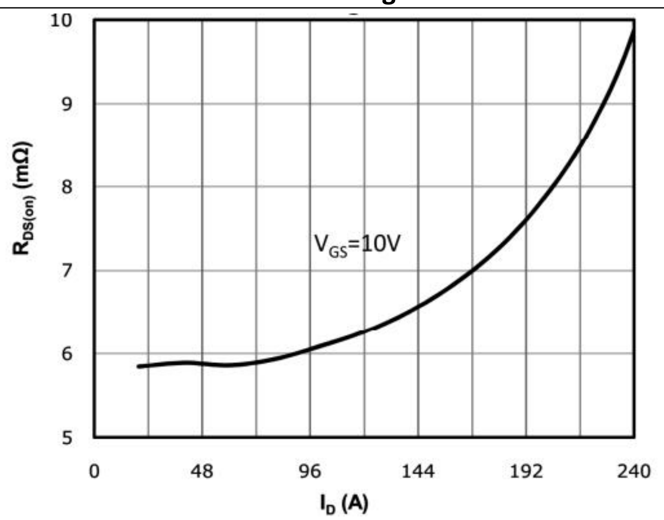


Fig 4: Rds(on) vs Gate Voltage

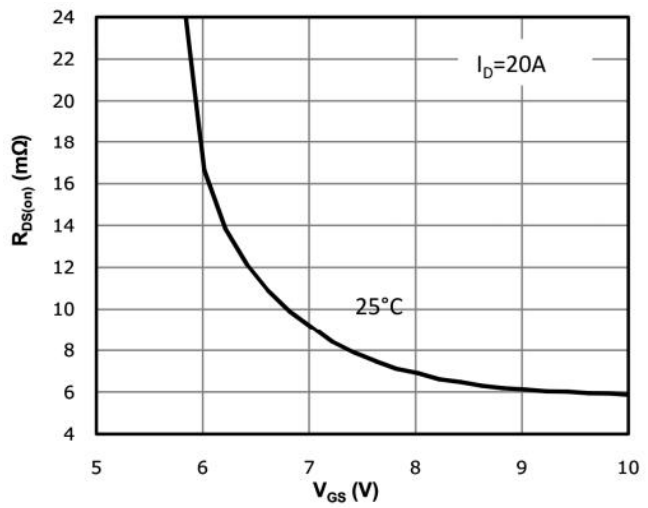


Fig 5: Rds(on) vs.Temperature

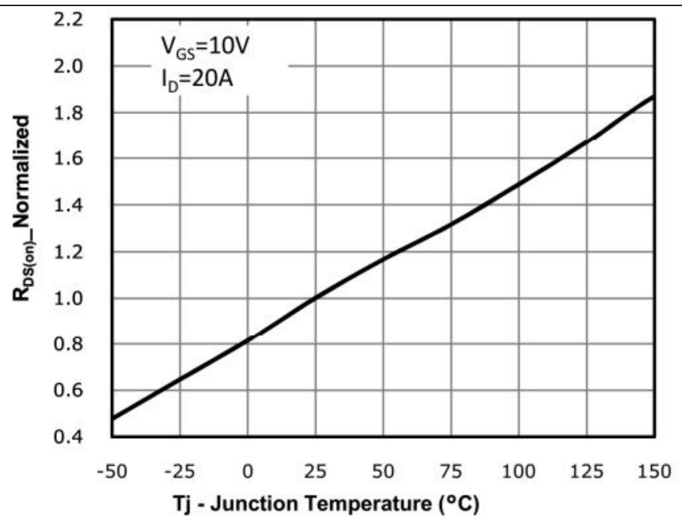
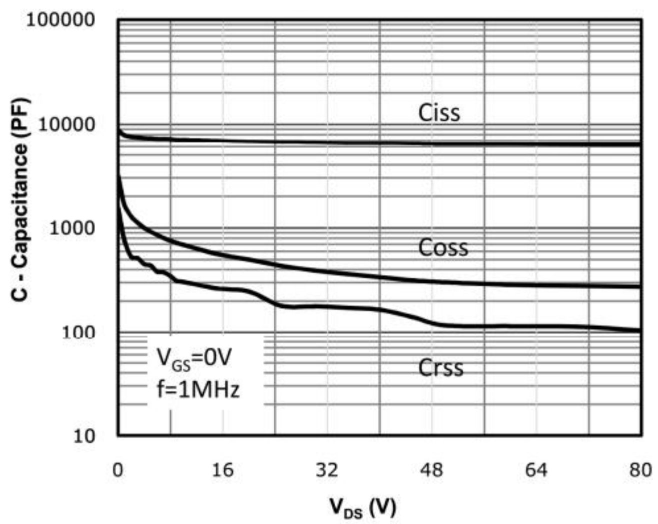


