HGA059N12SL P-1

120V N-Ch Power MOSFET

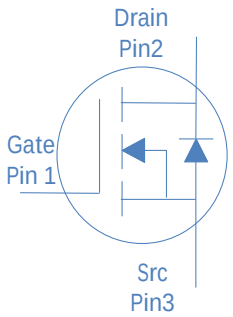
Feature

◇ High Speed Power Switching, Logic Level
◇ Enhanced Body diode dv/dt capability
◇ Enhanced Avalanche Ruggedness
◇ 100% UIS Tested, 100% Rg Tested
◇ Lead Free

V_{DS}	120	V
$R_{DS(on),typ}$	5	mΩ
I_D	67	A

Application

◇ Synchronous Rectification in SMPS
◇ Hard Switching and High Speed Circuit
◇ Power Tools
◇ UPS
◇ Motor Control



Part Number		
HGA059N12SL	TO-220F	GA059N12SL

Absolute Maximum Ratings at T_j

Parameter	Symbol		Value	Unit
Continuous Drain Current	I_D	T_C	67	A
		T_C	47	
	V_{DS}	-	120	V
	V_{GS}	-	±20	V
	I_{DM}	-	540	A
	E_{AS}	L=0.4mH, T_C	720	mJ
Power Dissipation	P_D	T_C	58	W
	T_J, T_{stg}	-	-55 to175	

Absolute Maximum Ratings

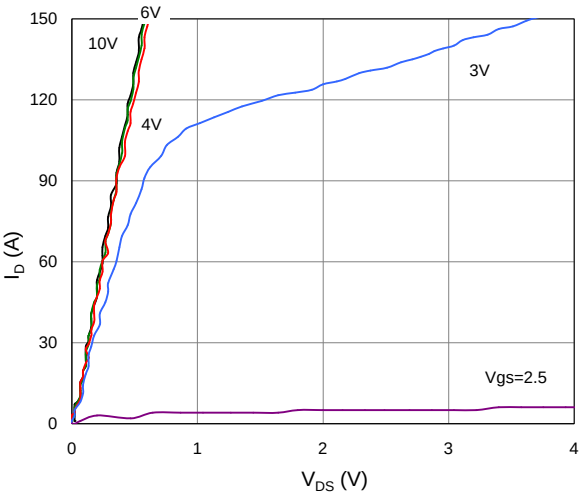
Parameter	Symbol	Max	Unit
	R	2.6	
	R	60	

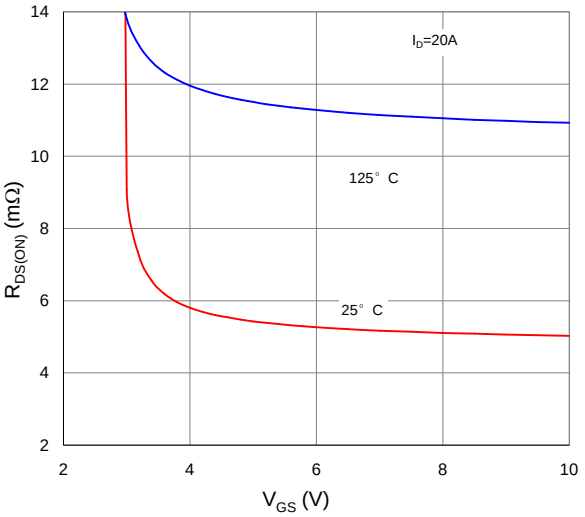
j

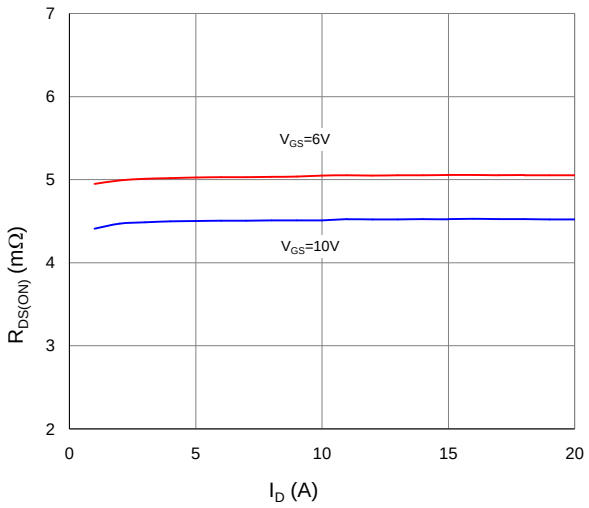
Parameter	Symbol		Value			Unit
			min	typ	max	
	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	120	-	-	V
	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250μA	1.4	1.8	2.4	
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V, V_{DS}=120V, T_j	-	-	1	μA
		V_{GS}=0V, V_{DS}=120V, T_j	-	-	100	
	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
	$R_{DS(on)}$	V_{GS}=10V, I_D=20A	-	5	5.9	mΩ
		V_{GS}=4.5V, I_D=20A	-	5.3	7.2	
	g	V_{DS}=5V, I_D=20A	-	90	-	S
	R_G	V_{GS}=0V, V_{DS}	-	0.7	-	Ω

