

N-MOSFET 135V 2.2mΩ 315A

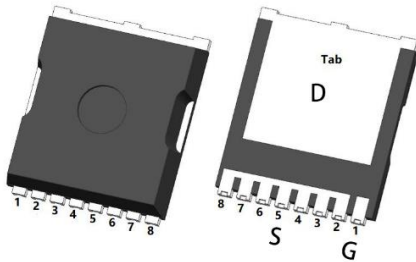
■ Product Summary

- V_{DS} 135V
- I_D 315A
- R_{DS(ON)} (at V_{GS}=10V) <3.3 mΩ (Typ: 2.2mΩ)

■ Naming convention

M	G	V	0	2	2	N	1	4	A	N
Megain										
B: PDFN3X3 C: PDFN5X6 P: TO220 H: TO263 S: SOP8 V: TOLL			R _{DS(ON)} Typ. @V _{GS} =10V			N: N P: P C: N+P D: N+N			15: 150V 12: 120V 10: 100V 06: 60V 04: 40V 03: 30V	
						A:V _{GS} ±12 w/o A:V _{GS} ±20			L:V _{th} (1~2.5V) N:V _{th} (2~4V)	

■ Pin configuration



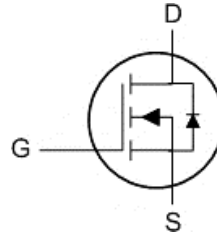
■ Features

- Low R_{DS(ON)}
- Low Gate Charge
- Low Thermal Resistance
- 100% Avalanche tested
- Excellent CdV/dt effect decline

■ Application

- Load Switch
- Battery Protection
- UPS and Energy Inverters

■ Symbol



■ Ordering Information

Order code	Package	Form	Quantity (PCS)	Marking
MGV022N14N	TOLL	Tape & Reel	2000/Tape & Reel	MGV022N14N

■ Absolute Maximum Ratings

T_C=25°C Unless Otherwise Noted.

Symbol	Parameter	Value	Units
V _{DS}	Drain-Source Voltage	135	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Drain Current – Continuous ¹ (T _C =25°C)	315	A
	Drain Current – Continuous (T _C =100°C)	220	
I _{DM}	Pulsed Drain Current ²	1250	A
EAS	Single Pulse Avalanche Energy ³	1680	mJ
P _D	Total Power Dissipation(T _C =25°C)	400	W
	Total Power Dissipation(T _C =100°C)	200	
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 to Ambient ¹	-	60	°C/W
$R_{\theta JC}$	Thermal Resistance Junction to Case ¹	-	0.35	°C/W