Fig 6: Capacitance Characteristics



Typical Operating Characteristics

Fig 7: Gate Charge Characteristics

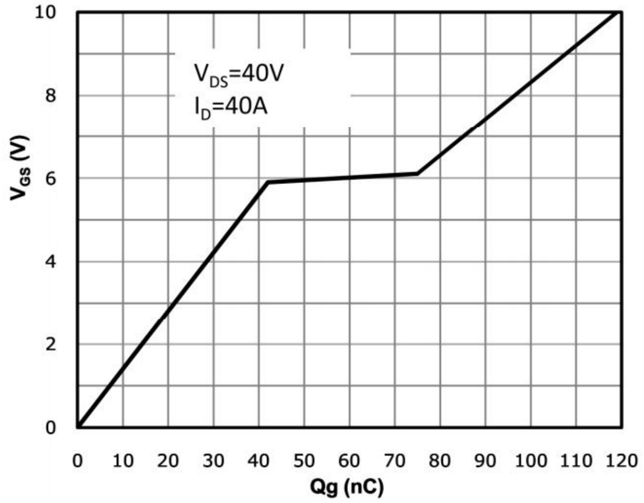


Fig 8: Body-diode Forward Characteristics

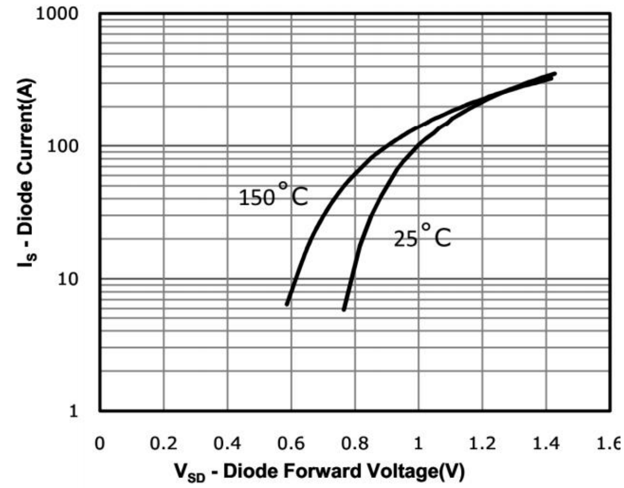


