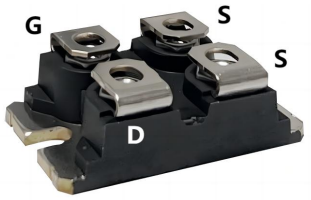
MASPOWER

MS340N07HGF4

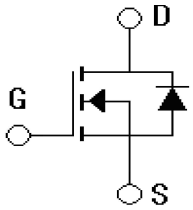
Features

- Low $R_{DS(on)}$
- Fast switching
- 100% avalanche tested
- Low package inductance
- Low intrinsic Rectifier
- RoHS Compliant



Applications

- DC-DC converters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC chopper
- Temperature and lighting controls
- Linear current regulators



Absolute Ratings (Tc=25℃)

Parameter	Symbol		Value	Unit
Drain-Source Voltage	V_{DSS}		70	V
Drain Current -continuous	I_D	T=25℃	340	A
		T=100℃	170	A
Drain Current - pulse （note 1）	I_{DM}		1360	A
Gate-Source Voltage	V_{GSS}		±30	V
Single Pulsed Avalanche Energy （note 2）	E_{AS}		4000	mJ
Avalanche Current（note 1）	I_{AR}		200	A
Repetitive Avalanche Current（note 1）	E_{AR}		64	mJ
Peak Diode Recovery dv/dt（note 3）	dv/dt		10	V/ns
Power Dissipation	PD TC=25℃		694	W
	-Derate above 25℃		2.86	W/℃
Operating and Storage Temperature Range	T_j, T_{STG}		-55~+150	℃
Maximum Lead Temperature for Soldering Purposes	T_L		300	℃

Isolation voltage for terminal to case (I_{ISOL}≤1mA,t=1s,DC)	V_{ISO}	3000	V

Electrical Characteristics(T_{CASE}=25℃ unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Type	Max	Units
Off-Characteristics						
Drain-Source Voltage	BV_{DSS}	I_D=250uA,V_{GS}=0V	70	-	-	V
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	I_D=250μA, referenced to 25℃	-	0.16	-	V/℃
Drain cut-off current	I_{DSS}	V_{DS}=70V,V_{GS}=0V Tj=25℃	-	-	100	μA
		V_{DS}=70V,Tj=125℃	-	-	2000	
Gate-body leakage current,forward	I_{GSSF}	V_{DS}=0V,V_{GS}=30V	-	-	500	nA
Gate-body leakage current,reverse	I_{GSSR}	V_{DS}=0V,V_{GS}=-30V	-	-	-500	nA
On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	2	-	4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V,I_D=75A （note 3）	-	3.1	3.8	mΩ
Forward Transconductance	g_{fs}	V_{DS} =10V , I_D=75A （note 3）	-	116	-	S
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, f=1.0MHz	-	11000		pF
Output capacitance	C_{oss}		-	6700		pF
Reverse transfer capacitance	C_{rss}		-	3300		pF

Switching Characteristics						
Turn-On delay time	$t_{d(on)}$	V_{DD}=35V,I_D=100A, R_G=25Ω, V_{GS}=10V(note 4,5)	-	90	-	ns
Turn-On rise time	t_r		-	85	-	ns
Turn-Off delay time	$T_{d(off)}$		-	270	-	ns
Turn-Off Fall time	t_f		-	40	-	ns
Total Gate Charge	Q_g	V_{DS}=50V, I_D=100A, V_{GS}=10V(note4,5)	-	450	-	nC
Gate-Source charge	Q_{gs}		-	72	-	nC
Gate-Drain charge	Q_{gd}		-	226	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						

Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=30A (note 3)	-	0.81	1.2	V
Maximum Continuous Drain-Source Diode Forward Current	I_S		-	-	340	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}		-	-	1360	A
Reverse recovery time	t_{rr}	V_{GS}=0V,I_F=50A dI$_F$/dt=100A/us(note 3)	-	95	-	ns
Reverse recovery charge	Q_{rr}		-	1.23	-	uC

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.18	℃/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	40	℃/W

Notes:

1：Pulse width limited by maximum junction temperature

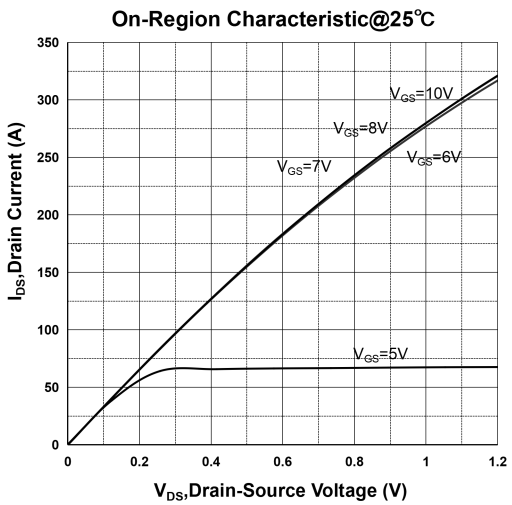
2：L=0.5mH, I_{AS}=100A, V_{DD}=50V, RG=25 Ω,Starting T_J=25℃