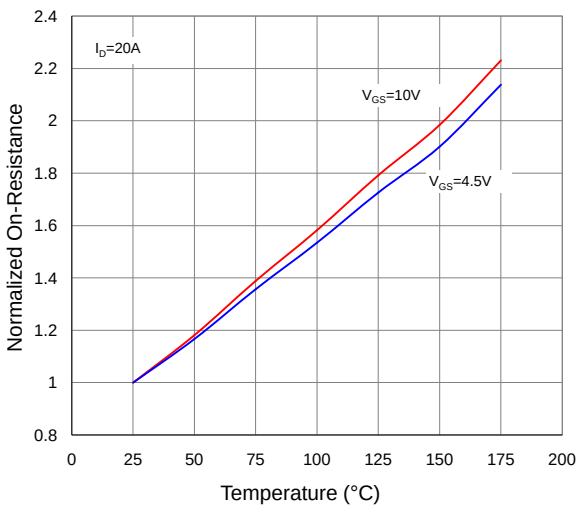
	C_{iss}	V_{GS}=0V, V_{DS}	-	7690	-	pF
	C_{oss}		-	441	-	
	C_{rss}		-	18.5	-	
Total Gate Charge	Q_g (10V)	V_{DD}=60V, I_D=20A, V_{GS}=10V	-	110	-	nC
Total Gate Charge	Q_g (4.5V)		-	50	-	
	Q_{gs}		-	20	-	
Gate to Drain (Miller) Charge	Q		-	34	-	
Turn on Delay Time	t	V_{DD}=60V, I_D=20A, V_{GS}=10V, R_G=10Ω,	-	30	-	ns
Rise time	t_r		-	21	-	
	t		-	50	-	
Fall Time	t		-	17	-	

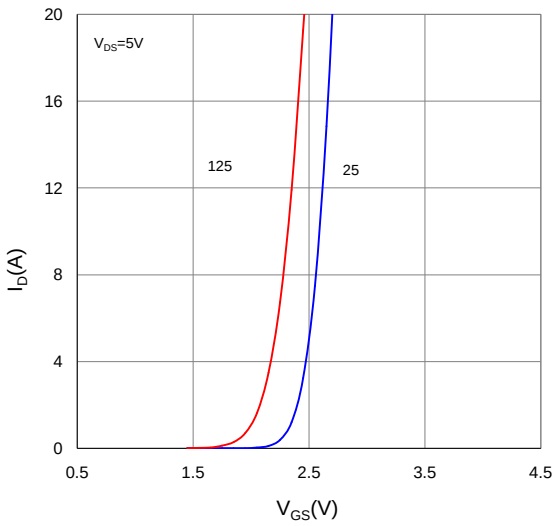
	V_{SD}	V_{GS}=0V, I_F=20A	-	0.9	1.2	V
	t_{rr}	V_R=60V, I_F F μs	-	80	-	ns
	Q_{rr}		-	420	-	nC

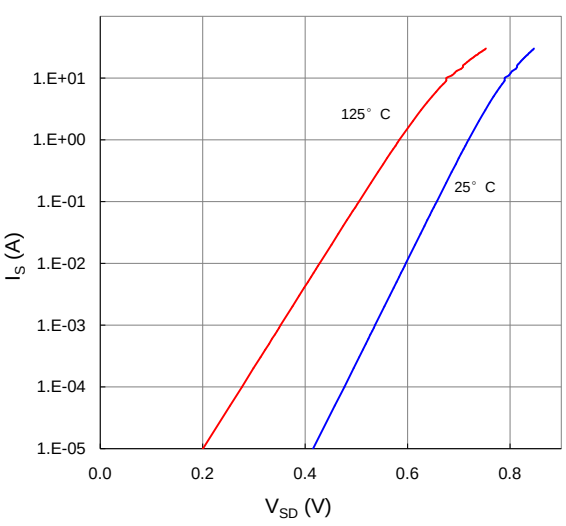

6V
10V
4V
3V
Vgs=2.5
I_D (A)
V_{DS} (V)