Fig 9: Power Dissipation

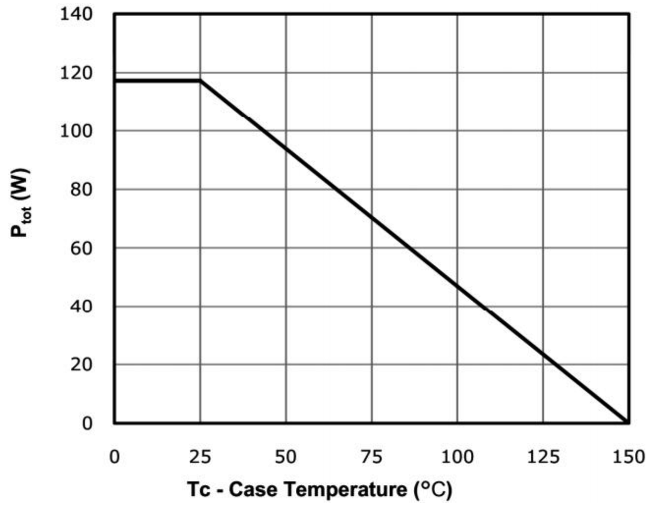


Fig 10: Drain Current Derating

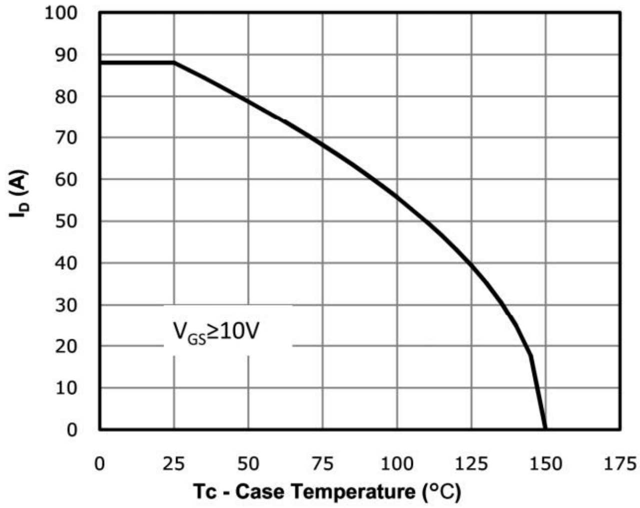
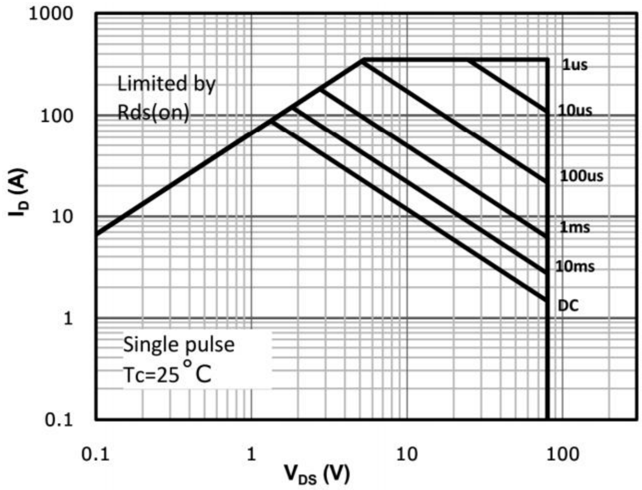
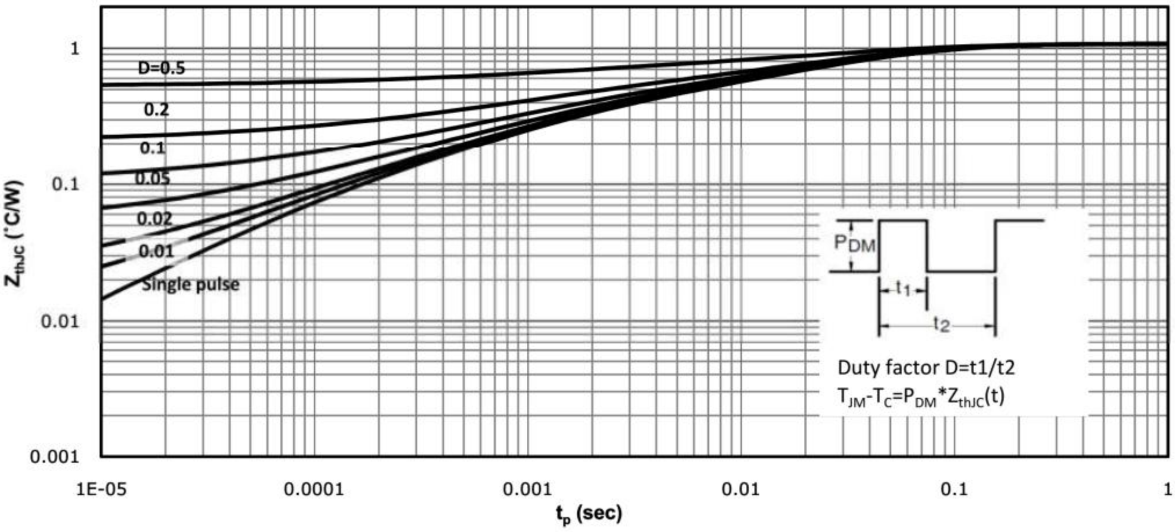


