

N-MOSFET 100V 6.8mΩ 90A

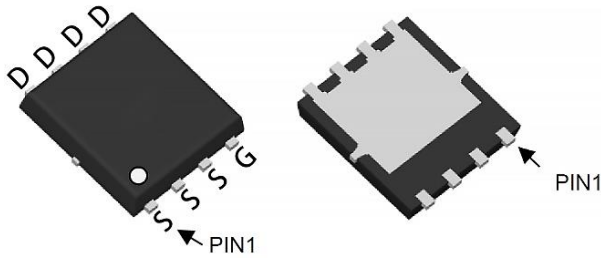
Product Summary

- V_{DS} 100V
- I_D 90A
- R_{DS(ON)} (at V_{GS}=10V) <8 mΩ (Typ: 6.8 mΩ)

Naming convention

M	G	C	0	6	8	N	1	0	A	N
Megain	B: PDFN3X3 C: PDFN5X6 P: TO220 H: TO263 S: SOP8 D: TO252	Reson Typ. @V _{GS} =10V	N: N P: P C: N+P D: N+N	10: 100V 08: 80V 06: 60V 04: 40V 03: 30V	A:V _{GS} 20/-12 w/o A:V _{GS} ±20	L:V _{DS} (1~2.5V) N:V _{DS} (2~4V)				

Pin configuration



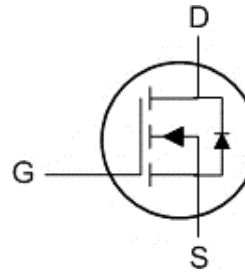
Features

- Advanced Trench MOS Technology
- 100% EAS Guaranteed
- Fast Switching Speed
- Green Device Available

Application

- High Frequency Switching
- Synchronous Rectification
- DC/DC Converter

Symbol



Ordering Information

Order code	Package	Form	Quantity (PCS)	Marking
MGC068N10N	PDFN 5x6	Tape & Reel	5000 / Tape & Reel	MGC068N10N

Absolute Maximum Ratings

T_C=25°C Unless Otherwise Noted.

Symbol	Parameter	Value	Units
V _{DS}	Drain-Source Voltage	100	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Drain Current – Continuous ^{1,6} (T _C =25°C)	90	A
	Drain Current – Continuous ^{1,6} (T _C =70°C)	72	A
I _{DM}	Pulsed Drain Current ²	360	A
EAS	Single Pulse Avalanche Energy ³	107	mJ
I _{AS}	Avalanche Current	35.2	A
P _D	Total Power Dissipation ⁴ (T _C =25°C)	104	W
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	°C

■ Thermal Characteristics

Symbol	Parameter	Typ	Max	Units
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	-	70	°C/W
$R_{\theta JC}$	Thermal Resistance Junction to Case ¹	1.0	1.4	°C/W

■ Electrical Characteristics

T_J=25°C Unless Otherwise Noted.

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
B _{VDSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	100	-	-	V
R _{DS(ON)}	Drain-Source On-state Resistance ²	V _{GS} =10V, I _D =13.5A	-	6.8	8	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	2	-	3.5	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =80V, V _{GS} =0V	-	-	1	uA
		V _{DS} =80V, V _{GS} =0V	-	-	5	
		T _J =55℃				
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =20A	-	44	-	S
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =50V, F=1MHz	-	2176	-	pF
C _{oss}	Output Capacitance		-	294	-	
C _{rss}	Reverse Transfer Capacitance		-	7	-	
T _{d(ON)}	Turn-on Delay Time	V _{GS} =10V,V _{DD} =50V, I _D =13.5A,R _G =3Ω	-	11.6	-	nS
T _r	Turn-on Rise Time		-	28.7	-	
T _{d(OFF)}	Turn-off Delay Time		-	26.4	-	
T _f	Turn-off Fall Time		-	35.6	-	
Q _g	Total Gate Charge (10V)	V _{GS} =10V,V _{DS} =50V, I _D =13.5A	-	33.1	-	nC
Q _{gs}	Gate-Source Charge		-	10	-	
Q _{gd}	Gate-Drain Charge		-	5.1	-	
Diode Characteristics						
I _S	Continuous Source Current ^{1,5,6}	V _G =V _D =0V,Force Current	-	-	90	A
V _{SD}	Diode Forward Voltage ²	I _S =20A, V _{GS} =0V	-	-	1.1	V
t _{rr}	Reverse Recovery Time	I _D =13.5A, V _{DS} =50V di/dt=100A/us	-	45	-	nS
Q _{rr}	Reverse Recovery Charge		-	49.3	-	nC

Note :

1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

2.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

3.The EAS data shows Max. rating . The test condition is $V_{DD}=50V, V_{GS}=10V, L=0.1mH, I_{AS}=28A$.