■ Electrical Characteristics

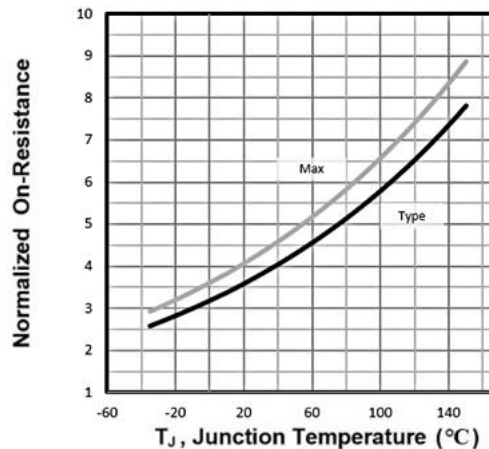
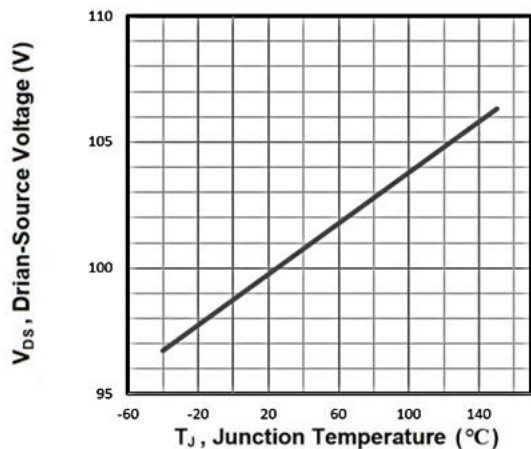
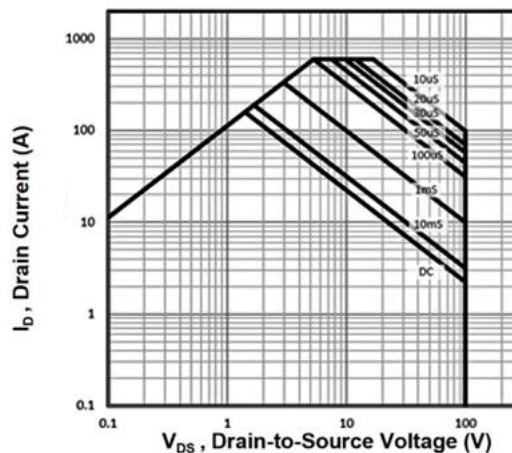
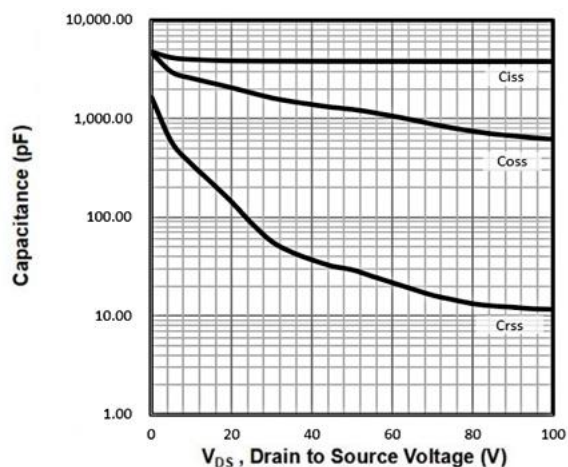
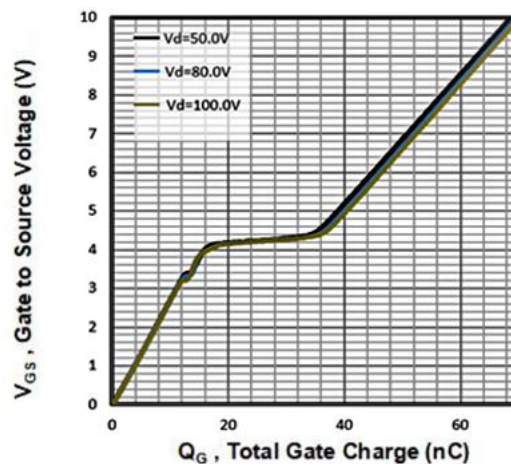
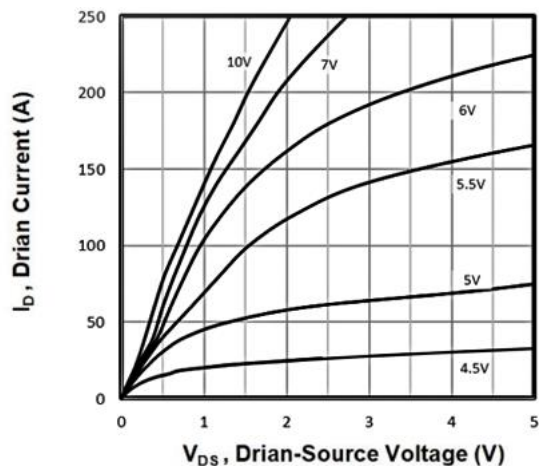
$T_J=25^{\circ}\text{C}$ Unless Otherwise Noted.

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
B _{VDSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	140	-	-	V
R _{DS(ON)}	Drain-Source On-state Resistance ²	V _{GS} =10V, I _D =20A	-	2.2	3.3	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	2.0	-	4.0	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =135V, V _{GS} =0V	-	-	1	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =5V, I _D =10A	-	32	-	S
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V F=1.0MHz	-	0.9	-	Ω
Q _g	Total Gate Charge	V _{DS} =10V, V _{GS} =70V I _D =50A	-	1350	-	nC
Q _{gs}	Gate-Source Charge		-	30	-	
Q _{gd}	Gate-Drain Charge		-	30	-	
T _{d(ON)}	Turn-on Delay Time	V _{DS} =70V, V _{GS} =10V, R _{GEN} =4.5Ω, I _D =50A	-	1	-	nS
T _r	Turn-on Rise Time		-	33	-	
T _{d(OFF)}	Turn-off Delay Time		-	95	-	
T _f	Turn-off Fall Time		-	75	-	
C _{iss}	Input Capacitance	V _{DS} =40V, V _{GS} =0V, f=1MHz	-	8292	-	pF
C _{oss}	Output Capacitance		-	3540	-	
C _{rss}	Reverse Transfer Capacitance		-	350	-	
Diode Characteristics						
I _{SD}	Source-Drain Current(Body Diode)		-	-	315	A
V _{SD}	Diode Forward Voltage	I _S =15A, V _{GS} =0V	-	-	1.2	V
t _{rr}	Reverse Recovery Time	I _F =50A, dI/dt=100A/us,	-	130	-	nS
Q _{rr}	Reverse Recovery Charge	T _J =25℃	-	500	-	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 $V_{DD}=50V, V_{GS}=10V, L=0.5mH, I_D=80A, R_G=25\Omega$.
- 4.The power dissipation is limited by 175°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.