Fig 11: Safe Operating Area



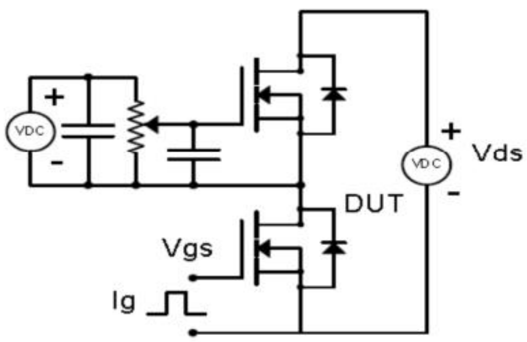
Typical Operating Characteristics

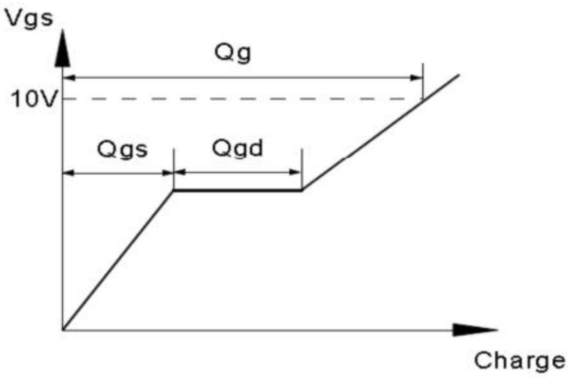
Fig 12: Max.Transient Thermal Impedance



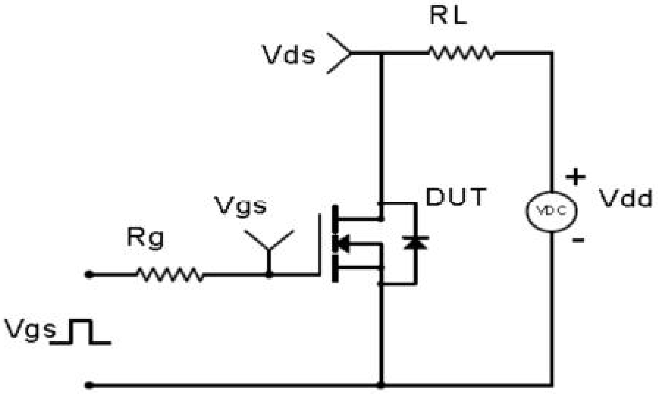
Test Circuit and Waveform

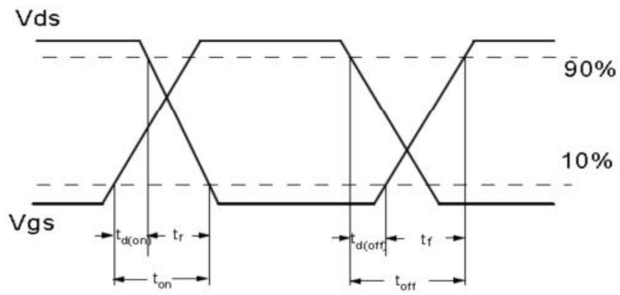
Gate Charge Test Circuit & Waveform



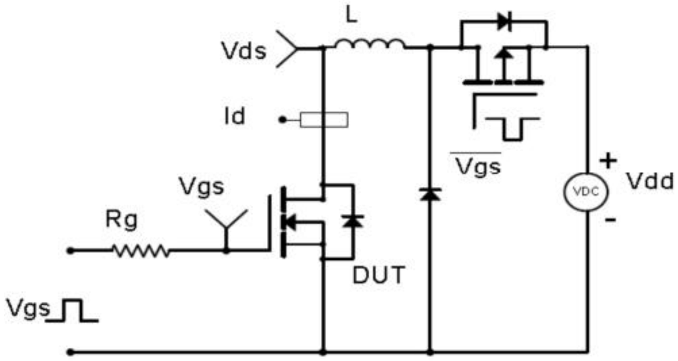


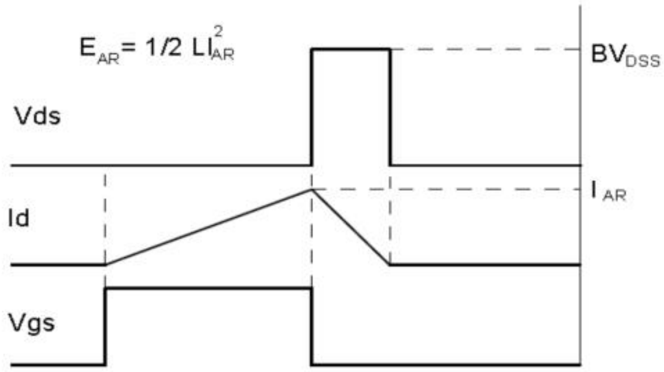