4.The power dissipation is limited by 150°C junction temperature.

5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

6.The maximum current rating is package limited.

■ Typical Characteristics

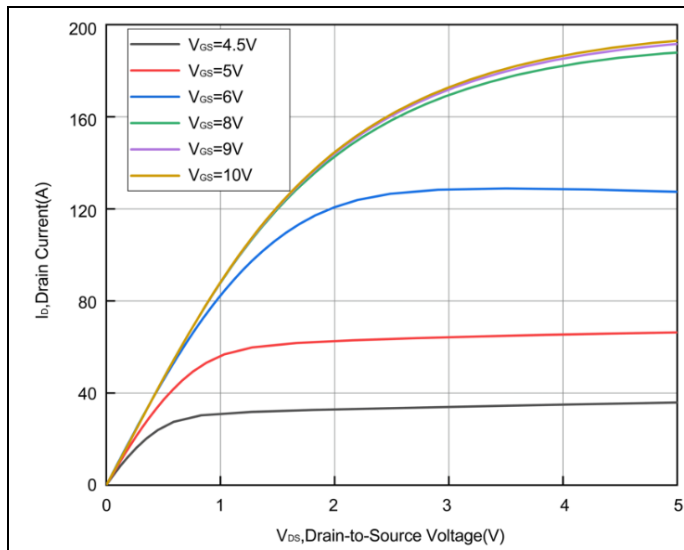


Fig1. Typical Output Characteristics

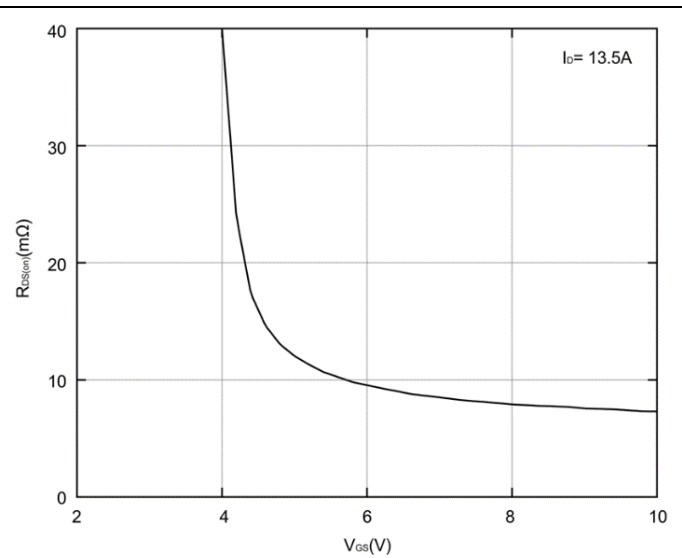


Fig2. Typical Output Characteristics