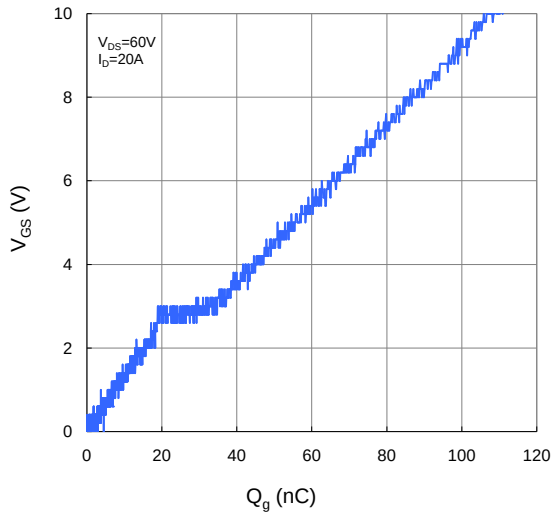

I_D=20A
125° C
25° C
$R_{DS(ON)}$ (mΩ)
V_{GS} (V)


V_{GS}=6V
V_{GS}=10V
$R_{DS(ON)}$ (mΩ)
I_D (A)


I_D=20A
V_{GS}=10V
V_{GS}=4.5V
Normalized On-Resistance
Temperature (°C)


V_{DS}=5V
125
25
I_D(A)
V_{GS}(V)


125° C
25° C
I_S (A)
V_{SD} (V)



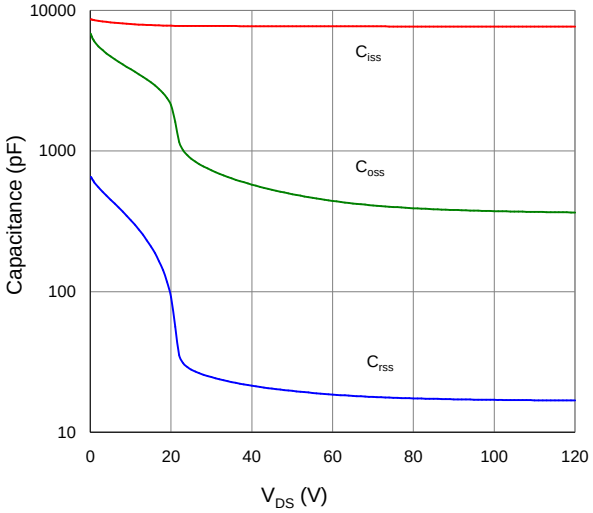
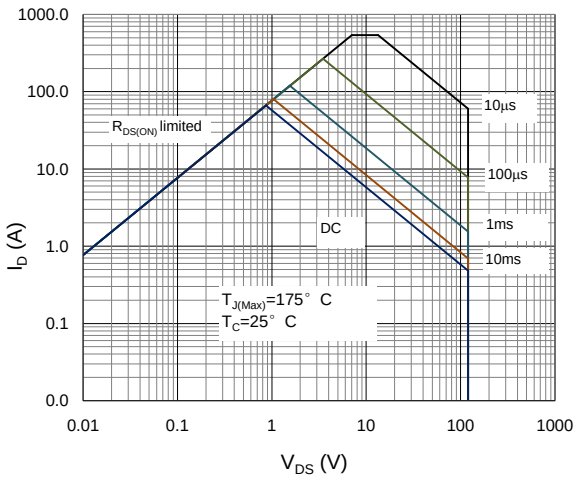
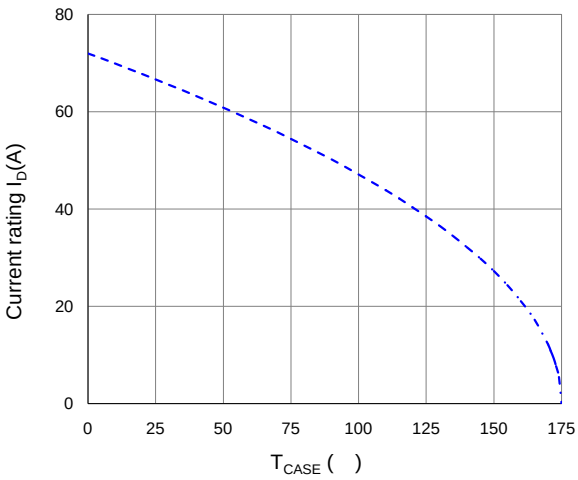
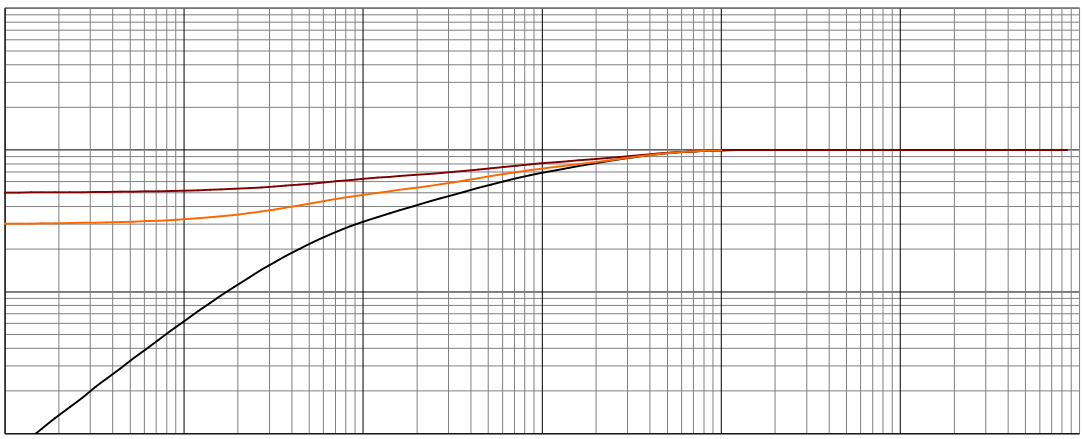