Resistive Switching Test Circuit & Waveforms



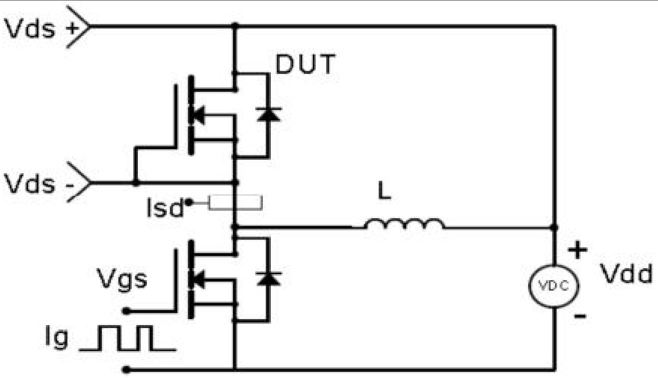


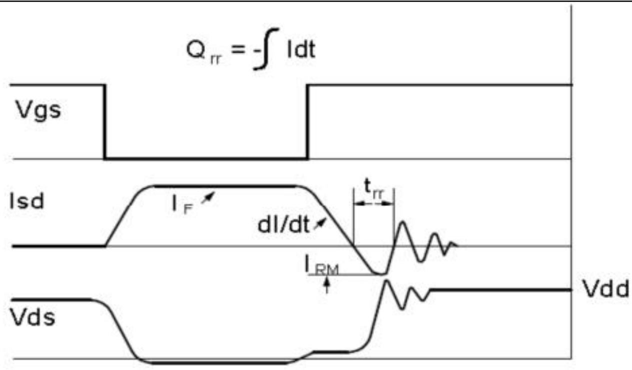
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



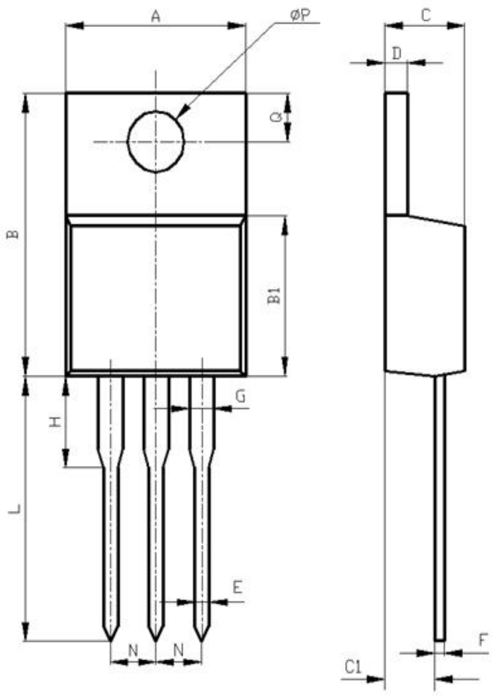


Diode Recovery Test Circuit & Waveforms





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
Φ P	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 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