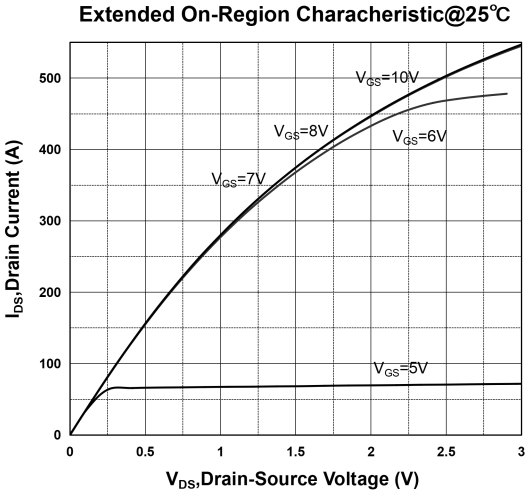
3：I_{SD} ≤100A,di/dt ≤300A/μs,V_{DD}≤BV_{DSS}, Starting T_J=25℃

4：Pulse Test：Pulse Width ≤300μs,Duty Cycle≤2%

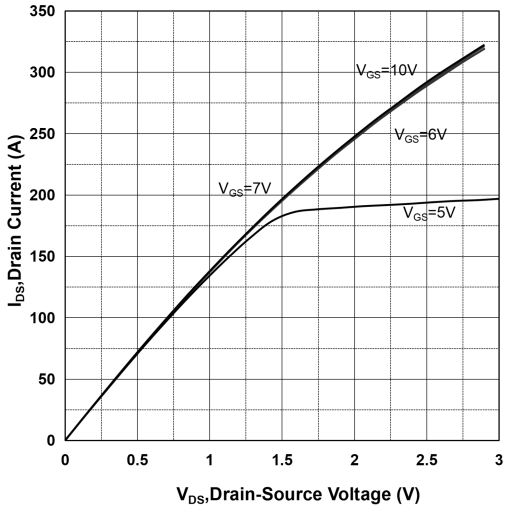
5：Essentially independent of operating temperature