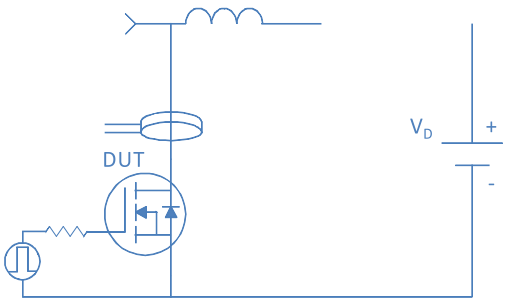
Figure 10. Maximun Drain Current vs. Case Temperature

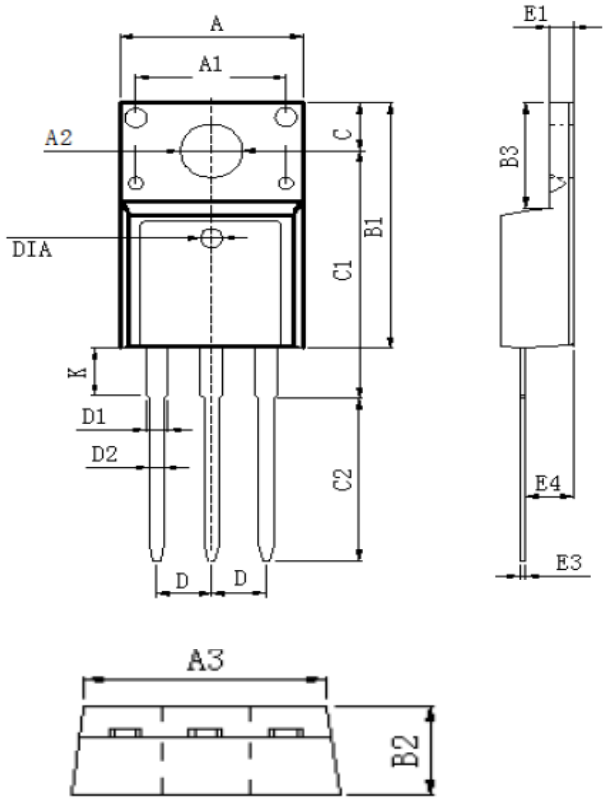






Gate Charge Test





DIM	MILLIMETERS
A	10.16±0.3
A1	7.00±0.1
A2	3.3±0.2
A3	9.5±0.2
B1	15.87±0.3
B2	4.7±0.2
B3	6.68±0.4
C	3.3±0.2
C1	12.57±0.3
C2	10.02±0.5
D	2.54±0.05
D1	1.28±0.2
D2	0.8±0.1
K	3.1±0.3
E1	E2
5±0.1	E3
76±0.2	E4
5(deep 0.2)	DIA ⊙1.
	Unit :mm