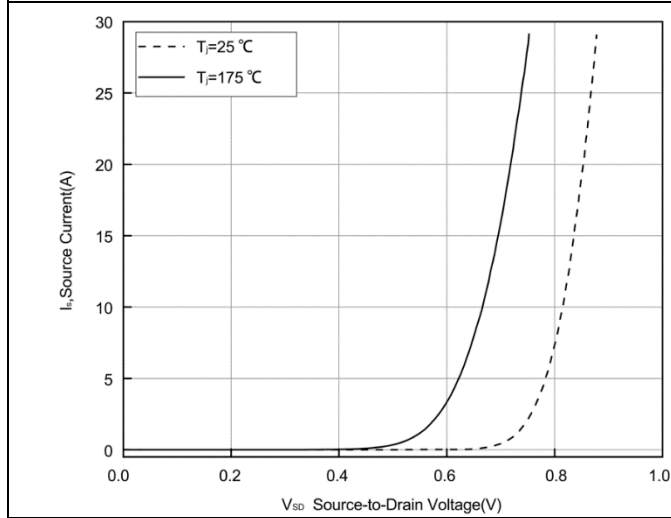


Fig3. Source-Drain Forward Characteristics

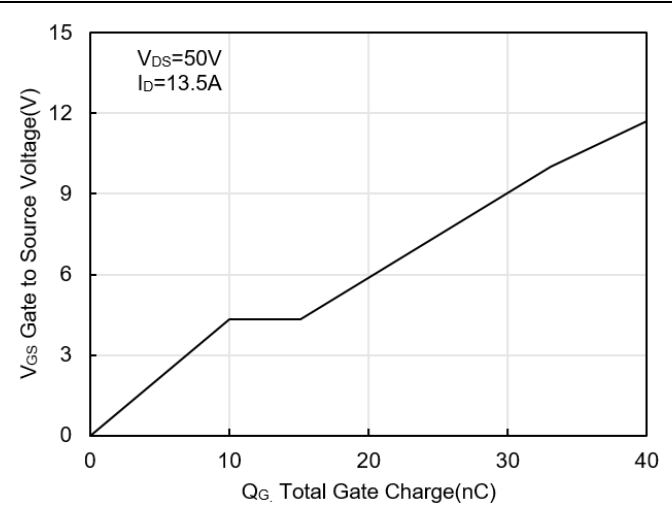


Fig4. Source-Drain Forward Characteristics

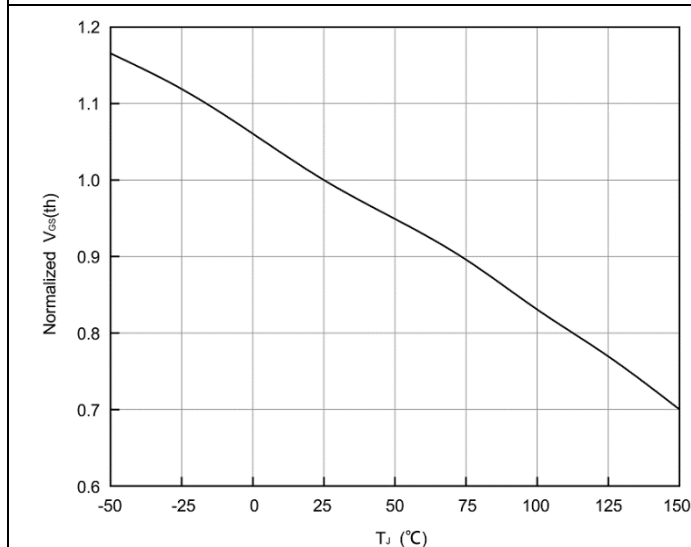


Fig5. Normalized $V_{GS(th)}$ vs T_j

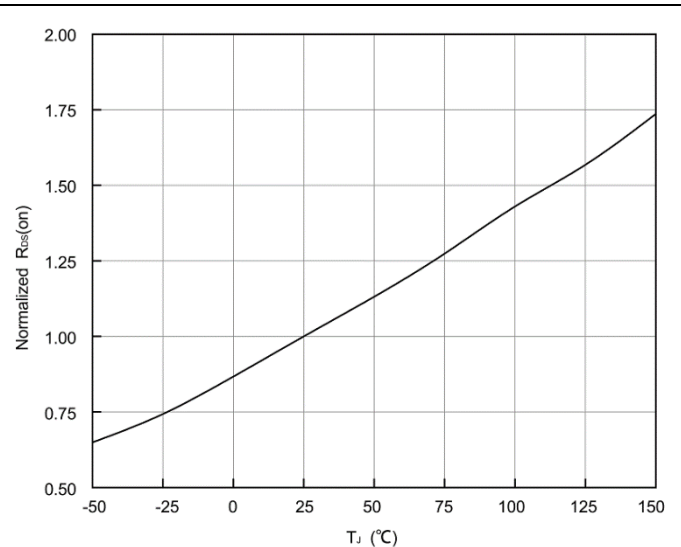


Fig6. Normalized $R_{DS(on)}$ vs T_j

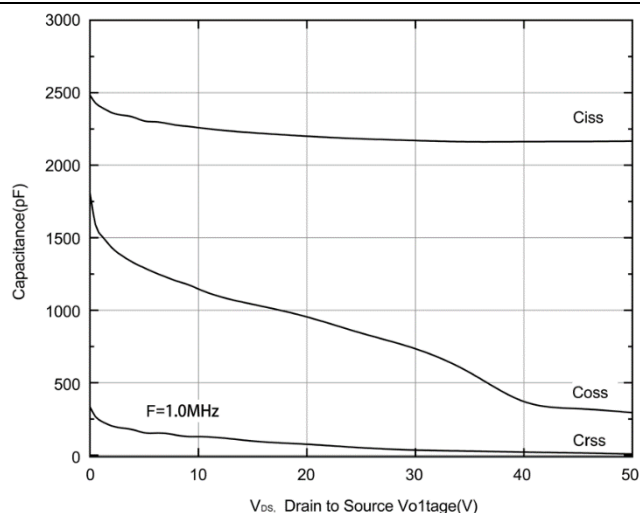