Electrical Characteristics

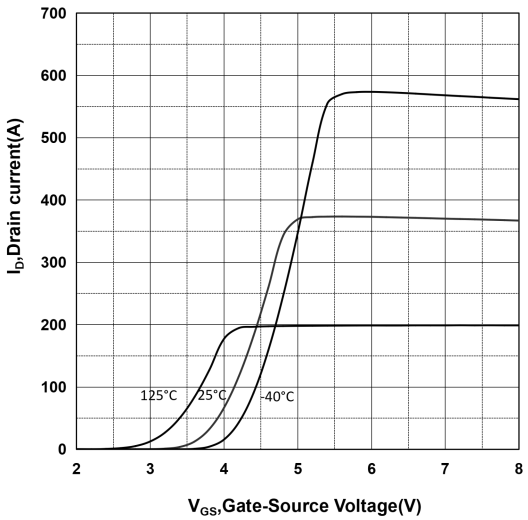




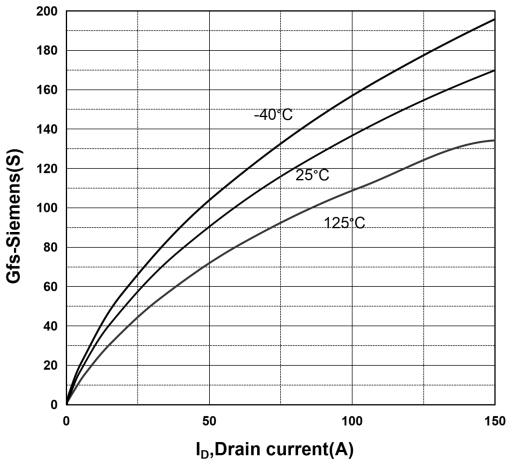
On-Region Characteristic@125℃



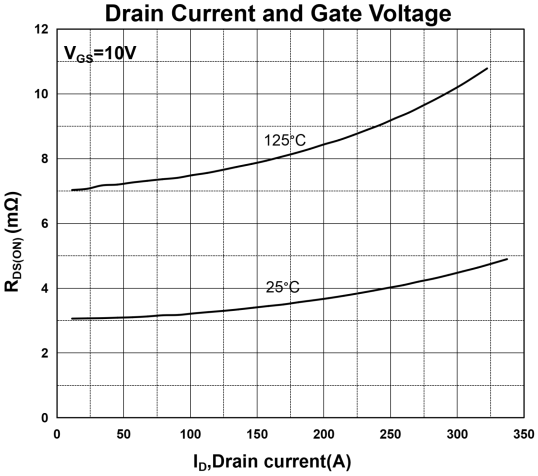
Transfer Characteristics



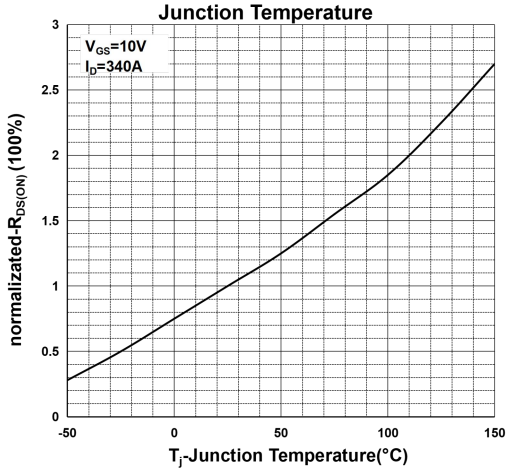
Transconductance



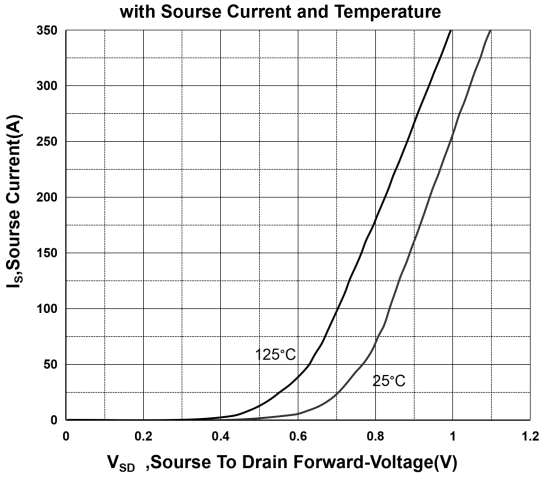
On-Resistance Variation vs Drain Current and Gate Voltage



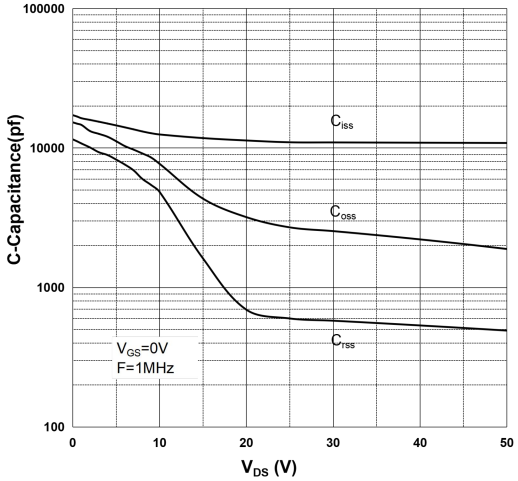
Normalizated On-Resistance Variation vs Junction Temperature



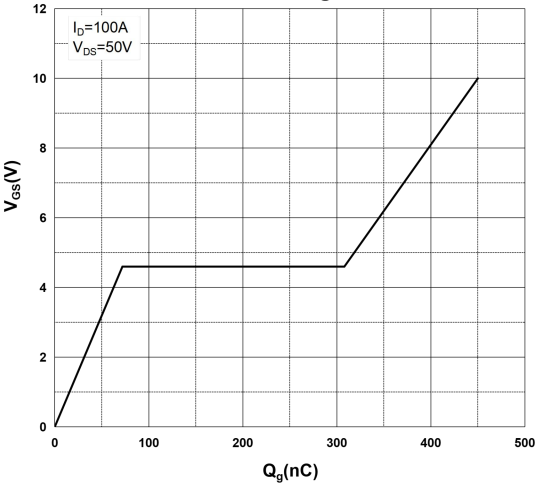
Body Diode Forward Voltage Variation with Sourse Current and Temperature