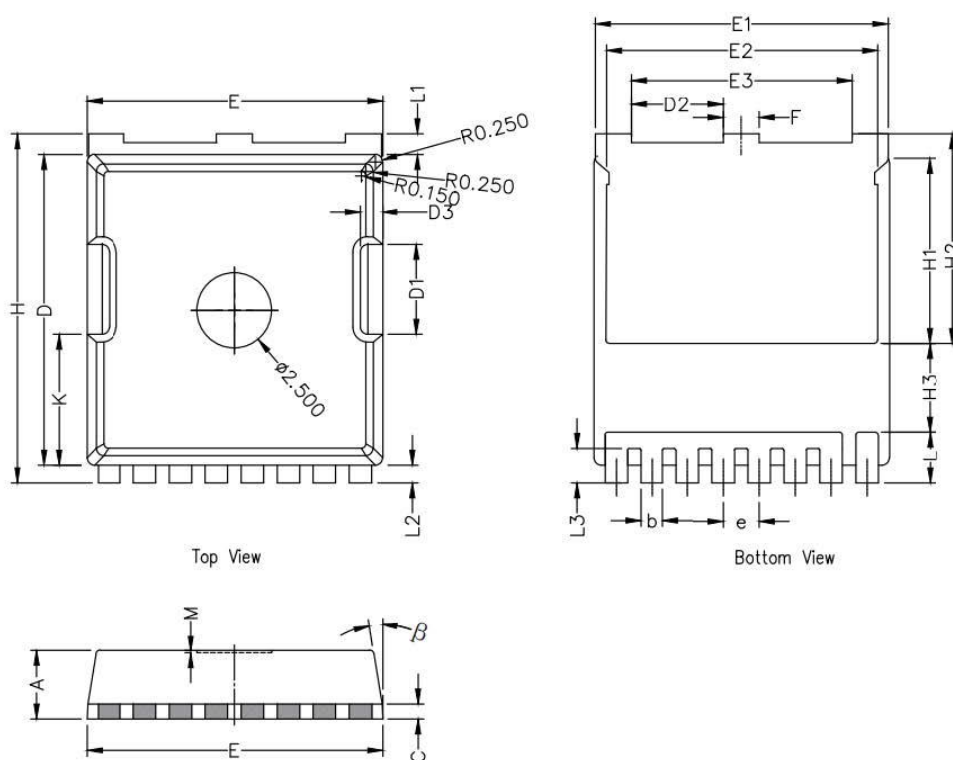
■ Typical Characteristics



■ Package size

Unit: mm。

TOLL:



Symbols	Millimeters		
	MIN.	NOM.	MAX.
A	2.20	2.30	2.40
b	0.65	0.75	0.85
C	0.508 REF		
D	10.25	10.40	10.55
D1	2.85	3.00	3.15
D2	2.95	3.10	3.25
D3	0.75 REF		
E	9.75	9.90	10.05
E1	9.65	9.80	9.95
E2	8.95	9.10	9.25
E3	7.25	7.40	7.55
e	1.20 BSC		
F	1.05	1.20	1.35
H	11.55	11.70	11.85
H1	6.03	6.18	6.33
H2	6.85	7.00	7.15
H3	3.00 BSC		
L	1.55	1.70	1.85
L1	0.55	0.70	0.85
L2	0.45	0.60	0.75
L3	1.00	1.15	1.30
M	0.08 REF		
β	8°	10°	12°
K	4.25	4.40	4.55