Fig7. Capacitance

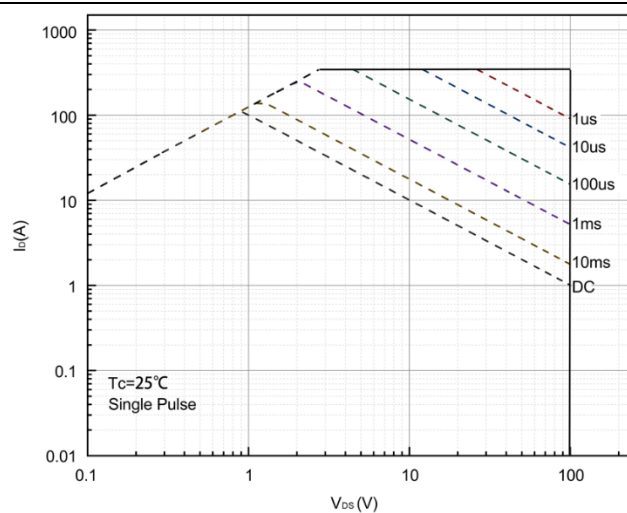


Fig8. Safe Operating Area

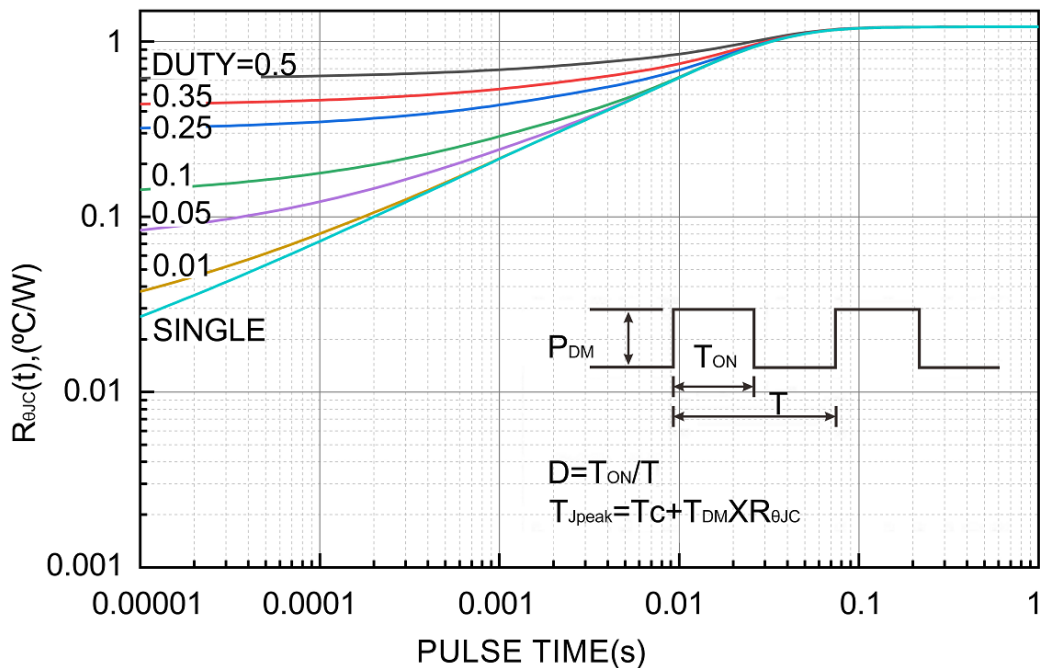


Fig9. Thermal Response

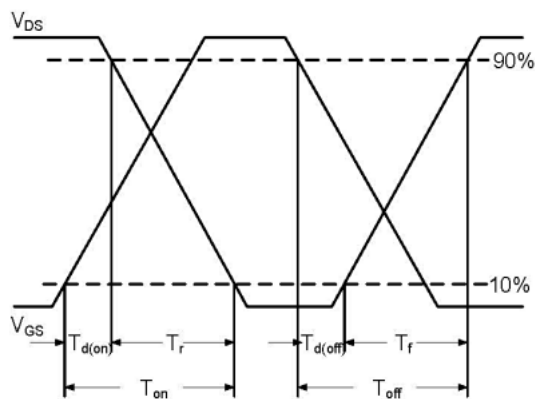


Fig10. Switching Time Waveform

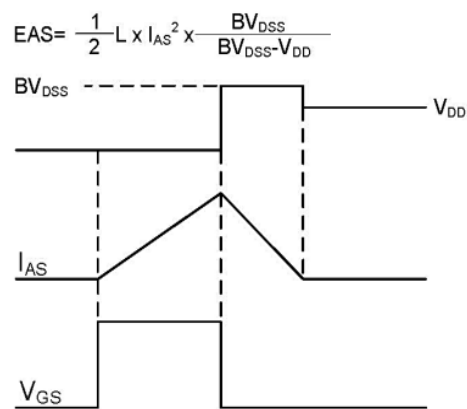
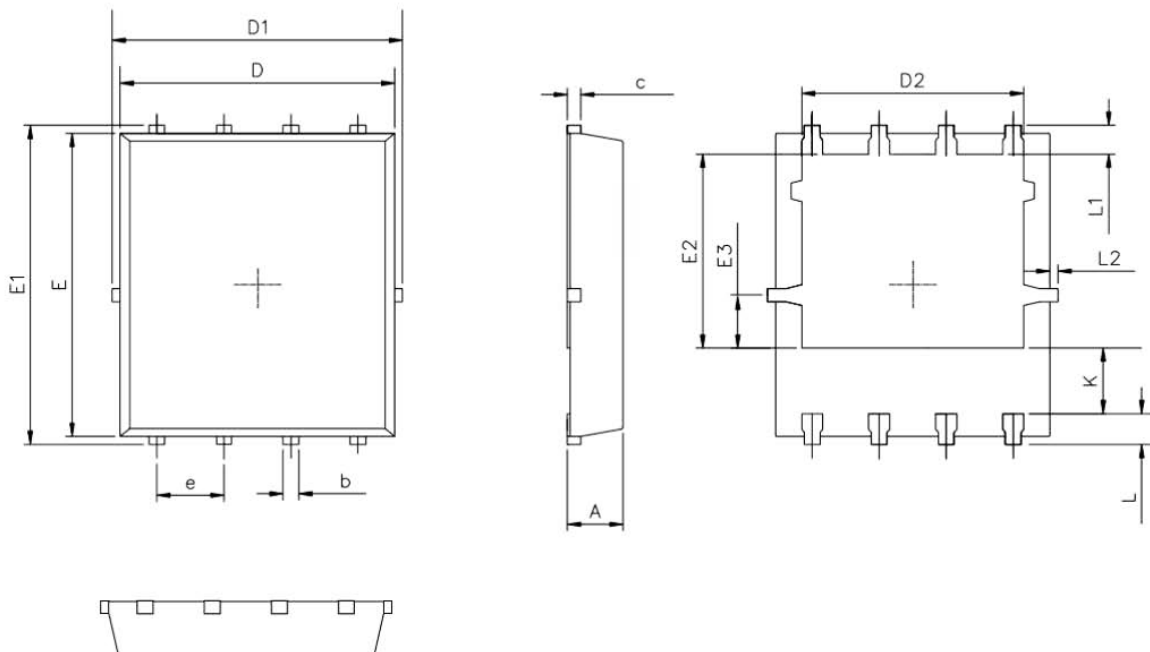


Fig11. Unclamped Inductive Switching Waveform

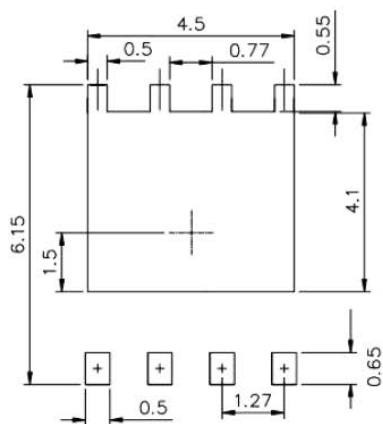
■ Package size

Unit: mm。

PDFN 5X6:



RECOMMENDED LAND PATTERN



UNIT:mm

	MIN	NOM	MAX
A	0.90	1.00	1.10
b	0.25	0.35	0.50
c	0.10	0.20	0.30
D	4.80	5.00	5.30
D1	4.90	5.10	5.50
D2	3.92	4.02	4.20
E	5.65	5.75	5.85
E1	5.90	6.05	6.20
E2	3.325	3.525	3.775
E3	0.80	0.90	1.00
e		1.27	
L	0.40	0.55	0.70
L1		0.65	
L2	0.00		0.15
K	1.00	1.30	1.50