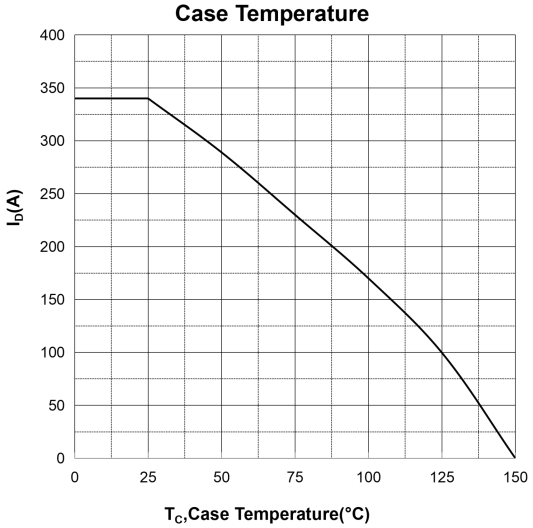
Capacitance



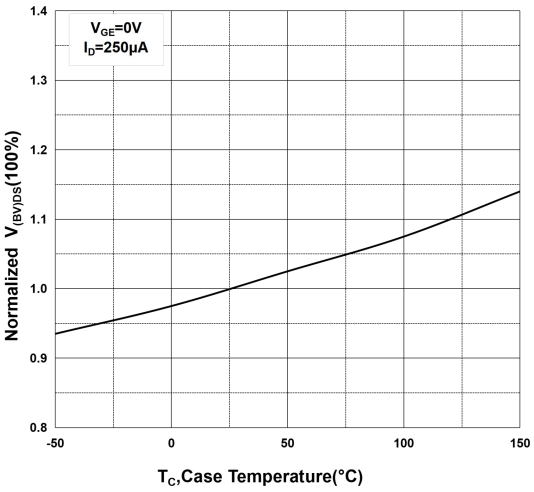
Gate Charge



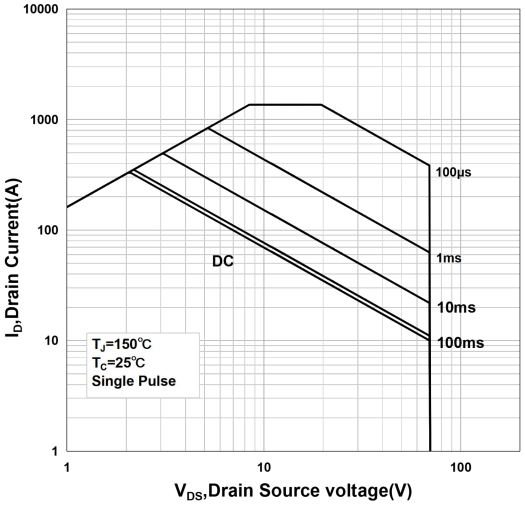
Maximum Drain Current vs Case Temperature



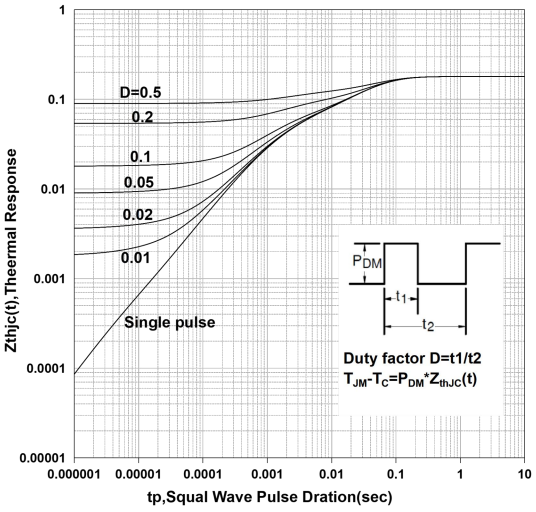
Normalized $V_{(BV)DS}$ vs temperature



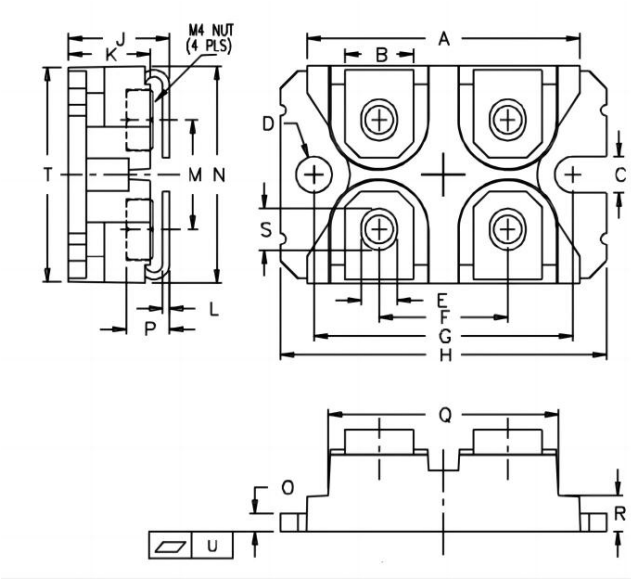
Safe Operating Area



Transient response Curve



Package Mechanical DATA



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	38.00	38.23	1.496	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.76	0.84	0.030	0.033
M	12.60	12.85	0.496	0.506
N	25.15	25.42	0.990	1.001
O	1.98	2.13	0.078	0.084
P	4.95	5.97	0.195	0.235
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.174
S	4.72	4.85	0.186	0.191
T	24.59	25.07	0.968	0.987
U	-0.05	0.1	-0.002	0.004